How To Conduct An In-House Utility Assessment

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McKinstry Co.

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How to Conduct an In-House Utility Assessment

A.   How Facilities Use Utilities
I.   Existing Utility Budget vs. Actual Costs
II. Building's Utility Using Systems
III. Understanding Utility Bills
IV. Document Buildings' Conditions

B.   How to Reduce Utility Costs
I.   Generate List of Measures
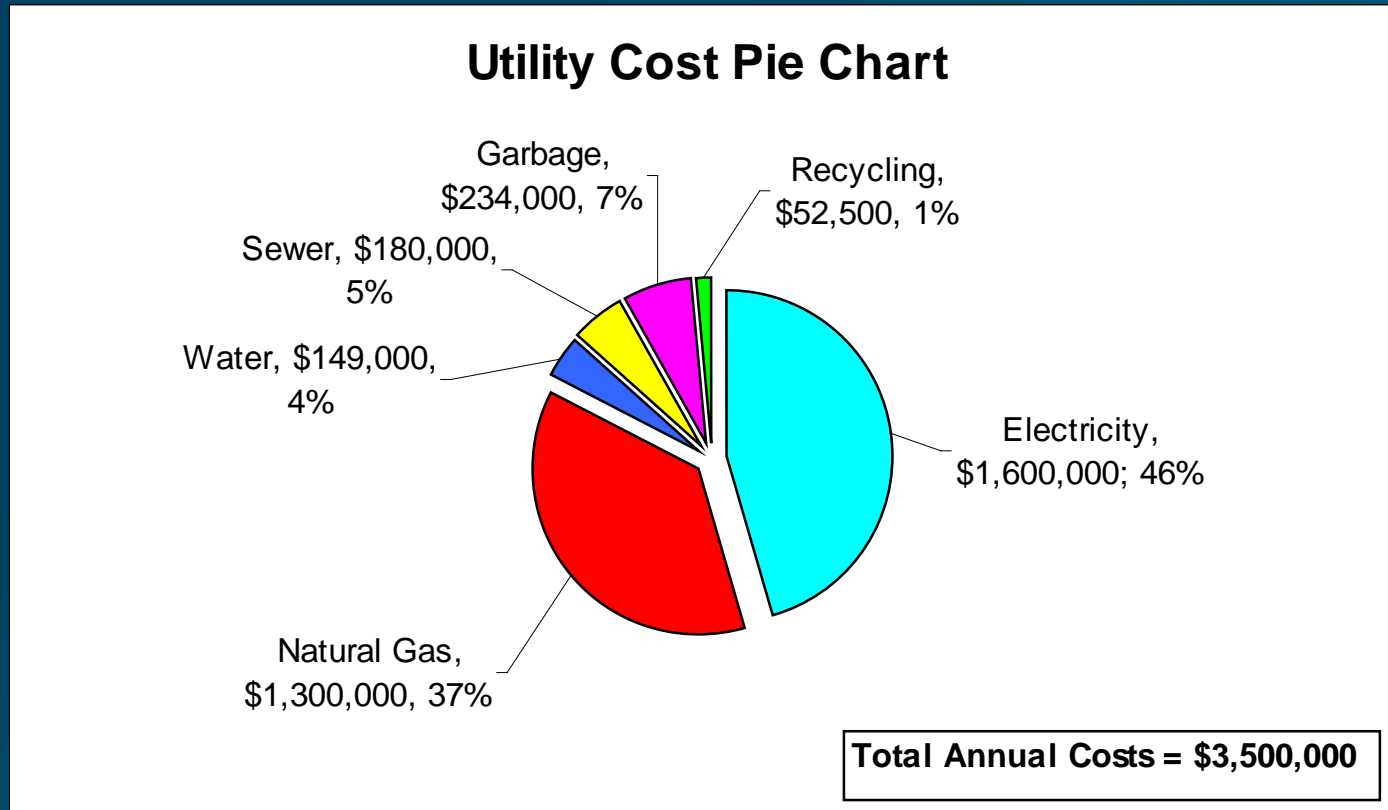II. Develop Plan to Lower Utility Costs

"Questions at any time"

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A. How Facilities Use Utilities

I.   Existing Utility Budget vs. Actual Costs

- Accounts payable
- Utility provider

Budget vs. Actual Utility Costs
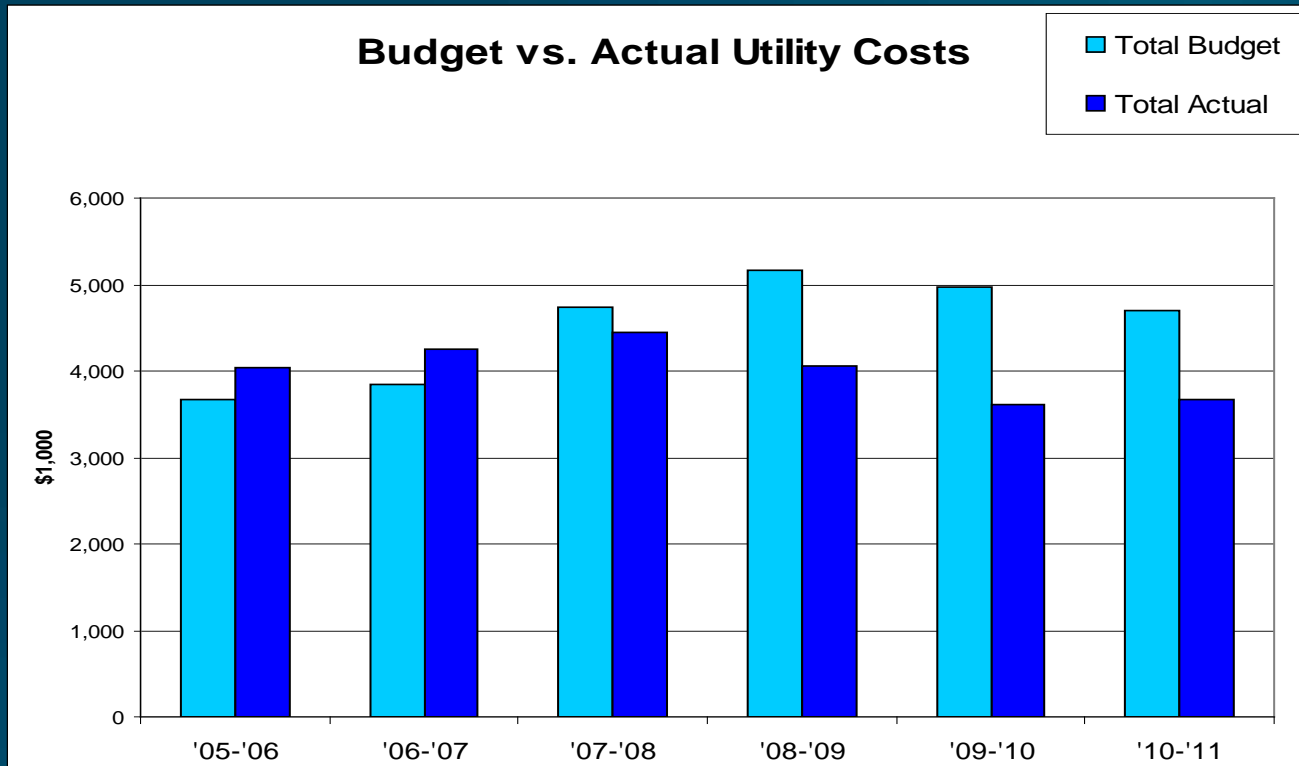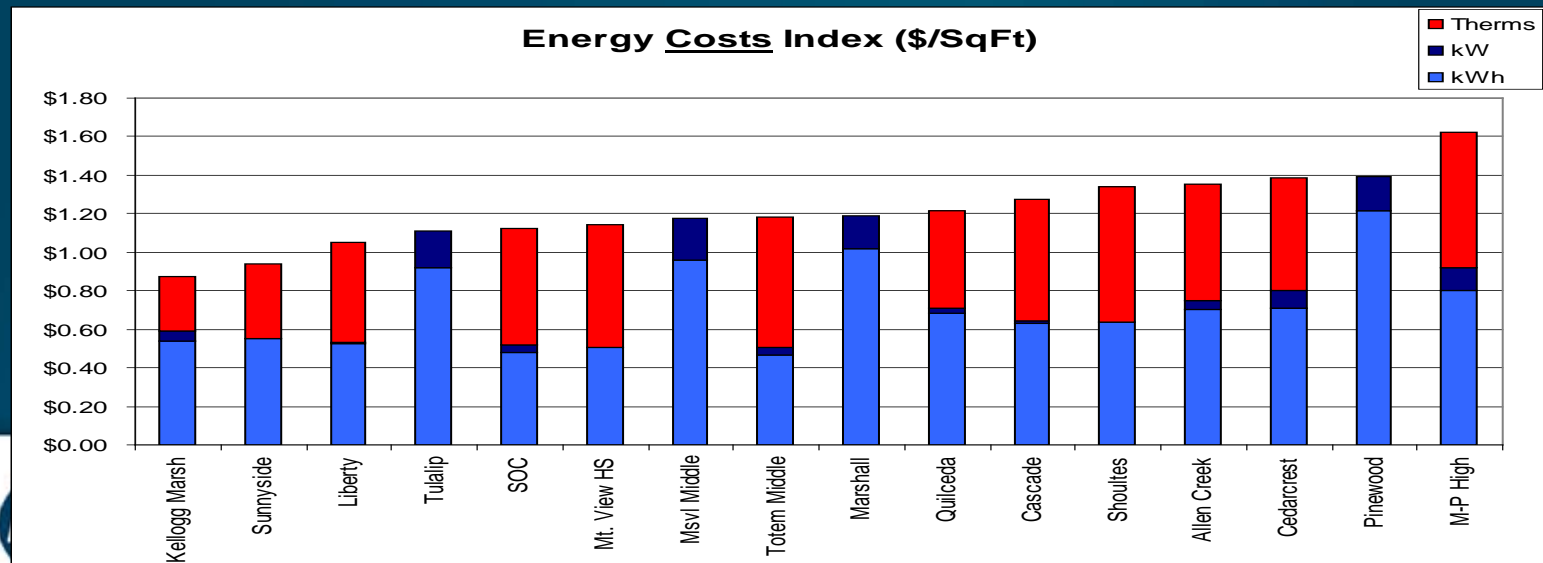
A. How Facilities Use Utilities

- Develop Utility Pie Chart – Entire Portfolio of Facilities

Utility Cost Pie Chart

Garbage, $234,000, 7%

Recycling, $52,500, 1%

Sewer, $180,000, 5%

Water, $149,000, 4%

Electricity, $1,600,000; 46%

Natural Gas, $1,300,000, 37%

Total Annual Costs = $3,500,000

A. How Facilities Use Utilities

- Benchmark Facilities

Energy **Use** Index (kBTU/sqft)

Legend: Natural Gas (red), Electricity (blue)

Facilities: Msvl Middle, 10th Street, Tulalip, Kellogg Marsh, Sunnyside, Marshall, Pinewood, Heritage, MAHS, Liberty, Cascade, Shoultes, Quilceda, Allen Creek, Cedarcrest, Msvl Jr., M-P High

Energy **Costs** Index ($/SqFt)

Legend: Therms (red), kW (dark blue), kWh (blue)

Facilities: Kellogg Marsh, Sunnyside, Liberty, Tulalip, SOC, Mt. View HS, Msvl Middle, Totem Middle, Marshall, Quilceda, Cascade, Shoultes, Allen Creek, Cedarcrest, Pinewood, M-P High
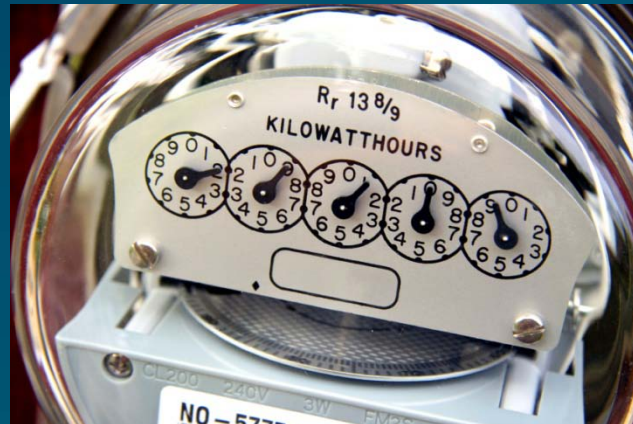
A. How Facilities Use Utilities

II. Building's Utility Using Systems
- Electricity
- Natural Gas
- Water/Sewer
- Waste

A. How Facilities Use Utilities

III. Understanding Utility Bills

- Electricity – kWh, kW, kVAhr
- Natural Gas – Therms, curtailment
- Water/Sewer – CCF, kgal, # of students, deduct meter, irrigation, fire sprinkler
- Waste – tons, yards, dumping fees, recycling, compost
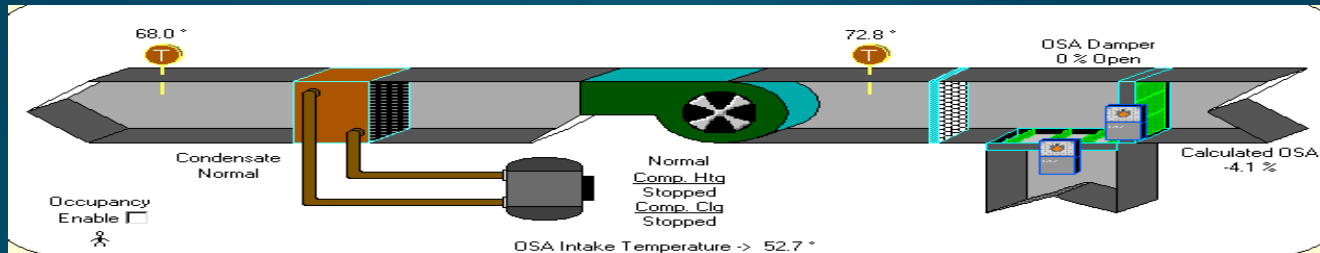
A. How Facilities Use Utilities

IV. Document Buildings' Conditions
- Physical
  - Envelope
  - Lights
  - HVAC
  - Plug Loads
  - Domestic Hot Water
  - Kitchen
  - Misc. – elevators, signs, transformers, etc

A. How Facilities Use Utilities

IV. Document Buildings' Conditions

- Operational
  - On/Off schedule
  - Temperature settings
  - Sequence of operations
  - Outside air control
  - Weekends
  - Holidays
  - Lighting controls

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A. How Facilities Use Utilities

IV. Document Buildings' Conditions
- Behavioral
    - Occupancy patterns
    - Behavioral habits

How to Conduct an In-House Utility Assessment

B. How to Reduce Utility Costs

- Generate List of Measures
- Develop Plan to Lower Utility Costs

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B. How to Reduce Utility Costs

I.   Generate Lists of Measures

- Work with staff, utilities, ESCOs

    - Physical

    - Operational

    - Behavioral

    Using A.II. – Identify ways to reduce usage in every line item

B. How to Reduce Utility Costs

II. Develop Plan to Lower Utility Costs
- Set goals
- Management support
- Prioritize measures
- Assign projects
- Feed-back loop
- Communicate, Communicate, Communicate

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B. How to Reduce Utility Costs

- Set goals
    - ✓ O&M savings - 1-3 Years = 5%-20+%

    - ✓ Capital investment projects
        - – Simple PB (life of measure or < 5-7 years)
        - – ROI
        - – Life cycle cost
        - – Reduction of carbon footprint

    - ✓ Employee awareness
        - – Encourage staff to submit ideas

B. How to Reduce Utility Costs

- Prioritize measures
    - Health/safety
        - Improve IAQ
        - Minimum code levels
    - Payback
    - Maintenance needs
    - Maintenance/Capital "wants"

B. How to Reduce Utility Costs

- Assign projects
    - HVAC Lead
    - Electrical Lead
    - Capital projects
    - RCM
    - Custodians
    - IT manager
    - Staff (teachers)
    - HVAC controls service providers (service contracts)

B. How to Reduce Utility Costs

- Feedback loop
    - Operations
    - Behavior

    - Communicate, Communicate, Communicate

Thank You For Your Time

- Questions?

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