

Traffic Safety Improvements Project

TSPLOST 2023 Project 30

Proposed Project Concept

MAYOR & COMMISSION WORK SESSION

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Presentation Purpose and Agenda

Purpose: To present the Proposed Project Concept that provides evaluation criteria to objectively score traffic signal conditions as the Proposed Project Concept. Thereby providing staff with the ability to create a traffic signal replacement priority list generally utilizing quantitative data. In addition to creating the matrix, this process identifies the initial priority intersection list with the most need for traffic signal infrastructure replacement.

- Project History
- Initial Project Statement
- General Information and Conditions of Existing Signal Inventory
- Proposed Concept: Traffic Signal Evaluation Criteria
- Proposed Initial Priority Intersection List
- Budget Summary
- Next Steps
- Questions & Comments

Project History

- On May 24, 2022, the voters of Athens-Clarke County approved a referendum for the TSPLOST 2023 Program, which included Project 30 - Traffic Safety Infrastructure Improvements.
- On February 27, 2023, a Notice of Proposed Administrative Action (NOPAA) completed the current Tier Funding Schedule. The tiering schedule included funding for the Traffic Safety Infrastructure Improvements (TSPLOST 2023 Project 30) during Tiers 1-6 (FY23-FY28).
- On October 20, 2023, a Notice to Proceed was issued to on-call engineering firm KCI Technologies to support the development of the Traffic Signal Evaluation Criteria.
- On February 14, 2024, Transportation and Public Works Department, Traffic Engineering Division finalized the Traffic Signal Evaluation Criteria for the Traffic Safety Infrastructure Improvements (TSPLOST 2023 Project 30).

TSPLOST 2023 Project 30

Initial Project Statement

Project 30 – Traffic Safety Infrastructure Improvements Program - This program provides funding for capital improvements for traffic safety infrastructure improvements. Depending upon actual costs and funding availability, improvements may include, but are not limited to: rebuild/replace traffic signals and associated controls, increasing fiber optic capacity to control traffic signals, striping, guard rails and/or other recommendations made through the Corridor Safety Committee. To the extent allowed by law, budgeted project funds may be used as matching funds for leveraging grant opportunities. Additionally, to the extent allowed by law, other funding sources, including, but not limited to, grants, may be utilized to offset and/or reduce the project budget. Any unspent project funds that accrue as a result of the receipt of grants or other funding sources may be assigned to other approved TSPLOST projects.

General Information and Conditions of Existing Signal Inventory

The costs to maintain traffic signal equipment increases as the equipment ages beyond the national recommended lifespan of 13 years. The current average age of the 90 traffic signals owned by ACCGov is about 26 years. At current funding levels, it is expected that this number would continue to grow. Current investment levels fund signal replacement on a 90-year frequency. In addition to stretching operating resources, older signals increase the likelihood of malfunctions which threaten the safety and efficiency of the overall traffic signal system and the traveling public.

There are approximately 40 signalized intersections which the signal equipment is 40 years or older. Current conditions of older signals include:

- Do not meet minimum height restrictions
- Joint use utility poles (not controlled/managed by ACCGov staff)
- Old/brittle/broke wiring
- Collapsed conduit under pavement
- Pole fatigue

General Information and Conditions of Existing Signal Inventory – cont'd

Upgrading or rebuilding signal equipment with appropriate technology :

- Will bring intersections to current standards
- Provide higher level of service
- Maintains or improves air quality
- Provide more efficient routes
- Reduces vehicle miles traveled and traffic congestion
- Reduces time spent traveling in vehicles
- Promotes health and safety

Updated traffic signals can operate with adaptive technology and increase efficiency by serving a higher volume of roadway users. The increased service capability can promote project development and economic growth with improved access by vehicles, pedestrians and freight shipments/delivery.

General Information and Conditions of Existing Signal Inventory – cont'd

Operational standards and failing infrastructure for these traffic signals can create liability issues not only for ACCGov with public safety but also for employee safety. The hazards with the current equipment within the public right of way are at risk to all users of the roadway including motorists, pedestrians, bicyclists and the ACCGov technicians who service these intersections on a daily basis just to maintain operations. The 13 year national average lifespan of a traffic signals is due to the fact that the equipment is susceptible to weather, UV and 24/7 operations.

Traffic Engineering currently manages and maintains 177 Traffic Signals. This doesn't include other roadway safety striping and signage. Ownership of the Traffic Signals in Athens-Clarke County are:

- ACCGov 90 Signals
- CCSD 1 Signal
- GDOT 80 Signals
- UGA 6 Signals

Proposed Concept: Traffic Signal Evaluation Criteria

Traffic Engineering has historically relied on age and condition of existing signals to determine replacement strategy and priorities. While this approach has generally served the past needs of the department, current funding opportunities such as needs-based grants and collaborative partners such as the Georgia Department of Transportation have increasingly requested a more objective data-driven approach.

To support a more objective approach to prioritizing signal rebuilds, Traffic Engineering has developed the following Traffic Signal Evaluation Criteria and Criteria Descriptions to better collect and evaluate signalized infrastructure at intersections.

Infrastructure (35% of Scoring)

- **Overall Age** (1-5 scale)
- **Pole Condition** (1-5 scale)
- **Wiring Condition** (1-5 scale)

Maintenance [previous 12 months] (18% of Scoring):

- **# of Service Calls** (1-5 scale)
- **# of Signal Flash Events** (1-5 scale)

Proposed Concept: Traffic Signal Evaluation Criteria – cont'd

Standards Met (32% of scoring):

Determine if current design standards are met Yes /No Fields

- **12" Heads (Y/N)** Standard Dimension Traffic Head
- **Reflective Back Plates (Y/N)** Contrasted background to improve visibility
- **FYA (Y/N)** Flashing Yellow Arrow
- **332 Cabinet (Y/N)** Standard GDOT Traffic Controller Equipment Cabinet
- **Fiber (Y/N)** Connected to ACCGov Traffic Management System by fiber optic cable
- **Min. Head Heights (Y/N)** Meets GDOT standard clearance guidelines
- **Pavement Markings** (1-5 scale)
- **Pedestrian Accommodations** (1-5 scale)

Traffic Volumes at Location (5% of scoring):

- **Document either the Mainline and Side street or overall Average Daily Traffic (ADT)**
 - **Mainline ADT (1-5 scale) + Side Street ADT (1-5 scale)**

OR

- **Overall ADT (1-5 scale)**

Safety (previous 5 years) (10% of Scoring) :

- **Utilize GDOT's Numetric or other source, document crash history*
 - **# of Crashes** (1-5 scale)
 - **# of Fatalities** (1-5 scale)
 - **# of Pedestrian Crashes** (1-5 scale)

Sample Traffic Signal Evaluation Matrix

Traffic Engineering staff will utilize the Signal Evaluation Criteria to score a signalized intersection with the following Traffic Signal Evaluation Matrix creating a defined score to help objectively identify signal replacement priorities.



TRAFFIC SIGNAL EVALUATION MATRIX

Date: 2/14/24

LOCATION INFORMATION:

Intersection ID	89
Intersection Main Street	Hunter Ave
Intersection Cross Street	Tree Lane

INFRASTRUCTURE:

		Raw Score	
15%	Overall Age (mm/yy)	9/14/00	5
10%	Pole Condition (1-5)	3	3
10%	Wiring Condition (1-5)	2	2

Pole ACC Owned: of

MAINTENANCE (PREVIOUS 12 MONTHS):

9%	# of Service Calls	24	5
9%	# of Flash Events	2	3

STANDARDS MET:

2%	12" Heads (y/n)	no	5	we have signal heads
3%	Reflective Back Plates (y/n)	no	5	do we reflect
3%	FYA (y/n)	no	5	flash the yellow arrow
3%	332 Cabinet (y/n)	no	5	upgrade the cabinet
3%	Fiber (y/n)	no	5	we are connected
5%	Minimum Head Heights (y/n)	yes	1	heads get hit
3%	Pavement Markings (1-5)	3	3	missing something
10%	Ped Accommodations (1-5)	2	2	none of the above

TRAFFIC VOLUMES AT LOCATION:

2.5%	Mainline (ADT)	4500	and	3
2.5%	Side street (ADT)	2000		3
5.0%	Overall (ADT)	4800	or	2

Source: somewhere

SAFETY (PREVIOUS 5 YEARS):

2%	# of Crashes	45	5
4%	# of Fatalities	0	1
4%	# with Pedestrian	8	4

Source: somewhere else

INTERSECTION SCORE 3.46

MIN SCORE: 100 / MAX SCORE: 5.00

OTHER NOTES TO CONSIDER: (FUNDING, SIDEWALK CONNECTIVITY, JURISDICTION...)

just checking to see that everything works as expected

Proposed Concept: Sample Traffic Signal Evaluation Matrix – cont'd



DATE: 2/14/24
ID: 89

TRAFFIC SIGNAL EVALUATION MATRIX - DESCRIPTIONS

INFRASTRUCTURE

Pole Condition (1-5 scale)

- 1 Poles in good condition
- 2 Poles appear in good condition but need to be replaced to accommodate infrastructure updates
- 3 Poles appear in good condition but should be replaced due lifecycle expectations
- 4 1 Pole in need of replacement due to leaning/physical damage to pole
- 5 2+ Poles in need of replacement due to leaning/physical damage to pole

Wiring Condition (1-5 scale)

- 1 Conductors in good condition
- 2 Conductors appear in good condition but are spliced or additional are required to for signal updates
- 3 Conductors appear in good condition but do not meet current standards or should be replaced due to lifecycle expectations
- 4 Conductors show signs of stress/damage, outer jack it worn, signal cables are exposed, or conductors are twisted
- 5 Conductors show obvious damage, unwanted slices or signs of cracking exposing bare wire

MAINTENANCE (PREVIOUS 12 MONTHS): quantitative measure of the quality of the infrastructure

STANDARDS MET: determine if current design standards are met

Yes/No Fields:

- Yes Standard is met for entire intersection
No Standard is not met for entire intersection
Blank Standard is unknown or to be excluded in evaluation

Pavement Markings (1-5 scale)

- 1 Pavement Markings in good condition
- 2 Markings faded on less than 50% of intersection, no layout changes required
- 3 Markings out of date, missing and/or faded on less than 50% of intersection, layout changes required
- 4 Markings faded on more than 50% of intersection, no layout changes required
- 5 Markings out of date, missing and/or faded on more than 50% of intersection, layout changes required

Pedestrian Accommodations (1-5 scale)

- 1 Ped infrastructure in good condition, present on all legs and includes audible peds
- 2 Ped infrastructure in good condition, present on all legs but does not include audible peds
- 3 Ped infrastructure exists at intersection but is missing/broken on one leg of intersection
- 4 Ped infrastructure missing/broken on multiple legs of intersection
- 5 No ped infrastructure exists at intersection or is non-functional

TRAFFIC VOLUMES AT LOCATION: Document either the Mainline and Side street or overall

SAFETY (PREVIOUS 5 YEARS): Utilize GDOT's Numetric or other source, document crash history



DATE: 2/14/24
ID: 89

TRAFFIC SIGNAL EVALUATION MATRIX - SCORING BREAKDOWN

INFRASTRUCTURE:

	WEIGHT	1	2	3	4	5
Overall Age (mm/yy)	15%	< 5 years	6-7 years	8-9 years	10-12 years	> 13 years
Pole Condition (1-5)	10%	see Traffic Signal Evaluation Matrix - Descriptions				
Pole ACC Owned	n/a	not included in scoring				
Wiring Condition (1-5)	10%	see Traffic Signal Evaluation Matrix - Descriptions				

MAINTENANCE (PREVIOUS 12 MONTHS):

		1	2	3	4	5
# of Service Calls	9%	0 - 2 calls	3 - 4 calls	5 - 6 calls	7 - 9 calls	> 9 calls
# of Flash Events	9%	0 events	1 event	2 events	3 events	> 3 events

STANDARDS MET (YES/NO):

		1	5
12" Heads	2%	yes	no
Reflective Back Plates	3%	yes	no
FYA	3%	yes	no
332 Cabinet	3%	yes	no
Fiber	3%	yes	no
Minimum Head Heights	5%	yes	no

		1	2	3	4	5
Pavement Markings	3%	see Traffic Signal Evaluation Matrix - Descriptions				
Pedestrian Accommodations	10%	see Traffic Signal Evaluation Matrix - Descriptions				

TRAFFIC VOLUMES AT LOCATION:

		1	2	3	4	5
and Mainline (ADT)	2.5%	< 2000	2001-4000	4001-8000	8001-12,000	> 12,000
Side street (ADT)	2.5%	< 500	501-1000	1001-2000	2001-5,000	> 5,000
or Overall (ADT)	5%	< 2500	2501-5000	5001 - 10,000	10,001 - 17,000	> 17,000

SAFETY (PREVIOUS 5 YEARS):

		1	2	3	4	5
# of Crashes	2%	0	1 - 10	11 - 20	21 - 30	> 30
# of Fatalities	4%	0	1	2	3	4+
# of Ped Crashes	4%	0	1	2 - 4	5 - 9	10+

OUTSIDE FUNDING SOURCE:

Timing	not included in scoring
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* Notes not included in scoring

** Field left blanks will given a score of 1

Minimum Possible Score 1.00
Maximum Possible Score 5.00

*password to unlock cells: ACCedit

Proposed Initial Priority List

**ACCGov Traffic Engineering
Traffic Engineering Evaluation Summary**

[illegible]

Traffic Engineering's goal is to evaluate the remaining traffic signals with the proposed criteria for each intersection as part of Traffic Engineering's preventative maintenance program over an estimated 12 – 18 month period.

The summary table is sortable for each column allowing additional intersection evaluation scores to be easily added and organized.

Proposed Initial Priority Intersections to Advance to the Preliminary Plan Phase

Current pricing trends require an approximate budget of \$500,000 per intersection to rebuild/replace all equipment at each location. Therefore, due to budget constraints, staff recommends moving the highest scoring 4 intersections on the Proposed Initial Priority Intersection List, to the Preliminary Plan Phase of the Capital Project Development process. These intersections are:

<u>Intersection ID</u>	<u>Main Street</u>	<u>Cross Street(s)</u>	<u>Intersection Score</u>
28	Cherokee Road	Buddy Christian Way	4.310
45	College Avenue	Dr MLK Jr Pkwy (Ruth St)	4.205
70	Hawthorne Ave	Old Epps Bridge Rd	4.180
09	Baldwin Street	Jackson Street	4.165

Project Concept Budget: Traffic Safety Infrastructure Improvements

REVENUES:		\$ 2,940,000	TSPLOST 2023 Project 30
		\$ 2,940,000	Total Revenue Available
EXPENSES:			
CAPITAL:		\$ 13,850	Expensed & Encumbered
		\$ 75,000	Designated for Land Acquisition
		\$ 2,201,150	Designated for Construction
		\$ 100,000	Designated Misc./PM Fees/ Testing Permitting
		\$ 100,000	Designated Furniture, Fixtures, & Equipment (FF&E)
		\$ 250,000	Designated Contingency
		\$ 200,000	Available for Design

Next Steps & Project Schedule

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|-----------------------------------------------------|----------------|
| ➤ TSPLOST Oversight Committee | March 18, 2024 |
| ➤ Concept Design Approval for M&C Consideration | April 2, 2024 |
| ➤ Preliminary Design Approval for M&C Consideration | September 2024 |
| ➤ Final Design, Permitting & Land Acquisition | December 2024 |
| ➤ Bidding/Contractor Award | February 2024 |
| ➤ Start Project Construction Phase | Spring 2025 |
| ➤ Construction Completion | Winter 2026 |

Questions?