



# *Charting a Course for Savings*

## *Where to Look for Immediate Upgrades*

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# *What is an Immediate Upgrade?*

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- “Immediate” has many moods
  - Want to
  - Have to
- Immediate upgrades can address the concerns for:
  - Financial benefit
  - Practical Applications for Maintenance And Facility Operation
  - Code compliance
- How do you find the immediate opportunities?

# *Where to Look for Immediate Upgrades*

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## Deductive Approach

- “Elementary Dear Watson”
- Utility Bills Tell a Story
  - Usage Indexing
  - Bill Analysis
    - Electric, Gas, Steam, Chilled Water, etc.
- Facility Maintenance and Management Practices
- Facility Assessment
  - Preliminary Site Assessment
  - Comprehensive Site Assessment

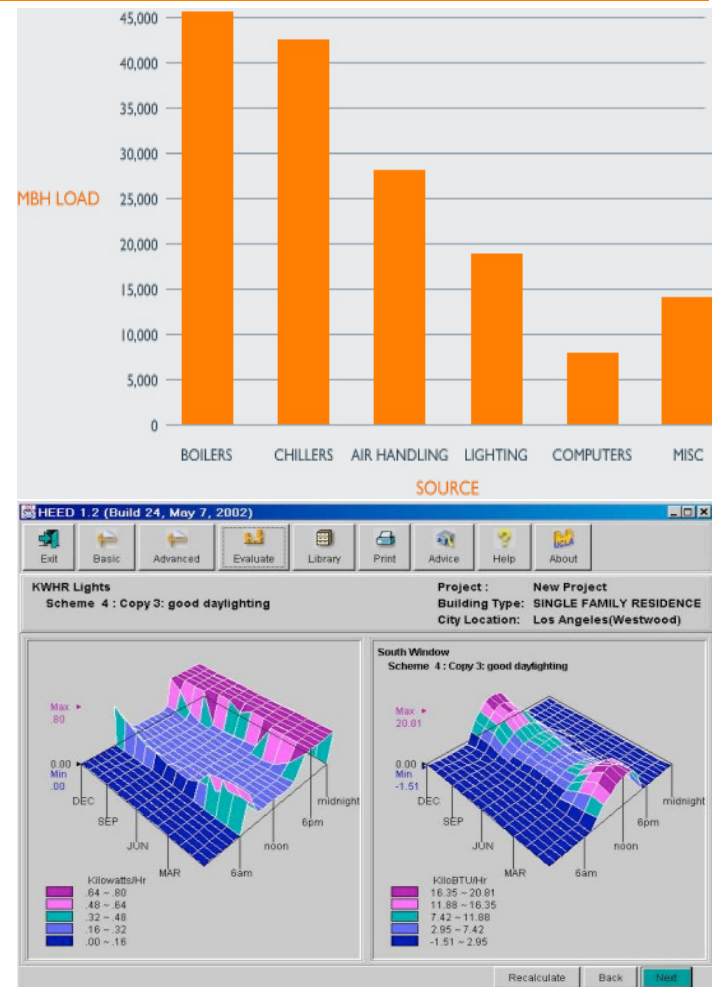
# What do Immediate Upgrades Look Like?

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- Retro-Commissioning
  - Operations & Maintenance improvements bringing equipment and/or systems back to their original intent
- Prudent Project Design, Development and Implementation
  - Taking Action
  - What do they typically look like;
    - Lighting
    - Drives
    - Motors
    - HVAC Optimization / Controls
    - Innovative Technologies
      - CHP
      - Renewables
- Cultural Conservation (efficiency vs. conservation)
  - Human factor impact
  - Energy Awareness Training
- Energy Supply Opportunities – Commodity Management

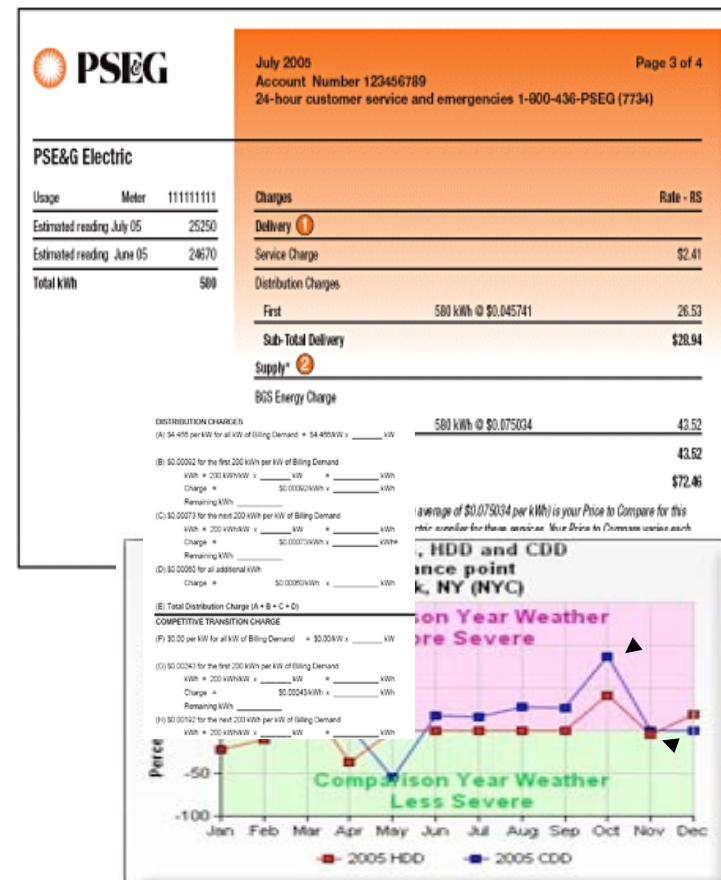
# Energy Usage Indexing

- Addresses the Facility Manager's Question of: "How am I Doing?"
- Establishes an Energy Use per Square Foot of Space
- Creates a Baseline for Energy Savings Analysis
- Provides Indication of Where Building Performance Falls Compared to Peer Applications



# Utility Bill Analysis

- Examines Billing Profile
- Analyzes Appropriate Tariff
- Addresses:
  - How Energy Is Used
  - How Energy Is Priced
  - Tariff Classification Upgrade Opportunity
  - Correct Billing Calculations
  - Locates Anomalies in Usage



# *Facility Management & Maintenance*

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- People, Process, Equipment
  - Evaluation of Staff
    - Capabilities and Training Needs
  - Standard Operating Procedures
    - Equipment/System Operations/Maintenance
  - Development of Equipment Standards
    - High Efficiency Equipment to Optimize Life Cycle Cost
- FM&M Delivers to an Owner Front End Optimization of Facility Operations
- Establishes the Framework for Reliability Centered Maintenance

# *Facility Management & Maintenance*

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- Establishing the Maintenance Program
  - O&M Manual Development/Training/PM
  - Facility Turnover is Managed to Ensure Optimum Leverage of CMMS and System/Component Reliability
  - Natural Evolution of Successful Turnover for Integrated Life Cycle Management
- Facilitation of Building Standards for Project Development and Construction

# *Retro-Commissioning*

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- Actual Field Engineering of Retro-commissioning Activities in an Effort to Bring Equipment and Systems Back to Design Intent Operation
- Improves Indoor Air Quality
- Low Cost Initiatives that Bring About Significant Energy Savings
- Paybacks Generally in the 1-2 Year Range
- Corrective Actions are Usually within the Scope of Existing Maintenance Contracts for Mechanical and Controls

# *Preliminary Site Assessment*

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- An Initial Analysis of the Entire Site to Assess the Energy Cost Savings Opportunities Available Through Operational and Capital Efficiency Improvement Measures
- Analysis of Energy Billing Data and Field Engineering for Auditing Purposes Results in a Summary Report of Findings
- Energy Conservation Measures with Estimated Savings and Installation Costs
- Incentive Funding and Rebate Programs



# Comprehensive Facility Assessment

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- An Investment Grade, Detailed Analysis of the Entire Site to Assess the Energy Cost Savings Opportunities Available Through Operational and Capital Efficiency Improvement Measures
- Three Phases of Execution:
  - Initial Data Analysis and Operational Interviews
  - Field Analysis and Measurement/Monitoring of Performance
  - Post Field Impact Analysis – Detailed Economic Calculations of Savings and Cost for Investment Decision Making
- Often Drills into Specific O&M Improvements for Immediate Results



# Examples of Immediate Opportunities

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- Hospital
  - RCX
  - VFD
  - Lighting
- Regional University
  - Lighting
  - Energy Supply Optimization
    - Base Contracts
    - Green Energy Contracts
- Museum
  - Controls
  - Boiler Installation (district steam)
- Manufacturing
  - Compressed Air
  - Steam Traps

# *Taking Action*

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- Energy Cannot be Saved Without Someone Who Is Willing to Take Action
- Take Actions That are Appropriate in Your Situation
- Get Help from Someone Who is and Expert in the Field

# QUESTIONS?



Energy Solutions...Efficient Results

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