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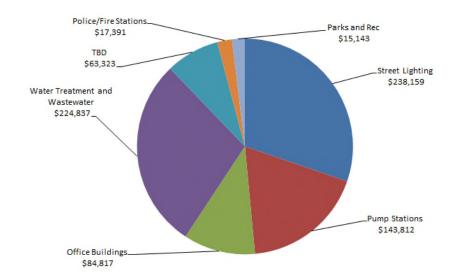
## City of Crossville, TN Feasibility Findings

The City of Crossville and NORESCO have performed a utility data analysis and a feasibility study. We would like to thank Greg Wood and Tim Begley for their help and insights. A NORESCO Energy Engineer spent two days in the city touring buildings, observing operations and noting potential energy conservation measures. We believe there is an opportunity for an energy and infrastructure project with city facilities to help the city reduce operating costs, address some of its deferred maintenance needs and become more energy efficient.

NORESCO took specific note of the City's Engineering Department and their technical capabilities. To their and the City's credit, many "low hanging fruit" items have already been implemented or are slated to be implemented. This speaks volumes to Crossville's ability and openness toward an energy and infrastructure project. During the study, the following Energy Conservation Measures (ECMs) were identified:

## Potential Energy Conservation Measures (ECM)

	ECM	Notes
1	Street Lighting	Pole acquisition and LED upgrade
2	Street Light Pole Improvements	Downtown pole foundation upgrades
3	Interior and Exterior Lighting	Already ~50% complete – finish LED upgrade
4	Water Conservation	Energy efficient fixtures
5	Ductless HVAC Units	To replace heaters in garages, warehouses, airport
6	New HVAC Building Controls	Limited to Fire and Police stations
7	Demand Control Ventilation	Limited opportunity in Palace and conference rooms
8	Programmable Thermostats	Upgrades City-wide where applicable
9	New HVAC Equipment	City Hall, Fire Station, Police Station (replace R-22)
10	Solar PV	City Hall, WTP, WWTP
11	WWTP Process Improvements	Improved aeration control





## Interesting Takeaways, Project Potential and Recommendations

- We believe there is opportunity to bundle the above ECMs in a \$2M+ project that would produce between \$150k and \$200k in savings annually.
  - o In order to address capital needs in the project like street light foundations, we believe there will likely be a need for a Crossville capital contribution either in a lump sum at the beginning of a project (between \$500k and \$750k) or annually throughout the term (around \$20k 30k)
  - We encourage the City to look at a contribution as getting \$2M+ in improvements for \$500k, as the remainder will be paid for by the savings generated.
- This project falls on the smaller side for an energy services company, so we would look to utilize a streamlined development and construction approach with preselected, trusted subcontractors to maximize your return on investment:
  - This allows collaborative scope development, direct pricing negotiation and expedited implementation, reducing project development costs allowing more project to be implemented.
  - The City of Crossville will have final approval on all equipment, partners and subcontractors that may be proposed or ultimately included in a project.
- We encourage Crossville to suspend current energy efficiency initiatives to be included in a bundled project to achieve the greatest savings in the program for other ECMs
- We encourage a strategic approach within Crossville coordinated education effort with city groups including Board, Finance, Operations and the public. This will result in the most effective manner to move a project forward to address your needs.
- There is also an opportunity for solar at various locations as part of this project. There are multiple programs through TVA and Volunteer Electric that will be evaluated and discussed.

As one of the largest energy services companies in the U.S., NORESCO utilizes design-build, performance-based contracting vehicles and asset monetization solutions to deliver energy and maintenance savings and significant infrastructure upgrades to existing facilities. NORESCO also provides energy consulting and sustainability services for new and existing buildings along with energy audits and Energy Conservation through Behavior Change. NORESCO has guaranteed more than \$3.5 billion in energy and operating cost savings at more than 7,000 facilities throughout the U.S. and abroad.

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## TYPICAL ENERGY SAVINGS PROJECT PROCESS











Utility Analysis Preliminary Audit

Development

Construction

Performance

- ► Data collection
- Utility Baseline Creation
- Analysis and benchmarking
- Engineers on site
- Technical feasibility
- ▶ ECM Opportunities
- Confirmation of Project Potential
- Selection and pricing of subcontractors &
- equipment Detailed audit
- ► Finalize scope cost → System & savings
- Financing
- ▶ Award subcontracts / Local workforce
- ▶ Project construction
- commissioning
- Training
- ▶ Annual Measurement and Verification (M&V) of guarantee
- Operations and Maintenance (O&M) if requested
- Ongoing training and support





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- Typically, projects follow the process outlined above. Crossville and NORESCO have completed the first two steps - Utility Analysis and Preliminary Audit.
- To this point, NORESCO has provided the analysis, engineering and data at no cost or obligation to the City of Crossville.
- The next step is a Letter of Intent with NORESCO to move into the Project Development phase – a collaborative engineering effort to identify the perfect project for Crossville.
- The project development phase does come with a pre-negotiated fee payable only if Crossville decides not to move forward with implementation of an energy and infrastructure project with NORESCO.
- The Project Development stage typically takes 4-6 months and NORESCO will ultimately deliver a full scope of work with contract-ready costs and savings.