

Performance Audit: Street Lighting

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City Auditor
City of Lawrence, Kansas

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Members of the City Commission

The city exerts little control over street lighting. Westar Energy installs, owns, operates, and maintains the street lights, billing the city on a monthly basis. The city spends about \$500,000 a year on street lighting. A tariff, approved by the Kansas Corporation Commission establishes the services and pricing for street lights.

Some of the utility company's billing practices result in higher costs for the city. The company assumes street lights burn 11 hours/night year-round; estimates energy use at higher levels than other utility companies; and overestimates energy use for private area lights. The city would have saved about \$3,500 last year if lighting was based on seasonal use. The city would have saved about \$12,000 last year if Westar Energy used energy estimates consistent with other utilities. The city would have saved about \$600 last year for 22 private area lights if energy estimates were more realistic. While these savings are relatively small, they are on-going savings and the billing practices affect not just Lawrence but also other customers of street lighting and private area lighting services.

The city pays for lights even when those lights are not working. About 7 percent of the lights in the city were out when inspected this winter. At that rate, the city paid about \$35,000 for lights that weren't working last year.

Cities that purchased their street lights from utility companies report significant savings. Initial analysis indicates the city could reduce street lighting costs. If the city purchased the system and obtained similar savings as other cities, the city could save \$150,000 a year.

I made eight recommendations intended to reduce costs, improve service levels, and begin a process to acquire the street lights. Before completing this report, I made an interim recommendation to intervene in an ongoing case at the Kansas Corporation Commission.

I provided a draft of this report to the City Manager and the Director of Public Works on May 1, 2009. The City Manager agrees with the recommendations.

I appreciate the cooperation and assistance I received from city staff and Westar Energy as I worked on this performance audit.

Michael Eglinski
City Auditor

Performance Audit: Street Lighting

Table of Contents

Results in Brief	1
City Buys Street Lighting From Westar Energy.....	3
Street Lighting Costs Increasing.....	5
City Does Little to Manage Street Lighting.....	11
Many Street Lights Don't Work	12
City-Owned System Might Reduce Costs	17
Recommendations.....	20
Scope, methods and objectives	22
Appendix A: Interim Recommendation.....	25
Management's Response	28

Performance Audit: Street Lighting

Results in Brief

The city spends about \$500,000 a year to provide street lighting. Westar Energy owns most of the street lights and bills the city on a monthly basis. A “tariff” approved by the Kansas Corporation Commission governs the relationship, defines the services, and sets the prices. Street lighting costs have increased over the years and increased significantly with the recently approved tariff.

Some of the utility company’s billing practices result in higher costs for the city. The company assumes street lights burn 11 hours/night year-round; estimates energy use at higher levels than other utility companies; and overestimates energy use for private area lights. The city would have saved about \$3,500 last year if lighting was based on seasonal use. The city would have saved about \$12,000 last year if Westar Energy used energy estimates consistent with other utilities. The city would have saved about \$600 last year for 22 private area lights if energy estimates were more realistic. While these savings are relatively small, they are on-going savings and the billing practices affect not just Lawrence but also other customers of street lighting and private area lighting services.

The city does little to manage street lighting. City staff process payments for bills, but have no way to verify the accuracy of the billing.

The city pays for street lights that don’t work. Observation of street lights on a random sample of street segments found seven percent of the lights were out. At that rate of outages, the city spent about \$35,000 on lights that were out last year.

The tariff which governs the provision and price for street lighting fails to clearly define responsibilities or set performance standards. For example, the tariff doesn’t define the company’s responsibility related to identifying lights that are out, repairing them in a timely manner, or billing for lights that aren’t working.

Cities that have purchased street lights from utility companies report substantial savings. If Lawrence were to own the street lights, the city might realize annual savings of \$150,000 to \$250,000.

The report includes recommendations intended to reduce street light costs and improve performance. Recommendations to the City Manager address billing practices, performance expectations, improving the city's management of street lighting, and evaluating the feasibility of acquiring the street lighting system. The City Manager agrees with the recommendations.

Performance Audit: Street Lighting

City Buys Street Lighting From Westar Energy

The city provides street lighting throughout Lawrence with lights installed, owned, operated, and maintained by Westar Energy. The utility owns about 3,500 street lights and bills the city for their use. The city also owns and maintains some street lights, paying the utility for the energy.

Residential streets generally have street lights at intersections and in each cul-de-sac. Streets with the most traffic generally have more lights than residential streets. On average, the city has about 11.5 street lights for each mile of street.

Tariff defines relationship between city and Westar Energy

The city relies on a tariff to define the relationship with Westar Energy and to set price for street lighting. The street light tariff is an 8-page document that spells out terms, conditions and street light rates. Under the tariff, the utility:

...shall install, own, operate and maintain the complete installation, consisting of a lamp, fixture, bracket, secondary cable, and pole. All lamps will normally be operated by a photo-electric controller to provide service from dusk to dawn (approximately 4,000 hours annually) and will be of the approximate lumen ratings and wattages indicated or requested. Maintenance shall consist of lamp replacement, photo electric controller replacement, lens cleaning and the like on an as needed basis.

The Kansas Corporation Commission (KCC) regulates rates, service and safety of public utilities and approved the street light tariff. The State of Kansas created the KCC and the Governor appoints the three commissioners.

Street light bills include a payment for the street light as well as adjustments and surcharges. In 2008, the various adjustments and surcharges represent 23 percent of the total billing. The adjustments and surcharges include a retail energy costs adjustment, property tax surcharge, transmission delivery charge, environmental cost recovery rider, and franchise fee.

Table 1 Street light charges

Item	Explanation	November 2008 bill
Energy charge	Westar Energy charges for installing, owning, operating, and maintaining each installation (lamp, fixture, bracket, secondary cable, and pole). The fee includes electric energy and the costs of owning, operating, and maintaining the lights. The fee is based on the number of lights and varies depending on the type and wattage of the lamp and the type of pole.	\$30,765.95
Fuel charge	Westar Energy recovers fuel costs. The company allocates this "retail energy cost adjustment" to customers based on the kilowatt hours delivered to each customer.	\$7,109.10
Property tax surcharge	Westar Energy charges or credits customers for increases or decreases in the property tax compared to the property taxes at the most recent rate review. The company allocates the adjustment to customers based on kilowatt hours.	-\$31.10
Transmission charge	Westar Energy charges to recover costs associated with building and maintaining the transmission system. The charges are based on kilowatt-hours.	\$729.34
Environmental charge	Westar Energy charges to recover investments in equipment installed to meet environmental standards. The charges are based on kilowatt-hours.	\$21.51
Franchise fee	Westar Energy collects a franchise fee of 5 percent on the sum of the various charges. The city established the franchise fee and Westar pays it to the city on a monthly basis.	\$1,929.74
Total		\$40,524.54

The charges for installing, owning, operating and maintaining lights depend on the type of light and pole. Brighter lights are billed at a higher rate. For example, the city pays a base rate of \$7.76 per light for 150 watt lamps on wood poles, and pays a base rate of \$11.66 for a brighter 250 watt lamp on a wood pole.

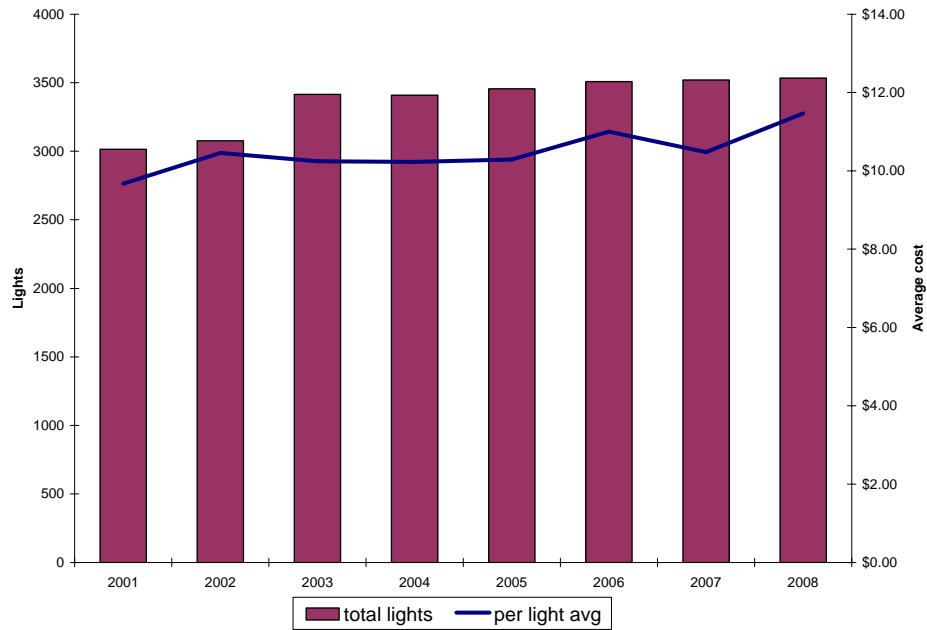
Table 2 Street light energy, lights, and charges

watts	pole	energy used (kWh)	number of lights	bill amount
250	wood	77,330	703	\$9,339.36
150	wood	75,628	1,022	\$9,111.36
100	wood	34,960	874	\$7,053.73
360	wood	67,584	384	\$5,731.02
400	wood	25,670	151	\$2,808.23
360	steel	17,248	98	\$1,808.34
250	wood	9,680	88	\$1,664.34
250	steel	10,120	92	\$1,550.66
215	wood	7,296	64	\$678.51
400	wood	1,700	10	\$242.26
150	steel	1,110	15	\$188.86
100	wood	240	6	\$82.20
Non-standard		1,120	14	\$78.53
215	steel	570	5	\$70.82
150	steel	222	3	\$39.44
100	steel	120	3	\$35.46
400	steel	170	1	\$22.19
150	wood	148	2	\$19.23
Total		330,916	3,535	\$40,524.54

Street Lighting Costs Increasing

Street lighting costs have been increasing in recent years and the city will spend over \$500,000 to provide street lights in 2009. Costs have increased because the number of lights and the average cost per light has gone up. The tariff approved in February 2009 will significantly increase street light costs. Figure 1 shows the number of utility-owned street lights in Lawrence and the average cost per light.

Figure 1 Street lights and average cost (2001-2008)



The Kansas Corporation Commission recently approved a street light tariff that will increase costs to the city. The new tariff went into effect on February 3, 2009. The base monthly charges for the lights most common in Lawrence went up by about 15 percent. The base monthly charges exclude the adjustments and surcharges.

Table 3 Street light rate increases

Number of lights	Lamp watts	2008 rates	Current rates	Increase
686	250	10.05	11.66	16.0%
875	100	6.74	7.75	15.0%
1020	150	6.74	7.76	15.1%
382	360	10.05	11.57	15.1%

The city has relatively little flexibility to control street light spending. The city can't easily reduce the number or use of lights or shift to more energy efficient lights.

Over time, the city has benefited from some energy efficiency gains as Westar Energy replaced some burned out 150 watt lamps with 100 watt lamps, reducing both the amount of light provided and the energy used. Lower energy use reduces city costs because the greater the energy used, the greater the adjustments and surcharges.

Street light energy use

Street lights are like fluorescent lights in a home or office. An electrical arc discharge between two electrodes produces the light. A ballast provides the power supply to the lamp. The ballast provides the proper starting and operating voltage and current. Both the lamp and the ballast use energy.

Utilities estimate the energy used by a street light as function of the energy used and how much time the light is on. A sensor turns a street light on around dusk and turns the light off around dawn.

Energy use higher than some other utilities

Westar Energy's estimates of the kilowatt hours (kWh) used by street lights in Lawrence are relatively high. The company uses estimates because the street lights are not on electricity meters. For billing purposes, the company allocates surcharges on estimated kWh. Lower energy estimates would reduce the amount of surcharges.

Some other utilities use lower estimates of kWh for similar lights. For example, Midwest Energy's estimates for street light energy use are lower for three of the four most common lights in Lawrence. The City Auditor reviewed street light tariffs for five other utilities and compared them to kWh estimates provided by Westar Energy. The comparison shows Westar Energy's estimated kWh as the highest for three of the four most common lights in Lawrence.

Table 4 Street light energy use comparison

lumens	watts	Westar Energy (Kansas)	Midwest Energy (Kansas)	Dayton P&L (Ohio)	AEP (Texas)	Oncor (Texas)	PG&E (California)
13,500	150	74	59	57	57	70	69
8,500	100	40	44	39	39	40	47
25,600	250	110	102	104	104	100	100
40,500	360	176	138	n/a	n/a	n/a	144

Westar Energy's kWh estimates are not included in the street light tariff. The rates can be easily calculated from each monthly bill and the utility company provided a rate sheet that includes kWh estimates.

The effect of relatively high kWh estimates is that surcharges are relatively high. If Westar Energy had billed at the kWh estimates of

Midwest Energy, then Lawrence would have paid about \$12,000 less for the fuel adjustment in 2008.¹

Table 5 Effect of different energy use estimates

Month (2008)	Charge (dollars per kWh)	At Westar Energy estimates	At Midwest Energy estimates
January	0.013206	\$4,324.52	\$3,752.33
February	0.012075	\$3,954.15	\$3,430.97
March	0.016146	\$5,287.27	\$4,587.69
April	0.025018	\$8,192.54	\$7,108.56
May	0.023888	\$7,822.51	\$6,787.49
June	0.029452	\$9,644.53	\$8,368.43
July	0.031322	\$10,256.89	\$8,899.77
August	0.041941	\$13,734.25	\$11,917.03
September	0.022577	\$7,393.20	\$6,414.98
October	0.022176	\$7,261.89	\$6,301.04
November	0.021483	\$7,034.95	\$6,104.14
December	0.019161	\$6,274.58	\$5,444.37
Total		\$91,181.27	\$79,116.81

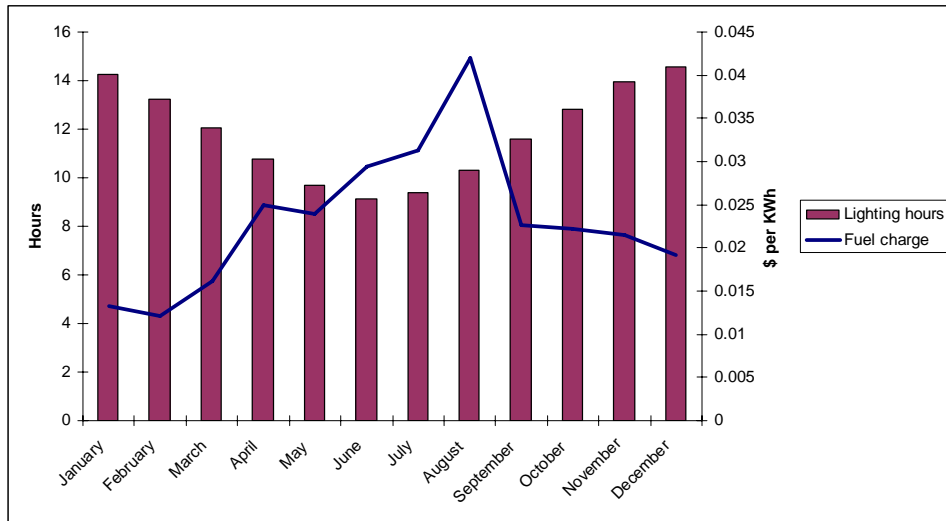
Assuming consistent year-round light use increases costs

The utility assumes street lights burn about 11 hours a night, year round. In fact, street lights burn longer in the winter and shorter in the summer. Because the fuel adjustment rates have typically been lower in the winter and higher in the summer, the assumption increased the city’s street light costs. If Westar Energy based energy estimates on season differences in hours of darkness, then Lawrence would have paid about \$3,500 less for the fuel adjustment in 2008.

The street light tariff does not directly address how the utility should allocate street light use throughout the year. The tariff defines a total annual use of “approximately 4,000 hours annually” but does not define any seasonal variation. The tariff notes that lights provide service “from dusk to dawn.”

¹ The estimate is based on the number and type of street lights in Lawrence on the December 2008 bill.

Figure 2 Monthly lighting hours and fuel surcharges



Private area light rates overstate energy use, increasing surcharges

Westar Energy’s estimates of the kilowatt hours (kWh) used by area lights are too high. The high energy estimates have the effect of increasing customers’ costs for the adjustments and surcharges. Energy estimates that more accurately reflect actual energy used would significantly reduce costs for customers of private and security area lighting.

Figures 3 and 4 compare Westar Energy’s monthly kWh estimates for private area lighting with similar lights from other tariffs and with a ballast manufacturers’ specifications. Westar Energy’s estimates are significantly higher.

Figure 3 kWh comparison for 150 watt HPS lights

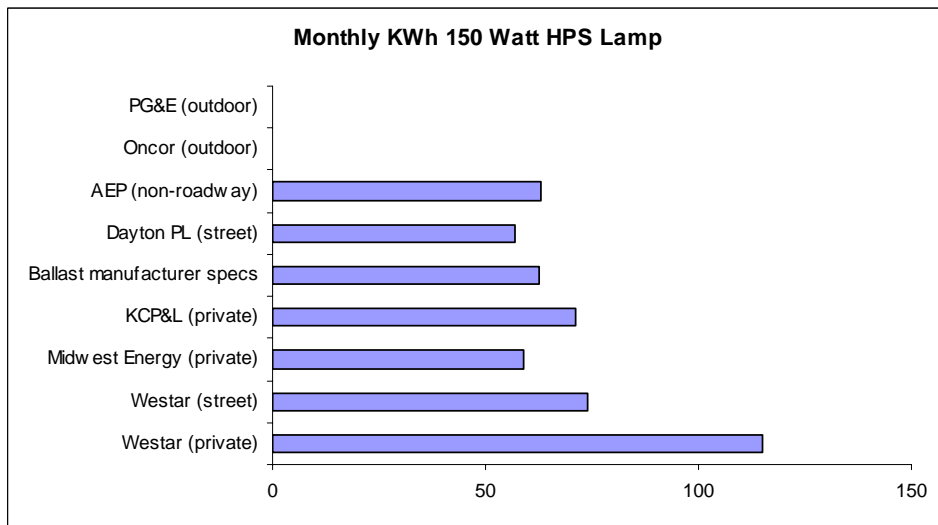
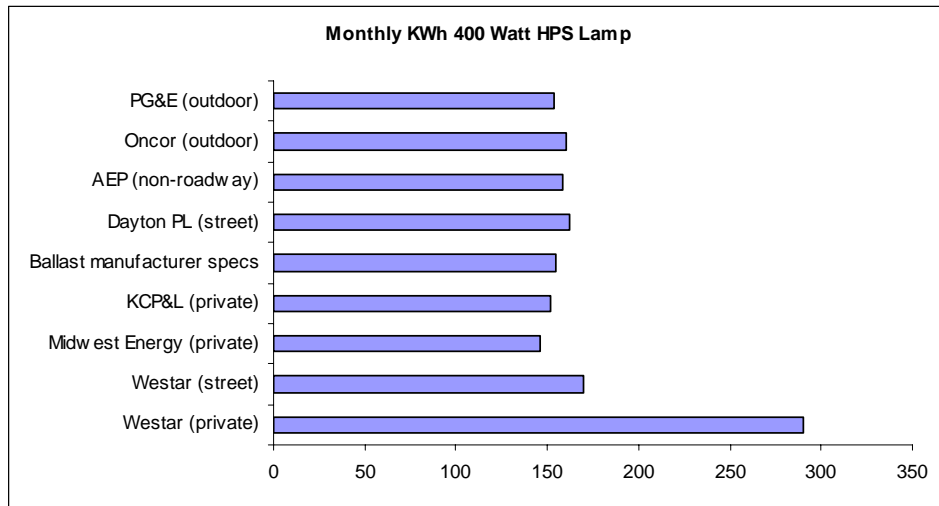


Figure 4 kWh comparison for 400 watt HPS lights



Staff from the city and two engineering professors reviewed calculations Westar Energy provided and concurred that the estimates overstate actual energy used for common lights. The utility company’s calculations, which form the basis for estimates in the tariff, appear to count the energy consumed by the lamp twice. The tariff was approved by the Kansas Corporation Commission.

If the utility company based adjustments on the average kWh rates of the comparison utilities, then customers’ fuel adjustments would have been significantly lower in 2008. A private area lighting customer with a 150 watt high pressure sodium light would have paid about \$14 less; and a customer with a 400 watt high pressure sodium light would have paid about \$37 less.

The city has 22 private area lights billed on overstated energy use. If Westar Energy had billed at the energy estimates for the equivalent street lights, the city would have paid about \$600 less for the fuel adjustment for these lights in a year.

What is the difference between street lights and private area lights?

Westar Energy provides both street lighting and private area lighting under tariffs approved by the Kansas Corporation Commission. The services differ in the customers served, the lighting provided, and the prices charged. Street lighting is provided only to cities, townships, and local governing bodies; while private area lighting is provided to a wider range of customers, including local governments. Street lighting is limited to public streets, alleys, and thoroughfares; while private area lighting is provided in a wider range of situations. For similar lights, street lighting rates are lower. For example, the base monthly rate for a 150 watt high pressure sodium light is \$8.52 as a street light and \$15.28 as a private area light.

City Does Little to Manage Street Lighting

Westar Energy installs, owns, operates and maintains the street lights, billing the city on a monthly basis. The Finance Department receives the bills, assigns the appropriate account codes, enters the bill into the city's document imaging system, and pays the utility. Finance does not review the bill for accuracy, but would likely notice if there was a large change in the amount billed.

The Public Works Department budget pays for the street lights. Public Works staff have access to the bills through the city's document imaging database. However, Public Works staff do not regularly review the bills for reasonableness. The department doesn't maintain an inventory of utility-owned street lights. Acquiring and maintaining an inventory would provide a way to check billing records for accuracy. An inventory could also help identify and report outages and track maintenance performance.

Billing inventory generally reliable

A limited test of Westar Energy's inventory found the information to be generally accurate. The City Auditor randomly selected 100 lights from the 2003 inventory and tested the records in the field by locating each street light. If a light couldn't be located, the auditor followed-up with the utility company to ensure the city was not being billed for the light. Overall, the inventory was found to be reliable.

The City Auditor identified two discrepancies in records of street lights and Westar Energy staff said the company would correct them. One of

those discrepancies was found during the random sample and one was found through a judgmental sample.

Table 6 Inventory discrepancies and resolutions

Location	Description
900 block of E. 14th	Light, pole and transformer removed April 2004 but not removed from billing system
8 th and New Hampshire	Removed by city contractor but not removed from billing system

In response to the discrepancies, Westar Energy will remove both lights from the billing system. The company credited the city for payments made since April 2004 for the light on East 14th Street.

Many Street Lights Don't Work

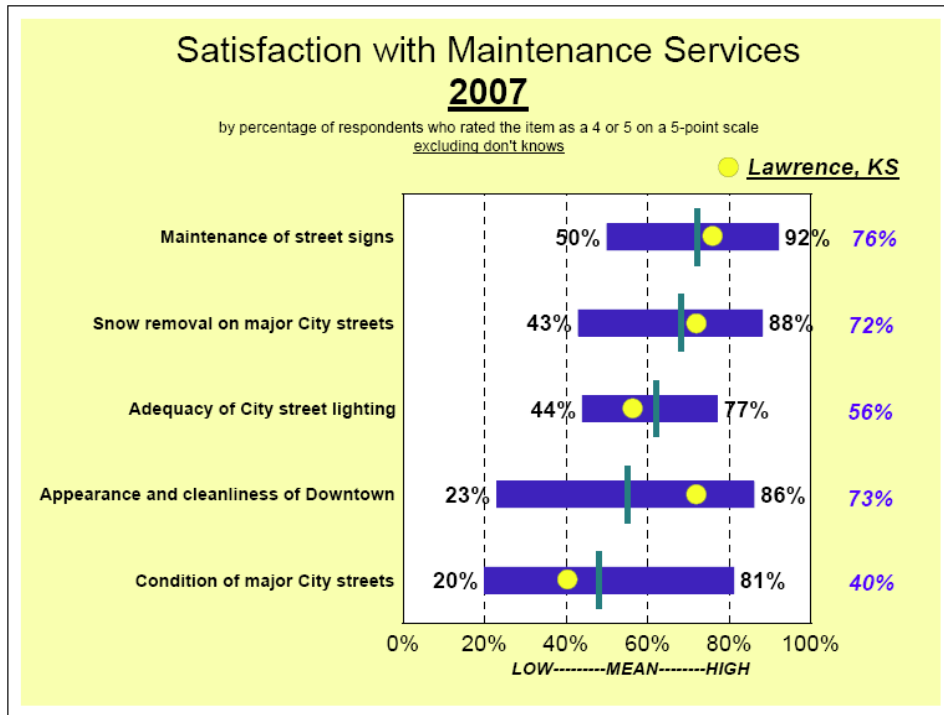
An estimated 250 street lights in Lawrence don't work. The estimate is based on observation of street lights on a randomly selected sample of city streets. The City Auditor drew a sample of street segments, then observed the conditions of street lights – counting the number on and off – over several nights in January and February. Seven percent of the lights were either out or cycling on and off. Similar results – 6.5 percent outages – were found in a non-random review of 92 street lights in January.

City pays for lights even if they do not work

Street lights that aren't working reduce services without reducing costs. The city pays for lights whether or not they work. Street lights provide light to make streets safer. Lights at corners, help drivers and pedestrians travel safely. When a light is out, driving or crossing a street becomes more dangerous. The City Auditor estimates that the city spent about \$35,000 in 2008 on lights that were not working.

Residents expressed relatively low satisfaction with the adequacy of street lights. The 2007 citizen survey asked respondents to rate their satisfaction with the adequacy of city street lights and included comparisons of those ratings to results from other communities. Lawrence residents' ratings were below the mean.

Figure 5 Citizen survey results



Street lights that don't work are identified in several ways. Westar Energy employees look for non-working lights, focusing on major streets. Residents can report street lights that don't work directly to the utility or through the city. City employees may identify and report outages, but the city doesn't have staff assigned to identify outages for Westar Energy-owned lights. If a resident notifies the city that a light is out, then the city forwards the information to the utility.

Street light outage



The pole in the foreground has no lamps, but is billed to the city as if it had two working lamps. The pole is located on 29th Terrace at Fourwheel Drive.

Westar Energy responds to repair requests in a timely manner

Westar Energy tracking reports indicate that the utility generally responds to repair requests in a timely manner. While the city doesn't track responsiveness, Westar Energy provides reports to the city about repairs made and the timeliness of those repairs. Those reports include information about when and how the problem was identified, the "tag number" and address of the light; and the date the work was completed.

The street light tracking suggest that the utility responds within a few days of a problem being found. Based on the reports for January 2008 and January 2009, Westar Energy repaired 80 percent of the problems within three days of the problems being found.

Westar Energy repaired outages that the City Auditor identified and reported. After completing observations of street lights in the city, the auditor reported those outages to the utility company. The utility company repaired the lights, which was confirmed by a follow-up visit to some of the reported outages.

Because Westar Energy has been responsive to repairing lights that don't work, the high number of lights that don't work probably reflects an ineffective approach to identifying outages.

Street Light Outage Reporting

In an article on managing outages for municipal street lighting, the authors describe traditional outage reporting.

Customers are likely to report street light outages in front of their homes in a timely manner. However, an outage observed while traveling on other streets is often overlooked until the duration of the outage becomes a major irritant for the customer.

Traditionally, utilities rely on customers to report street light outages....Relying on outage reports from customers to initiate the work order process, may appear to be a low cost alternative, but it frequently leads to weak service levels and negative customer perceptions.

Source: "Transforming Customer Perception," Eric Vogel and Hoang Nguyen, *LD+A* May 2006.

Tariff fails to define performance requirements

While the tariff makes the utility responsible for operating and maintaining lights, the tariff doesn't clearly define those responsibilities. For example, it doesn't clearly define the utility's responsibilities for identifying lights that are out, repairing them in a timely manner, or billing for lights that are not working. The tariff makes the utility responsible to:

install, own, operate and maintain the complete installation,...Maintenance shall consist of lamp replacement, photo electric controller replacement, lens cleaning and the like on an as needed basis.

In contrast, some tariffs that apply to other services or other jurisdictions include defined responsibilities. The table provides examples from other tariffs.

Table 7 Tariff provision examples

Tariff provision	Source tariff	Similar provision for street lights in Lawrence?
The customer shall assume responsibility for notifying the Company when fixtures are inoperative	Private area lighting (Westar Energy)	No
Company shall provide a bill credit equal to 6.5 percent of the affected municipality's non-routine maintenance charges for Calendar Year 2008 if > 15 percent of the reported street light outages for that year were not repaired to operational condition within 5 days	Street light (Public Service Company of Colorado)	No
If the results of the sampling study show that the street light burn out rate exceeds two percent (2%), then the Company shall reduce the Customer's total street light bill for service delivered under this tariff by the percentage...that the burn out rate exceeds two percent.	Street light (Public Service Company of Colorado)	No

Volunteers identify outages in Lenexa

Volunteers with the Lenexa Police Department help the city identify street light outages. City staff prepare maps with the location of all of the lights marked. Volunteers then drive the streets, noting lamps that are out. The volunteers return the maps to city staff who can then ensure the lamps are repaired.

Frequent night patrols are necessary to identify and repair outages by replacing lamps as they burn out. "Group relamping" is another approach. Under group relamping the city replaces all of the lamps in an area at the same time, about every three or four years.

Lenexa staff report that the different approaches have nearly identical total costs, but group relamping provides better service. As lamps age, but before they go out, they produce less light and a less effective color of light. Older lamps produce a lower level of service, but still use the same amount of energy. Older lamps may also begin to cycle on and off before finally burning out. A group relamping program replaces those poorly performing lamps before they burn out.

City-Owned System Might Reduce Costs

Lawrence might be able to reduce costs for street lighting if the city owned and operated the system. Cities that purchased street lights from utility companies reported significant annual savings and better control over street lighting. Cities can reduce costs because they typically have lower financing costs, may have lower installation and maintenance costs, and do not earn a financial return like a utility company. Acquiring the street light system would require careful analysis of the costs and benefits and negotiation with the utility that owns and operates the street lights in Lawrence.

If Lawrence were to acquire the street lights and achieve savings similar to those achieved in other cities that acquired their systems, the city could save over \$150,000 annually. The city would have to purchase the street lights from the utility and would take over the responsibility for maintenance and repairs. Maintenance and repairs could be provided in-house or through a competitively bid contract.

Street light purchase in Lenexa

Lenexa purchased 2,400 street lights from Kansas City Power and Light on January 1, 2009. Lenexa already owned about 4,000 street lights, which city staff maintain. The city contracts for maintenance of the newly purchased lights. The contractor inventories and assesses the system, installs new lamps, repairs equipment, and repairs burnouts.

Lenexa expects to save about 20 percent each year while repaying the purchase price and then will save about 50 percent each year. Much of the savings will pay for routine replacement of street lights.

Cost savings depend on the specifics of the purchase, but the experiences of other municipalities suggest the city might save from 30-50 percent if it owned and operated the street lights, paying the utility company for electric power. The table provides summary information about four municipalities that have purchasing lighting systems.

Table 8 Street light municipal purchase examples

Municipality	Population (2007)	Year acquired	Reported annual savings
Kansas City, Missouri	450,375	1997	About 30 percent.
Binghamton, New York	45,020	2000	About 50 percent.
Manchester, Connecticut	55,857	2003	About 40 – 50 percent.
Lenexa, Kansas	45,681	2009	About 20 percent until the purchase is paid off, then about 50 percent.
Range of savings			30-50 percent

Initial analysis suggests potential for savings in Lawrence

Over half of the per light costs for Lawrence appear to be for the “lease” costs associated with each light. The monthly street light bill includes payment to the utility for the energy and the costs of installing, owning, operating, and maintaining the lights. The tariff does not identify the portion of the costs associated with equipment and maintenance. The City Auditor estimated that the equipment and maintenance cost represents over half of the per light cost by applying the assumed kWh use and the electricity rate that Westar Energy charges for non-standard lighting (4.202 cents per kWh).

For the street light system as a whole, lease costs represent an estimated 62 percent of the base rate for street lights. A high portion of base cost for the “lease” indicates a potential for savings if the city were to purchase the street lights.

Table 9 Estimated "lease" costs of street lights

Type of street light (wood pole)	Number of Lights	Base charge per light	kWh cost	"lease cost"	"lease portion"
250 watt	703	\$11.66	\$4.62	\$7.04	60%
100 watt	874	\$7.75	\$1.68	\$6.07	78%
150 watt	1022	\$7.76	\$3.11	\$4.65	60%
360 watt	384	\$11.57	\$7.40	\$4.17	36%

Purchasing the street light system would require the city to negotiate a price with the utility and have an estimate of the value of the system. An approach to valuing the street lights is to calculate the net plant value (also referred to as the unrecovered cost) of the street lights. The net plant value is the difference between the original installed costs of the asset and the portion of the accumulated reserve for depreciation allocated to the

asset being sold. Valuing the system requires detailed information about the street light system and the condition of the system.

The potential for significant annual savings makes city ownership of street lights an option worth considering. Interviews with employees of other jurisdictions and reviews of reports on city ownership of street lights identify some common arguments from both proponent and opponents of city ownership.

Table 10 City street light ownership proponent and opponent arguments

Proponents might argue	Opponents might argue
Owning and operating street lights has the potential for significant savings.	Owning the system shifts the maintenance burden to the city.
Bidding out maintenance services allows for competition and better prices.	Requires significant equipment and technical skills to maintain the system or staff to administer and monitor contractors.
Municipalities that own street lights have more control over maintenance and service levels.	City might be purchasing a system with significant deferred maintenance.
Owning the system provides greater policy control, making it easier to test and install new technologies that reduce energy use.	Purchasing requires complex negotiations. The utility does not currently have a tariff for non-metered municipally owned lights and metering the entire system would be expensive.

Lessons learned in other cities

Officials in areas where cities have purchased or considered purchasing street lights and others knowledgeable about street light purchases cite a number of similar lessons learned. Understanding the common lessons learned could help the city should it pursue purchasing the street lights.

- **Valuing a street light system is difficult.** To determine the value of the system requires good information on the equipment in the field (e.g. lamps, poles, and wiring) and the age and condition of the equipment. A utility selling a system expects to receive a fair price.
- **Working together helps share knowledge and costs.** Municipalities have sometimes worked together to represent their interests with the regulators and share experiences and knowledge about street lighting. Cooperation allows municipalities to share

costs of technical experts who can analyze options and represent interests.

- **Representing interests with the regulators ensures consideration of municipal interests.** The Kansas Corporation Commission reviews rates, service, and safety of utilities. Representing municipal interests helps ensure that the regulators consider the effects of changes on municipal governments.
- **Using a competitive process to provide maintenance helps ensure best value and performance.** Municipalities provide maintenance in different ways – through municipal employees, through a contract with the utility company, or through a contract with private maintenance contractors. Comparing options and allowing for competition ensure the most cost effective maintenance.

Recommendations

The City Auditor recommends:

1. The City Manager should request Westar Energy to adopt estimated kWh rates for street lights that are consistent with those of other utilities.
2. The City Manager should request Westar Energy to estimate monthly kWh use for street lights based on seasonal variations in the actual use of street lights.
3. The City Manager should request Westar Energy to review the estimates of energy used for area lights, determine why the estimates are too high, and refund customers for excess surcharges if appropriate.
4. The City Manager should work to establish clear performance expectations for the utility company's responsibility to identify and repair outages.
5. The City Manager should work to ensure that customers are not billed when service or outages fail to meet reasonable expectations.
6. The City Manager should request that Westar Energy provide the city with an inventory.

7. The City Manager should ensure that staff review bills on a regular basis and follow up on any discrepancies.
8. The City Manager should evaluate the feasibility of acquiring the street lights from the utility company.

Implementing the recommendations could involve intervening at the Kansas Corporation Commission. Because street light costs and performance affect many municipal governments, not just Lawrence, the City Manager should consider cooperation with other affected governments. As appropriate, the city should work with those governments to address common interests.

Performance Audit: Street Lighting

Scope, methods and objectives

The City Auditor designed this performance audit to answer:

- How does the city provide street lighting?
- What are the costs and levels of service?
- Could the city reduce costs?

The City Commission included this audit in the work plan approved April 2008.

This performance audit focuses on the street lights in Lawrence owned by Westar Energy. In addition to those street lights, the city owns some street lights, primarily downtown, at roundabouts, and in some newer developments.

Staff from the City Manager's Office have been collecting information about street lighting in other jurisdictions. The City Auditor coordinated with the City Manager's Office to avoid duplicating efforts.

The City Auditor interviewed staff from the city, other jurisdictions, and people knowledgeable about street lights and efforts to purchase street light systems. The auditor also interviewed staff from Westar Energy.

The City Auditor reviewed audit reports and studies from other jurisdictions, street lighting tariffs from Westar Energy, and street lighting tariffs from several other utility companies. The auditor initially compared Westar Energy tariffs with the street light tariff for Midwest Energy, which provides service in Kansas. The auditor then selected other utilities through an internet search, using the first four utilities that included energy estimates for street lights.

The City Auditor observed street lights throughout the city. The auditor observed over 400 street lights. The auditor randomly selected 100 street segments and observed whether lights were on or off. The auditor randomly selected 100 street lights from inventory information provided by Westar Energy and located the lights, following-up with utility

company staff to resolve discrepancies. The auditor also did pilot observations of both street segments and lights from the inventory.

The City Auditor conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require planning and performing the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for the findings and conclusions based on the audit objectives. The City Auditor believes that the evidence obtained provides a reasonable basis for the findings and conclusions based on the audit objectives.

The City Auditor made an interim recommendation to the City Manager to consider intervening in the Kansas Corporation Commission docket addressing the consolidation of the northern and southern Westar Energy areas and the resulting rate design. The auditor made the recommendation on March 20, 2009. Appendix A includes the interim recommendation.

The City Auditor provided the City Manager and the Director of Public Works with drafts of the report on May 1, 2009. The City Manager's written response is included.

Performance Audit: Street Lighting

Appendix A: Interim Recommendation

Memorandum
City of Lawrence
City Auditor

TO: David L. Corliss, City Manager

FROM: Michael Eglinski, City Auditor

CC: Cynthia Boecker, Assistant City Manager
Diane Stoddard, Assistant City Manager
Jonathan Douglas, Assistant to the City Manager

Date: March 20, 2009

RE: Street Lighting – Interim Recommendation

Based on my in-progress performance audit of street lights, I recommend the city consider intervening in Kansas Corporation Commission Docket No. 09-WSEE-641-GIE. The docket addresses the consolidation of the northern and southern Westar areas and resulting rate design.

Intervening may provide an opportunity for the city to raise issues related to the street light tariff. The tariff governs the relationship between Westar Energy and the city. Based on the audit work completed to date the tariff does not:

- Define expectations for timely repair of street lights that are out after being reported by the city or the public;
- Define responsibility for identifying street lights that are out;
- Provide a mechanism for the city to avoid paying for street lights that are out or otherwise not working;
- Define the method for allocating estimated kilowatt-hours used to allocate surcharges.

Clarifying these expectations would help ensure appropriate service levels for street lighting provided in Lawrence.

Currently, the street light tariffs for the north and south areas have different rates.

At this point, the performance audit fieldwork is not completed and the work has not gone through a quality assurance process. However, because of the potential need for timely action by the city, I am providing this memo as an interim report. The final performance audit report will include a reference to this interim report.

Please let me know if you have any questions or would like any additional information.

Performance Audit: Street Lighting

Management's Response



City of Lawrence KANSAS

CITY COMMISSION

MAYOR
ROBERT CHESTNUT

COMMISSIONERS
MIKE AMYX
ARON E. CROMWELL
LANCE M. JOHNSON
MICHAEL DEVER

DAVID L. CORLISS
CITY MANAGER

City Offices
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785-832-3000
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May 11, 2009

Mr. Michael Eglinski
City Auditor
City of Lawrence, Kansas
City Hall
6 E. 6th Street
Lawrence, KS 66044

Re: Performance Audit – Street Lighting May 2009

Dear Mr. Eglinski:

Thank you for the preparation and submission of the above referenced audit. City staff has reviewed the document and we agree with the audit recommendations.

I believe the audit confirms a number of concerns that have been expressed regarding this important City function. The audit report certainly supports my belief that this City function deserves substantial additional attention, if not a complete reworking of our relationship with Westar in regard to street lights. It is important to note that of the eight recommendations in your audit, seven will require the cooperation and assistance of Westar in order to successfully accomplish.

Additionally, City staff believes that a further exploration of our street lighting function should also examine our current street lighting standards: e.g. Should we provide additional street lighting within the city? Do we provide too much lighting in certain locations? Are there alternative lighting systems available which reduce light trespass? Are there alternative lighting systems which reduce energy consumption? As we move forward with the implementation of your recommendations, particularly those focused on evaluating the feasibility of acquiring the street lights from Westar, these street light standard issues should also be examined.

Mr. Michael Eglinski
May 11, 2009
Page 2 of 2

I am attaching to this response a copy of the City's Petition to Intervene before the Kansas Corporation Commission in a current Westar rate matter. This follows through on your interim recommendation.

We thank you for your work on this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "David L. Corliss". The signature is stylized with a large, circular initial "D" and a long, sweeping underline.

David L. Corliss
City Manager

c: Mayor and City Commission

**BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS**

In the Matter of the Investigation of Westar)
Energy, Inc., and Kansas Gas and Electric) Docket No. 09-WSEE-641-GIE
Company to Consider the Issue of Rate)
Consolidation and Resulting Rate Design.)
)

PETITION TO INTERVENE

COMES NOW the City of Lawrence, Kansas (hereinafter “the City”) and in support of its Petition to Intervene states as follows:

1. The City of Lawrence, Kansas, is a municipal corporation duly organized and existing under the laws of the State of Kansas with its principal place of business at City Hall, 6 East Sixth Street, Lawrence, Douglas County, Kansas.

2. The issues raised in this matter and the Commission’s determination of said issues will have a substantial impact on the rates which the City will pay for its electric service. Therefore, the City has an interest in the outcome of this proceeding. The City is not now and will not be adequately represented by any other party to this proceeding.

3. Pursuant to K.S.A. § 66-117f, K.S.A. § 77-521, and K.A.R. § 82-1-225, the City is entitled to intervene herein.

4. No party to this proceeding will be prejudiced by granting the requested intervention.

5. All communications and correspondence to the City, including service of all notices and orders of the Commission herein are requested to be sent to the following named individual:

Toni Ramirez Wheeler
Director, Legal Services Department
CITY HALL
6 East Sixth Street
Lawrence, KS 66044
(785) 832-3404 (telephone)
(785) 832-3405 (facsimile)
Email: twheeler@ci.lawrence.ks.us

WHEREFORE, the City moves the Commission for an Order allowing it to intervene in this case and to become a party of record with all rights to have notice and fully participate in this matter, including, but not limited to, the right to file briefs and motions, to participate in argument, and to conduct discovery, and for all other necessary and proper purposes.

Respectfully Submitted,

By 

Toni Ramirez Wheeler #18473
Director, Legal Services Department
John Jay Miller, Staff Attorney #14659
CITY HALL
6 East Sixth Street
Lawrence, KS 66044
(785) 832-3400 (telephone)
(785) 832-3405 (facsimile)

VERIFICATION

STATE OF KANSAS)
) ss:
COUNTY OF DOUGLAS)

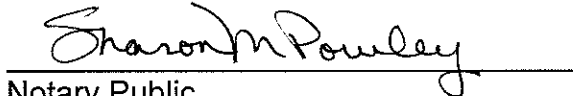
Toni Ramirez Wheeler, of lawful age, being first duly sworn, upon her oath, deposes and says:

That she is the attorney for the City of Lawrence, Kansas, that she is familiar with the foregoing **Petition to Intervene**; and that all the statements therein contained are true and correct to the best of her knowledge and belief.


Toni Ramirez Wheeler

Subscribed and sworn to before me this 7th day of May, 2009.




Notary Public

My Appointment Expires:

February 24, 2013

CERTIFICATE OF SERVICE

I hereby certify that on the 7th day of May, 2009, the original and seven copies of the foregoing **Petition to Intervene** was sent via first class U.S. Mail, postage prepaid, addressed to:

Susan K. Duffy, Executive Director
Kansas Corporation Commission
1500 S.W. Arrowhead Road
Topeka, Kansas 66604-4027

and that one copy was sent via U.S. Mail, postage prepaid, addressed to:

Kurt J. Boehm, Attorney
Boehm, Kurtz & Lowry
36 East Seventh St., Ste 1510
Cincinnati, OH 45202

Michael L. Kurtz, Attorney
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