



Effective Energy Management

Communication Makes it Work



Our Goals

- Reduce energy consumption and operating costs
- Implement infrastructure improvements that result in substantial savings City-wide
- Enhance facilities environmental conditions/comfort
- Obtain lowest-cost funding to allow greatest possible investment in facilities
- Transfer project operational and financial risk with written guarantees when possible



Biggest Bang?

Our EPC

- Comprehensive project including 99 facilities totaling 2.3 million square feet
- Over 40 public parks and golf courses included in the project
- Innovative/renewable solutions
- Significant community involvement
- Final contract:

\$13.4 million investment

\$1.1M/annual energy savings



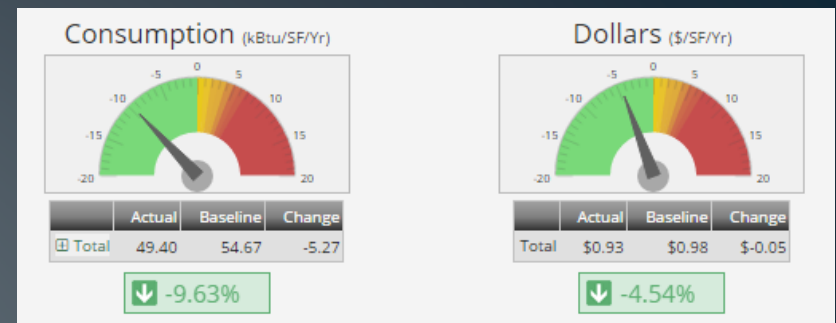
ECMs

- Lighting retrofits and controls
- EMS to monitor 53 buildings
- Water retrofits
- Irrigation system upgrades
- Hydronic VFD upgrades
- HVAC equipment upgrades
- HVAC VFD upgrades



- Boiler installations
- Convert electric hot water to gas
- Building envelope repairs
- Swimming pool upgrades
- Vending machine controls
- Transformer replacements
- Solar-powered hot water
- Solar PV system installation
- PC power network management
- Golf course irrigation upgrades

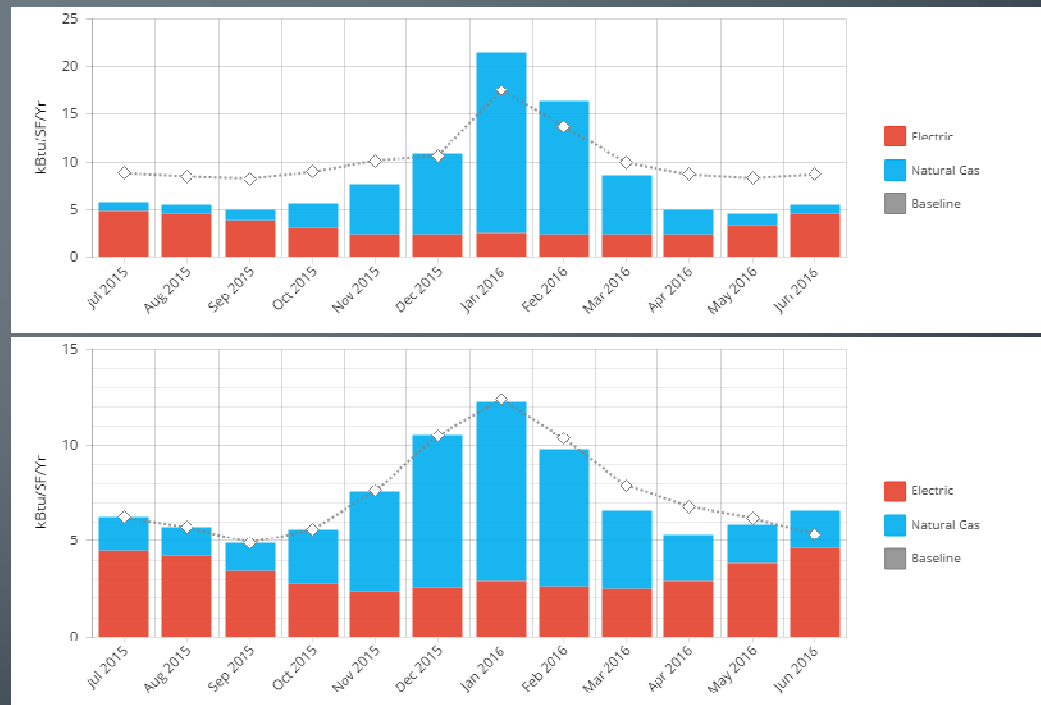
Value Added



- Infrastructure improvements implemented City-wide
- Deferred maintenance issues addressed
- Improved working environment for employees and residents
- Used high-quality, local subcontractors selected by the City of Knoxville, creating jobs in the local community
- Funded from a bond, with no impact on taxes

On-going O&M and M&V

- Savings exceed guarantee
- Additional savings possible through improved operations
- Best performance when facility managers take ownership



Proposed LED Retrofit

Project Objective: Retrofit the City's ~29,500 high pressure sodium (HPS) streetlights to LED technology.

Background

- Currently, KUB fully operates & maintains the system (including lamps, wiring, poles, and cables)
 - For all intents and purposes, they “own” the system (and pay PILOTs on its value)

Knoxville: Looking ahead

- Pay off stranded costs – a necessary 1st step
 - Estimated cost of \$4.8M
- Procure turn-key retrofit contract (Early 2017)
 - Includes audit, design, material procurement & install
 - Estimated cost of \$10M - \$14M
- Establish long-term maintenance plan and contract
 - Cost of this is major variable in projecting annual savings



Thank you!

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