

# Energy Performance Contracting

KANSAS ENERGY PROGRAM

JUNE 20, 2019



# Agenda

- ▶ Welcome and logistics
- ▶ Who we are
- ▶ Terms to remember
- ▶ What is EPC?
- ▶ History of Energy Performance Contracting (EPC)
- ▶ Kansas Facility Conservation Improvement Program (FCIP)
- ▶ Eligible projects
- ▶ Results

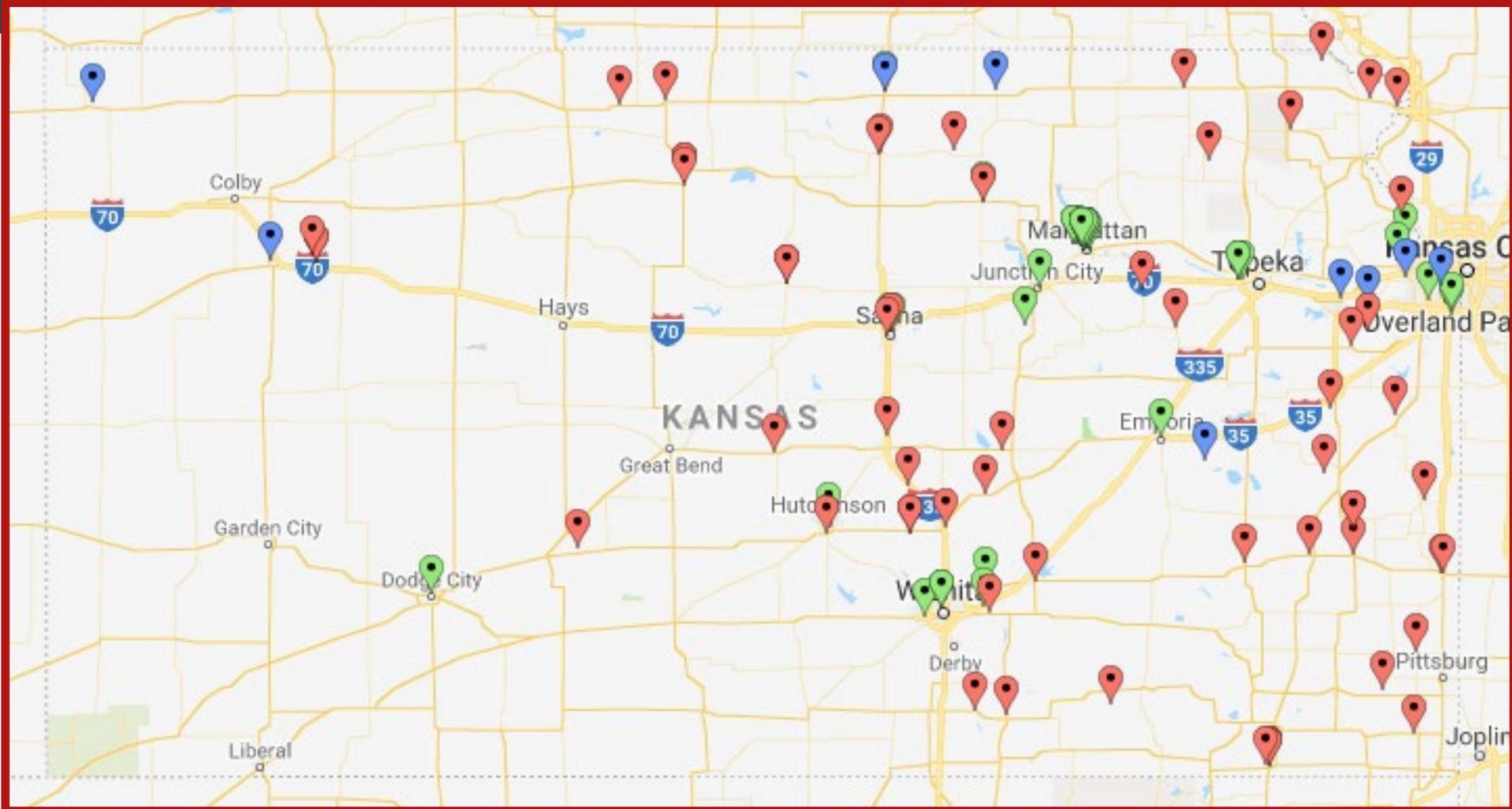
# Welcome and logistics

- ▶ Logistics
  - ▶ You will start off muted.
  - ▶ Questions? Raise hand or use chat bar
  - ▶ Webinar will be recorded and link sent to all registrants
  - ▶ Reminder – this webinar is an introduction only; a more in-depth look at EPC will occur at a full-day workshop in the Fall.
    - ▶ Polling questions

# Who we are

- ▶ Kansas Corporation Commission Energy Division
  - ▶ Lynn Retz, Director
  - ▶ Administers the FCIP and other energy activities/programs
- ▶ Kansas Energy Program
  - ▶ Kansas State University, College of Engineering, Engineering Extension
  - ▶ Established in 2016 through partnership with Kansas Corporation Commission
  - ▶ Provides services in –
    - ▶ Energy education
    - ▶ Small business energy assessments
    - ▶ FCIP

# Where we go – 46 counties and counting



# Terms to remember

- ▶ ECM – Energy Conservation Measure
- ▶ EPC – Energy Performance Contracting (Contracts)
- ▶ ESCO – Energy Service Company
- ▶ FCIP – Facility Conservation Improvement Program
- ▶ IGA – Investment Grade Audit
- ▶ IPMVP – International Performance and Measurement and Verification Protocol
- ▶ KCC – Kansas Corporation Commission
- ▶ M&V – Measurement and Verification

# What is EPC?

- ▶ Turnkey service (compared to design/build construction contracting)
  - ▶ Energy audit
  - ▶ Design engineering
  - ▶ Construction management
  - ▶ Arrangement of long-term project financing
  - ▶ Commissioning
  - ▶ Operations and maintenance
  - ▶ Measurement and verification

# History of Energy Performance Contracting<sup>1</sup>

- ▶ Beginning of Demand Side Management (pre-1985) – ESCOs established to provide manpower and systems to enable utilities to meet federal and state mandates.
- ▶ Emergence of EPC (1985-1993) – Evolution of utility programs resulted in ESCOs bidding to provide kW or kWh reduction through turnkey projects to large industrial and institutional customers; ESCOs financed projects.
- ▶ Success and Consolidation (1994-2002) – Documented success stories encouraged federal and state programs to promote EPC; implementation of IPMVP provided confidence for lenders to finance large-scale EPC projects.
- ▶ Pause, and Fast Growth (2003-present) – Collapse of Enron, suspension of federal ESPC program and uncertainty of deregulation of electric utility industry resulted in slowdown in growth of EPC; the latest Lawrence Berkeley National Laboratory Report estimates ESCO investment in EPC projects runs about \$5 billion/year.<sup>2</sup>

<sup>1</sup>[Introduction to Energy Performance Contracting, U.S. EPA ENERGY STAR Buildings, October 2007](#)

<sup>2</sup><https://www.naesco.org/>

# Kansas Facility Conservation Improvement Program (FCIP)

- ▶ Implemented by state legislature in 2000
- ▶ [KSA 75-37,125](#)
- ▶ Administered by KCC
- ▶ KEP provides technical assistance to KCC
  - ▶ PE
  - ▶ CEM
  - ▶ CMVP

## 2017 Kansas Statutes

**75-37,125. Energy conservation measure, financing; prior approval of plans and projects; definitions.** (a) As used in this act:

(1) "Federal entity" means the government of the United States of America or any bureau, department, instrumentality or other agency of the federal government.

(2) "Political subdivision" shall have the meaning ascribed thereto in subsection (c) of K.S.A. 74-8902, and amendments thereto.

(3) "State agency" means any office, department, board, commission, bureau, division, public corporation, agency or instrumentality of this state.

(4) "Energy conservation measure" means an energy study, audit, improvement or equipment which is designed to provide energy and operational cost savings at least equivalent to the amount expended by a participating political subdivision or state agency for such energy study, audit, improvement or equipment over a period of not more than 30 years after the date such improvement or equipment is installed or becomes operational, as the case may be.

(b) Subject to the provisions of subsection (c), a political subdivision or state agency, which include the board of regents and a regent's institution and a community or technical college, may enter into a contract or lease-purchase agreement for an energy conservation measure which meets the criteria of this section. In addition to any other authority provided by law a political subdivision or state agency may solicit proposals to contract for an energy conservation measure by advertising for proposals and qualifications in a newspaper of general circulation or the Kansas register, and by sending requests for proposals to at least three vendors and negotiating a lease-purchase agreement with one or more vendors submitting a proposal thereto. Negotiations entered into pursuant to this section with individual vendors shall not be subject to the provisions of the open meetings act. After an agreement has been executed, the agreement and all proposals from vendors shall be open records available for public inspection in accordance with the open records act. A state agency may utilize the procedures prescribed in K.S.A. 75-37,102, and amendments thereto, by the procurement negotiating committee to negotiate and contract for energy conservation measures. Each state agency shall provide copies of plans of the proposed energy conservation measure to the state corporation commission for review. No state agency may enter into a contract for an energy conservation measure unless such measure has been approved by the state corporation commission. Plans submitted under this section shall be retained and maintained by the state corporation commission.

(c) Before executing any contract or finance, pledge, loan or lease-purchase agreement under this section, the energy conservation contractor shall provide the political subdivision or state agency with plans for the proposed energy conservation measures prepared by an engineer licensed to practice in Kansas. The energy conservation contractor shall also provide a report of the calculations showing the estimated energy and operational cost savings that would result from the proposed energy conservation measures. Notwithstanding any provision contained in K.S.A. 71-201 and 72-1149, and amendments thereto, or other provisions of law, the board of education of any school district and the board of any community college or technical college may enter into a contract or finance, pledge, loan or lease-purchase agreement for an energy conservation measure for a period exceeding 10 years. Political subdivisions and state agencies may include a provision in the contract with an entity providing the energy conservation measure requiring such entity to guarantee that the actual amount of savings of energy and operational costs attributable to the energy conservation measure be not less than the cost of the energy conservation measure over the time specified including financing costs.

(d) Within the limits of appropriations available therefor, the state corporation commission is authorized to provide grants for engineering studies and energy conservation measures for political subdivisions and state agencies.

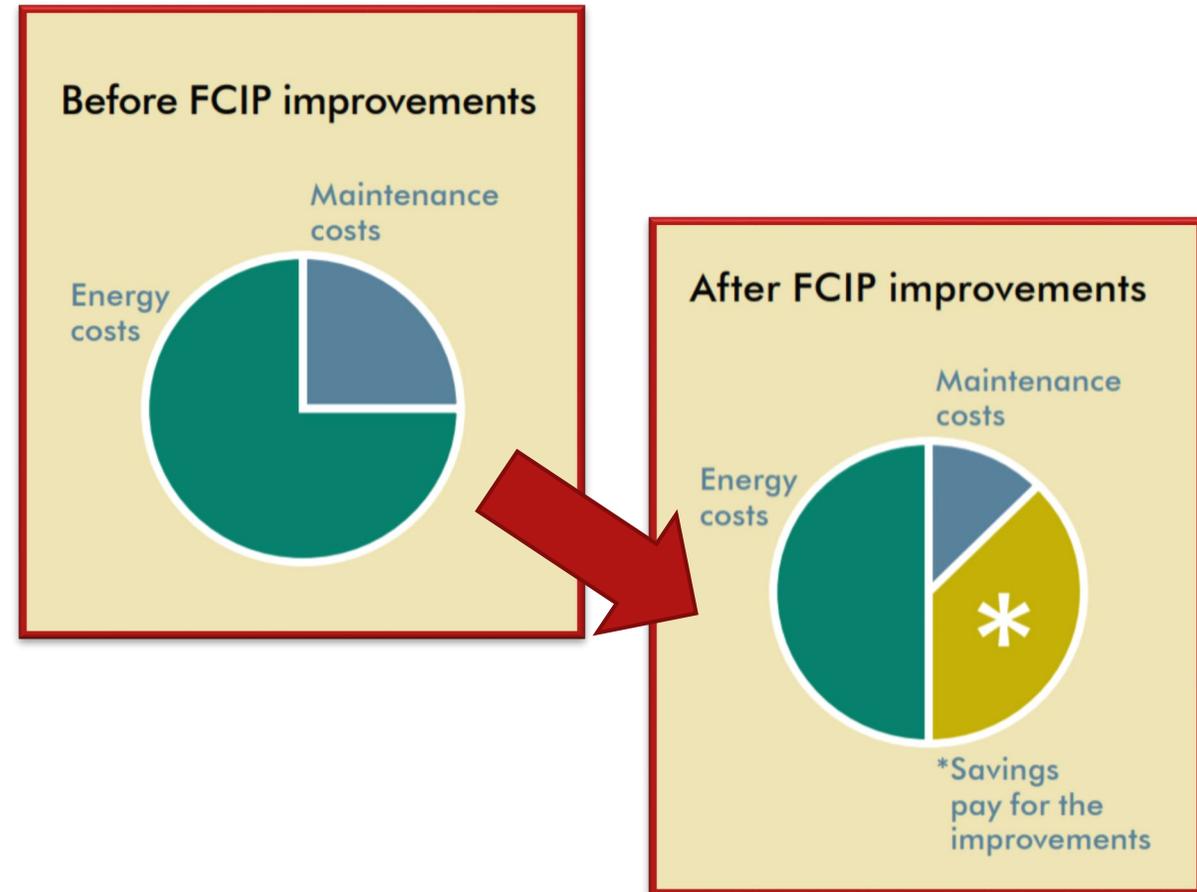
(e) The state corporation commission, or its designee, may provide administrative support and resources available under the facility conservation improvement program under this section or K.S.A. 75-37,111 et seq., and amendments thereto, as requested by school districts, private and public colleges in Kansas, political subdivisions, state agencies or federal entities for purposes of this section. The state corporation commission, or its designee, may fix, charge and collect reasonable fees for any administrative support and resources or other services provided by the state corporation commission, or its designee, under this subsection.

(f) The provisions of the cash basis law and K.S.A. 79-2925, and amendments thereto, shall not apply to any contract or lease-purchase agreement entered into pursuant to this section.

**History:** L. 2000, ch. 88, § 1; L. 2006, ch. 88, § 1; L. 2007, ch. 116, § 3; July 1.

# Facility Conservation Improvement Program

- ▶ Allows government-owned buildings to implement energy-efficiency projects without upfront capital costs (budget-neutral).
- ▶ Projects are paid for through guaranteed energy and operational savings.
- ▶ Requires an annual budget-neutral cash flow with a payback of less than 30 years
  - ▶ KCC requires budget-neutral cash flow through finance term



# Examples of EPC/FCIP Projects

- ▶ Common
  - ▶ Lighting
  - ▶ Heating, ventilation, and air conditioning (HVAC)
  - ▶ Control systems
  - ▶ Building envelope improvements (e.g., insulation, windows, etc)
- ▶ Can consider
  - ▶ Roofing replacement (might have a long payback)
  - ▶ Cogeneration and combined heating and power (CHP)



# What are the benefits?

- ▶ No need to issue separate Requests for Proposals (RFPs).
- ▶ Saves time: no need to develop specifications, write contracts, or hire outside consultants and engineers.
- ▶ Construction markup rates are capped, but may be negotiated downward.
- ▶ Third-party assistance by KCC and K-State
  - ▶ Staff provides guidance to facility throughout process
  - ▶ Attends meetings
  - ▶ Reviews documentation

# Guaranteed Savings

Energy Conservation Measure	Electrical kWh	Electrical kW	Water kgal	Sewer kgal	Natural Gas Therm	Propane Therm	Electrical kWh Cost Savings	Electrical kW Cost Savings	Water kgal Cost Savings	Sewer kgal Cost Savings	Natural Gas Therm Cost Savings	Propane Therm Cost Savings	Gasoline gallons Cost Savings	Projected Energy Savings (\$)	Guaranteed Energy Savings	O&M Savings	Total Guaranteed Savings	Total ECM Price	
Lighting	453,526	630	0	0	-39	-23	\$31,403	\$5,490	\$0	\$0	-\$33	-\$37	\$0	\$36,823	1	\$34,978	\$13,513	\$48,491	\$326,486
Street Lighting	1,331,516	0	0	0	0	0	\$114,683	\$0	\$0	\$0	\$0	\$0	\$0	\$114,683	1	\$108,949	\$82,931	\$191,880	\$1,321,023
Water	0	0	0	0	2,118	260	\$0	\$0	\$0	\$0	\$1,751	\$427	\$0	\$2,178	1	\$1,851	\$640	\$2,491	\$178,774
Building Envelope Improvements	47,134	0	0	0	3,713	2,248	\$4,216	\$0	\$0	\$0	\$3,214	\$3,687	\$0	\$11,117	1	\$9,434	\$0	\$9,434	\$114,492
Building Automation	138,689	0	0	0	7,590	4,033	\$9,471	\$0	\$0	\$0	\$6,867	\$6,614	\$0	\$22,952	1	\$19,509	\$20,017	\$39,526	\$520,691
Engine Block Heater Control	14,000	0	0	0	0	0	\$1,210	\$0	\$0	\$0	\$0	\$0	\$0	\$1,210	1	\$1,029	\$0	\$1,029	\$14,144
Retrocommissioning	177,820	326	0	0	0	0	\$10,225	\$2,742	\$0	\$0	\$0	\$0	\$0	\$12,967	1	\$11,022	\$0	\$11,022	\$166,187
Add VFDs to Chilled Water Pumps	16,381	70	0	0	0	0	\$960	\$845	\$0	\$0	\$0	\$0	\$0	\$1,805	1	\$1,534	\$0	\$1,534	\$18,740
Performance Optimization	350,000	0	0	0	1,870	0	\$31,192	\$0	\$0	\$0	\$1,533	\$0	\$0	\$32,725	1	\$27,816	\$0	\$27,816	\$349,307
Sealant Repairs	10	0	0	0	28	0	\$1	\$0	\$0	\$0	\$23	\$0	\$0	\$24	1	\$20	\$2,500	\$2,520	\$271,016
Replace Water Heaters	41,653	239	0	0	-537	180	\$3,712	\$1,539	\$0	\$0	-\$441	\$296	\$0	\$5,106	1	\$3,886	\$141	\$4,027	\$194,184
Higher Priority HVAC / Mechanical Work	392,077	2,056	0	0	-10,247	0	\$20,748	\$17,687	\$0	\$0	-\$9,550	\$0	\$0	\$28,885	1	\$26,775	\$9,277	\$36,052	\$1,287,054
Lower Priority HVAC / Mechanical Work	32,823	39	0	0	809	1,182	\$2,868	\$353	\$0	\$0	\$656	\$1,939	\$0	\$5,816	1	\$4,641	\$712	\$5,353	\$395,426
<b>Totals</b>	<b>3,098,285</b>	<b>3,360</b>	<b>0</b>	<b>0</b>	<b>5,305</b>	<b>7,880</b>	<b>\$239,611</b>	<b>\$28,656</b>	<b>\$0</b>	<b>\$0</b>	<b>\$4,020</b>	<b>\$12,926</b>	<b>\$0</b>	<b>\$285,213</b>		<b>\$259,031</b>	<b>\$129,731</b>	<b>\$388,762</b>	<b>\$5,300,723</b>

### Energy Performance Contract Project

Project Costs					Projected Annual Savings				
Energy Measures Installed Cost	\$	341,401			Utility Cost Savings	\$	9,400		
Investment Grade Audit Fee	\$	1,539			O&M Svgs	\$	1,623		
Estimate FCIP Fee	\$	11,100			Avoided Future Cost Svgs	\$	-		
Capital Contribution					<b>Total Annual Savings</b>	<b>\$</b>	<b>11,023</b>		
<b>Net Capitalized Costs</b>	<b>\$</b>	<b>354,040</b>			<b>Finance Factors</b>				
					Term		15.0	years	
<b>Annual Costs</b>					Rate (Range 2.5% - 3.7%)		3.50%		
Avoided Future Costs	\$	20,200			Escalation Rate		2.0%		
On-Going Technical Services &/or ECT	\$	-			Energy Escalation Rate		2.0%		
YEAR	PROJECTED UTILITY COST SAVINGS	GUARANTEED UTILITY COST SAVINGS	OPER & MAINT / AVOID. FUTURE COST SAVINGS	AVOIDED FUTURE COST SVGS	TOTAL FUNDS AVAILABLE	DEBT SERVICE	ON-GOING TECHNICAL SERVICE FEE	GUARANTEED PROGRAM COST	ACCUMULATED CASH FLOW
Interim	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	\$0
1	\$9,400	\$8,977	\$1,623	\$20,200	\$30,800	\$30,740	\$0	\$30,740	\$484
2	\$9,588	\$9,156	\$1,656	\$20,200	\$31,012	\$30,740	\$0	\$30,740	\$1,188
3	\$9,780	\$9,339	\$1,689	\$20,200	\$31,228	\$30,740	\$0	\$30,740	\$2,118
4	\$9,976	\$9,526	\$1,723	\$20,200	\$31,449	\$30,740	\$0	\$30,740	\$3,277
5	\$10,176	\$9,717	\$1,757	\$20,200	\$31,674	\$30,740	\$0	\$30,740	\$4,670
6	\$10,380	\$9,911	\$1,792	\$20,200	\$31,903	\$30,740	\$0	\$30,740	\$6,303
7	\$10,588	\$10,109	\$1,828	\$20,200	\$32,137	\$30,740	\$0	\$30,740	\$8,179
8	\$10,800	\$10,311	\$1,865	\$20,200	\$32,376	\$30,740	\$0	\$30,740	\$10,305
9	\$11,016	\$10,517	\$1,902	\$20,200	\$32,619	\$30,740	\$0	\$30,740	\$12,683
10	\$11,236	\$10,727	\$1,940	\$20,200	\$32,867	\$30,740	\$0	\$30,740	\$15,320
11	\$11,461	\$10,942	\$1,979	\$20,200	\$33,121	\$30,740	\$0	\$30,740	\$18,220
12	\$11,690	\$11,161	\$2,019	\$20,200	\$33,380	\$30,740	\$0	\$30,740	\$21,390
13	\$11,924	\$11,384	\$2,059	\$20,200	\$33,643	\$30,740	\$0	\$30,740	\$24,833
14	\$12,162	\$11,612	\$2,100	\$20,200	\$33,912	\$30,740	\$0	\$30,740	\$28,556
15	\$12,405	\$11,844	\$2,142	\$20,200	\$34,186	\$30,740	\$0	\$30,740	\$32,563
16	\$12,653	\$12,081	\$0	\$0	\$12,081	\$0	\$0	\$0	\$45,216
17	\$12,906	\$12,323	\$0	\$0	\$12,323	\$0	\$0	\$0	\$58,122
18	\$13,164	\$12,569	\$0	\$0	\$12,569	\$0	\$0	\$0	\$71,286
19	\$13,427	\$12,820	\$0	\$0	\$12,820	\$0	\$0	\$0	\$84,713
20	\$13,696	\$13,076	\$0	\$0	\$13,076	\$0	\$0	\$0	\$98,409
<b>TOTALS</b>	<b>\$228,428</b>	<b>\$218,102</b>	<b>\$28,074</b>	<b>\$303,000</b>	<b>\$549,176</b>	<b>\$461,093</b>	<b>\$0</b>	<b>\$461,093</b>	<b>\$98,409</b>

# How does a facility participate?

1. Reach out to the KCC to let them know you'd like to utilize FCIP.
2. Select three (suggested) pre-approved ESCOs to conduct preliminary energy assessment (no charge).
3. Based on results of assessment, choose ESCO to conduct a comprehensive Investment Grade Audit (IGA) that identifies detailed energy efficiency opportunities for the facility.
4. Work with ESCO to select the improvements that best meet your needs and meet the scope of the FCIP program.
5. If IGA is approved, sign an Energy Performance Contract (EPC) with ESCO.
6. ESCO completes energy improvements at facility.
7. Payment begins.
8. ESCO performs measurement and verification to ensure savings are met.

# FCIP Fee

## FCIP Participation Fees

4% of the first \$100,000 of the project amount

3% of the next \$400,000 of the project amount

2% of the next \$500,000 of the project amount

1% of the next \$4,000,000 of the project amount

½% of any project amount greater than \$5,000,000

### EXAMPLES:

\$400,000 project

$4\% \times \$100,000 + 3\% \times \$300,000 = \$13,000$

Result: 3.25% of total project cost

\$12,000,000 project

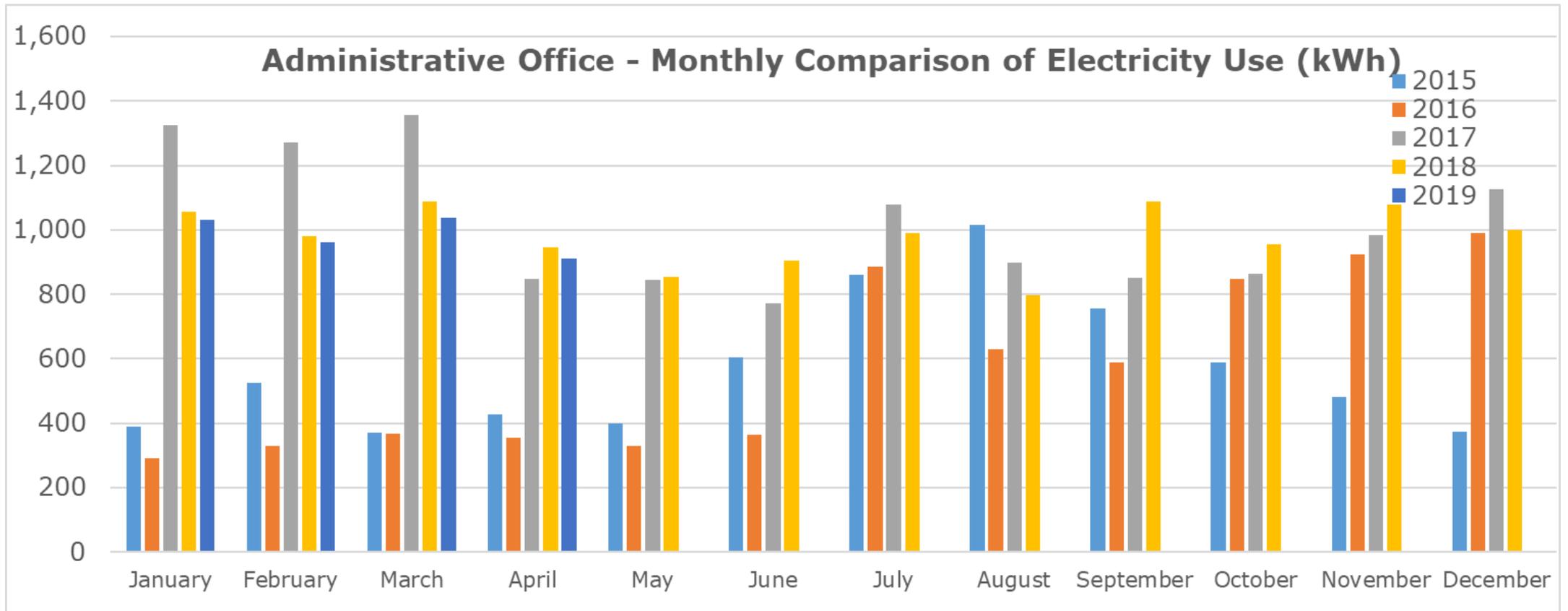
$4\% \times \$100,000 + 3\% \times \$400,000 + 2\% \times \$500,000 + 1\% \times \$4,000,000 + 0.5\% \times \$7,000,000 = \$101,000$

Result: 0.84% of total project cost

# Recent FCIP projects

- ▶ City of Lawrence: HVAC, swimming pool ventilation, lighting
- ▶ City of Eudora: lighting, web-based thermostat installations, water meters (would not be approved under new FCIP contract)
- ▶ Washington County School District (#108): windows, lighting, HVAC, building envelope

# Results – City of Eudora



# Results – City of Eudora



The city of Eudora, Kansas, through its five-person city commission, took the initiative to implement multiple energy and water conservation projects throughout the city.

The city replaced 1,435 lighting fixtures and 333 street lights with LED lights, saving an estimated 400,000 kilowatt hours of electricity and more than \$22,000. This reduction in energy and fees allowed the city to increase its lighting levels and provide better safety for its citizens at lower operating costs. Maintenance costs were also reduced. [Read full details on awardee's P2 projects](#) | [See related news release](#)



Awardees with EPA Region 7 Administrator Jim Gulliford ([click to enlarge](#))

# KCC/K-State Staff

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