FIXED TRANSPORTATION EQUIPMENT

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Fixed Transportation Equipment
Proposed FY 2016 – 2025 Capital Improvement Program
Summary of Projects

Note: Projects with $0 total funding are active capital projects funded in prior CIPs that do not require additional resources.

CIP Seciton/Subsection/Project	FY 16	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	FY 25	TOTAL FY 16-25
Transportation											
Fixed Transportation Equipment											
Fixed Transportation Equipment	850,000	850,000	1,450,000	850,000	850,000	850,000	850,000	2,350,000	850,000	850,000	10,600,000
Traffic Control Upgrade	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000
Intelligent Transportation Systems (ITS) Integration	0	1,918,063	0	0	0	0	0	0	0	0	1,918,063
Citywide Transportation Management System (SCOOT/TDi)	0	0	0	0	0	0	0	0	0	0	0
Transportation Technologies	250,000	175,000	0	0	250,000	0	250,000	0	250,000	0	1,175,000
Parking Technologies	0	0	110,000	200,000	0	500,000	0	0	0	0	810,000
FY 2016 - 2025 Fixed Transportation Equipment	1,200,000	3,043,063	1,660,000	1,150,000	1,200,000	1,450,000	1,200,000	2,450,000	1,200,000	950,000	15,503,063

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Fixed Transportation Equipment

Document Subsection: Fixed Transportation Equipment
Managing Department: Transportation & Environmental Services
Supporting Department(s): N/A
ORG: 49411771

Project Location: Citywide
Reporting Area: Citywide
Project Category: 1 – Asset Maintenance
Estimated Useful Life: Varies

Fixed Transportation Equipment													
	A (B+M)	*B*	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	*Through FY 2015*	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total FY 2016-2025
Expenditure Budget	26,822,833	*16,222,833*	850,000	850,000	1,450,000	850,000	850,000	850,000	850,000	2,350,000	850,000	850,000	10,600,000
Financing Plan													
Prior City Funding	16,222,833	*16,222,833*	0	0	0	0	0	0	0	0	0	0	0
Cash Capital	3,000,000	*0*	225,000	225,000	425,000	225,000	225,000	225,000	225,000	575,000	325,000	325,000	3,000,000
General Obligation Bonds	7,600,000	*0*	625,000	625,000	1,025,000	625,000	625,000	625,000	625,000	1,775,000	525,000	525,000	7,600,000
Total Financing Plan	26,822,833	*16,222,833*	850,000	850,000	1,450,000	850,000	850,000	850,000	850,000	2,350,000	850,000	850,000	10,600,000
Additonal Operating Impact													
Annual Impact			0	0	2,500	5,000	7,500	10,000	12,500	15,000	17,500	20,000	90,000
Cumulative Impact			0	0	2,500	7,500	15,000	25,000	37,500	52,500	70,000	90,000	90,000

Changes from Prior Year CIP: Funding added for FY 2025. No other changes from prior year CIP.

Project Description & Justification

This project provides annual funding for the upgrade, maintenance and replacement of traffic control and parking equipment, as well as the installation of new traffic signals. Of particular importance is the replacement of traffic signal poles. Traffic signal poles have a design life of 25 to 30 years. With more than 250 signalized intersections in operation, numerous traffic signal poles throughout the City are approaching the end of their design life and will require replacement. Staff plans to replace the poles at five intersections per year.

Funding is also provided for replacement of the multi-space meters in East Eisenhower/Carlyle in 2018 and in Old Town in 2023. As with all technology driven devices, these meters will have reached the end of their useful life and will need to be replaced.

All funding will be used for the procurement of equipment and construction service.

Annual funding maintains the value of the City's physical assets sustainability by funding the maintenance of critical infrastructure. Additionally, public safety concerns are addressed by installing new traffic signals to improve the safety at dangerous intersections.

City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 3 – Transportation

Focus Area: Accountable, Effective, & Well-Managed Government

- Ensure the government is accountable to the community
- Ensure the fiscal strength of the City government

Focus Area: Livable, Green, and Prospering City

- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure
- Increase transportation system mobility, connectivity, and accessibility that supports the City's economy

External or Internal Adopted Plan or Recommendation

- N/A

Additional Operating Budget Impact

This project is ongoing and provides for the upgrade, maintenance and replacement of traffic control and parking equipment, as well as the installation of new traffic signals and small scale parking meter projects. Staff estimates that one new traffic signal will be constructed per year with an annual operating impact of $2,500 per signal. No signals are planned in FY 2016 & FY 2017, so the additional operating impact begins in FY 2018.

Fixed Transportation Equipment (Continued)

Fixed Transportation Equipment Category 1 Project List

Fiscal Year 2016	
Description	Amount
Reconstruct signal at Van Dorn & Kenmore	$ 135,000
Reconstruct signal at King & 28th	$ 150,000
Reconstruct signal at Preston & Quaker	$ 150,000
Reconstruct signal at Slaters & Abingdon	$ 150,000
Reconstruct signal at King & Peyton	$ 125,000
LED Upgrades	$ 30,000
Repair and upgrade of detection	$ 60,000
Knockdowns from accidents	$ 50,000
Total Fiscal Year 2016	$ 850,000

Fiscal Year 2017	
Description	Amount
Reconstruct signal at Bashford & Abingdon	$ 150,000
Reconstruct signal at Columbus & Prince	$ 135,000
Reconstruct signal at Wilkes & Columbus	$ 135,000
Reconstruct signal at Alfred & Cameron	$ 135,000
Reconstruct signal at Alfred & Prince	$ 135,000
LED Upgrades	$ 50,000
Repair and upgrade detection	$ 60,000
Knockdowns from accidents	$ 50,000
Total Fiscal Year 2017	$ 850,000

Fiscal Year 2018	
Description	Amount
Reconstruct signal at Van Dorn & Van Dorn Plaza	$ 135,000
Reconstruct signal at Commonwealth & Braddock	$ 135,000
Reconstruct signal at King & Menokin	$ 150,000
Reconstruct signal at King & Dearing	$ 150,000
New Signal (undertermined location)	$ 150,000
LED Upgrades	$ 20,000
Repair and upgrade detection	$ 60,000
Knockdowns from accidents	$ 50,000
Replace multi-space meters in East Eisenhower	$ 600,000
Total Fiscal Year 2018	$ 1,450,000

Traffic Control Upgrade

Document Subsection: Fixed Transportation Equipment
Managing Department: Transportation & Environmental Services
Supporting Department(s): N/A
ORG: TBD

Project Location: Citywide
Reporting Area: Citywide
Project Category: 1 – Asset Maintenance
Estimated Useful Life: Varies

Traffic Control Upgrade													
	A (B+M)	*B*	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	*Through FY 2015*	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total FY 2016-2025
Expenditure Budget	1,000,000	*0*	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000
Financing Plan													
Cash Capital	1,000,000	*0*	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000
Total Financing Plan	1,000,000	*0*	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000
Additional Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0

Changes from Prior Year CIP: This is a new project added for FY 2016 - 2025.

Project Description & Justification

The Traffic Control Upgrade project will fund the maintenance and upgrading of transportation management technology systems. The recent completion of the ITS Integration Phase I project installed technology driven infrastructure, such as a broad band fiber optic communications network throughout parts of the City, traffic surveillance cameras, and a management center at Business Center Drive.

Future phases of the ITS Integration project will expand the fiber optic network, add more traffic cameras as well as add other devices, such as pavement temperature sensors and flood monitoring stations. The information from all these devices will go to the management center at Business Center Drive. The management center will be activated during snow removal operations and emergency events as well as for transportation management. The technology infrastructure associated with this initiative will be maintained and upgraded with the funding from this program. Technology has a short life and must constantly be upgraded to prevent obsolescence and failure. These devices are expensive and if one fails prematurely, staff needs to have a readily available source of funding to purchase replacements.

City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 3 – Transportation

Focus Area: Accountable, Effective, & Well-Managed Government

- Ensure the government is accountable to the community
- Ensure the fiscal strength of the City government

Focus Area: Livable, Green, and Prospering City

- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure
- Increase transportation system mobility, connectivity, and accessibility that supports the City's economy

External or Internal Adopted Plan or Recommendation

- N/A

Additional Operating Budget Impact

No additional impact to the operating budget is anticipated.

Intelligent Transportation Systems (ITS) Integration

Document Subsection: Fixed Transportation Equipment
Managing Department: Transportation & Environmental Services
Supporting Department(s): N/A
ORG: 49411772

Project Location: Citywide
Reporting Area: Citywide
Project Category: 3 – New Facilities
Estimated Useful Life: Varies

Intelligent Transportation Systems (ITS) Integration													
	A (B+M)	*B*	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	*Through FY 2015*	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total FY 2016-2025
Expenditure Budget	8,607,588	*6,689,525*	0	1,918,063	0	0	0	0	0	0	0	0	1,918,063
Financing Plan													
Prior City Funding	39,356	*39,356*	0	0	0	0	0	0	0	0	0	0	0
State/Federal Grants	6,650,169	*6,650,169*	0	0	0	0	0	0	0	0	0	0	0
CMAQ/RSTP	1,918,063	*0*	0	1,918,063	0	0	0	0	0	0	0	0	1,918,063
Total Financing Plan	8,607,588	*6,689,525*	0	1,918,063	0	0	0	0	0	0	0	0	1,918,063
Additional Operating Impact													
Annual Impact			0	10,000	10,300	10,609	10,927	11,255	11,593	11,941	12,299	12,668	101,591
Cumulative Impact			0	10,000	20,300	30,909	41,836	53,091	64,684	76,625	88,923	101,591	101,591

Changes from Prior Year CIP: Planned grant funding in FY 2016 is shifted to FY 2017 as prior year balances are sufficient to complete FY 2016 initiatives. Additional budget authority will not be required until FY 2017.

Project Description & Justification

This project provides funding for the deployment and upgrade of Intelligent Transportation Systems (ITS). Much of this work will focus on designing and constructing a broadband communications network, installing traffic cameras and other field devices, such as weather stations, flood monitoring equipment, pavement temperature sensors, etc.

ITS Integration Phase I will be completed in the third quarter of FY 2015. This phase of the project installed a broadband fiber optic communications network, 11 traffic surveillance cameras, and a management center at Business Center Drive.

ITS Integration Phase II will be advertised for construction in the third/fourth quarter of FY 2015 and take approximately 18 months to complete. Phase II will expand the communications network installed in Phase I and install additional traffic surveillance cameras. Future phases of the project will add new capabilities, such as pavement temperature sensors, flood monitors and future vehicle to infrastructure technology applications currently being developed by the Federal Government.

Completion of this project will replace much of the City's 30 year old traffic signal communications and allow public safety department technology to monitor conditions on the City's roadway network.

City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 3 – Transportation

Focus Area: Livable, Green, and Prospering City

- Increase transportation system mobility, connectivity, and accessibility that supports the City's economy
- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure

External or Internal Adopted Plan or Recommendation

- N/A

Additional Operating Budget Impact

Additional operating costs estimated based on hardware and software requirements to run CCTV cameras and manage the network.

Citywide Transportation Management System (SCOOT/TDi)

Document Subsection: Fixed Transportation Equipment
Managing Department: Transportation & Environmental Services
Supporting Department(s): N/A
ORG: TBD

Project Location: Citywide
Reporting Area: Citywide
Project Category: 3 – New Facilities
Estimated Useful Life: Varies

Citywide Transportation Management System (SCOOT/TDi)													
	A (B+M)	*B*	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	*Through FY 2015*	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total FY 2016-2025
Expenditure Budget	500,000	*500,000*	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
NVTA 70%	500,000	*500,000*	0	0	0	0	0	0	0	0	0	0	0
Total Financing Plan	500,000	*500,000*	0	0	0	0	0	0	0	0	0	0	0
Additional Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0

Changes from Prior Year CIP: No changes from prior year CIP. This is an active project with no additional funding requested.

Project Description & Justification

The Split Cycle Offset Optimization Technique/Transportation Data Information (SCOOT/TDi) system is an advanced, real-time system that tracks movement of all transportation modes through the transportation network. This technology will advance the City's signal system so that staff can utilize this real time travel information for better optimization of signal timings as well as optimal planning for infrastructure projects.

SCOOT analyzes real-time traffic data to optimize the operation of traffic signals in the network. TDi anonymously locates and tracks the movement of cellular devices (3G/4G/CDNA/GSM networks). Filters differentiate between modes of transportation and vehicles. By monitoring cellular device movement over time, the system is able to determine the speed at which a vehicle/pedestrian is traveling and thus the flow of traffic along any section of road. Tracking specific anonymous cellular devices provides current and historical data on origins, destinations, route selection and travel speed, providing powerful and robust planning and operations data.

This project has three components – concept strategy and benefits mapping (CS), preliminary engineering (PE), and implementation. Funding was provided only for the CS phase through NVTA 70% funds in FY 2015.

The concept strategy (CS) phase will involve thorough understanding of the City of Alexandria travel and traffic arrangements, key stakeholders, and the benefits to be realized from a project of this scale. Major wireless service providers will be queried to assess interest and determine the costs and ability of the various providers to provide the required service. The concept phase output will be a full brief for the PE and implementation phases.

The future PE phase will involve developing (1) concept of operations, (2) system requirements, (3) high level design, (4) detailed design, (5) bid package, estimates, and project schedule, and (6) system and subsystem validation, verification and testing plans. The implementation phase will involve installation, integration, validation, verification, testing, and acceptance of the system.

City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 3 – Transportation

Focus Area: Livable, Green, and Prospering City

- Increase transportation system mobility, connectivity, and accessibility that supports the City's economy
- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure

External or Internal Adopted Plan or Recommendation

- N/A

Additional Operating Budget Impact

None at this time. Funding provided for an initial planning and feasibility study only.

Transportation Technologies

Document Subsection: Fixed Transportation Equipment
Managing Department: Transportation & Environmental Services
Supporting Department(s): N/A
ORG: 49412090

Project Location: Citywide
Reporting Area: Citywide
Project Category: 3 – New Facilities
Estimated Useful Life: Varies

Transportation Technologies													
	A (B+M)	*B*	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	*Through FY 2015*	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total FY 2016-2025
Expenditure Budget	1,578,400	*403,400*	250,000	175,000	0	0	250,000	0	250,000	0	250,000	0	1,175,000
Financing Plan													
TIP - Cash	1,463,400	*403,400*	135,000	175,000	0	0	250,000	0	250,000	0	250,000	0	1,060,000
Prior Year TIP - GO Bonds	115,000	*0*	115,000	0	0	0	0	0	0	0	0	0	115,000
Total Financing Plan	1,578,400	*403,400*	250,000	175,000	0	0	250,000	0	250,000	0	250,000	0	1,175,000
Additional Operating Impact													
Annual Impact			0	0	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Cumulative Impact			0	0	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Changes from Prior Year CIP: Planned funding in last year's CIP over the ten-year plan is reduced by $75,000 due to the reprioritizaiton of TIP funding.

Project Description & Justification

This project funds the deployment of small, undefined transportation technology projects to improve efficiency of the transportation network through technology.

In the past, funding was used to upgrade the Old Town multi-space meter modems from 2G to 3G to ensure continued operation and reliability when the cellular service provider upgraded their network.

Real Time Passenger Information is the delivering of actual real information to transit stop locations that have significant ridership and connection ability. Real Time helps passengers who are planning their travel, waiting for an arriving vehicle, or already onboard. Accurate and reliable passenger information is critical to increasing mass transport ridership and has a positive economic effect on a city by reducing lost productivity and personal time.

Real Time Passenger Arrival uses communications-based technologies that make travel more efficient and effective using the transportation network that exists, while building smarter infrastructure to meet future demands. The benefits of ITS technologies are measured in the increase in ridership based on safety, time, and money.

City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 3 – Transportation

Focus Area: Livable, Green, and Prospering City

- Increase transportation system mobility, connectivity, and accessibility that supports the City's economy
- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure

External or Internal Adopted Plan or Recommendation

- N/A

Additional Operating Budget Impact

Unknown at this time. Operating costs will be determined once the full scope of work for the technologies implemented is identified.

Parking Technologies

Document Subsection: Fixed Transportation Equipment
Managing Department: Transportation & Environmental Services
Supporting Department(s): N/A
ORG: TBD

Project Location: Citywide
Reporting Area: Citywide
Project Category: 3 – New Facilities
Estimated Useful Life: 10 years

Parking Technologies													
	A (B+M)	*B*	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	*Through FY 2015*	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total FY 2016-2025
Expenditure Budget	810,000	*0*	0	0	110,000	200,000	0	500,000	0	0	0	0	810,000
Financing Plan													
CMAQ/RSTP	810,000	*0*	0	0	110,000	200,000	0	500,000	0	0	0	0	810,000
Total Financing Plan	810,000	*0*	0	0	110,000	200,000	0	500,000	0	0	0	0	810,000
Additional Operating Impact													
Annual Impact			0	0	0	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Cumulative Impact			0	0	0	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Changes from Prior Year CIP: CMAQ/RSTP funding was added for FY 2021. No other changes from the prior year CIP.

Project Description & Justification

This project provides funding for the deployment of new parking technologies, such as real time parking occupancy systems for on-street spaces, website based interactive parking map, dynamic signage that would illustrate real-time parking availability in city-owned garages, and other parking technology. These technologies will mostly be off the shelf solutions requiring minimal design and engineering.

This project is fully funded with CMAQ/RSTP funds anticipated in FY 2018 – 2021. Specific projects include:

- FY 2018 ($110,000): Phase I – Begin installing sensors in all City owned garages; begin to install sensors or similar technology in on-street spaces; and install dynamic directional signage that would indicate real-time parking availability and direct parkers to available parking spaces.
- FY 2019 ($200,000): Phase II – Continue installing sensors in all City owned garages; continue installing sensors or similar technology in on-street spaces; and continue installing dynamic directional signage that would indicate real-time parking availability and direct parkers to available parking spaces.
- FY 2021 ($500,000): Phase III – Develop interactive mobile and web-based applications to display both on-street and off-street real-time parking occupancy and availability using data from sensors installed in Phases I and II.

Depending on technology selected to monitor on-street space utilization and availability, additional funding may be needed to complete this project.

Once implemented, these technologies will support economic development by providing more efficient parking strategies and allow the City to manage parking and traffic assets more efficiently.

City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 3 – Transportation

Focus Area: Livable, Green, and Prospering City

- Increase transportation system mobility, connectivity, and accessibility that supports the City's economy
- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure
- Ensure Alexandria supports, retains, and attracts businesses

External or Internal Adopted Plan or Recommendation

- Old Town Area Parking Study

Additional Operating Budget Impact

Unknown at this time. Operating costs will be determined once specific technologies are identified.

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