



Capital Program, Planning and Real Estate Committee

Item IV - A

July 14, 2016

Capital Needs Inventory Progress Update

Washington Metropolitan Area Transit Authority

Board Action/Information Summary

☐ Action ☒ Information

MEAD Number:
201758

Resolution:
☐ Yes ☒ No

TITLE:

Capital Needs Inventory - Progress Update

PRESENTATION SUMMARY:

The Capital Needs Inventory (CNI) will identify and prioritize Metro's critical capital needs, including safety, repair, and system enhancements, in a transparent and objective manner.

This presentation updates the Board on the goals, objectives, process, progress, and milestones of this critical project.

PURPOSE:

Provide progress report on WMATA's Capital Needs Inventory (CNI).

DESCRIPTION:

Development of WMATA's Capital Needs Inventory (CNI) is occurring at a critical time both for the Authority and within the transit industry. Concurrent with recent state of good repair needs on WMATA's rail system, international standards for asset management (ISO 55000) and Federal Transit Administration (FTA) proposed rules have recently been published that guide the methodology and tools used to develop a best-in-class CNI. The primary guiding principles from these State-of-the-Practice documents are:

- Align decision-making with the objectives of the agency;
- Utilize asset inventory and condition data in making investment decisions;
- Determine the value and/or risk of assets to service delivery and safety; and
- Prioritize investments in a transparent, informed process.

Based on FTA's proposed rules, transit agencies are working to develop processes to improve asset inventory and directly tie inventory and condition assessment to investment prioritization. Many of WMATA's peers are also utilizing versions of the FTA's decision support tool, TERM Lite1, to support estimation of reinvestment needs and prioritization. Unlike the prioritization tool that WMATA used in its 2011-2020 CNI, TERM Lite allows for a more objective, data-driven prioritization process based on multiple weighted criteria.

The CNI provides an unconstrained and prioritized list of investment needs over a 10-year horizon that will be used as a guidepost with funding partners when discussing and negotiating a new Capital Funding Agreement (CFA). The timing of the completion of the CNI is such that by the end of this calendar year, Board members and their colleagues in the respective funding jurisdictions will have an accurate assessment of the magnitude, importance, and system impacts of the range of investments identified in the CNI. This will articulate the potential

magnitude of WMATA's capital reinvestment, rehabilitation, and replacement funding needs, and will be coordinated with WMATA's estimate of ongoing maintenance capital expenses to provide a holistic picture of WMATA's total capital investment needs suitable for inclusion in CFA discussions.

Key Highlights:

WMATA will include industry standard processes and tools, such as TERM Lite, in developing the CNI. This approach will both align with best practices and also provide a basis for upcoming compliance with the FTA's Transit Asset Management (TAM) requirements.

Two concurrent and mutually supportive methodologies will be considered when prioritizing WMATA's needs:

- Multi-criteria prioritization will support aligning criteria with each of WMATA's strategic goals in Momentum. This methodology is included in TERM Lite.
- Risk-based prioritization will align with international standards for asset management, and, depending on the selection of criteria for prioritization, supports risk-based ranking of assets (i.e., based on asset condition [likelihood] and service impacts [consequence]).

Prioritization criteria should be based on measurements where data is readily available and can be applied broadly to all asset types.

- Data for measuring criteria needs to be readily obtainable and maintainable over time such that the measures can be used in future iterations of the CNI.
- The criteria chosen for prioritization should be simple, transparent and easy to explain.
- Given the visibility of the CNI report, multiple levels of measures and/or calculations should be avoided such that all stakeholders can understand the priorities reflected in the outputs.

Finally, the CNI must be a repeatable, annual process that does not require too much additional effort in data gathering. Other properties have focused their update efforts on improving inventory and condition data to improve the basis of their needs estimates. WMATA should also continue to improve the inputs to the CNI, as this is an iterative process, remaining mindful to keep it simple for the sake of stakeholders and staff.

Background and History:

Awareness of the need to focus on the maintenance and renewal of Metro's capital assets has existed since the system opened, but a comprehensive approach to long-term planning for the funding and management of capital assets was lacking for much of Metro's history.

In the early years of Metrorail operations, the focus of funding campaigns was on construction of the full system. Toward the late 1990s, as the 103-mile rail system neared completion, efforts began to quantify capital improvement needs and increase

the size of the capital improvement program budget. Some key milestones during that period included:

- 1998: R. Harris study, "20 Year Capital Improvement Program". This study developed the first significant capital asset database and identified infrastructure renewal requirements based on asset age and condition.
- 2001: Government Accountability Office (GAO) report, "Many Management Successes at WMATA, but Capital Planning Could Be Enhanced". This report called for a long-term strategy and capital plan and improved capital improvement decision-making.
- 2002: Metro issued "Routes to the Future, A Strategic Plan."
- November 2002 – 10-Year, \$12.2 billion Capital Improvement Plan, which defined an Infrastructure Renewal Program (IRP) from the F.R. Harris study; System Access and Capacity Program (SAP) that addressed core and station capacity needs as well as station access; and a System Expansion Program (SEP) that envisioned new rail and bus rapid transit lines.
- Metro Matters – Supported by the 2004 MWCOC Blue Ribbon Panel on WMATA funding needs, the Metro Matters plan constrained the 10-year, \$12.2 billion program into a six-year, \$4.2 billion program covering FY 2005 to FY 2010. The Metro Matters funding agreement primarily funded the IRP needs with some small amount of funding for the SAP program. A policy on System Expansion placed the responsibility for funding expansion needs with the local jurisdictions.

Despite the success of the Metro Matters agreement in increasing the capital funding of Metro, there was a continued push for dedicated long-term capital funding. In order to support this campaign, beginning in 2007 WMATA staff began to develop a new capital needs inventory that would outline the agency's needs and support a new long-term funding agreement. From 2007 to 2010, staff conducted a process to develop a 2011-2020 Capital Needs Inventory, which was published in February 2010, and supported the execution of a new six-year Capital Funding Agreement in July 2010, which included an agreement on local match for new federal Passenger Rail Investment and Improvement Act (PRIIA) capital funding.

Metro last completed a CNI in 2009 and used it to help guide the MetroMatters and PRIIA funding discussions in 2010; however, since completion of the last CNI and execution of the six-year Capital Funding Agreement (CFA) in 2010, progress has been made on several aspects of asset management, capital planning and decision-making. This puts Metro in a position to create a much more rigorous, analytically based, and transparent CNI that can be used over time to better guide and inform funding and capital investment decisions of the Authority.

As mentioned above, this rigorous, analytically-based, and FTA-compliant CNI will form the basis of discussions with jurisdictional funding partners about WMATA's overall capital investment needs and inform these discussions as they pertain to the creation of a new CFA.

Discussion:

Metro's CNI effort is occurring at a critical time both for the Authority and the transit industry. Concurrent with recent failures on Metro's rail system, international standards for asset management (ISO 55000) and Federal Transit Administration (FTA) proposed rules have been published that can help guide the methodology and tools used to develop a best-in-class CNI.

In April 2016, Metro staff began updating its Capital Needs Inventory (CNI), a financially unconstrained prioritized plan of capital needs that documents Metro's infrastructure, vehicle, facility, technology, and system capacity investment needs over a 10-year horizon and provides input to the development of the six-year Capital Improvement Plan (CIP).

This document not only informs our jurisdictional partners about funding needs, but is now as well a component of the federally required Transit Asset Management Plans outlined in the Moving Ahead for Progress in the 21st Century Act (MAP-21).

The first step in this process is to understand exactly what assets we have, what condition they are in, and analyze them for reinvestment/rehabilitation/replacement needs.

Metro's Office of Quality and Internal Compliance Operations Office (QICO) is currently evaluating almost 100,000 assets through a Transit Asset Inventory and Conditions Assessment (TAICA) to produce an underlying data set for analysis of future State of Good Repair (SGR) needs in the CNI.

The TAICA effort will include construction of a comprehensive database of existing assets as well as condition assessment of the assets such that they can be consistently rated on a condition scale compatible with the FTA-recommended Transit Economic Requirements Model (TERM).

The TAICA project anticipates completing its initial inventory and condition assessment by October 2016, with preliminary data available prior to that date. This resource will be an important input to the updated CNI.

On April 28, 2016, Metro issued "Capital Needs Inventory Policy" (P/I 4.12/2), which defines the process and framework for capital investment decision making. The purpose of this policy is to provide "the framework for evaluating and prioritizing Metro's capital investment needs, with the ultimate goal of informing the development of a capital program that is beneficial and cost-effective and has the greatest strategic impact."

The policy also identifies four key elements that will help drive the prioritization of asset reinvestment decisions, including:

- Asset criticality;
- Achievement of strategic objectives;
- Asset condition; and
- Asset risk

The Office of Planning is currently working with industry experts and has alongside CPAC members developed set of asset prioritization criteria and indices that are aligned with these key elements.

The goal is to deliver a draft CNI document to the Board in December 2016, and conduct further scenario testing on this product in early 2017. The scenario testing will explore the outcomes of different funding levels on state of good repair achievement and overall system performance, and will be the groundwork for the aforementioned Transit Asset Management Plan, which is to be submitted to the FTA in 2018.

FUNDING IMPACT:

Define current or potential funding impact, including source of reimbursable funds.	
Project Manager:	Shyam Kannan
Project Department/Office:	ENG/PLAN

TIMELINE:

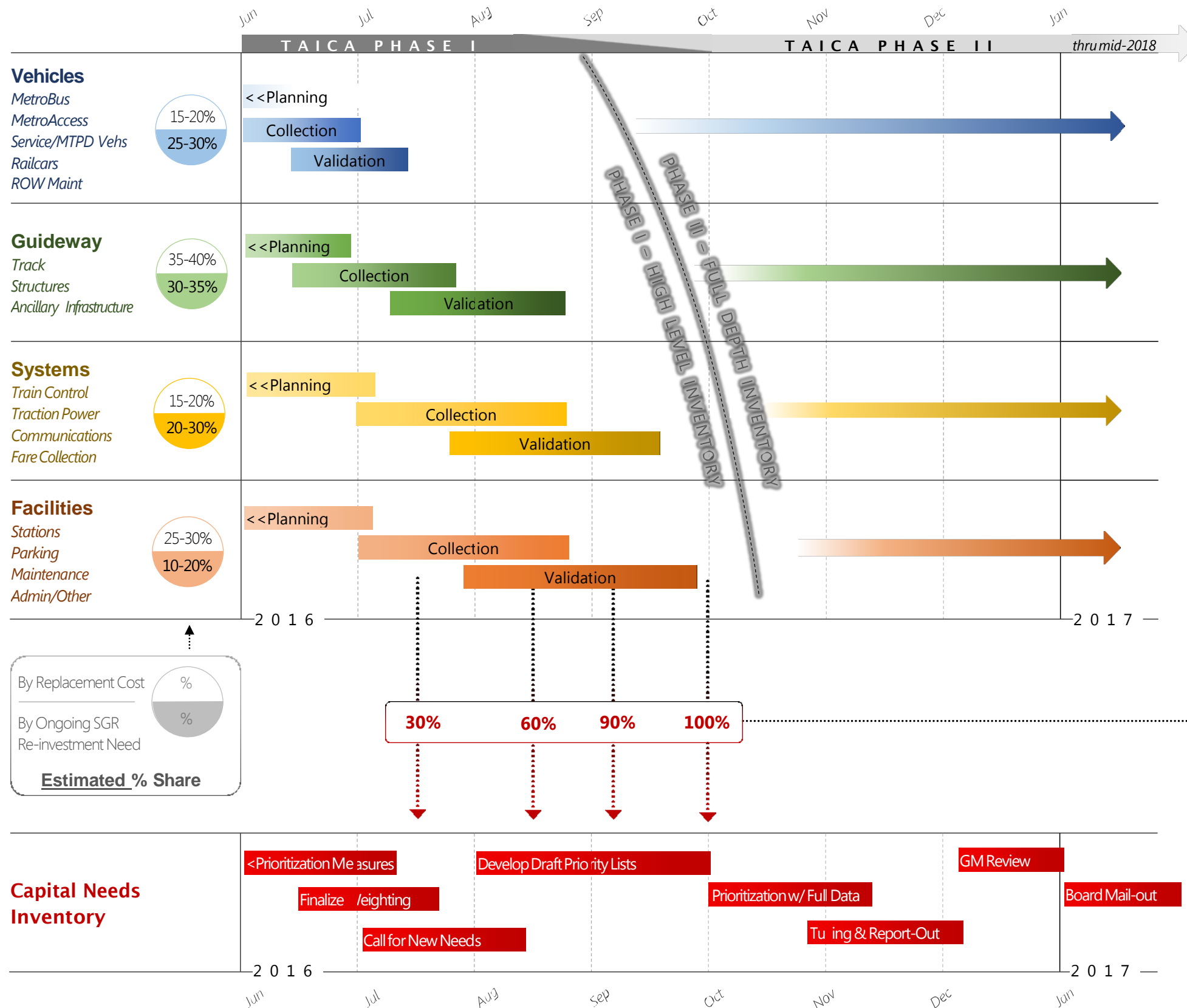
Previous Actions	2009 Capital Needs Inventory
Anticipated actions after presentation	Capital Needs Inventory to be delivered to the Board in December of 2016

RECOMMENDATION:

None. For information only.

Transit Asset Inventory and Condition Assessment (TAICA) + Capital Needs Inventory (CNI) Schedule

23 Jun 2016



TAICA Phase II Objectives	Partners
Ensure compliance with new MAP-21 requirements	SAFE, GOVR
Align system data and business practices to standardized asset framework	COO, CE, IT, SAFE
Align Property Accounting asset inventory and TAICA	CFO, IT
Enhanced maintenance analytics	COO, IT
Institutionalize condition assessment to support continual capital needs updates	COO, CE, PLAN, CFO

Data Milestone	Assets Included
30%	Rubber-Tire Vehicles Steel-Wheel Vehicles
60%	30% Data Plus: Track; Structures (Bridges+Tunnels) Train Control, Fare Collection Escalators
90%	60% Data Plus: Structures (All), Ancillary Inf. Traction Power
100%	90% Data Plus: Facilities



Washington Metropolitan Area Transit Authority

Capital Needs Inventory: Progress Update

Capital Program, Planning and Real Estate Committee

July 14, 2016



Capital Needs Inventory

What it Is:

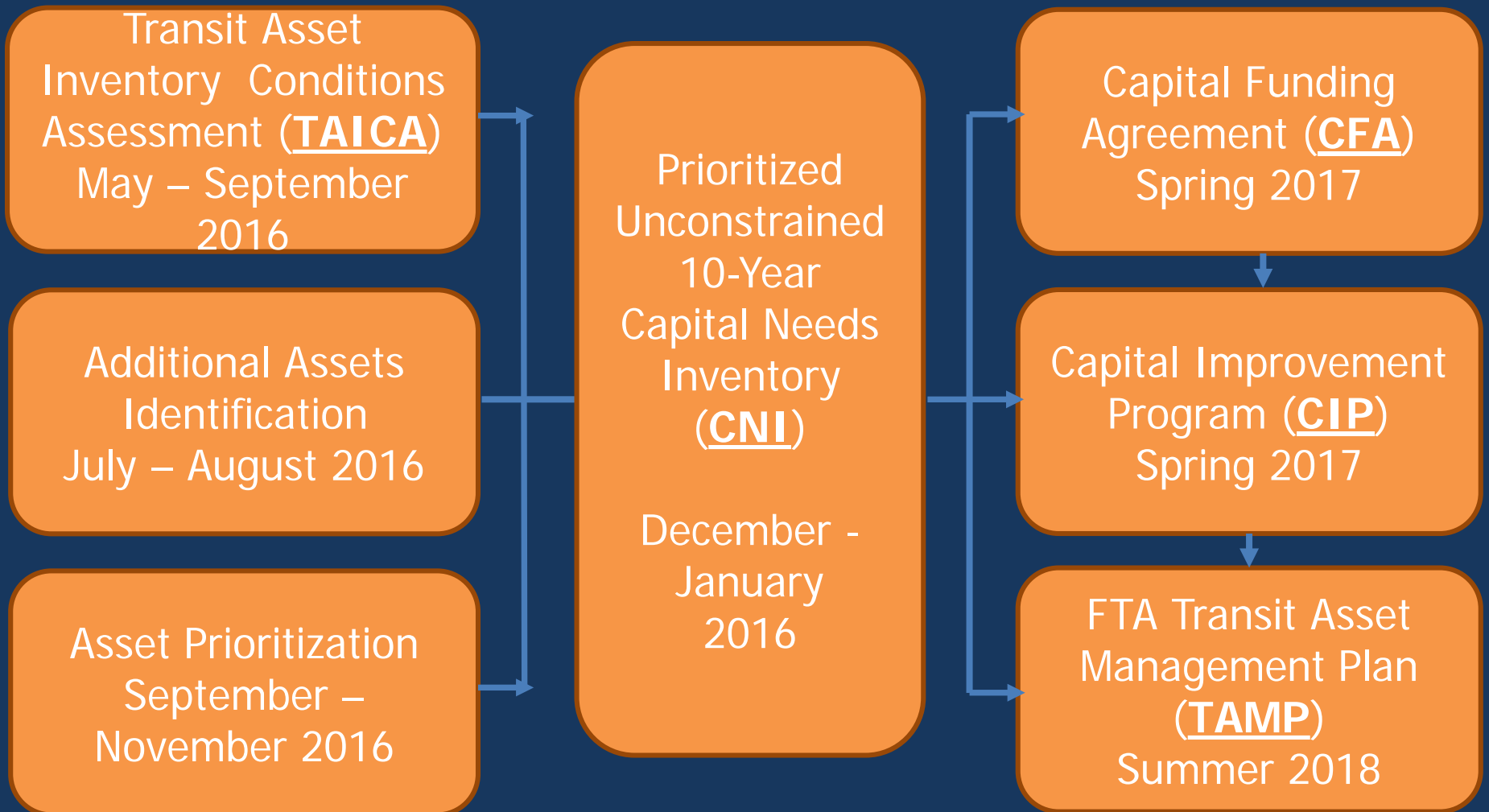
- A comprehensive, prioritized, and fiscally unconstrained list of capital investment needs for the next 10 years
- Capital investments that renew or replace existing assets to achieve a State of Good Repair (SOGR)
- Capital investments to expand capacity to near-term demand

What it Does:

- Creates a prioritized list to bring Metro into a State of Good Repair
- Provides critical input to the 2017 Capital Funding Agreement (CFA)
- Complies with anticipated FTA rules on transit asset management



CNI Process and Products





Establish Metro's Prioritization Tool

- Evaluate assets using WMATA prioritization (below)
- Import into TERM Lite and assign score from 1 to 5
- CPAC determine weighting approach and weighting scenarios

Asset Condition

Definition: The physical condition of an asset

A%

Safety & Security

Definition: Degree to which asset reinvestment impacts the safety and security of passengers and employees

B%

Service Delivery

Definition: Degree to which reinvestment improves service reliability or reduces risk of service failures

C%

Ridership Impact

Definition: The relative number of riders impacted by asset reinvestment

D%

Weighted Average Total Investment Score:
(Converted to 100-Point Scale; High Score = High Priority)



Progress and Next Steps

- Completed:
 - Peer Review
 - Prioritization tool (TERM Lite)
 - Prioritization formulae and criteria
 - Guidelines for call for new needs
- July – August 2016:
 - Conduct call for new needs
 - “Stress test” prioritization methodology with 30% asset condition data and different weighting scenarios
 - Using internal task force, examine processes and policies to modernize and improve WMATA Capital Program Policies



Next Steps

- September 2016:
 - Complete draft prioritized list of capital needs
 - Bring proposal for Capital Program Policy Improvements to CFA Working Group and JCC
- October 2016
 - Board discuss outcomes from CFA Working Group and JCC discussion
- November 2016
 - Integrate work completed to-date
- December 2016 – January 2017
 - Distribute CNI to GM and Board