City of Leavenworth
100 N. 5th Street
® Leavenworth, Kansas 66048

CITY COMMISSION STUDY SESSION
COMMISSION CHAMBERS
TUESDAY, SEPTEMBER 20, 2022 6:00 P.M.

Welcome to your City Commission Study Session – Please turn off or silence all cell phones during the meeting

Meetings are televised everyday on Channel 2 at 6 p.m. and midnight and available for viewing on YouTube

Study Session:

POLICY REPORT
Business Symposium Update
September 20, 2022

Prepared By:

Penny Holler
Assistant City Manager

Reviewed By:

Paul Kramer
City Manager

ISSUE:

Receive update on planning for the Leavenworth 2022 Business Symposium.

BACKGROUND:

The creation of a small business symposium was one of the City Commission's 2022-23 goals established earlier this year. The half-day program will be held on Monday October 17 at the Riverfront Community Center. The purpose is to bring timely resources to local businesses that spur economic recovery and help with preparing for upcoming challenges. Experts from the University of Kansas Small Business Development Center, the U.S. Small Business Administration, and Kansas Workforce Development will present tools and resources available for businesses. Further information on the agenda and partner involvement will be provided in the planning update.

POLICY REPORT PWD NO. 22-45

WORK SESSION – PRESENTATION
TRAFFIC SIGNAL CONDITION ASSESSMENT

City Project 2021-968

September 20, 2022

Prepared By:

Brian Faust, P.E.,
Director of Public Works

Reviewed By:

Paul Kramer,
City Manager

ISSUE:
In March of 2022, the Commission approved a contract with Olsson, Inc. to conduct a Traffic Signal Assessment for the City's traffic signal system. This assessment is an important component in the City's 'Roadway and Infrastructure' Goal which is to develop a long-range management plan associated with our City Streets.

BACKGROUND:
The City of Leavenworth has 43 traffic signals in our system ranging from several decades old to brand new. As signals age, poles can experience cracking (wind loading), rust (both inside and out), and individual components within the controller cabinet can fail and/or become obsolete. The cost to completely replace one signalized intersection can range in the $250K to $350K range. It is important to manage this asset like other assets (streets/bridges/buildings/etc.) and that maintenance and replacement of components are done to help ensure the signals operate efficiently and safely. In addition, changing regulatory requirements (ADA) and advancements in smart technologies like connected vehicles should be planned for.

This evening, Mr. Kurt Rotering of Olsson will present the findings and recommendations to the Commission.

ATTACHMENT:
March 22, 2022 Policy Report
Signal Assessment - Final Report

POLICY REPORT PWD NO. 22-17

CONSIDER APPROVAL OF A DESIGN CONTRACT WITH OLSSON, INC. FOR THE TRAFFIC SIGNAL ASSESSMENT

City Project No. 2021-968

March 22, 2022

Prepared By:

Brian Faust, P.E.,
Director of Public Works

Reviewed By:

Paul Kramer,
City Manager

ISSUE:

Consider approval of the contract with Olsson, Inc. for a complete assessment of our traffic signals. The project includes completing a full assessment of the traffic signals, developing a maintenance and replacement plan, developing standards and specifications, and providing direction to address financial and technology considerations moving forward. This project is an important component of the City Commission 'Roadways and Infrastructure' Goal which is to develop a long-range management plan associated with our City streets.

BACKGROUND:

The City of Leavenworth has 43 traffic signals in our system ranging from several decades old to brand new. As signals age, poles can experience cracking (wind loading), rust (both inside and out), and individual components within the controller cabinet can fail and/or become obsolete. The cost to completely replace one signalized intersection can range in the $250K to $350K range. It is important to manage this asset like other assets (streets/bridges/buildings/etc.) and that maintenance and replacement of components are done to help ensure it operates efficiently and safely. In addition, changing regulatory requirements (ADA) and advancements in smart technologies like connected vehicles should be planned for.

Moving forward, it is critical to assess our equipment to determine remaining life, replacement costs and the consequence of failure for components within our system along with planning for the future. In addition, KDOT recently completed a TEAP (Traffic Engineering Assistance Program) Study on Spruce between 4th and 5th which identified a need for a complete evaluation of the City's traffic signal system.

POLICY:

The City generally uses the Qualifications Base Selections process to select engineers for project design and evaluations. The City requested proposals from qualified firms that were interested in helping the City complete the following:

Non-Structural Data Collection:

Perform field inventory activities to collect/confirm the following information at the City's signalized intersections:

- Intersection Lane Configurations
- Cabinet Type and Condition
- Controller Type / Firmware Version
- Communications Type
- Type of Detection (Loop, Video, Radar)
- Pull boxes and Conduit
- Signal and Pedestrian Heads
- Battery Backup
- Power Supply
- Streetlight Type
- Pedestrian Button Location
- Accessible Ramp Location, Type, Grade, Detectable Warning

Structural Assessment:
Perform a structural assessment of the pole and foundation of existing traffic signals.

Prioritization and Replacement Plan and Maintenance Schedule:
Develop a replacement and maintenance schedule for the traffic signals system. Initial safety and operational concerns that need to be addressed immediately will be identified, followed by near-term needs, then a replacement and maintenance schedule for the remaining signals including anticipated costs for equipment/components.

Review options to upgrade the signals to be ready for the future technology such as connected and autonomous vehicles, advanced signal timing, communications, etc.

Traffic Signal Standards and Specifications:
Work with the City to update existing traffic signal standard drawings and specifications.

The Request for Qualifications was sent to seven (7) firms and a notice was placed in the Leavenworth Times and on the City's website. The City received three (3) submittals:

- Olsson, Inc.
- Kimley-Horn and Associates, Inc.
- WSP USA, Inc.

The review committee consisted of the following:

- Brian Faust, Director of Public Work
- Michael Stephan, Project Manager
- Derek Burleson, Operations Superintendent
- Becky Beaver, Street Foreman
- Mitch Braget, GIS Technician
- Justin Stewart, Sr. Engineering Technician

The three (3) submittals were evaluated and the top two (2) firms were interviewed. After the interviews, Olsson was identified as the top firm. City staff worked with Olsson to negotiate a detailed project scope of services along with an estimated engineering fee for the work.

BUDGET IMPACT:
Project cost is a not-to-exceed amount of $93,214. KDOT is looking into what, if any funding, could be allocated to this project. While some KDOT funding is a possibility, outside funding is not anticipated.

RECOMMENDATION:
Staff recommends approval of the Traffic Signal Assessment contract with Olsson for an amount not to exceed $93,214.

ATTACHMENTS:
Traffic Signal Assessment Contract – Olsson, Inc.
Traffic Signal Photographs

LEAVENWORTH SIGNAL SYSTEM ASSESSMENT

Prepared for:

City of Leavenworth, Kansas

September 2022

Olsson Project No. 021-08879

olsson®

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1. INTRODUCTION

As requested by the City of Leavenworth, Kansas, Olsson completed a full assessment of the city's traffic signal system. The purpose of this report is to document the inventory of existing intersection signal equipment as inspected in the field. After evaluation of the data, a replacement schedule for the signal equipment was formulated. Both the inventory and the schedule, attached to this report, are intended as living documents to be continually updated along with modifications to the signal infrastructure.

2. EXISTING CONDITIONS

There are currently 43 signalized intersections in the City of Leavenworth, not including those on Fort Leavenworth. Out of these intersections, 40 signals were assessed as part of the inventory. The remaining signals are either under construction or planned to be removed/replaced. These three remaining signals are included in the inventory and will need to be updated once constructed.

Signal equipment field reviews were conducted during the spring/summer of 2022. Data was collected using the ArcGIS Field Maps application, which was customized to collect structural and nonstructural signalized intersection data. The mobile app automatically populates the online database in real time, and access to the software will be delivered to the city as part of this project; this allows city staff to maintain a current database as improvements are made and new signals are built. The application also outputs an Excel file that is compatible with Environmental Systems Research Institute (ESRI) software and is intended to be used to maintain a signal inventory spreadsheet and replacement schedule into the future.

2.1 Structural Assessment

A structural assessment of the signal poles was conducted to determine lifetime viability of the existing equipment throughout the city. Olsson nondestructive testing (NDT) inspectors conducted field reviews of the signalized intersections. Inspections included structural testing of the pole and its general appearance. All field-collected data and photos were compiled using the Field Maps application.

Base Plate Inspection

After a visual inspection, all signal pole base plates were tested to check the weld joining the vertical pole and the anchor rod/nut assembly. Torque of the anchor bolts was also tested as specified on the original plans.

Corrosion Testing

The vertical pole was tested for corrosion. Ultrasonic thickness testing was completed within 1 to 2 inches of the base plate at quarter sections (90 degrees around the pole in four locations).

Additional Testing

Depending on the coating of the existing vertical pole, either enhanced magnetic particle inspection or a liquid penetrant test was conducted as determined by the professional engineer on-site. Based on the coating inspection, these tests were not required at any location at the time of data collection.

Structural Assessment Results

One traffic signal pole was identified as being an immediate concern. The northwest signal pole at Fifth Avenue and Spruce Street was identified as having severe cracking of the pole and a deteriorated foundation. Poles at four other intersections were identified as having structural damage and should be replaced within the next five years:

- Limit Street and Hughes Road – Northwestern and southeastern corners
- Limit Street and Maple Avenue / Shrine Park Road – All corners
- Limit Street and 10th Street – Southwestern and southeastern corners
- Emergency Signal south of Limit Street – Western side of street

The remaining poles reviewed are believed to be structurally sound and should be reassessed in five to eight years. Numerous poles have visual imperfections or missing anchor bolt covers. These defects do not reduce the strength of the pole or reduce the service life. The detailed structural review information is contained within the Field Maps application and a summary table is in **Appendix A**.

2.2 Nonstructural Assessment

A full assessment of the nonstructural components and equipment was conducted at all signals. Nonstructural refers to all other aspects of the intersection, including cabinet firmware, conduit runs, pedestrian accommodations, signal pole equipment, lane configurations, and any other technology located at the intersection. All field-collected data and photos were compiled using the Field Maps application.

Intersection Lane Configurations

Existing intersection geometrics were back-checked against aerial imagery for consistency. Any discrepancies were noted in the “Intersections” layer, which primarily included the recent geometric updates at 20th Street and Eisenhower Road.

Cabinet Type and Condition

All cabinets were opened and inspected for hardware and visual conditions. Cabinets were noted with available shelf and conduit space. Cabinets were either surface mounted or pole mounted. All cabinets were found to be in good condition with four locations at full capacity:

- 10th Street and Shawnee Street
- 20th Street and Eisenhower Road
- Second Avenue and Thornton Street
- Shrine Park Road and Eisenhower Road

Controller Type and Firmware Version

Controller types and firmware versions were recorded at all intersections. Controller types primarily included EPAC300 and Siemens m50/m60. Intelight and several other Eagle controller types were also noted.

Firmware versions varied; several locations had firmware that was 20-plus years old. Older firmware versions are prevalent between Fourth Street and Seventh Street and in the downtown corridor. This data will be used in prioritizing controller and firmware updates that reflect city specifications.

Communications Type

The only communications system noted at any signal was at Fourth Street and Eisenhower Road, which is equipped with wireless communication capabilities. No other location currently contains wireless or fiber. Future communication recommendations will be included in the updates and replacement schedule.

Detection and Preemption Type

Intersections were checked and photographed for detection type, direction, and condition. Of the 40 locations reviewed, 9 intersections use radar detection, 2 intersections use video detection, 11 intersections use loops, and 1 intersection uses both radar and loops.

Currently, 17 intersections have no vehicular detection; most of these are located downtown. The only location with advanced detection was at 10th Avenue and Pennsylvania Street. All other locations only had stop bar detection.

Emergency vehicle preemption (EVP) was verified at each approach. EVP was noted to be present at 34 intersections (of which five of the intersections have detection in all four directions), and six intersections are currently not equipped with EVP devices. All existing preemption devices were noted to be infrared.

Pull Boxes and Conduit

All pull boxes were opened and locations were recorded with type – either metal, concrete, or preform – and any visible damage was noted. Twelve intersections were observed to have damage, some with damage to multiple pull boxes.

Using the Field Maps application, conduit runs were laid out connecting poles, pull boxes, loops, and cabinets. The type (polyvinyl chloride [PVC], high-density polyethylene [HDPE], or galvanized steel) and size of each conduit run were recorded. All conduit runs were in good condition with no apparent damage to note.

Signal and Pedestrian Heads

The size and number of signal and pedestrian heads were recorded for each pole. The light type, whether incandescent or light-emitting diode (LED), was also recorded and photographed. Six intersections were found to have incandescent bulbs; remaining used LED for signal heads.

Pedestrian signal heads were reviewed for their type, size, and condition. Nine intersections have been upgraded to countdown pedestrian heads for all approaches, while the remaining locations use “hand/person” pedestrian heads. A hand/person pedestrian head is a traffic signal that shows a red hand when pedestrians may not cross the intersection and a walking man when pedestrians may cross the intersection. Eighteen intersections contain some type of pedestrian signal head damage/deterioration.

Battery Backup and Power Supply

The location of the power supply to the cabinet was recorded at each intersection. If applicable, the battery backup for the controller was also recorded and both power supplies were photographed.

Approximately half of the signals contain battery backup, one of which (Maple Street and Limit Street) was malfunctioning at the time of evaluation. The remaining signals are not equipped with battery backup and rely on the main power supply.

Streetlight Type

Streetlights were recorded if attached to a signal or pedestrian pole. Light types such as high-pressure sodium (HPS) or LED were recorded and photographed.

Most streetlights were found to be LED; the only exceptions were found at 10th Street and Spruce Street and at Fourth Street and Spruce Street. Streetlights at two intersections, Seventh Street and Metropolitan Street and Hughes Road and Limit Street, were observed to be in poor condition.

Pedestrian Button Location

Pedestrian button locations were recorded on either individual or shared signal poles. Buttons were evaluated to ensure they were Americans with Disabilities Act (ADA)-compliant for level landing, distance to curb, and overall operations. Over half of the push buttons were found to be installed in a location exceeding allowable ADA requirements.

Pedestrian detection type was recorded, which included passive or active, button, speaker, or vibrotactile, and if pedestrian recall mode was implemented. Eleven of the intersections were noted to have some type of detection issue at the time of data collection.

Accessible Ramp Location, Type, Grade, and Detectable Warning

Landings and crosswalk ramps were evaluated for ADA compliance. The type of ramp was either directional or nondirectional, and they were noted for acceptable grades and if detectable warning was provided in the form of truncated domes. The location and imagery of each ramp is available on the Field Map application.

Many study intersections were found to have noncompliant pedestrian ramps on at least one corner of the intersection. These locations are noted in the summary table and within the Field Map application.

Nonstructural Assessment Summary

The age and type of components and equipment assessed on the signals throughout the city vary greatly. All information is compiled and located within the Field Maps application and can be found on the city's geographic information system (GIS). A summary table of all nonstructural signal elements is in **Appendix A**.

ADA ramp condition and compliance were not considered with the prioritization schedule. Ramps that are in poor condition or noncompliant should be reconstructed when street reconstruction or signal replacement projects occur or when funding is available. ADA ramp condition and compliance is detailed in the summary table in **Appendix A**.

2.3 Current Best Practices

A variety of traffic signal hardware and software are currently in operation within the City of Leavenworth. Based on national best practices and conversations with city staff, **Table 1** and **Table 2** were developed to guide signal system improvement decisions. The city's approved product list should be referenced for guidance on specific equipment models to be specified. **Table 1** and **Table 2** should be used in tandem with the recommended replacement schedule illustrated in **Table 3**, **Table 4,** and **Appendix B** to determine what the replacement plan should be for any given intersection.

Table 1. General Equipment Guidance.

Equipment	Preferred Type	Alternative	Notes
Cabinet	NEMA	-	Pad mounted
Controller	Siemens Advanced Traffic Controller (ATC)	-	Consistent make and model help maintenance and operations.
Vehicular Detection	Radar	Video, Loops	Replace old loops with radar. Advanced detection can assist with signal coordination.
Pedestrian Detection	Accessible Pedestrian Signals (APS)	Non-APS Buttons	APS systems are not yet required but are expected to be the standard in the near future.
Streetlight	LED	-	-
Signal Heads	12-inch LED	-	Phase out 5-section signal heads.
Pedestrian Signal Heads	16-inch Countdown LED	-	Replace flashing hand and person symbol signal heads with countdown heads.
Conduit	High-density polyethylene (HDPE)	Polyvinyl Chloride (PVC)	Colored conduits could be used to identify their use (e.g., orange conduit for fiber).
Backup Power	Battery	-	-
Conflict Monitor	Malfunction Management Unit	-	Include an ethernet port and meet or exceed current NEMA standards; at least 16 channels.
Emergency Vehicle Preemption (EVP) Opticom System	Infrared System	GPS	Install along mainline and all directions of critical intersections. Coordinate with Fire Department.
Closed Circuit Television (CCTV) Camera	Pan, tilt, and zoom (PTZ), 360-degree	Fixed Cameras	Install at intersections of interest. Communication infrastructure required.
Communication (Network)	Fiber	Wireless, Cellular	Wireless requires adequate line of sight; cellular requires a monthly subscription.
Communication (in Cabinet)	Ethernet Switch	-	Fiber requires intelligent transportation system (ITS) drop cable routed to city fiber. Wireless requires transmitter devices.

Table 2. List of Best Practices.

Topic	Best Practice
American with Disabilities Act (ADA) Ramps	Sidewalk to crosswalk connections should be designed with a level landing at the push button and at the top of the ramp where pedestrians are expected to wait to cross or required to turn. Level is defined as a 2 percent grade or less in all directions. The ramp itself should be less than a 2 percent grade across with less than an 8.33 percent grade down the slope.
Push Buttons	Push buttons should be no more than 10 feet (6 feet is desirable) from the curb of the street it is designated to cross and should be no more than 10 inches from a level landing to be wheelchair accessible. Push buttons must also be within 5 feet of the outside edge of the crosswalk.
Signal Timing	Signal timings should be determined by the city engineer or consultant and coordinated along major roadways as appropriate. Yellow and red times should be calculated for each approach/movement based on speeds, grades, and measured clearance distances. Pedestrian crossing times should also be calculated based on appropriate field measurements.
Communications	Communications should be installed along important thoroughfares throughout the city as time and budget allow. Once a communications network has been established, new intersections should be equipped and brought online. It is recommended to systematically integrate communications with a holistic approach.
Central Management Software	As the communications network is expanded, adopting a central management software will allow the city to remotely monitor intersections and make changes as needed. TransSuite is already available to the City through the continued partnership with Operation Green Light (OGL), but other services are available.
Controllers/ Firmware	Controller and firmware consistency across the signals will simplify management and troubleshooting efforts when problems arise. It is important to select a controller and firmware that are compatible and stable for the city's eventual central management software.
Traffic Operations Center	If possible, a traffic operations center (TOC) should be planned. The City of Olathe is a good model to follow for Leavenworth's needs, because it has integrated communications across the city with a TOC capable of real-time troubleshooting and event-specific traffic demand. In the interim, as signals are connected, operations could be monitored by laptop with proper software. A continued partnership with OGL serves as another means to manage the signal network. Fourth Street from Eisenhower Road to the south is already on the OGL network. If communication is provided to additional signals, these signals could be added to the OGL network.

As technology continues to advance, the recommendations listed in this report should be reevaluated on an ongoing basis to reflect those advancements.

2.4 Future Best Practices

Connected and Automated Vehicles (CAVs) will be a part of the future transportation industry. The automotive industry has made great strides in advanced driving assistance support (ADAS), which refers to new car features that promote driver safety such as lane departure correction and automatic emergency braking. Though these advancements increase driver safety now, they also pave the way for future automated driving systems (ADS). These autonomous vehicles will save lives, increase roadway capacity for more effective roadways, and promote access to transportation to potentially underserved citizens. The following commentary outlines specifics on how the transportation practice is changing and what can be done in the near term to make those transitions smooth.

Connected Vehicles

There are varying degrees to which a vehicle can be connected, which refers to a vehicle's ability to communicate with the objects around it. The most prevalent connections are vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I). However, the eventual goal is for a vehicle to be connected to everything that can be encountered on a roadway and react accordingly. Progress for connected vehicles has been negatively affected in recent years because of issues between the Federal Communications Commission (FCC) and the Federal Highway Administration (FHWA). Specifically, the changes in protocols and frequencies of connected vehicles and whether they should be dedicated short-range communications (DSRC) that are derived from Wi-Fi or cellular vehicle-to-everything (C-V2X) that is derived from long-term evolution (LTE). Another connected vehicle device is a Signal Phase and Timing (SPaT) message that relays real-time data about the green and red bands at an upcoming intersection to the car. Though this device is high in potential, few operating vehicles can use the data at this time.

Automated Vehicles

Automated vehicles, on the other hand, are making great strides toward deployment. Automation is the ability for a vehicle to operate on its own and make real-time traffic decisions to the benefit of its passengers. However, many challenges are associated with a self-driving vehicle, namely ensuring that the vehicle "sees" the same thing that a human being sees. Areas of the country with poor pavement markings and signage are not ready for automation, and the difficulty of snow obscuring such markings and signage, specifically because of the lack of snow removal, is still being tested. For this reason, automation has seen the most growth in snow-free states such as Florida, Arizona, and Texas.

Preparation for the Future

Several things, big and small, can be done in preparation for CAVs. First, make sure that pavement marking and signing is clear and up to date in the city. Some cities have also increased the standard pavement marking lane width to 6 inches. This change will not only promote safety for drivers now, but also prepare for automated vehicles when the time comes. Participating on the state level is another way to get the conversation started about future innovations and funding. A few initial ways to accomplish this is to stay in contact with the Kansas Department of Transportation (KDOT) Division of Innovative Technologies and Operation Green Light, because both programs keep their finger on the pulse of new technologies.

The largest step that the City of Leavenworth can take at this time is introducing communications to signals. Except for Fourth Street and Eisenhower Road, no communication infrastructure is in place, even at recently updated signals that have cabinet space to introduce the feature. Fiber-optic cable (at least 96-count) is undoubtably the most reliable communication device. However, a wireless communication system is an alternative option where adequate line of sight or cellular subscription can be provided. Both will likely integrate with CAVs in the future.

If the City of Leavenworth is looking above and beyond for a way to accelerate CAVs in the region, investing in a shuttle pilot project is one of the most prominent ways to promote innovation in the eye of the public. This could be a challenging task, however, especially with the observed difficulties of snowy conditions. Alternatively, a city research task that studies former and current shuttle projects would be beneficial.

3. PRIORITIZATION AND RECOMMENDATIONS

The structural and nonstructural data was reviewed to determine life expectancy and prioritize replacement for the City of Leavenworth. To provide flexibility, two options with varying levels of funding are depicted below. Considerations were made both for individual updates and entire signal reconstruction. Considerations such as traffic signal equipment age, pole base integrity, and adherence to the aforementioned best practices were considered. The schedule for signal replacement and other more time sensitive groupings of improvements were thus deduced.

The Lite Prioritization Plan (**Table 3** and **Appendix B)** presents a plan to connect all existing 43 signals with wireless communications and includes critical updates to 40 signals over the next 15 years.

The Full Prioritization Plan (**Table 4** and **Appendix B)** presents a plan to connect all existing 43 signals with fiber communications and full replacement of 40 signals over the next 25 years.

Based on a review of the traffic signal infrastructure of the City of Leavenworth, the following actions are recommended:

1. Implement one of the following replacement plans illustrated in either **Table 3** or **Table 4.** A detailed signal inventory and a long-term replacement plan are provided in **Appendix A** and **Appendix B**.
2. Possibly use these plans in tandem. For example, holistic upgrades could be achieved when funds are available; wireless communication can be installed in less critical corridors with line of site; and light upgrades can be performed when necessary.
3. Make a communications installation plan a high priority. One option that may expedite and reduce cost is to partner with other entities to implement a shared fiber corridor. Potential partners to consider in this effort include the following:
    a. Schools, universities, and libraries
    b. Hospitals and the Veterans Affairs Medical Center
    c. Fire, police, and state highway patrol stations and their areas of interest
    d. KDOT
    e. County of Leavenworth
    f. Private communications providers

4. Establish additional capital improvement plans to improve the city's signal system, which would be beneficial. Examples of possible capital improvement plans and their general costs include the following:
    a. Signal Timings – $5,000 per signal
    b. Traffic Operations Center – $30,000 to $50,000

        This option would be beneficial once signals have been connected with communications to manage signals, update timings, and troubleshoot without having to visit the intersection.
5. Implement a standard inspection schedule at five-to-eight-year increments. This inspection rotation should at minimum include a structural evaluation but also consider full inspection of signal equipment inventory similar to the data collection procedures outlined in **Section 2.2.**
6. Update the GIS system with the relevant equipment information whenever new signal equipment is installed/modified.
7. Review funding opportunities. Potential grant opportunities include the following:
    a. Mid-America Regional Council (MARC) Surface Transportation Block Grant (STBG) Funds
    b. KDOT Innovative Technology Grant
    c. KDOT Cost Share Program

The replacement plan spreadsheet was formatted in a user-friendly way for continuous, ongoing use. With the ArcGIS Field Maps application, the City of Leavenworth will be able to upload new data as desired. Problem areas at specific signals will highlight automatically; therefore, prioritization order can be adjusted as needed.

Table 3. Lite Prioritization Plan (Near-term)

Improvement	Fiscal Year / Improvement ($1,000s)					
	2023	2024	2025	2026	2027	2028
Wireless Communications Fourth Street (Metropolitan Street to Poplar Street)	$90					
Wireless Communications Fourth Street (Poplar Street to Eisenhower Road)		$60				
Wireless Communications Downtown Signals		$115				
Wireless Communications Spruce Street			$45			
Wireless Communications Limit Street			$45			
Wireless Communications 10th Avenue			$70			
Wireless Communications Eisenhower Road			$45			
Wireless Communications 20th Street			$45			
Fifth Avenue & Spruce Street	$35					
Maple Avenue & Limit Street				$120		
Hughes Road & Limit Street				$66		
10th Avenue & Limit Street	(KDOT Funded Replacement)					
20th Street & Fire Station					$29	
Fourth Street & Spruce Street					$56	
Fourth Street & Idaho Street						$21
Fourth Street & Muncie Road						$27
Fifth Street & Delaware Street						$27
Total Cost	**$125**	**$175**	**$250**	**$186**	**$85**	**$75**

Note: Estimated costs are in 2022 dollar-values.

Table 4. Full Prioritization Plan (Near-term)

Improvement	Fiscal Year / Improvement ($1,000s)					
	2023	2024	2025	2026	2027	2028
Fiber Communications Fourth Street (Metropolitan Street to Poplar Street)		$425				
Fiber Communications Fourth Street (Poplar Street to Eisenhower Road)			$590			
Fiber Communications Downtown Signals			$225			
Fiber Communications Spruce Street				$95		
Fiber Communications Limit Street				$115		
Fiber Communications 10th Avenue				$490		
Fiber Communications Eisenhower Road					$440	
Fiber Communications 20th Street					$525	
Fifth Avenue & Spruce Street	$325					
Maple Avenue & Limit Street						$325
Hughes Road & Limit Street						$325
10th Avenue & Limit Street	(KDOT Funded Replacement)					
Total Cost	**$325**	**$425**	**$815**	**$700**	**$965**	**$650**

Note: Estimated costs are in 2022 dollar-values.

APPENDIX A

Assessment Summary

ASSESSMENT SUMMARY

Location	Installation Year	Battery Backup	Cabinet				Conduit Damage?	Pole Data										Pole Structural Assessment	Pullbox Damage?	ADA Ramp
			Controller	Firmware	Communications Type	Full?		Pole/Base Damage?	Street Light	Opticom	Vehicular Head Bulb Type	Vehicular Detection Type	Vehicular Detection Working?	Pedestrian Head Type	Pedestrian Head Condition	Pedestrian Detection Working?	Pedestrian Detection Location			
10th Avenue & Eisenhower Rd	2008	Present	Siemens m50	OS 3.34g						Partial	Incandescent	Video		Hand	Poor	Malfunctioning	Non-Compliant			Non-Compliant
10th Avenue & Gatewood St	1999	None	EPAC300	2.34 Sept 95						Partial	LED	Loop		Hand	Good		Non-Compliant			Non-Compliant
10th Avenue & Limit St	1996	None	EPAC300	3.33e May 2005						Partial	Incandescent	Loop		Hand	Poor		Non-Compliant	Structural Concern		Non-Compliant
10th Avenue & Pennsylvania St	2019	Present	Siemens m50	3.34h Jan/14						None	LED	Radar		Hand	Good		Non-Compliant			Non-Compliant
10th Avenue & Thornton St	2012	Present	Eagle ATCnx	3.34b June 08						Partial	LED	Radar		Hand	Good	Malfunctioning	Non-Compliant			Non-Compliant
10th Street & Shawnee St	2019	None	EPAC300	2.32 Sept/94		Full		Poor		Partial	LED	Loop		Hand	Good		Non-Compliant			Non-Compliant
10th Street & Spruce St	1987	Present	Siemens m60	SEPAC 5.2.2 Mar/2020						All Directions	LED	Loop	Malfunctioning	Hand	Poor	Malfunctioning	Non-Compliant			Non-Compliant
20th Street & Eisenhower Rd	2017	Present	Siemens m60			Full				All Directions	LED	Radar		Count	Good		Non-Compliant			Non-Compliant
20th Street & Fire Station		None	EPAC300					Poor		Partial	Incandescent	N/A		N/A	N/A			Structural Concern	Ugly	Compliant
20th Street & Spruce St	1995	Present	EPAC300	3.32b Nov/99						Partial	Incandescent	Loop		Hand	Good	Malfunctioning	Non-Compliant			Non-Compliant
20th Street & Vilas St	2007	Present	Intelight					Poor		Partial	Incandescent	Radar		Count	Good		Non-Compliant		Bad	Compliant
2nd Avenue & Limit St	2012	Present	Intelight	MaxTime 2.5.3						Partial	LED	Radar		Count	Good	Malfunctioning			Bad	Non-Compliant
2nd Avenue & Thornton St	2019	Present	Siemens m60	SEAPAC 3.53 March 2017		Full				Partial	LED	Radar		Count	Good		Non-Compliant			Non-Compliant
4th Street & Cherokee St																				
4th Street & Delaware St																				
4th Street & Eisenhower Rd	2022	Present	Siemens m50	4.01f (12/07)	Wireless					All Directions	Incandescent	Loop		Hand	Poor		Non-Compliant		Ugly	Non-Compliant
4th Street & Idaho St	1992	None	Siemens m60	SEPAC 5.2.2 (3/2020)						Partial	LED	None		Hand	Good		Non-Compliant		Bad	Non-Compliant
4th Street & Johnson St	1993	None	EPAC300	2.34s Nov/00						None	LED	Loop		Hand	Good		Non-Compliant			Non-Compliant
4th Street & Limit St	1980	Present	Siemens m60	SEPAC 5.2.2(6/2019)						Partial	LED	Loop		Hand	Poor	Malfunctioning	Non-Compliant			Non-Compliant
4th Street & Marion St	2017	Present	Siemens m50	3.4h Jan/14						Partial	LED	Radar		Count	Good		Non-Compliant			Non-Compliant
4th Street & Metropolitan Ave	1994	Present	Siemens m60	3.58 Mar/17						Partial	LED	Mix		Hand	Good	Malfunctioning	Non-Compliant			Compliant
4th Street & Muncie Rd	1991	Present	Eagle	3.33e (4/07)						Partial	LED	None		None	N/A				Bad	Compliant
4th Street & Poplar St	2016	Present	Siemens m60	SEPAC 3.58 mar/17						None	LED	Radar		Count	Poor	Malfunctioning	Non-Compliant			Non-Compliant
4th Street & Shawnee St																				
4th Street & Spruce St		Present	EPAC300	2.34s Nov/00						Partial	LED	None		Hand	Poor			Structural Concern		Non-Compliant
5th Avenue & Spruce St		Present	EPAC300	3.30d Jan/99						Partial	LED	None		Hand	Poor	Malfunctioning	Non-Compliant	Structural Failure	Ugly	Non-Compliant
5th Street & Cherokee St	2007	None	EPAC300	2.34s Nov/00						Partial	LED	None		Hand	Poor				Bad	Non-Compliant
5th Street & Delaware St		None	EPAC300	2.32 Sept/94						Partial	LED	None		Hand	Poor				Bad	Non-Compliant
5th Street & Shawnee St	2009	None	EPAC300	2.34f Feb/97						Partial	LED	None		Hand	Poor					Non-Compliant
5th Street & Spruce St		None	Eagle EPAC300	2.22 Aug/92						Partial	LED	None		Hand	Good					Non-Compliant
6th Street & Cherokee St	2003	None	EPAC300	2.34sNov/00						None	LED	None		Hand	Poor				Bad	Non-Compliant
6th Street & Shawnee St		None	EPAC300	2.34s June/96						Partial	LED	None		Hand	Poor					Non-Compliant
7th Street & Cherokee St		None	EPAC300	2.32 Aug/1992						Partial	LED	None		Count	Poor					Non-Compliant
7th Street & Delaware St		None	EPAC300	3.32c Aug/00						All Directions	LED	None		Hand	Poor					Non-Compliant
7th Street & Metropolitan Ave	1994	Present	Siemens m60	3.58 Mar/17					Bad	Partial	LED	Radar		Hand	Poor		Non-Compliant			Non-Compliant
7th Street & Ottawa St	1983	None	EPAC300	3.32m Nov/03						Partial	LED	Loop		Hand	Good	Malfunctioning	Non-Compliant			Non-Compliant
7th Street & Shawnee St		None	EPAC300	2.34s Nov/00						All Directions	LED	None		Hand	Good					Non-Compliant
Broadway St & Cherokee St		None	EPAC300	3.34g Feb/10						None	LED	None		Hand	Good	Malfunctioning	Non-Compliant		Ugly	Non-Compliant
Broadway St & Shawnee St	2012	Present	Siemens m60	3.5 March/17						Partial	LED	None		Count	Good		Non-Compliant			Compliant
Broadway St & Spruce St		None	EPAC300	2.34 Sept/95						None	LED	None		Hand	Good					Non-Compliant
Hughes Rd & Limit St	1980	None	EPAC300	2.43a(6/1996)				Poor	Bad	Partial	LED	Loop		Hand	Poor			Structural Concern		Non-Compliant
Maple Ave & Limit St	1977	Malfunctioning	EPAC300	2.34s Nov 2000				Poor		Partial	LED	Loop		Hand	Good		Non-Compliant	Structural Concern	Bad	Non-Compliant
Shrine Park Rd & Eisenhower Rd	2018	Present	Siemens m50	3.4g		Full				All Directions	LED	Video		Count	Poor		Non-Compliant			Non-Compliant

APPENDIX B

Prioritization Schedule

LITE REPLACEMENT PLAN - PROVIDES WIRELESS CONNECTIVITY TO ALL 43 SIGNALS, CRITICAL UPGRADES TO 40 EXISTING SIGNALS

	Location	Unit Cost (1,000s)	Projected Cost by Fiscal Year (in 1,000s)																								
			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047
Communications	Wireless Communications - 4th Street (Metro. - Poplar)	$90	1																								
	Wireless Communications - 4th Street (Poplar - Eisen.)	$60		1																							
	Wireless Communications - Downtown Signals	$115		1																							
	Wireless Communications - Spruce Street	$45			1																						
	Wireless Communications - Limit Street	$45			1																						
	Wireless Communications - 10th Avenue	$70			1																						
	Wireless Communications - Eisenhower Road	$45			1																						
	Wireless Communications - 20th Street	$45			1																						
Intersection Upgrades	10th Avenue & Limit St (KDOT Funded)	-																									
	5th Avenue & Spruce Street	$35	1																								
	Hughes Rd & Limit St	$120				1																					
	Maple Ave & Limit St	$66				1																					
	20th Street & Fire Station	$29					1																				
	4th Street & Spruce St	$56					1																				
	4th Street & Idaho Street	$21						1																			
	4th Street & Muncie Rd	$27						1																			
	5th Street & Delaware St	$27						1																			
	5th Street & Spruce St	$27							1																		
	5th Street & Cherokee St	$27							1																		
	5th Street & Shawnee St	$27								1																	
	6th Street & Cherokee St	$27								1																	
	6th Street & Shawnee St	$27									1																
	7th Street & Cherokee St	$27									1																
	7th Street & Delaware St	$27										1															
	7th Street & Shawnee St	$27										1															
	7th Street & Metropolitan Ave	$3											1														
	Broadway St & Spruce St	$27											1														
	Broadway St & Cherokee St	$27												1													
	Broadway St & Shawnee St	$21												1													
	4th Street & Limit St	$0																									
	7th Street & Ottawa St	$6													1	1											
	10th Street & Spruce St	$0																									
	4th Street & Johnson St	$6													1	1											
	4th Street & Metropolitan Ave	$0																									
	20th Street & Spruce St	$6													1	1											
	10th Avenue & Gatewood St	$6													1	1											
	20th Street & Vilas St	$6													1	1											
	10th Avenue & Eisenhower Rd	$0																									
	10th Avenue & Thornton St	$6													1	1											
	2nd Avenue & Limit St	$6													1	1											
	4th Street & Poplar St	$0																									
	20th Street & Eisenhower Rd	$0																									
	4th Street & Marion St	$0																									
	Shrine Park Rd & Eisenhower Rd	$0																									
	10th Avenue & Pennsylvania St	$0																									
	10th Street & Shawnee St	$6													1	1											
	2nd Avenue & Thornton St	$0																									
	4th Street & Eisenhower Rd	$0																									
	Total		***$125***	***$175***	***$250***	***$186***	***$85***	***$75***	***$54***	***$54***	***$54***	***$54***	***$30***	***$48***	***$48***	***$48***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***

Traffic Signal Unit Cost Notes:
In 2022 Dollar-values.
Estimated costs include (materials + installation).
Intersection upgrade includes structural/lighting concerns & consistent controllers/firmware.
Does not include roadway, sidewalk, lighting, or other non-traffic signal items.

FULL REPLACEMENT PLAN - PROVIDES FIBER OPTIC CONNECTIVITY TO ALL 43 SIGNALS, FULL UPGRADE TO 40 EXISTING SIGNALS

	Location	Unit Cost (1,000s)	Projected Cost by Fiscal Year (in 1,000s)																						
			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Communications	Fiber Communications - 4th Street (Metro. - Poplar)	$425		1																						
	Fiber Communications - 4th Street (Poplar - Eisen.)	$590			1																					
	Fiber Communications - Downtown Signals	$225			1																					
	Fiber Communications - Spruce Street	$95				1																				
	Fiber Communications - Limit Street	$115				1																				
	Fiber Communications - 10th Avenue	$490				1																				
	Fiber Communications - Eisenhower Road	$440					1																			
	Fiber Communications - 20th Street	$525					1																			
Intersection Replacements	10th Avenue & Limit St (KDOT Funded)	-																								
	5th Avenue & Spruce Street	$325	1																							
	Maple Ave & Limit St	$325						1																		
	Hughes Rd & Limit St	$325						1																		
	20th Street & Fire Station	$100							1																	
	4th Street & Spruce St	$325							1																	
	4th Street & Muncie Rd	$325								1																
	4th Street & Idaho Street	$325								1																
	5th Street & Delaware St	$325									1															
	5th Street & Spruce St	$325									1															
	5th Street & Cherokee St	$325										1														
	5th Street & Shawnee St	$325										1														
	6th Street & Cherokee St	$325											1													
	6th Street & Shawnee St	$325											1													
	7th Street & Cherokee St	$325												1												
	7th Street & Delaware St	$325												1												
	7th Street & Shawnee St	$325													1											
	7th Street & Metropolitan Ave	$325													1											
	Broadway St & Spruce St	$325														1										
	Broadway St & Cherokee St	$325														1										
	Broadway St & Shawnee St	$325															1									
	4th Street & Limit St	$325															1									
	7th Street & Ottawa St	$325																1								
	10th Street & Spruce St	$325																1								
	4th Street & Johnson St	$200																	1							
	4th Street & Metropolitan Ave	$400																	1							
	20th Street & Spruce St	$325																		1						
	10th Avenue & Gatewood St	$325																		1						
	20th Street & Vilas St	$325																			1					
	10th Avenue & Eisenhower Rd	$250																			1					
	10th Avenue & Thornton St	$325																				1				
	2nd Avenue & Limit St	$250																				1				
	4th Street & Poplar St	$200																					1			
	20th Street & Eisenhower Rd	$325																					1			
	4th Street & Marion St	$325																						1		
	Shrine Park Rd & Eisenhower Rd	$325																						1		
	10th Avenue & Pennsylvania St	$325																							1	
	10th Street & Shawnee St	$400																							1	
	2nd Avenue & Thornton St	$325																								1
	4th Street & Eisenhower Rd	$325																								1
			$325	***$425***	***$815***	***$700***	***$965***	***$650***	***$425***	***$650***	***$650***	***$650***	***$650***	***$650***	***$650***	***$650***	***$650***	***$650***	***$600***	***$650***	***$575***	***$575***	***$525***	***$650***	***$725***	***$650***

Traffic Signal Unit Cost Notes:
In 2022 Dollar-values.
Estimated costs include (materials + installation).
Standard cost of $325k assumes 4 mast arm poles and pedestrian poles as needed.
Intersection cost assumes no CCTV (additional) or fiber optic upgrades (separate item).
Does not include roadway, sidewalk, lighting, or other non-traffic signal items.

FIBER OPTIC CABLE INSTALLATION - COST ASSUMPTIONS

S/I FO Cable	$	3.00	LF
S/I 10/100/1000 Switch	$	2,500.00	1 Each
S/I 3-1.25" Sch 40 HDPE	$	25.00	LF
Type III Pull box	$	1,800.00	1/800'
Splice enclosure	$	900.00	1/Int
Splices	$	60.00	6/Int
Gator Patch	$	1,200.00	1/Int

Area	Route Length (FT)	# of Int	# of PB	Conduit	Pullboxes	Fiber	Splices	Splice Enclosure	Switch	Gators	Area Total		Avg / LF	Avg / Mi
4th Street (Metro. - Poplar)	12000	8	15	$ 300,000.00	$ 27,000.00	$ 55,725.00	$ 2,880.00	$ 7,200.00	$ 20,000.00	$ 9,600.00	**$ 422,405.00**		$ 35.20	$ 185,858.20
4th Street (Poplar - Eisen.)#	15850	6	20	$ 452,250.00	$ 35,662.50	$ 68,718.75	$ 2,160.00	$ 5,400.00	$ 15,000.00	$ 7,200.00	**$ 586,391.25**		$ 37.00	$ 195,340.43
Downtown Signals*	7000	11	9	$ 175,000.00	$ 15,750.00	$ 35,025.00	$ 3,960.00	$ 9,900.00	$ 27,500.00	$ 13,200.00	**$ 280,335.00**		$ 40.05	$ 211,452.69
Spruce Street**	2500	3	3	$ 62,500.00	$ 5,625.00	$ 8,437.50	$ 1,080.00	$ 2,700.00	$ 7,500.00	$ 3,600.00	**$ 91,442.50**		$ 36.58	$ 193,126.56
Limit Street****	3250	3	4	$ 81,250.00	$ 7,312.50	$ 10,968.75	$ 1,080.00	$ 2,700.00	$ 7,500.00	$ 3,600.00	**$ 114,411.25**		$ 35.20	$ 185,874.28
10th Avenue***	15000	6	19	$ 375,000.00	$ 33,750.00	$ 50,625.00	$ 2,160.00	$ 5,400.00	$ 15,000.00	$ 7,200.00	**$ 489,135.00**		$ 32.61	$ 172,175.52
Eisenhower Road****	13750	3	17	$ 343,750.00	$ 30,937.50	$ 46,406.25	$ 1,080.00	$ 2,700.00	$ 7,500.00	$ 3,600.00	**$ 435,973.75**		$ 31.71	$ 167,413.92
20th Street***	16500	3	21	$ 412,500.00	$ 37,125.00	$ 55,687.50	$ 1,080.00	$ 2,700.00	$ 7,500.00	$ 3,600.00	**$ 520,192.50**		$ 31.53	$ 166,461.60
Total	**85850**	**43**	**107**	**$ 2,202,250.00**	**$ 193,162.50**	**$ 331,593.75**	**$ 15,480.00**	**$ 38,700.00**	**$ 107,500.00**	**$ 51,600.00**	**$ 2,940,286.25**		$ 34.25	$ 180,835.31

***Excludes 10th/Shawnee St, 4th St**
****Excludes 10th & 20th St**
*****Excludes Eisenhower**
****** Excludes 4th St**
#Includes 2nd/Thornton

WIRELESS COMMUNICATIONS INSTALLATION - COST ASSUMPTIONS

Wireless Subscriber Unit	$	6,000.00	Each
Wireless Access Unit	$	7,500.00	Each
S/I 10/100/1000 Switch	$	3,000.00	Each

Area	Route Length (FT)	# of Int	Wireless Equipment	Switch	Area Total
4th Street (Metro. - Poplar)	12000	8	$ 63,000.00	$ 24,000.00	**$ 87,000.00**
4th Street (Poplar - Eisen.)#	15850	6	$ 51,000.00	$ 18,000.00	**$ 69,000.00**
Downtown Signals*	7000	11	$ 81,000.00	$ 33,000.00	**$ 114,000.00**
Spruce Street**	2500	3	$ 33,000.00	$ 9,000.00	**$ 42,000.00**
Limit Street****	3250	3	$ 33,000.00	$ 9,000.00	**$ 42,000.00**
10th Avenue***	15000	6	$ 51,000.00	$ 18,000.00	**$ 69,000.00**
Eisenhower Road******	13750	3	$ 33,000.00	$ 9,000.00	**$ 42,000.00**
20th Street***	16500	3	$ 33,000.00	$ 9,000.00	**$ 42,000.00**
Total	**85850**	**43**	**$ 378,000.00**	**$ 129,000.00**	**$ 507,000.00**

***Excludes 10th/Shawnee St, 4th St**
****Excludes 10th & 20th St**
*****Excludes Eisenhower**
****** Excludes 4th St**
#Includes 2nd/Thornton

LITEREPLACEMENT PLAN EQUIPMENT - COST ASSUMPTIONS

Cost Estimates	
Traffic Signal Cabinet	$ 20,000
TS2 M60 Signal Controller	$ 5,000
Firmware Upgrade	$ 800
Mast Arm	$ 20,000
Left-turn Head (FYA)	$ 3,000
Vehicle Detection (Side Street Radar)	$ 17,500
Ped Pole	$ 2,200
APS Button	$ 900
CCTV Camera	$ 5,000
Opticom	$ 4,000
Battery Back-up	$ 5,000
Pedestrian Head	$ 800
ADA Ramps	$ 3,600
New Conduit/Cable	$ 30,000
Intersection Markings	$ 8,000
Intersection Lighting	$ 10,000
Contingency	20%

Cross Street	Equipment																	
	Controller		Firmware Upgrade		Signal Poles		Intersection Lighting		Side Street Vehicle Detection		Conduit System		Contingency		Int. Total	
5th Avenue & Spruce Street	1	$ 5,000		$ -	1	$ 20,000		$ -		$ -	0.125	$ 3,750	$ 5,750		$ 34,500	
Maple Ave & Limit St	1	$ 5,000		$ -	4	$ 80,000		$ -		$ -	0.5	$ 15,000	$ 20,000		$ 120,000	
Hughes Rd & Limit St	1	$ 5,000		$ -	2	$ 40,000	0.25	$ 2,500		$ -	0.25	$ 7,500	$ 11,000		$ 66,000	
10th Avenue & Limit St	1	$ 5,000		$ -	1	$ 20,000		$ -		$ -	0.125	$ 3,750	$ 5,750		$ 34,500	
20th Street & Fire Station		$ -		$ -	1	$ 20,000		$ -		$ -	0.125	$ 3,750	$ 4,750		$ 28,500	
4th Street & Muncie Rd	1	$ 5,000		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 4,500		$ 27,000	
4th Street & Idaho Street		$ -		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 3,500		$ 21,000	
4th Street & Spruce St	1	$ 5,000		$ -	1	$ 20,000		$ -	1	$ 17,500	0.125	$ 3,750	$ 9,250		$ 55,500	
5th Street & Delaware St	1	$ 5,000		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 4,500		$ 27,000	
5th Street & Spruce St	1	$ 5,000		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 4,500		$ 27,000	
5th Street & Cherokee St	1	$ 5,000		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 4,500		$ 27,000	
5th Street & Shawnee St	1	$ 5,000		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 4,500		$ 27,000	
6th Street & Cherokee St	1	$ 5,000		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 4,500		$ 27,000	
6th Street & Shawnee St	1	$ 5,000		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 4,500		$ 27,000	
7th Street & Cherokee St	1	$ 5,000		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 4,500		$ 27,000	
7th Street & Delaware St	1	$ 5,000		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 4,500		$ 27,000	
7th Street & Shawnee St	1	$ 5,000		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 4,500		$ 27,000	
7th Street & Metropolitan Ave		$ -		$ -		$ -	0.25	$ 2,500		$ -	0	$ -	$ 500		$ 3,000	
Broadway St & Spruce St	1	$ 5,000		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 4,500		$ 27,000	
Broadway St & Cherokee St	1	$ 5,000		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 4,500		$ 27,000	
Broadway St & Shawnee St		$ -		$ -		$ -		$ -	1	$ 17,500	0	$ -	$ 3,500		$ 21,000	
4th Street & Limit St		$ -		$ -		$ -		$ -		$ -	0	$ -	$ -		$ -	
7th Street & Ottawa St	1	$ 5,000		$ -		$ -		$ -		$ -	0	$ -	$ 1,000		$ 6,000	
10th Street & Spruce St		$ -		$ -		$ -		$ -		$ -	0	$ -	$ -		$ -	
4th Street & Johnson St	1	$ 5,000		$ -		$ -		$ -		$ -	0	$ -	$ 1,000		$ 6,000	
4th Street & Metropolitan Ave		$ -		$ -		$ -		$ -		$ -	0	$ -	$ -		$ -	
20th Street & Spruce St	1	$ 5,000		$ -		$ -		$ -		$ -	0	$ -	$ 1,000		$ 6,000	
10th Avenue & Gatewood St	1	$ 5,000		$ -		$ -		$ -		$ -	0	$ -	$ 1,000		$ 6,000	
20th Street & Vilas St	1	$ 5,000		$ -		$ -		$ -		$ -	0	$ -	$ 1,000		$ 6,000	
10th Avenue & Eisenhower Rd		$ -		$ -		$ -		$ -		$ -	0	$ -	$ -		$ -	
10th Avenue & Thornton St	1	$ 5,000		$ -		$ -		$ -		$ -	0	$ -	$ 1,000		$ 6,000	
2nd Avenue & Limit St	1	$ 5,000		$ -		$ -		$ -		$ -	0	$ -	$ 1,000		$ 6,000	
4th Street & Poplar St		$ -		$ -		$ -		$ -		$ -	0	$ -	$ -		$ -	
20th Street & Eisenhower Rd		$ -		$ -		$ -		$ -		$ -	0	$ -	$ -		$ -	
4th Street & Marion St		$ -		$ -		$ -		$ -		$ -	0	$ -	$ -		$ -	
Shrine Park Rd & Eisenhower Rd		$ -		$ -		$ -		$ -		$ -	0	$ -	$ -		$ -	
10th Avenue & Pennsylvania St		$ -		$ -		$ -		$ -		$ -	0	$ -	$ -		$ -	
10th Street & Shawnee St	1	$ 5,000		$ -		$ -		$ -		$ -	0	$ -	$ 1,000		$ 6,000	
2nd Avenue & Thornton St		$ -		$ -		$ -		$ -		$ -	0	$ -	$ -		$ -	
4th Street & Eisenhower Rd		$ -		$ -		$ -		$ -		$ -	0	$ -	$ -		$ -	

LEAVENWORTH SIGNAL SYSTEM ASSESSMENT

Leavenworth, Kansas

September 2022

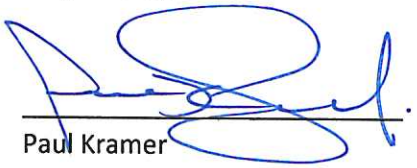
Olsson Project No. 021-08879

Policy Report

Continued discussion of American Rescue Plan Act (ARPA) funding

September 20, 2022

Prepared by:



Paul Kramer
City Manager

Issue

Continue discussion of planning and options related to funding provided by the American Rescue Plan Act (ARPA).

Update

Following the May 17 and July 19 ARPA discussions, staff will provide a brief update on a few of the items discussed.

1. **Critical Infrastructure**
    - **Wastewater Treatment Plant**
        i. The Commission has approved one of the three critical items for replacement.
        ii. Staff is currently working on the design and replacement process for the trickling filter and filter press projects.

2. **Community/Business Investment**
    - **Fire suppression and ADA upgrade grants**
        i. Based on feedback, the staff proposal has widened a bit, but remains focused on specific items mentioned in feedback from local businesses. A draft proposal is expected to be presented in October.

3. **City facility investment**
    - **City Hall**
        i. Staff recently completed the upgrade project to the City's HVAC system, which was approved by the Commission at the Sept. 13 meeting. Staff is currently working on documents related to the condensate piping replacement project.
    - **Riverfront Community Center**
        i. Staff issued a limited services contract to get basic design and cost information for the Commission related to the creation of a Parks and Recreation Office.
        ii. Staff has collected cost estimates for the replacement of weight and cardio equipment at the RFCC.

4. **Long-term efficiency/investment projects**

- **Energy sustainability at the Riverfront Community Center**
    i. Staff has been in contact with a solar panel company to begin to put together a return on investment report for the Commission.

5. **Other/Commission discretion**
    - **The purchase of one replacement fire truck**
        i. Fire Chief Birch has obtained the quote for the replacement truck. The apparatus is within the budgeted amount previously discussed. The lead team (see quote) is 28 months to delivery. It is recommend to move forward with the order.
    - **Refuse change**
        i. Based on the status of the discussion related to refuse changes, staff continues to hold a budget level appropriate for poly-cart implementation.
    - **Engineered traffic calming**
        i. Staff has completed some internal work on type and location of an initial traffic calming solution, and at this point would ask for Commission consensus approving soliciting professional design work, which would also provide a construction cost estimate.
    - **Wollman Aquatic Center Upgrades**
        i. Staff has been working on options, and recently hosted a site meeting to discuss options and pricing.

6. **Not included in the update, but still active:**
    - **Wilson Avenue repair**
    - **Boys and Girls Club**
    - **Housing project**
    - **Other recreational amenities**

Attachments:
Fire apparatus quote sheet

HGACBuy

CONRAD FIRE EQUIPMENT

Pierce

Apparatus Proposal

Customer Name: LEAVENWORTH, KS

Sales Rep: TREY JOHNSON

Submitted Date: 9/2/22

Expiration Date: 10/31/22

Apparatus Detail

Qty.	Description	Price
1	PIERCE IMPEL PUMPER	$ 823,446.00

Proposal Bid No.: 1025

Proposal Doc Date: 9/2/22

Performance Bond: YES

Warranty Period: Standard

Estimated Build Time: 28 MO

Payment Options

OPTION 1 (with Pre-Payment Discount)

Apparatus Purchase Price	$ 823,446.00
Trade-in Value	$ 0.00
Price After Trade-in	$ 823,446.00
Pre-Payment Discount	-$ 39,000.59
Extrication Rescue Tools	$ 0.00
Loose Equipment	$ 0.00
Options	$ 0.00
Due Upon Order	$ 784,445.41

OPTION 2 (w/o Pre-Payment Discount)

Apparatus Purchase Price	$ 823,446.00
Trade-in Value	$ 0.00
Price After Trade-in	$ 823,446.00
Pre-Payment Discount	N/A
Extrication Rescue Tools*	$ 0.00
Loose Equipment*	$ 0.00
Options	$ 0.00
Due Upon Delivery	$ 823,446.00

Payment Terms

OPTION 1 PRICING IS BASED ON FULL PAYMENT BEING MADE AT TIME OF ORDER.
OPTION 2 PRICING IS BASED ON FULL PAYMENT BEING MADE AT TIME OF PRODUCT DELIVERY. *RESCUE TOOLS AND LOOSE EQUIPMENT THAT ARE NOT PRE-PAID MUST BE PAID FOR UPON DELIVERY; TO SECURE THE QUOTED PRICING, TOOLS AND EQUIPMENT WILL BE PROCESSED IMMEDIATELY UPON ORDER PLACEMENT AND PAYMENT FOR TOOLS AND EQUIPMENT WILL BE DUE UPON DELIVERY, WHICH WILL BE PRIOR TO APPARATUS DELIVERY.*

Notes

NOTE: Pre-payment discounts are based on purchase price at time of order. Manufacturing build time is subject to change up to the time an order is placed. If deferred payment arrangements are required, the Customer must make such financial arrangements through a financial institution acceptable to Company. All taxes, excises and levies that Company may be required to pay or collect by reason of any present or future law or by any governmental authority based upon the sale, purchase, delivery, storage, processing, use, consumption, or transportation of the Product sold by Company to the Customer shall be for the account of the Customer and shall be added to the Purchase Price. All delivery prices or prices with freight allowance are based upon prevailing freight rates and, in the event of any increase or decrease in such rates, the prices on all unshipped Product will be increased or decreased accordingly. Delinquent payments shall be subject to a carrying charge of 1.5 percent per month or such lesser amount permitted by law. Company will not be required to accept payment other than as set forth in this Agreement. Company shall have and retain a purchase money security interest in all goods and products now or hereafter sold to the Customer by Company or any of its affiliated companies to secure payment of the Purchase Price for all such goods and products. In the event of nonpayment by the Customer of any debt, obligation or liability now or hereafter incurred or owing by the Customer to Company, Company shall have and may exercise all rights and remedies of a secured party under Article 9 of the Uniform Commercial Code (UCC) as adopted by the state of [KANSAS].