



# City of Fort Smith Energy Master Plan

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CITY OF FORT SMITH EFFICIENCY OPPORTUNITY:

## 10%

Energy reduction for facilities  
benchmarked through the  
SAGE® Program

## \$78,820

In annual combined energy cost savings

## 90%

Project Funding opportunities  
through the SAGE® Program

### Additional opportunities include:

- Utility-paid cash incentives for implementing energy efficiency projects
- Improved usability and comfort in offices, fire and police stations, and other city buildings
- Modernized energy platform to reduce carbon footprint
- Positive public relations in the community, including press releases and incentive check presentations for any projects completed in the SAGE® program

## Our mission

Energy costs are an enormous expense for our nation's cities; energy is often one of the largest line items in a city's budget. To help significantly reduce these costs and improve energy efficiency, the **City of Fort Smith** is participating in the **OGE SAGE®** Program. The no-cost program will assist in identifying energy efficiency opportunities in our portfolio of buildings, and help us to:

- Improve city focus
- Reduce energy expenditures
- Boost the local economy (through upgrade projects)
- Enhance community relations

The program provides technical and financial assistance for efficiency upgrades. Whether we retrofit an existing building or incorporate energy efficiency technologies into new construction, we will identify and implement cost-effective projects that will allow us to use energy more efficiently. In addition, the **SAGE®** Program will help us form a long-term strategy to address rising energy costs. As part of our participation and with assistance from the program, we have prepared this *Energy Master Plan* to outline where we are today and what steps we will undertake to improve the efficiency of our buildings by **10%** by 2025.

## Strategies for improvement

- By adopting the energy management best practices outlined in the plan, we can mobilize and coordinate our efforts toward reducing energy costs
- Improved human behavior to overcome barriers to unlock your energy savings potential with an innovative approach
- By adhering to the listed efficiency strategies, we can minimize the lifecycle cost associated with our energy-consuming equipment

## Commitment

The Energy Master Plan is an adaptable, evolving document. It is a starting point for consensus and uniform action, which will ensure that all appropriate departments and parties are informed of and involved in our plans. Because it will adapt to changing needs and new information, it will never be "final" or concrete; however, approval of this strategy will allow us to plan effectively and efficiently in terms of funding, personnel availability, and other constraints.

## Project implementation

- **SAGE®** will pay us cash incentives for incorporating energy efficiency into equipment replacement/installation (e.g., lighting, HVAC) at our facilities through the end of the program year (also the date by which all projects must be post inspected).
- Outlined below is a list of measures and incentive levels that are supported by the **SAGE®** Program.

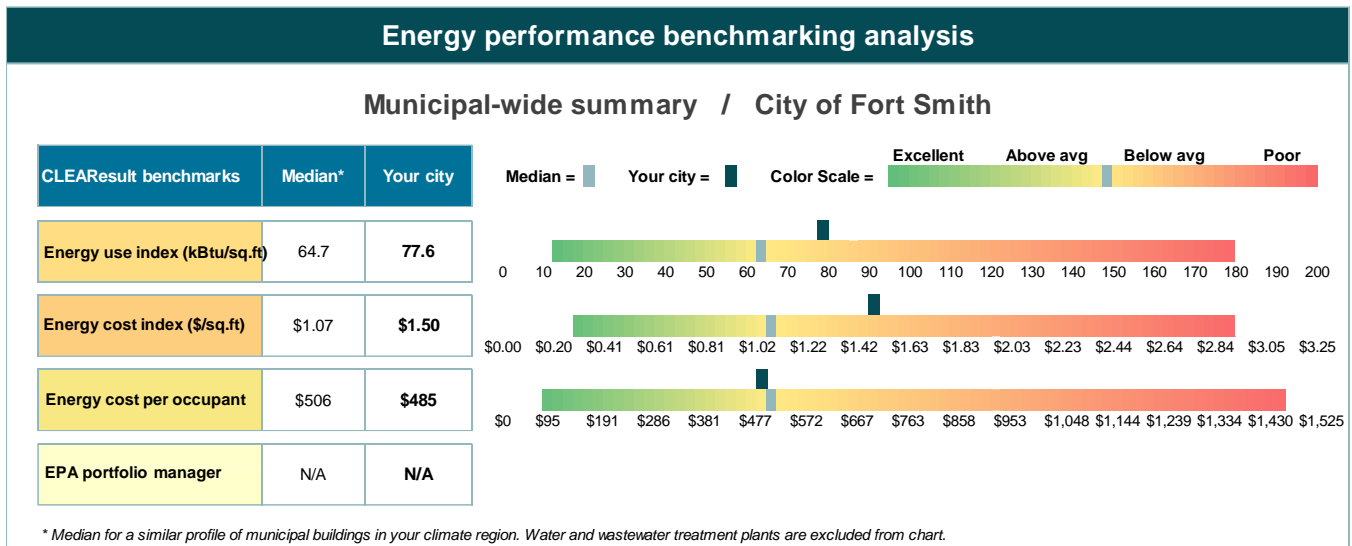
Deemed Savings Measures	Performance Based (\$/kWh)	Total Project Cost Cap*
PC Power Management	\$0.10	Up to 90%
**Direct Install Measures	Full costs are covered by Program	Up to 100%
All other measures	\$0.13	Up to 90%

\*Incentives are subject to program year subscription levels, and percentage of total cost limitations. The City will contact OGE, or our CLEAResult local consultant, during each project planning process to verify current availability.

# Current building benchmark assessment

Based on the utility bills and building information we provided, the **SAGE®** Program compared our energy use to other city facilities in Arkansas and the U.S. The benchmarking process revealed that our buildings are performing **below average overall**, meaning we are using more energy per square foot than other cities in our same climate region. More detailed assessments of each individual building can be found in the *Benchmarking Report Appendix*.

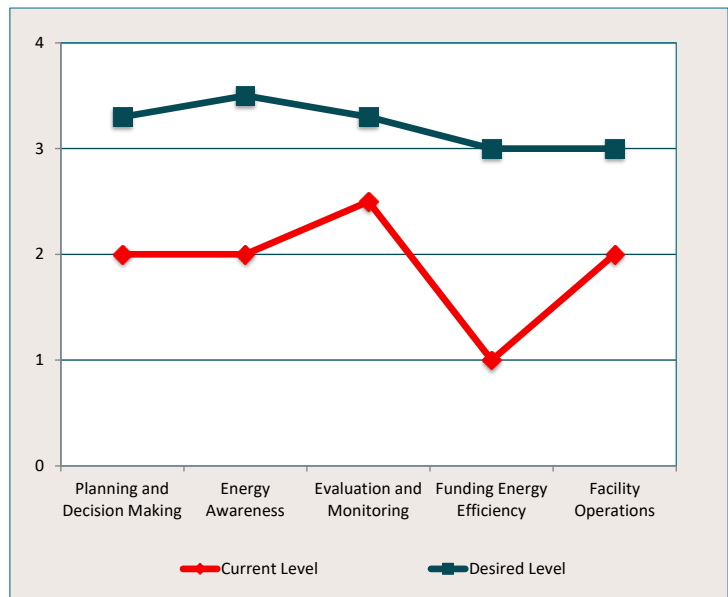
- Compared to the median, *our city* is using nearly **20% more energy per square foot** than other cities in our same climate region, which costs us approximately **\$196,245 in additional annual energy costs**
- By reducing our current electricity consumption alone by **8%**, we *could save another estimated \$59,115 in annual utility bills* at the buildings included in the benchmarking analysis



# Energy management scorecard assessment

In addition to facility performance benchmarking, our energy management methods were also benchmarked against recognized best practices in the following *key focus areas*: **planning and decision making, evaluation and monitoring, funding energy efficiency, facility operations, and energy awareness.**

The chart to the right summarizes the outcome of the workshop's **energy performance best practices scorecards**. The **red line** represents our *current level* of achievement, and the **blue line** represents our *desired level*. Strengths in each category, along with specific short and long term strategies to help us achieve our desired levels in each category, are identified in the appendix.



## Set goals

The goal of implementing the *Energy Master Plan* is to avoid spending more money on energy than necessary. We attempted to quantify the bottom-line effect of improving the energy performance of our buildings. For the **40 buildings that we included in the benchmarking analysis**, the chart below estimates how much reducing our electricity consumption alone would save us in annual utility bills:

Annual electricity costs	Percent reduction	Annual electricity cost savings
\$788,198	10%	\$78,820
	20%	\$157,640
	30%	\$236,459

## Create an action plan

In benchmarking our procedures against recognized “best practices,” we confirmed several areas in which we want to improve our energy management methods. The appendix provides a complete breakdown of short- and long-term steps toward improving energy management in each focus area. *The table below identifies the highest priority “next steps” for the City of Fort Smith:*

Focus area	Target audience	Priority action item
<b>Facilities Operations</b>	All staff, building occupants & operators	1) Develop and enforce written guidelines that outline operating rules (such as building usage, operating hours, personal refrigerators/heaters, and temperature set points). 2) Continue to monitor and adjust building systems operations when occupancy, demands, or loads are reduced. Conduct night walk-throughs to enforce shut down procedures. Leave reminders and recognize success when correct shut down procedures have been followed.
<b>Planning &amp; Decision Making</b>	Administration, Facilities & Maintenance Personnel	1) Create a prioritized list of specific energy efficiency projects based on benchmark report, other data, and walkthroughs. 2) Develop an Internal Energy Committee that meets quarterly to discuss progress, brainstorm ideas, help support the Energy Awareness Program and prepare reports for Senior Management review.

## Energy efficiency design specifications

By continuing to refine our energy management practices at all organizational levels, we will ensure that we are getting the most out of our existing equipment and facilities. We will also position ourselves to identify, evaluate, and move forward with new energy efficiency investments on shorter timelines.

New construction, renovations, outdated or failing equipment, and routine change-outs all present opportunities for increasing energy efficiency in our buildings. Unfortunately, many potential efficiency opportunities are left unrealized or delayed considerably. When less efficient equipment is installed or left in place, we incur higher utility costs over the life of the equipment. By taking the lifecycle cost and cost of delaying efficiency into consideration during our project evaluations, we will equip ourselves to make sound financial decisions.

Working with the **SAGE®** Program, we have identified the strategies listed below for achieving energy efficiency. We will evaluate the feasibility of each strategy separately and consider incorporating them into written guidelines

or minimum specifications for energy-consuming equipment. By having our own target design specifications, we will ensure that energy efficiency is always a consideration in our buildings.

Measure	Energy efficiency strategy
Lighting	10 - 15% improvement over the lighting power density (LPD) guidelines put forth by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1- 2013
	High-performance LED and T8 lamps with premium efficiency ballasts in hallways, offices
	LEDs and high-bay fluorescents (T5, T8) in bay areas, multi-purpose rooms, and other applicable areas
	Automatic lighting controls (occupancy sensors, automatic daylight controls, time clock controls) and adjustable lighting level strategies (bi-level switching)
HVAC	System size closely matches the actual building loads, thus increasing operating efficiency, reducing operating costs, and extending equipment service life
	Improvement over minimum equipment efficiencies specified in ASHRAE 90.1- 2013 or International Energy Conservation Code (IECC) 2009
	Usage of demand control ventilation
Roofing	ENERGY STAR-labeled Cool Roof materials
	Increased insulation value for roofing systems
Window	Thermopane, low-emissivity glass, thermal break frames

## Operations and Maintenance

**Attention to operation and maintenance provides the most rapid means of reducing consumption and costs in most buildings.** Proper operations and maintenance (O&M) of facility systems (heating, cooling, ventilation, etc.) not only reduces energy consumption, but also increases the longevity and functionality of these systems. This helps to maintain the comfort and attractiveness of the building itself. We have identified the O&M strategies listed to the right to help us achieve our energy efficiency goals.

O&M opportunities	
Off-hour	<ul style="list-style-type: none"> <li>• First round savings when building is unoccupied</li> <li>• After-hours, weekends, holidays</li> </ul>
Computers & office equipment	<ul style="list-style-type: none"> <li>• Computers, Monitors</li> <li>• Printers, Scanners</li> </ul>
Unnecessary lighting	<ul style="list-style-type: none"> <li>• Offices</li> <li>• Common areas</li> <li>• Exterior</li> </ul>
HVAC systems	<ul style="list-style-type: none"> <li>• Temperature settings and sensor locations</li> <li>• System scheduling</li> <li>• Ventilation</li> <li>• System maintenance</li> </ul>
Exhaust fans	<ul style="list-style-type: none"> <li>• Meeting rooms, bathrooms, maintenance closets</li> <li>• Off at night</li> </ul>
Door & window operation	<ul style="list-style-type: none"> <li>• Blinds closed at night</li> <li>• Close doors and windows</li> <li>• Weather-stripping</li> </ul>
Water usage	<ul style="list-style-type: none"> <li>• Drips and leaks</li> <li>• Temperatures</li> <li>• Aerators</li> </ul>

## Recognizing achievements

In addition to joining the **SAGE®** Program sponsored by **OGE**, we have already taken steps to reduce our energy use:

- Our municipal leadership is planning energy efficient lighting and HVAC projects over the next three years that will reduce our energy usage and cost.

We anticipate that by continuing to implement projects identified through this *Energy Master Planning* process and adopting energy management best practices, we will continue to improve our energy performance and reduce expenditures. This will ensure our limited funding is used effectively.

# Endorsement

Although we will seek approval of individual projects and expenditures separately, we request a review and endorsement of this plan. This will ensure that our facilities personnel have a clear understanding of the input, concerns, and support of the **City Administrator, Board of Directors, and our management staff.**

The following people contributed to this plan:

- Carl Geffken, City Administrator
- Joshua Robertson, Deputy Director of Business Administration
- Shelly Freeman, Administrative Coordinator
- Jeff Dingman, Deputy City Administrator
- Lance McAvoy, Utility Director
- Thomas Milam, Police Captain
- Waymon Parker II, Deputy Police Chief
- Andrew Richards, Finance Director
- Doug Reinert, Parks & Recreation Director
- Ken Savage, Transit Director
- Phil Christensen, Fire Chief

### Prepared and submitted by:

\_\_\_\_\_  
Joshua Robertson, Deputy Director of Business Administration

Date: \_\_\_\_\_

### Endorsed by:

\_\_\_\_\_  
Carl Geffken, City Administrator

Date: \_\_\_\_\_

\_\_\_\_\_  
Jeff Dingman, Deputy City Administrator

Date: \_\_\_\_\_

\_\_\_\_\_  
George B. McGill, Mayor

Date: \_\_\_\_\_

\_\_\_\_\_  
Jarred Rego, Director Ward 1

Date: \_\_\_\_\_

\_\_\_\_\_  
Andre Good, Director Ward 2

Date: \_\_\_\_\_

\_\_\_\_\_  
Lavon Morton, Director Ward 3

Date: \_\_\_\_\_

\_\_\_\_\_  
George Catsavis, Director Ward 4

Date: \_\_\_\_\_

\_\_\_\_\_  
Christina Catsavis, Director Position 5 At-Large

Date: \_\_\_\_\_

\_\_\_\_\_  
Kevin Settle, Director Position 6 At-Large

Date: \_\_\_\_\_

\_\_\_\_\_  
Neal Martin, Director Position 7 At-Large

Date: \_\_\_\_\_

# Appendix

## PLANNING & DECISION MAKING

We understand that inefficiency often results from a failure to prioritize efficiency when building and operating high-performance buildings. We strive to place more importance on our planning regarding new building design, energy reduction projects in existing buildings, and our daily operational activities that impact energy performance.

### Existing strengths

- Our organization has prioritized the need to improve energy efficiency and reduce costs
- We have management support to identify and install energy efficiency improvements quickly (if justified)
- We have an individual whose primary responsibility is managing energy

### Short-term action items

- Develop an Internal Energy Committee that meets quarterly to discuss progress, brainstorm ideas, help support the Energy Awareness Program and prepare reports for Senior Management review.
- Have a regular review of goals, plans, and successes to date compared to the plan
- Establish a written energy policy or mission statement that will help remind staff, building occupants and community members that energy management is a priority for our organization
- Develop a list of energy efficiency improvement projects for prioritization

### Long-term action items

- Develop a written energy action plan for the next 1-5 years that includes performance goals, benchmarks, and other metrics regarding energy use and costs

## EVALUATION, ASSESSMENT & MONITORING

We need to establish a baseline and maintain ongoing benchmarks on how our buildings perform so we can determine the value of making improvements. This will allow us to recommend priorities for building improvements in an environment of limited resources (funding & staff).

### Existing strengths

- We have conducted building “walk-through” opportunity-assessment surveys to identify energy saving opportunities in our facilities

### Short-term action items

- Evaluate the building performance benchmarking reports from the SAGE® program that compare our buildings to others in Arkansas and across the U.S.
- Prioritize facilities with the highest energy use for assessment and improvement
- Conduct inventory surveys to list all energy-using equipment in our facilities
- Revisit the Energy Performance Best Practices Scorecards annually to evaluate and identify additional actions the organization can take to improve our energy performance

### Long-term action items

- Track and report energy usage (kWh), demand (kW), and therms along with energy costs. Compare energy usage to prior month along with same month year to year comparison. (Example January 2012 to January 2011).
- Monitor daily or weekly energy use to identify and resolve anomalies. Utilize the utility’s interval data that is offered online.
- Conduct an investment-grade audit in a facility when necessary



## FUNDING ENERGY EFFICIENCY

Finding funds to improve existing buildings is challenging; however, energy reduction projects are cost-effective and are often self-funding. While many funding or financing options for energy projects may have a level of complexity or risk not ideally suited for our city, we will investigate and consider all viable options.

### Existing strengths

- We have funding available for energy efficiency improvement projects future budgets.

### Short-term action items

- Explore setting up an internal revolving fund to invest a portion of energy cost savings and any rebates or incentives into additional energy efficiency measures. Consider seeding the fund with the utility incentives received for increasing the efficiency of energy using equipment.
- Develop a 2-5 year budget strategy for implementing identified energy efficiency projects.
- Take full advantage of the available incentive dollars through the SAGE® Program to make our energy improvement projects even more cost effective.
- Calculate and compare the cost of not doing the project (e.g. maintaining the status quo) when evaluating the value of energy efficiency projects.

### Long-term action items

- Establish criteria and authority for approving improvement projects such as three to five-year payback, or up to a specified dollar limit.

## FACILITY OPERATIONS

Given the importance, complexity, and cost of energy utilization for our organization we strive to have management policies and procedures that promote effective energy management. These practices not only improve our energy performance they also improve the comfort, usability, and longevity of our facilities.

### Existing strengths

- We commission new equipment and facilities with testing and verification of performance at startup
- We monitor and adjust system operations when occupancy, demands, or loads are reduced (examples: temperature setbacks, lighting controls)

### Short-term action items

- Develop and enforce written guidelines that outline operating rules (such as building usage, operating hours, personal refrigerators/heaters, and temperature set points).
- Continue to monitor and adjust building systems operations when occupancy, demands, or loads are reduced. Conduct night walk-throughs to enforce shut down procedures. Leave reminders and recognize success when correct shut down procedures have been followed.
- Re-commission existing energy-using equipment to verify that it is operating at peak performance every 5-7 years.
- Strive to purchase higher efficiency (15 or 16+ SEER) A/C equipment when replacing existing units
- Require contractors to provide written performance specifications as well as operating and maintenance procedures and manuals for all major energy-using systems (example: boilers, chillers)

### Long-term action items

- Research additional opportunities for improving energy performance, such as installing LED signs, ENERGY STAR roofs, increased levels of insulation, occupancy sensors, more effective control systems, solar film for windows, solar water heating systems for large domestic hot water loads, and solar panels for electricity
- Develop written design guidelines and minimum efficiency specifications for energy-consuming equipment for new construction, renovations, and improvement projects

## ENERGY AWARENESS

Energy costs are a significant expenditure and a sizable portion of that is a controllable cost. To successfully manage energy costs all members of our institution need to be aware of how their behavior affects energy cost and usage. The facilities department or energy manager needs to communicate, train, and recognize success regularly and effectively with all staff members and building occupants.

### Existing strengths

- All staff members have access to energy reports at least quarterly

### Short-term action items

- Establish an Energy Awareness Program that includes participation from the City of Fort Smith employee ranks. Award performance and create accountability among peers.
- Develop an energy management recognition program that rewards and promotes exemplary accomplishments by energy management/facility personnel.

### Long-term action items

- Provide training and conference opportunities related to energy management for our key energy management personnel.
- Post energy reports by facility in a common place where staff can view monthly/quarterly results. This will help foster healthy competition and engage staff to participate in the Energy Awareness Program.