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# REGIONAL TRANSPORTATION AUTHORITY Capital Asset Condition Assessment

*prepared by*
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To the Reader:

The final report summarizes an 18-month effort to assess the condition of existing capital assets of our transit system and provides outline of future replacement, rehabilitation and capital maintenance costs for the Chicago Transit Authority, Metra and Pace. The Capital Asset Condition Assessment will help transit agencies prepare their respective annual capital programs and focus efforts on those improvements intended to bring our transit system to a State of Good Repair (SGR). The major challenge that the system faces is a gradual deterioration of its infrastructure due to a $17 billion shortfall in capital funding over the next 10 years.

Participation on the part of the transit operating agencies was essential to the development of this report. A team comprised of key staff from the RTA, CTA, Metra and Pace worked with outside experts to design and create the inventory framework, collect inventory data, develop a condition ratings system and set criteria for the SGR. The review and sampling of all assets categories, along with the conversion of the collected data resulted in the program needs and costs for each asset.

The report concludes that the RTA region's 10-year capital program need is **$24.6 billion,** broken down to $15 billion for the CTA, $7.4 billion for Metra, and $2.2 billion for Pace. $13.8 billion of the total need is dedicated to backlog costs, $6.9 billion to normal replacement costs and $3.9 billion for capital maintenance costs* (pages 20 and 21 of the report). This total identified need is more than three times larger than the projected funding available during the same time period. The RTA 10-year financial plan projects existing revenue sources to total less than $8 billion, assuming the federal transportation program is reauthorized and the receipt of $2.7 billion of State funding for a net funding shortfall of approximately $17 billion.

The shortage of capital funds needed to support the RTA system will continue to present challenges with regard to achieving a SGR. In fact, our system's infrastructure will move further from that goal as it slowly continues to deteriorate, annually adding $300 million to $13.8 billion of backlog needs. Furthermore, the policy issues related to capital investments for "maintenance" versus "enhancement" and "expansion" will be amplified. Tough decisions will have to be made to preserve our existing infrastructure and transit network while ensuring that our future system develops, coordinates with and supports the region's growth and demographic changes. This funding need poses a significant concern as we all recognize the capital funding to address this growing problem is severely limited. This means that

* The **Backlog** component represents the value placed upon replacement of assets characterized by an age greater than their useful life. These assets are still in service and typically have not been replaced due to a lack of sufficient funding. The **Normal Replacement** component represents the planned replacement cost for assets that will reach the end of their useful life during the 10-year program, 2010-2019. If such assets are not replaced according to schedule, the costs' value of those assets becomes a backlog cost. The **Capital Maintenance** component reflects the cost associated with keeping an asset in a state of good repair.

our riders will confront a less reliable system. Safety remains our highest priority and maintaining awareness of the challenges facing our system helps to ensure its safe operation now and in the future.

The RTA recognizes the commitment, collaboration, cooperation and level of effort each transit agency provided in order for the Capital Asset Condition Assessment to be a success. The RTA is extremely appreciative and pleased to note the exemplary dedication and commitment of the transit agencies personnel during this process. The RTA will continue to work with the CTA, Metra and Pace to advocate for capital on both the federal and state level to ensure our transit system continues to prioritize and work toward a State of Good Repair. Their input for the report was very valuable to the RTA and will help us, with them, obtain support to address our system's funding shortfalls.

Sincerely,

Stephen E. Schlickman
Executive Director

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# Executive Summary

This report summarizes the results of an 18-month effort to assess the condition of existing capital assets for each of the region's three Service Boards: the Chicago Transit Authority (CTA), Metra and Pace. The report's intent is to provide the Regional Transportation Authority (RTA) with a plan for a capital asset condition assessment for each Service Board. The process establishes administrative criteria for the capital replacement, capital rehabilitation and capital maintenance of all assets.

Representatives from the Service Boards assisted in all aspects of this process including: the design and development of the inventory tables, the condition ratings system based on useful life and industry standards, the definition of "State of Good Repair (SGR)," the sampling plan and sampling data.

Asset Information Teams were formed to design and develop the inventory framework. Each Asset Information Team consisted of members representing the RTA, the Service Board and the URS Team. The Asset Information Teams were each associated with an individual Service Board. For discussion purposes at the Asset Information Team meetings, assets were grouped into five asset types:

- Track and Structures
- Electrical/Subway Equipment

- Signals/ Communications/ Fare Collection
- Stations/ Garages/ Facilities
- Rolling Stock

The Asset Information Teams determined the condition rating process that would be used to assess the condition of the Service Board's assets. Early on in the assessment, it was determined that an asset's age would act as the primary "predictor" of an asset's condition. This approach reflected the best approach possible among the Service Boards while taking into consideration the limited resources of each Service Board and the established level of effort available to undertake the overall assessment. To quote the FTA in its report entitled Transit State of Good Repair: Beginning the Dialogue, October, 2008: "Physical asset condition assessment is the best way to measure SGR for individual assets and on an agency-wide basis. Asset age is a second-best proxy . . ."

While in-depth availability of information and data was unavailable for each asset for the Service Boards, sufficient data was collected and satisfactory age estimates were established for nearly all assets of the Service Boards. In some instances (e.g, Metra's rail assets), age data was difficult to ascertain. Thus, an agreement was reached with Metra staff that costs for the regular replacement program would be used to determine 10-year needs in those instances until an accurate inventory could be compiled.

Inventory tables form the basis for the 10-year capital needs assessment. During the process of compiling data for the age-based inventory tables, a number of asset groups were selected for an extremely limited on-site sampling effort. The sampling, representing less than 1% of each asset class, was meant to test the degree of consistency between asset age and the condition of assets in actual field conditions. For the most part, though not in all cases, the results of the limited sampling did generally confirm the condition rating process based on asset age. Clearly, to fully assess assets of all Service Boards, thorough inspections would need to be conducted for all assets.

This initial 10-year capital needs assessment is based on cost components for backlog, normal replacement and capital maintenance (Table i-1). The **backlog** component is the value placed upon the replacement of assets characterized by an age greater than their useful life. These assets are still in service and typically have not been replaced within their useful life due to a lack of sufficient funding. **Normal replacement costs** are the planned replacement cost for assets that will reach the end of their useful life during the 10-year program, 2010-2019. These assets are still in service and would be scheduled for replacement during the 10-year program if sufficient funding were available. The **capital maintenance component** is the cost associated with keeping an asset in a State of Good Repair. Capital maintenance costs are typically significant and anticipated, and are associated with keeping the asset in service for the full term of its useful life. Capital maintenance costs are characterized by replacement or rehabilitation of asset components, but not replacement of the entire asset. Assets in service beyond their useful lives will typically require increased capital maintenance costs.

In addition to backlog, normal replacement and capital maintenance costs, soft and contingency costs were added to the total cost of assets. The majority of soft costs are expended in the planning, engineering, and project management efforts. These services include; in-house agency staff, government related support staff, and the use of consultants for particular tasks. Project

start-up and initiation expenses are also included in this cost category. Contingency costs are costs for unforeseen emergencies or design shortfalls typically identified after a project commences. A contingency cost is included in project costs so that projects can proceed with minimal interruption due to changes or cost overruns. Typically, once the project has been designed and put out for bid, a project budget is established that includes some contingency for these types of potential costs. However, earlier in the planning phase contingency costs are usually estimated higher and are used to reflect additional uncertainty about cost prior to scoping and design.

Future ADA and other code requirements are not addressed as part of the 10-year needs assessment with the exception of Positive Train Control (PTC) which is Federally mandated to be in place by 2015. The CTA systems already have one type of PTC implemented while Metra systems do not.

**Table i-1 Definitions of Asset Cost Terms**

| | |
|---|---|
| **BACKLOG** | **The replacement cost for assets characterized by an age greater than their useful life. These assets are still in service and typically have not been replaced within their useful life due to a lack of sufficient funding.** |
| **NORMAL REPLACEMENT COSTS** | **The replacement cost for assets that will reach the end of their useful life during the 10-year program, 2010-2019. These assets are still in service and would be scheduled for replacement during the 10-year program if sufficient funding was available.** |
| **CAPITAL MAINTENANCE COSTS** | **The cost associated with keeping an asset in a state of good repair. Capital maintenance costs are typically significant and anticipated and are associated with keeping the asset in service for the full term of its useful life. Capital maintenance costs are characterized by replacement or rehabilitation of asset components, but not replacement of the entire asset. Examples of typical capital maintenance costs are bus overhauls (CTA, Pace), rail car overhauls (CTA, Metra), structure component replacement such as flange angles, foundations or connection angles (CTA, Metra).** |
| **SOFT COSTS** | **RAIL & BUS INFRASTRUCTURE COMPONENTS: Additional 22.7% of total base cost including miscellaneous costs related to development of passenger services.<br>RAIL AND BUS ROLLING STOCK AND EQUIPMENT: Additional 15% of total base cost including miscellaneous costs related to development of passenger services.<br>The majority of soft costs are expended in the planning, engineering, and project management efforts. These services include in-house agency staff, government related support staff, and the use of consultants for particular tasks. Project start-up and initiation expenses are also included in this cost category. Project financing cost and an "other" expense line item, which includes any reconciliations and unaccountable costs, comprise the full range of project development capital costs. (Federal Transit Administration definition)** |
| **CONTINGENCY COSTS** | **RAIL & BUS INFRASTRUCTURE COMPONENTS: Additional 20% of total base cost including miscellaneous costs related to development of passenger services.<br>RAIL & BUS EQUIPMENT & ROLLING STOCK: Additional 15% of total base cost including miscellaneous costs related to development of passenger services.<br>These costs are budgeted for unforeseen emergencies or design shortfalls typically identified after a project commences. The contingency is included in the budget so the project can proceed with minimal interruption for changes or cost overruns.** |

Table i-2 presents a summary of the results of the 10-year needs assessment. The total 10-year needs assessment cost for the CTA is $14.999 billion. The total 10-year needs assessment cost for Metra is $7.373 billion. The total 10-year needs assessment cost for Pace is $2.255 billion. The 10-year needs of each of the Service Boards are based strictly on responsibilities of the agencies and do not include costs, needs or contributions of railroads or other entities.

**Table i-2 10-Year Program Needs Summary (000's)***

| 10-YEAR PROGRAM NEEDS | CTA | Metra | Pace | All Service Boards |
|---|---|---|---|---|
| Total Backlog | $10,005,502 | $3,701,495 | $114,671 | $13,821,668 |
| Total Normal Replacement Costs | $3,222,138 | $1,704,253 | $1,932,499 | $6,858,890 |
| Total Capital Maintenance Costs | $1,771,786 | $1,967,885 | $207,688 | $3,947,359 |
| Total 10-Year Program Needs | $14,999,426 | $7,373,633 | $2,254,858 | $24,627,916 |
| % of Total Program Needs | 60.90% | 29.94% | 9.16% | 100.00% |

*NOTE: All costs include Soft Costs and Contingencies

## CONDITION RATING FINDINGS

Asset condition ratings were broken into five categories on a scale from 1 to 5 with 1 representing an asset "past its useful life" and 5 representing a relatively new asset in "excellent" condition. For the purposes of this asset condition assessment, the "State of Good Repair (SGR)" is defined as a condition rating of 3, or "adequate with no backlog." In effect, anything rated 3 or higher is in a SGR Anything rated lower than 3 begins to take on "marginal" aspects and as defined, is in the last quarter of the asset's useful life. The Assessment data provides snapshots of assets within the Chicago region as they relate to a SGR,with associated major capital investment requirements. The largest categories, which represent nearly 75% of the entire 10-year capital needs, are discussed below.

**Rail Passenger Cars ($5.86B)** The average rating for SGR for all rail passenger cars within the system is currently 2.29, with nearly 42% past their useful life (Figure i-1). In order to assure that assets are in an absolute SGR, there are to be no assets in the category classification of 1 or "Backlog," Therefore, in order to consider the RTA system's rail passenger cars to be in a SGR by 2019, at least 931 of the 2,225 vehicles would need to be replaced during that period. Since assets with rating of 1 are the most difficult and expensive to maintain for the riding public and working employees, this is a prudent and an important factor in defining true SGR. In addition, Replacement and Capital Maintenance would need to occur with the remaining rail passenger cars.

**Passenger Train Stations ($5.78B)** The average rating for SGR for all train stations within the region currently amounts to 3.00. In reality, more than 39% of the stations are rated a 1, which means that they are past their useful life (Figure i-2). In order to consider the RTA system's train stations to be in a SGR by 2019, 150 or more of the 382 train stations would need to be renovated within that period. In addition, Replacement and Capital Maintenance would need to occur with other stations.

**Rail Bridges and Structures ($2.91B)** The average rating for SGR for all rail bridges and structures within the region currently tallies 3.26, but with 11% considered beyond their useful life (Figure i-3). Thus, to bring this category to reflect a SGR by 2019, at least 151 of the 1,361 rail bridges and structures would need to be renovated within that period. In addition, Replacement and Capital Maintenance would need to occur with the other bridges and structures.

**Fixed-Route Passenger Buses ($2.18B)** The average rating for SGR for all fixed-route passenger buses within the RTA system currently tallies 3.46, with nearly two-thirds of them in a state of good repair (Figure i-4). Nevertheless, in order to consider the RTA system's passenger bus vehicle fleet to be in a SGR by 2019, at least 457 of the 2,918 buses that are past their useful life would need to be replaced during that time period. In addition, Replacement and Capital Maintenance would need to occur with the other buses.

**Rail Maintenance Facilities ($1.00B)** The average rating for SGR for all rail maintenance facilities within the region currently tallies 3.64, while nearly 14% of them are rated 1, or "past their useful life" and more than 8% are rated 2, or "marginal" (Figure i-5). In order to consider the RTA system's rail maintenance facilities to be in a SGR by 2019, at least five of the 36 facilities will need to be renovated within that period. In addition, Replacement and Capital Maintenance would need to occur with other facilities.

**Bus Garages ($.89B)** The average rating for SGR for all bus garage facilities within our region is 3.37, with nearly 16% rated 1, and another 16% rated 2 (Figure i-6). Thus, in order to consider the bus garages within the RTA system to be in a SGR by 2019, at least 3 of the 19 garages would need to be renovated within that period. . In addition, Replacement and Capital Maintenance would need to occur with other garages.

Figure i-1 Rail Passenger Cars: Condition Ratings

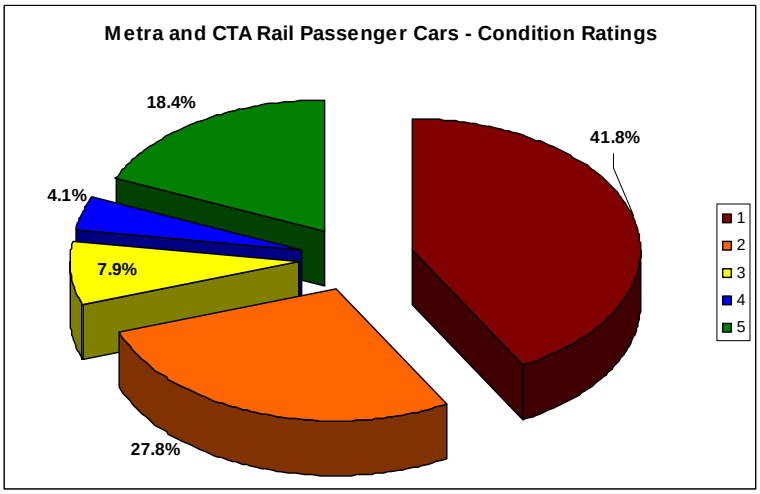



Figure i-2 Passenger Train Station: Condition Ratings

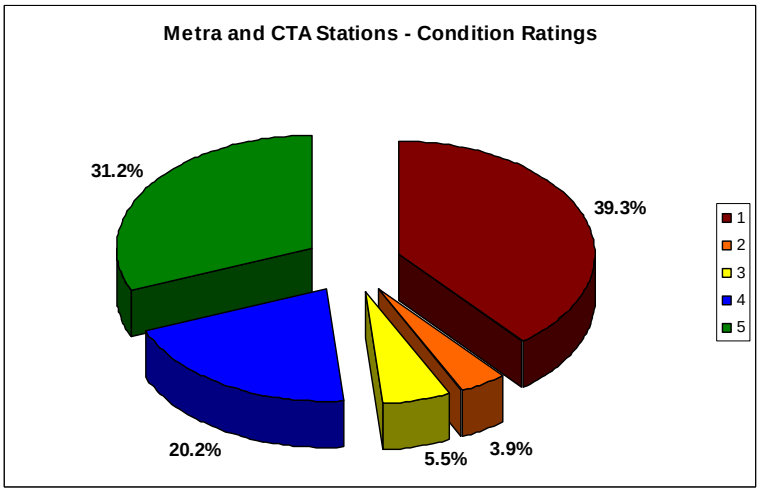



Figure i-3 Rail Bridges and Structures: Condition Ratings

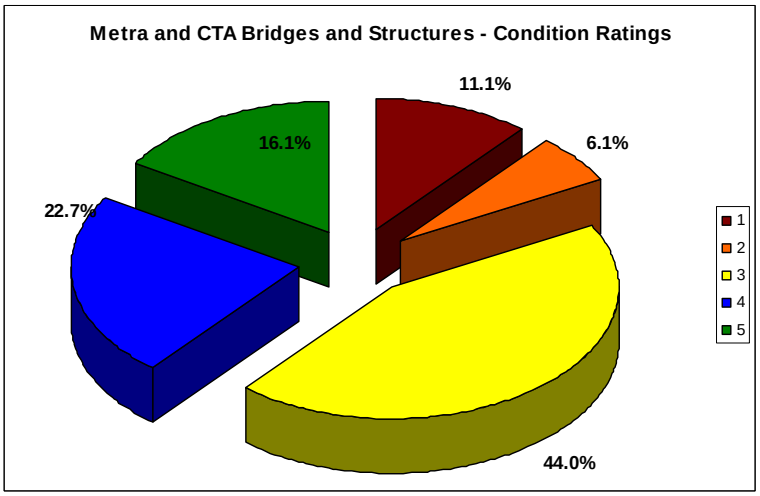


Figure i-4 Fixed Route Passenger Buses: Condition Ratings

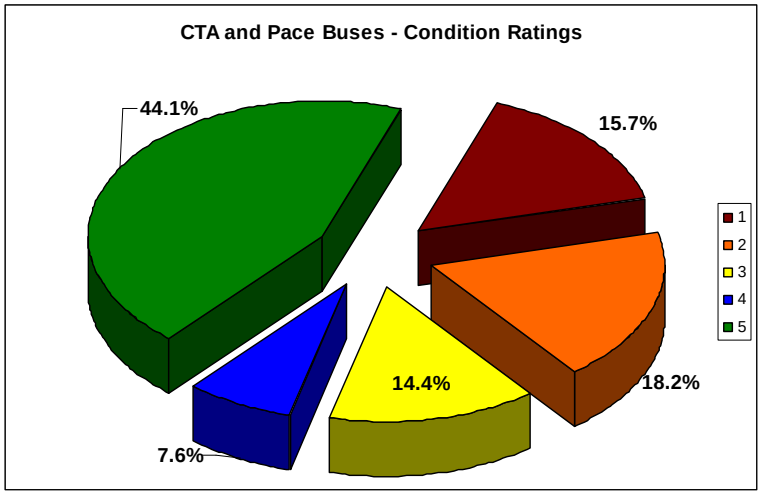



Figure i-5 Rail Maintenance Facilities: Condition Ratings

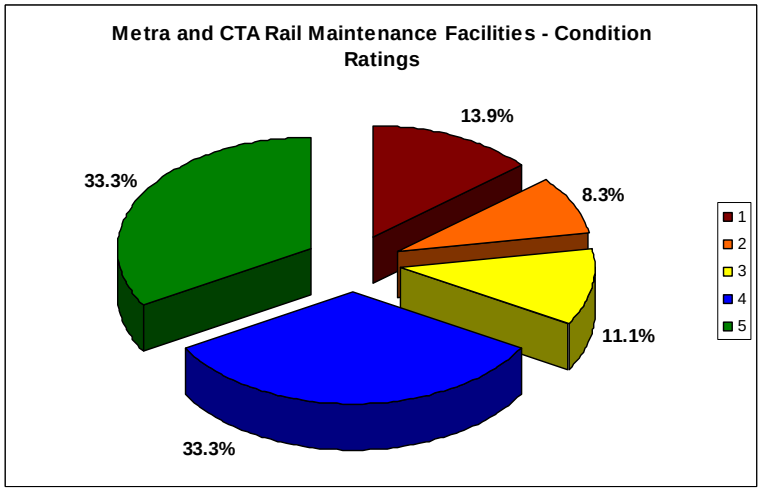
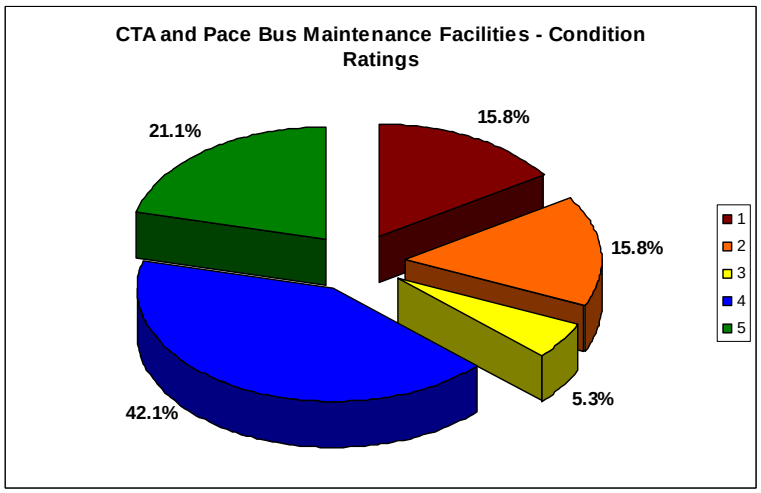



Figure i-6 Bus Garages: Condition Ratings



# 1

## Summary of Background Review

The Regional Transportation Authority (RTA) for northeastern Illinois is responsible for the oversight of capital planning and the allocation of capital funding for its three Service Boards: the Chicago Transit Authority (CTA), Metra, and Pace. The RTA was established in 1974 to oversee local transportation operators in the six-county region: DuPage, Cook, Kane, Lake, McHenry and Will counties. The RTA is a special purpose unit of local government and a municipal corporation of the State of Illinois. Illinois state law requires the RTA Service Boards to collectively recover at least 50 percent of operating costs from farebox and other system revenues. The RTA provides public funding for the agencies' remaining operating expenses.

This report summarizes the results of an 18-month effort to identify and characterize the condition of existing capital assets for each of the Service Boards based largely on the age of assets. To the extent that asset age reflects asset condition, the report provides RTA with a guidance tool for capital asset condition assessment including timing of replacement, rehabilitation and capital maintenance of assets.

Representatives of the Service Boards assisted in all aspects of this process including: the design and development of the inventory tables, the condition ratings system based on useful life and industry standards, the definition of “State of Good Repair (SGR),” the sampling plan and sampling data.

Attaining a State of Good Repair (SGR) in the region's bus and rail systems is essential. Despite the current level of investment, similar to transit systems throughout the nation, much of the Service Boards' rolling stock and infrastructure is deteriorating such that the level of current capital reinvestment will likely not reverse this decline. For the Service Boards, higher levels of repairs are required as assets age and surpass their useful life, thereby incurring increased maintenance costs.

## National Perspective

According to the Federal Transit Administration (FTA), roughly one-quarter of the nation's bus and rail assets are near or past their useful life (RE: *Transit State of Good Repair: Beginning the Dialogue*, October 2008, FTA). The proportion of assets in marginal or poor condition is even worse for the nation's largest rail transit systems. The FTA report highlights several examples:

- New York City Transit (NYCT): While NYCT has been working steadily since 1982 to bring its system to a State of Good Repair, a long-term major reinvestment program lost momentum following the defeat of New York's proposed congestion pricing plan, a measure that would have yielded a significant portion of funding to meet NYCT's reinvestment and expansion needs.
- Massachusetts Bay Transportation Authority (MBTA): Boston's MBTA estimates that its annual capital investment need is $150 million short of current annual funding levels.
- Washington Metropolitan Area Transit Authority (WMATA), San Francisco's Bay Area Rapid Transit (BART) and the Metropolitan Atlanta Rapid Transit Authority (MARTA) are all examples of rail systems entering their "middle age" or 30 years of age and now need capital reinvestment. While recapitalization needs to maintain the status quo continue to increase, these transit systems are also experiencing increasing ridership demand, thereby increasing the need for capital expansion investment.

According to the FTA's study, very few transit operations possess useful asset management processes. FTA is currently working with the transit industry to jointly develop asset management approaches that serve specific needs of the agencies.

Future ADA and other code requirements are not addressed as part of the 10-year needs with the exception of Positive Train Control (PTC) which is Federally mandated to be in place by 2015. Currently, CTA systems have PTC while Metra systems do not. Metra's implementation of PTC is estimated at a cost of $100 million. PTC refers to technology that is capable of preventing train-to-train collisions, overspeed derailments, and casualties or injuries to roadway workers (e.g., maintenance-of-way workers, bridge workers, signal maintainers) operating within their limits of authority as a result of unauthorized incursion by a train. Prior to October 2008, PTC systems were being voluntarily installed and tested by various carriers including Metra. However, the Rail Safety Improvement Act of 2008 (RSIA) has mandated the widespread installation of PTC systems by December 2015.

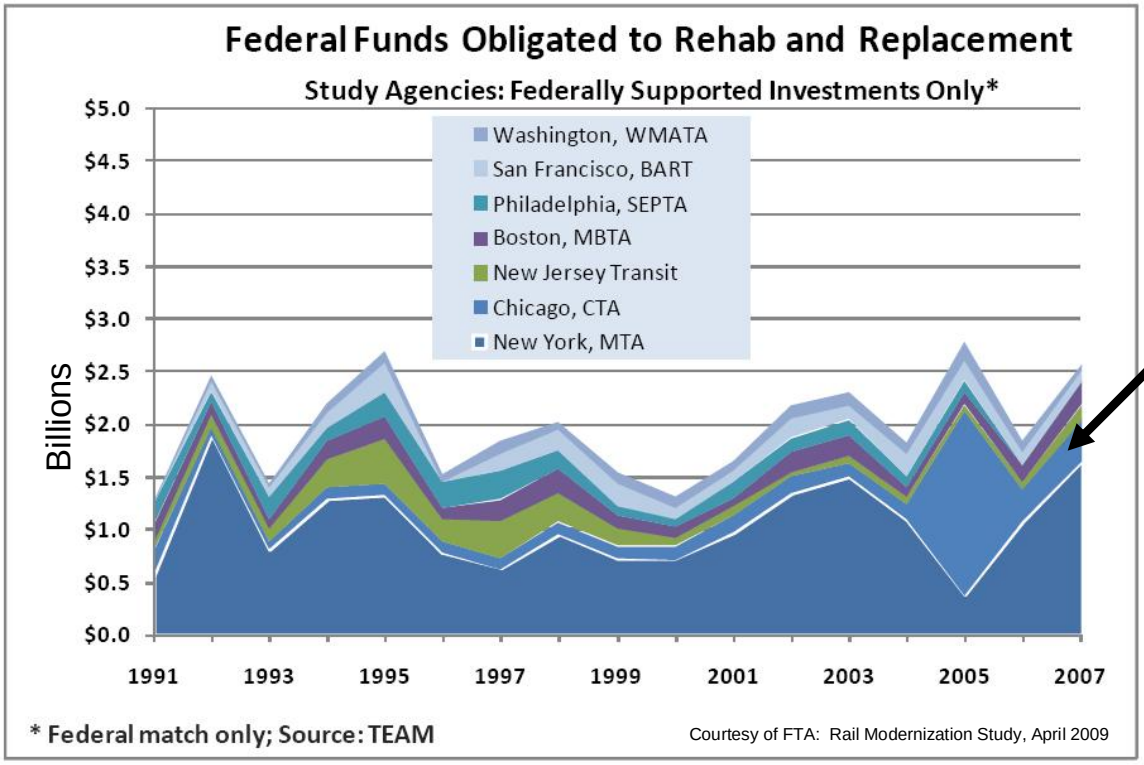
## Local Service Boards

**CTA -** The Chicago Transit Authority (CTA) is an independent governmental agency created by state legislation. The CTA began operating on October 1, 1947, after it acquired the properties of the Chicago Rapid Transit Company and the Chicago Surface Lines. On October 1, 1952, CTA became the sole operator of Chicago transit when it purchased the Chicago Motor Coach system.

The CTA operates the nation's second largest public transportation system in the nation. The CTA provides 1.7 million rides on an average weekday, accounting for over 80% of all transit trips taken in the six-county region. All of CTA's paratransit bus services were transferred to Pace in July of 2006.

Presently, the CTA service is a bus and rail transit system that serves the city of Chicago and surrounding suburbs. The CTA system provides approximately 520 million rides per year with about 60% of the rides served by bus. The CTA's bus system consists of over 2,100 buses that operate 140 routes (covering 2,230 route miles) and are supported by eight bus garages. The CTA's buses make over 25,000 trips daily, and serve over 11,500 bus stops throughout the region. The CTA's rail system consists of 1,190 rail cars operating over 224.1 miles of track on eight routes. The rail system also has 12 railcar maintenance facilities and 15 other major maintenance facilities. The CTA trains make about 2,157 trips serving 144 stations and approximately 640,000 rides each weekday. The CTA's train lines span the city and neighboring communities, and are known locally as the "L" since a portion of the system is supported by elevated tracks. The service provided is described as "heavy rail rapid transit," also referred to as a "subway" or "metro" in many parts of the world. Parts of the "L" run above ground, in subway tunnels and tubes, as well as at grade or in expressway medians. The CTA completed a system-wide rail engineering assessment in the early '90s and has been using the assessment annually in its capital planning. The CTA currently estimates its annual capital need to maintain assets at their current condition at $800 million.

The CTA, along with six other large metropolitan rail systems, participated in FTA's Rail Modernization Study: Report to Congress, April, 2009. The study assessed federal rehab and replacement funds provided to the seven rail systems since 1991. As seen in the figure below, historically the CTA has not received a significant share of the funds except during 2005.



**Metra -** The 1,155-mile Metra system serves 240 stations in the counties of Cook, DuPage, Lake, Will, McHenry and Kane. Metra (officially the Commuter Rail Division of the RTA) is a regional rail system that serves the city of Chicago and surrounding suburbs. Its system is comprised of 11 different rail lines across the Regional Transportation Authority's six-county service area. Four lines are operated under purchase of service agreements with the Union Pacific (UP) and the Burlington Northern Santa Fe (BNSF) Railroad Companies and the remaining seven are operated by Metra personnel (employees of the Northeast Illinois Regional Commuter Railroad Corporation) over Metra-owned tracks or through use agreements with other railroads. A consequence of the shared-use agreements is the public/private partnerships with freight railroads for operations and maintenance. In addition, Metra is regulated by the Federal Railroad Administration for its track, rolling stock and employees. The Metra system provides over 82 million rides annually and approximately 44% of all public transit passenger miles traveled in the region. Except for Metra's Electric District, all Metra platforms are low-level platforms causing the need for individual lift mechanisms in each car to meet ADA requirements. Metra's rail system consists of 146 diesel locomotives, 179 Electric Multiple Units (EMUs), 836 rail cars, more than 2,000 signals, 18 rail yards and seven maintenance facilities. More than 700 trains operate each weekday to serve the Metra system's 240 stations. Geographically, it's the largest and one of the most complex commuter rail systems in the nation integrating its operation with multiple complex rail crossings which are controlled and operated by major freight railroads. Metra relies heavily on its successful relationships with these Class I freight carriers to maintain its 95 plus percent on-time performance ratio. The dilapidated condition of the commuter rail assets in Chicago at the time Metra was formed caused Metra to perform a formal assessment of capital assets (track, interlockings, bridges and yard facilities) and another has not been performed since that time.

**Pace -** Pace is the Suburban Bus Division of the Regional Transportation Authority and was created by reformed legislation in the late 1980's. As noted above, CTA's paratransit bus services were transferred to Pace in July of 2006. Additionally in January, 2008, the State Legislature amended the RTA Act and added a provision that Pace shall be the Regional ADA provider of service in the suburbs and in the City of Chicago.

Pace carries over 36 million riders each year on fixed-route buses, dial-a-ride services in the suburbs, vanpool operations and regional ADA. Pace service is one of the largest bus services in North America. The Pace service area (excluding the City of Chicago ) covers 3,500 square miles. Pace operates 607 fixed-route buses, 345 paratransit vehicles in the suburbs, 580 contractor-owned paratransit vehicles in the City of Chicago, and 799 vanpool vehicles.

Pace owns 11 bus garages totaling over a million square feet and uses other facilities owned by private contractors and two municipalities who provide bus services for Pace. Pace services many CTA rail stations and numerous Metra stations. Pace owns and operates nine transportation centers, five park-and-ride lots and owns one administration office building.

In 1995, Pace hired Alfred Benesch and Company to perform a Transit Needs Assessment for Pace. Pace has used this document to schedule its bus replacements and garage improvements and it has included the life-cycle cost replacements of major capital infrastructure in its annual 5-year capital budget. Pace annually updates this study as part of its yearly capital budget process.

In addition, Pace conducted an Asset Condition Assessment in 1994 and has used life cycle frequencies in its repair and replacement decisions.

# 2

## Inventory Framework Design

Asset Information Teams were formed to design and develop the inventory framework for this assessment. Each Asset Information Team consisted of members representing the RTA, the respective Service Board and the URS Team. The Asset Information Teams were associated with an individual Service Board. For discussion purposes at the Asset Information Team meetings, assets were grouped into five asset types:

- Track and Structures
- Electrical/Subway Equipment
- Signals/ Communications/ Fare Collection
- Stations/ Garages/ Facilities
- Rolling Stock

The Asset Information Teams and the URS Team assessed the agency backgrounds and used Service Board input to guide the development of the inventory tables and the framework of the assessment inventory.

Team members developed the general data structure, categorized the assets into types, and identified the data fields required for each type. The URS Team developed a relational database for recording, maintaining and reporting asset information. The asset database supported the recording of current assets by Service Board type, current asset value and age. In total, 80 inventory tables were developed to provide the basis for data collection and ultimately, condition ratings. Table 2-1 below lists the assets which Service Board representatives and asset teams identified as important to be inventoried. For each asset type, Asset Information Team members agreed upon a “useful life.” The identification of the condition ratings, as described in the next chapter of this report, became a direct function of the age of the asset and its corresponding

length of useful life. The useful life of asset types do not align perfectly among agencies due to differences in asset wear and tear, historical differences in how assets are replaced, differences in types of use and differences in business practices.

**Table 2-1 Inventory Asset Tables by Service Board**

| Asset Groups | Asset Sub-Groupings | Service Board | | |
|---|---|---|---|---|
| | | CTA | Metra | Pace |
| Track and Structures | Track Structures | CTS1 - CTA Track Structures | MTS1 - Metra Track Structures | |
| | Track | CTS2 - CTA Ties | MTS2 - Metra Ties | |
| | | CTS3 - CTA Rail | MTS3 - Metra Rail | |
| | | CTS4 - CTA Grade Crossing Rail | MTS4 - Metra Grade Crossings | |
| | | CTS5 - CTA Special Trackwork | MTS5 - Metra Special Trackwork | |
| Electrical and Subway Equipment | Traction Power | CES1a - CTA Substations | MES1 - Metra Substations | |
| | | CES1b - CTA Substations Distribution | MES2 - Metra ROW Traction Power | |
| | | CES2 - CTA ROW Traction Power | MES3 - Metra Catenary | |
| | Subway Equipment | CES3 - Subway Electrical Service | | |
| | | CES4 - CTA Subway fans | | |
| | | CES5 - Subway Illumination | | |
| | | CES6 - CTA Subway Pumps | | |
| Systems | Signals | CSCF1 - CTA Interlockings | MSCF1a - Metra Interlockings | |
| | | CSCF2 - CTA Cab Signals | MSCF1b - Metra UP Interlockings | |
| | | CSCF3 - CTA Grade Crossing Signals | MSCF1c - Metra BNSF Interlockings | |
| | | | MSCF2a - Metra Signal Controls | |
| | | | MSCF2b - Metra UP Signal Controls | |
| | | | MSCF2c - Metra BNSF Signal Controls | |
| | | | MSCF3a - Metra Grade Crossing Signals | |
| | | | MSCF3b - Metra UP Grade Crossing Signals | |
| | | | MSCF3c - Metra BNSF Grade Crossing Signals | |
| | Fare Collection | CSCF4 - CTA Fare Collection Equipment | MSCF4 - Metra Fare Collection Equipment | PSCF1 - Pace Fare Collection Equipment |
| | Communications | CSCF5 - CTA Bus and Rail Radio Systems | MSCF5 - Metra Radio Systems | PSCF2 - Pace Radio Systems |
| | | CSCF6 - GPS On-Board Bus | MSCF6a - Metra CCTV Vending | PSCF3 – Electric/Signal/ ITS (including IBS, AVL, MDT, TSP) |
| | | CSCF7 - CTA CCTV Station | MSCF6b - Metra CCTV Homeland Security | |
| | | CSCF8 - CTA Cable Plant Fiber | MSCF7 - Metra Telephone Systems | |
| | | CSCF9 - CTA Fiber Optic Backbone Network | MSCF8 - Metra Public Address Systems | |
| | | CSCF10a - CTA Station SCADA Systems | MSCF9 - Metra Cable Plant | |
| | | CSCF10b - CTA Substation SCADA RTUs | MSCF10 - Metra Fiber Optic Backbone Network | |
| | | CSCF11a - CTA Public Address Systems Audio | MSCF11 - Metra Microwave | |
| | | CSCF11b - CTA Public Address Systems VMS | MSCF12 - Wireless Telephone | |
| Stations/ Garages/ Facilities | Stations and Parking | CFS1a - CTA Stations | MFS1a - Metra Stations | |
| | | CFS1b - CTA Station Parking | MFS1b - Metra Station Parking | |
| | Passenger and Maintenace Facilities | CFS2 - CTA Bus Passenger Facilities | MFS2 - Metra Maintenance and Yard Facilities | PFS1 - Pace Stations and Passenger Facilities |
| | | CFS3a - CTA Bus and Maintenace Facilities: Bus Garages | MFS3 - Metra Headquarters | PFS2a - Pace Support Facilities & Equipment |
| | | CFS3b - CTA Bus and Maintenace Facilities: Other Major Facilities | | PFS2b - Pace ADA Support Facilities & Equipment |
| | | CFS3c - CTA Bus and Maintenace Facilities: Railcar Maintenance | | PFS3 - Pace Headquarters Building |
| | | CFS4 - CTA Yard Facilities | | |
| | | CFS5 - CTA Headquarters Building | | |
| Rolling Stock | Revenue Vehicles | CRS 1 - CTA Rail Revenue Vehicles | MRS1a - Metra Rail Revenue Vehicles: Locomotives | PRS1a - Pace Rolling Stock (Non-Paratransit) |
| | | CRS 2 - CTA Buses | MRS1b - Metra Rail Revenue Vehicles: Coach Cars | PRS1b - Pace ADA Rolling Stock (Paratransit) |
| | | | MRS1b - Metra Rail Revenue Vehicles: EMUs | PRS1c - Pace ADA Rolling Stock (Para Vans) |
| | Non-Revenue Vehicles | CRS 3 - CTA Non-Revenue Vehicles | MRS 2 - Metra Non-Revenue Vehicles | PRS 2 - Pace Non-Revenue Vehicles |
| | Work Equipment | CRS 4 - CTA Work Equipment | MRS 3 - Metra Work Equipment | |

# 3

## Condition Rating Process

The Asset Information Teams, as described in the preceding chapter, determined the condition rating process that would be used to assess the condition of the Service Board's assets. Determining asset condition based on inspections was beyond the scope, timeframe and budget of this study's effort. Instead and early on in the assessment, it was determined that an asset's age would act as the primary "**predictor**" of an asset's condition. This approach was agreed to among the Service Boards due to the limited resources of each Service Board and the established level of effort available to undertake the magnitude of an overall assessment. To quote the FTA in its report entitled Transit State of Good Repair: Beginning the Dialogue, October, 2008: "Physical asset condition assessment is the best way to measure SGR for individual assets and on an agency-wide basis. Asset age is a second-best proxy . . ."

As a precursor to determining an age-based rating system, a series of Asset Information Team meetings were held to determine the appropriate useful life for each asset type. As stated in the previous chapter, an understanding was reached among Service Board representatives that useful life for any one type of asset could vary from one Service Board to another due to differences in asset wear and tear, historical differences in how assets are replaced, differences in types of use and differences in business practices. Asset condition ratings were broken into five categories on a scale from 1 to 5 with 1 representing an asset "past its useful life" and 5 representing a relatively new asset in "excellent" condition. The scale of 1 to 5 recognizes the importance of maintaining as much consistency as possible within the Federal Transit Administration's (FTA)

Condition Rating process. Table 3-1 provides a direct comparison of this assessment's and the FTA's condition rating definitions. While the ratings are somewhat consistent, the methods to determine the ratings differ. This assessment is based strictly on the asset's useful life and age, as "predictors" of an asset's condition (with the exception of Metra bridge structures which are rated based on actual inspections) while the FTA's definition is based on the asset's actual condition, which in theory would be dependent on direct inspection. While asset life and age are used as "predictors" for the purposes of this assessment, functional obsolescence of assets must also be taken into consideration. Useful life and corresponding condition ratings based on each asset type's age is given in Table 3-2 for CTA, Table 3-3 for Metra and Table 3-4 for Pace.

**Table 3-1 Condition Rating Definition Comparison: RTA vs. FTA**

| RTA Capital Asset Condition Assessment | | FTA Rail Modernization* | |
|---|---|---|---|
| **Condition Rating** | **Definition** | **Condition Rating** | **Definition** |
| **5** | **Excellent:** Asset is in the first quarter of its useful life. | **5.0 - 4.8** | **Excellent:** New asset; no visible defects. |
| **4** | **Good:** Asset in the first half of its useful life. | **4.7 - 4.0** | **Good:** Asset showing minimal signs of wear; some (slightly) defective or deteriorated component(s). |
| **3** | **Adequate:** Asset has not exceeded three quarters of its life. | **3.9 - 3.0** | **Adequate:** Asset has reached its mid-life (condition 3.5); some moderately defective or deteriorated component(s). |
| **2** | **Marginal:** Asset is in the last quarter of its useful life. | **2.9 - 2.0** | **Marginal:** Asset reaching or just past the end of its useful life; increasing number of defective or deteriorated component(s) and increasing maintenance needs. |
| **1** | **Past its Useful Life:** Asset has exceeded its useful life and is not in a state of good repair. These assets are considered to be backlog and have not been replaced or rehabilitated due to a lack of funding. | **1.9 - 1.0** | **Poor:** Asset is past its useful life and is in need of immediate repair or replacement; may have critically damaged component(s). |

* Rail Modernization Study, Federal Transit Administration, April 2009

**Table 3-2 Useful Life: CTA Assets**

| Asset Groups | Asset Sub-Groupings | Asset | Useful Life | Condition Rating Years | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 |
| CTA TRACK & STRUCTURES (TS) | CTA TRACK STRUCTURES | CTS1 - Track Structures | 80 | > 80 | 61 - 80 | 41 - 60 | 21 - 40 | < 21 |
| | CTA TRACK | CTS2 - Ties: Pine* | 25 | > 25 | 19 - 25 | 13 - 18 | 7 - 12 | < 7 |
| | | CTS2 - Ties: Oak/ DF Fasteners* | 25 | > 25 | 19 - 25 | 13 - 18 | 7 - 12 | < 7 |
| | | CTS2 - Ties: Composite* | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | CTS2 - Ties: Concrete Slab* | 55 | > 55 | 41 - 55 | 28 - 41 | 14 - 27 | < 14 |
| | | CTS3 - Rail: Tangent | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | CTS3 - Rail: Curves < than 1500' radius | 25 | > 25 | 19 - 25 | 13 - 18 | 7 - 12 | < 7 |
| | | CTS4 - Grade Crossing Track: High Auto Usage | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| | | CTS4 - Grade Crossing Track: Low Auto Usage | 20 | > 20 | 16 - 20 | 11 - 15 | 6 - 10 | < 6 |
| | | CTS5 - Special Trackwork | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| CTA ELECTRICAL & SUBWAY EQUIPMENT (ES) | CTA TRACTION POWER | CES1a - Substations | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | CES1b - Substations Distribution | 30 | > 30 | 23 - 30 | 16- 23 | 8 - 15 | < 8 |
| | | CES2 - ROW Traction Power | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | CTA SUBWAY EQUIPMENT | CES3 - Subway Electrical | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | CES4 - Subway Fans | 32 | > 32 | 25 - 32 | 17 - 24 | 8- 16 | < 8 |
| | | CES5 - Subway Illumination | 20 | > 20 | 16 - 20 | 11 - 15 | 6 - 10 | < 6 |
| | | CES6 - Subway Pumps | 30 | > 30 | 23 - 30 | 16- 23 | 8 - 15 | < 8 |
| CTA SYSTEMS (SCF) | CTA SIGNAL SYSTEMS | CSCF1 - Interlockings | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | CSCF2 - Cab Signals | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | CSCF3 - Grade Crossing Systems | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | CTA FARE COLLECTION | CSCF4 - Fare Collection | 15 | > 15 | 13 - 15 | 9- 12 | 5- 8 | < 5 |
| | CTA COMMUNICATIONS | CSCF5 - Radio Systems | 15 | > 15 | 13 - 15 | 9- 12 | 5- 8 | < 5 |
| | | CSCF6 - GPS Bus | 15 | > 15 | 13 - 15 | 9- 12 | 5- 8 | < 5 |
| | | CSCF7 - CCTV Station | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| | | CSCF8 - Cable Plant | 20 | > 20 | 16 - 20 | 11 - 15 | 6 - 10 | < 6 |
| | | CSCF9 - Fiber Optic Systems | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| | | CSCF10a - SCADA Systems Station | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| | | CSCF10 b- SCADA Systems Subgstation | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| | | CSCF11a - Public Address Systems Audio | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| | | CSCF11b - Public Address Systems VMS | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| CTA STATIONS, GARAGES, FACILITIES (FS) | CTA STATIONS & PARKING | CFS1a - Stations | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | CFS1b - Station Parking Garages | 20 | > 20 | 16 - 20 | 11 - 15 | 6 - 10 | < 6 |
| | CTA BUS PASSENGER AND MAINTENANCE FACILITIES | CFS2 - Bus Passenger Facilities | 20 | > 20 | 16 - 20 | 11 - 15 | 6 - 10 | < 6 |
| | | CFS3 - Maintenance Facilities | 70 | > 70 | 54 - 70 | 36 - 53 | 18 -35 | < 18 |
| | | CFS4 - Yard Facilities | 50 | > 50 | 38 - 50 | 25 - 37 | 13 - 25 | < 13 |
| CTA ROLLING STOCK (RS)** | CTA REVENUE VEHICLES | CRS1 - Rail Revenue Vehicles | 25 | > 25 | 19 - 25 | 13 - 18 | 7 - 12 | < 7 |
| | | CRS2 - Buses | 12 | > 12 | 10 - 12 | 7 - 9 | 4 - 6 | < 4 |
| | CTA NON-REVENUE VEHICLES AND WORK EQUIPMENT | CRS3 - Non-Revenue Vehicles | 5 | > 5 years | 46 - 60 mo | 31 - 45 mo | 16 - 30 mo | < 15 mo. |
| | | CRS4 - Work Equipment | varies | | | | | |

*CTA ties are replaced based on a scheduled replacement program while Metra ties are replaced as needed.

**Rolling stock useful life requires regulary scheduled rehabs.

**Table 3-3 Useful Life: Metra Assets**

| Asset Groups | Asset Sub-Groupings | Asset | Useful Life | Condition Rating Years | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 |
| METRA TRACK & STRUCTURES (TS) | METRA TRACK STRUCTURES | MTS1 - Track Structures | 80 | > 80 | 61 - 80 | 41 - 60 | 21 - 40 | < 21 |
| | METRA TRACK | MTS2 - Ties* | 32 | >32 | 24 - 32 | 16 - 24 | 8 - 16 | < 8 |
| | | MTS2 - Ties (Heavy Use)* | 28 | >28 | 21 - 28 | 14 - 21 | 7 - 14 | <7 |
| | | MTS3 - Rail: Tangent | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | MTS3 - Rail: Curve, 2 degrees or more | 7 | > 8 | 7 - 8 | 5 - 6 | 2 - 4 | < 2 |
| | | MTS4 - Grade Crossing Track | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| | | MTS5 - Special Trackwork: Normal | 25 | > 25 | 19 - 25 | 13 - 18 | 7 - 12 | < 7 |
| | | MTS5 - Special Trackwork: High Usage | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| METRA ELECTRICAL & SUBWAY | METRA TRACTION POWER | MES1 - Substations | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | MES2 - ROW Traction Power | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | MES3 - Catenary | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| METRA SYSTEMS (SCF) | METRA SIGNAL SYSTEMS | MSCF1a - Interlockings | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | MSCF 1b - Unions Pacific (UP) Interlockings | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | MSCF 1c - BNSF (BN) Interlockings | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | MSCF2a - Signal Controls | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | MSCF2b - UP Signal Controls | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | MSCF2c - BNSF Signal Controls | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | MSCF3a - Grade Crossing Systems | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | MSCF3b - UP Grade Crossing Systems | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | | MSCF3c - BNSF Grade Crossing Systems | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | METRA FARE COLLECTION | MSCF4 - Fare Collection | 15 | > 15 | 13 - 15 | 9- 12 | 5- 8 | < 5 |
| | METRA COMMUNICATIONS | MSCF5 - Radio Systems | 15 | > 15 | 13 - 15 | 9- 12 | 5- 8 | < 5 |
| | | MSCF6 - CCTV | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| | | MSCF7 - Telephone Systems | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| | | MSCF8 - Public Address Systems | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| | | MSCF9 - Cable Plant Fiber | 20 | > 20 | 16 - 20 | 11 - 15 | 6 - 10 | < 6 |
| | | MSCF10 - Metra Fiber Optic Backbone Network | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| | | MSCF11 - Metra Microwave | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| | | MSCF12 - Wireless Telephone | 10 | > 10 | 7.5 - 10 | 5 - 7.5 | 2.5 - 5 | < 2.5 |
| METRA FACILITIES (FS) | METRA STATIONS & PARKING | MFS1 - Stations & Parking Facilities | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| | METRA MAINTENANCE & YARD FACILITIES | MFS2 - Maintenance Facilities | 70 | > 70 | 54 - 70 | 36 - 53 | 18 -35 | < 18 |
| | | MFS2 - Yard Track | 50 | > 50 | 38 - 50 | 25 - 37 | 13 - 25 | < 13 |
| | | MFS2 - Yard Track: Diesel Shop Lead | 15 | > 15 | 13 - 15 | 9- 12 | 5- 8 | < 5 |
| | | MFS2 - Yard Track: Other Switches/ Ties | 25 | > 25 | 19 - 25 | 13 - 18 | 7 - 12 | < 7 |
| | METRA HEADQUARTERS BUILDING | MFS3 - Headquarters Building | 40 | > 40 | 31 - 40 | 21 - 30 | 11 - 20 | < 11 |
| METRA ROLLING STOCK (RS)** | METRA RAIL REVENUE VEHICLES | MRS1a - Rail Revenue Vehicles - Locomotives | 30 | > 30 | 23 - 30 | 16- 23 | 8 - 15 | < 8 |
| | | MRS1b&c - Rail Revenue Vehicles - Coach Cars & EMUs | 50 | > 50 | 38 - 50 | 25 - 37 | 13 - 25 | < 13 |
| | METRA NON-REVENUE VEHICLES | MRS2 - Non-Revenue Vehicles | 5 | > 5 years | 46 - 60 mo | 31 - 45 mo | 16 - 30 mo | < 15 mo. |
| | | MRS3 - Work Equipment | varies | | | | | |

*CTA ties are replaced based on a scheduled replacement program while Metra ties are replaced as needed.

**Rolling stock useful life requires regulary scheduled rehabs.

**Table 3-4 Useful Life: Pace Assets**

| Asset Groups | Asset Sub-Groupings | Asset | Useful Life | Condition Rating Years | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 |
| PACE SYSTEMS (SCF) | PACE FARE COLLECTION | PSCF1 - Fare Collection | 15 | > 15 | 13 - 15 | 9- 12 | 5- 8 | < 5 |
| | PACE COMMUNICATIONS | PSCF2 - Radio Systems | 15 | > 15 | 13 - 15 | 9- 12 | 5- 8 | < 5 |
| | PACE ELECTRIC/ SIGNAL/ ITS SYSTEMS | PSCF3 – Electric/Signal/ ITS (including IBS, AVL, MDT, TSP) | varies | | | | | |
| PACE STATIONS, GARAGES, FACILITIES (FS) | PACE BUS PASSENGER AND MAINTENANCE FACILITIES | PFS1- Bus Passenger Facilities | 20 | > 20 | 16 - 20 | 11 - 15 | 6 - 10 | < 6 |
| | | PFS1- Bus Passenger Facilities, Bus Pavement, P.C Concrete | 20 | > 20 | 16 - 20 | 11 - 15 | 6 - 10 | < 6 |
| | | PFS1- Bus Passenger Facilities, Bus Pavement, Asphaltic | 20 | > 20 | 16 - 20 | 11 - 15 | 6 - 10 | < 6 |
| | | PFS1- Bus Passenger Facilities, Auto Pavement, P.C Concrete | 20 | > 20 | 16 - 20 | 11 - 15 | 6 - 10 | < 6 |
| | | PFS1- Bus Passenger Facilities, Auto Pavement, Asphaltic | 20 | > 20 | 16 - 20 | 11 - 15 | 6 - 10 | < 6 |
| | | PFS2- Maintenance Facilities - Building | 60 | > 60 | 46 - 60 | 31 - 45 | 16 - 30 | < 16 |
| | | PFS2- Maintenance Facilities - Interior Equipment | 12 | > 12 | 10 - 12 | 7 - 9 | 4 - 6 | < 4 |
| | | PFS2- Maintenance Facilities - Roof/ Exterior | 20 | > 20 | 16 - 20 | 11 - 15 | 6 - 10 | < 6 |
| PACE ROLLING STOCK (RS)** | PACE BUSES | PRS1 - Buses | 12 | > 12 | 10 - 12 | 7 - 9 | 4 - 6 | < 4 |
| | | PRS1 - Paratransit Buses | 5 | > 5 years | 46 - 60 mo | 31 - 45 mo | 16 - 30 mo | < 15 mo. |
| | | PRS1 - Vans | 4 | > 4 | 3 - 4 | 2 - 3 | 1 - 2 | < 1 |
| | PACE NON-REVENUE VEHICLES | PRS2 - Non-Revenue Vehicles | varies | | | | | |

**Rolling stock useful life requires regulary scheduled rehabs.

For the purposes of this asset condition assessment, the SGR is defined as a condition rating of 3, or "adequate with no backlog." In effect, anything rated 3 or higher is in an SGR. Anything rated lower than 3 begins to take on "marginal" aspects and as defined, is in the last quarter of the asset's useful life. FTA's condition rating system, also based on a scale of 1.0 to 5.0, is defined more strictly related to the asset's actual condition, not the asset's age. FTA's range of 2.9 – 2.0 defines an asset as one that is reaching the end of its useful life with an ". . .increasing number of defective or deteriorated components." As such, FTA identifies 2.5 or higher as the rating at which the asset is in a "State of Good Repair". Based on comparison of the definitions and for the purposes of this assessment, a "State of Good Repair" of 3 is consistent with FTA's "State of Good Repair" of 2.5.

# 4

## Asset Inventory Tables and Sampling

Service Board representatives assisted in the design and finalization of the asset inventory tables and also provided the input data to complete the tables. Asset data elements are generally defined by the following groups:

**Structures:** Structures are defined as steel bridges, steel elevated structure, concrete bridges, viaducts, movable bridges, and embankments/retaining walls.

**Track:** Inventory for the track is defined by five major elements: ties, rails, special track work (includes switches, frogs and closure rails), yard track and ballast.

**Traction Power and Subway Equipment:** Substation equipment includes rectifiers, transformers and switch equipment, contact rail, insulator chairs, catenary wire and structures and the power distribution cable plant. Subway support equipment includes ventilation fans, pumps, breaker room louvers and subway lighting.

**Signal:** The signaling of both the CTA and Metra are categorized and assessed as each being comprised of two systems: Grade Crossings and Train Control including interlockings. Even though both systems are inherently interfaced, each has a unique structure, equipment and guidelines and can be subject to capital investment separately. In an effort to break apart and simplify the assets of the signaling system, Grade Crossing and Train Control Systems are assessed and reported separately to allow for distinct and convenient report updates in the future.

**Fare Collection Equipment:** Fare Media Equipment and Automatic Fare Collection Equipment include primary fare collection facilities, revenue processing and counting rooms, data centers, representative rail stations and communications infrastructure involved in fare collection data.

**Communications:** The assets include bus antenna base stations, microwave towers, fiber optic cable plant fiber optic nodes, telephone switch facilities, public address systems, CCTV security systems and control center systems (SCADA) and alarms.

**Stations:** Major station elements include architectural elements, roofs, sewers, fire protection, HVAC systems, electrical systems and passenger areas.

**Bus Passenger Facilities:** These facilities are evaluated by the following major elements: concrete and asphaltic pavements, drainage structures and employee facilities.

**Bus Garages and Maintenance Facilities:** Major elements include tracks or pavements, multiple building elements including large train maintenance structures, welfare and office buildings, fueling facilities, roofs, lifts or hoists, sewers, vehicle washers, lighting, electrical stand-by structures, fire protection, and HVAC systems.

**Outlying Maintenance Yards:** Facilities for overnight storage and cleaning with the ability to make minor repairs but not fueling.

**Rolling Stock:** The assets included in this group are both revenue and non-revenue vehicles including transit rail cars, rail passenger coaches, locomotives, buses, rail work equipment service cars, and other rubber tire vehicles.

The final inventory tables form the basis for this initial 10-year capital needs assessment. During the process of compiling data for the inventory tables, a minimal number of assets from each asset group was selected for limited statistical sampling. The sampling, representing less than 1% of each asset class, was conducted to verify that the proposed condition ratings represent actual field conditions. The results of this limited sampling generally corroborated the condition rating process which, as discussed in previous chapters, was based on the asset age as compared to its useful life. A summary of the sampling results is provided in Tables 4-1, 4-2 and 4-3 for CTA, Metra and Pace respectively. In addition, sampling reports are provided in Appendix A-1.

The final inventory tables, representing all data provided by the Service Boards, are presented for CTA, Metra and Pace respectively in Appendices A-2a, A-3a, A-4a under separate cover.

**Table 4-1 CTA Sampling Results**

| Asset | Asset ID and Location | Condtion Rating by Age | Sampling Observed Condition Rating | Comment | Appendix Reference |
|---|---|---|---|---|---|
| Bridges | Greenleaf St. Purple Line Northside Elevated Structure/Sheridan Rd to Addison. | 1 | 1 | Bridges sampled appear to be past their useful life. Temporary shoring has been installed. The steel structures are showing advanced deterioration. Bridges have received in-service repairs to the structural steel and have been repainted. | A-1, p. 1 |
| Tracks | Tracks 1& 2 Foster to Central Ave. Purple Line | 1 | 2 | The rail on curves such as the curve over Ridge Ave. showed sidewear due to the lateral curving forces in the less than 1500 foot radius curve. The projected useful life of 25 years seems conservative due to the light traffic on this line. The rail was well within the APTA Standard for sidewear. The rail on the tangent sections showed some wear but it appeared to be a rate that would be in line with a forty year projected life. | A-1, p. 2 |
| Signals | Granville Interlocking Red Line (Signal)* | 1 | 1 | The control panel is a "unit lever" type and is no longer a CTA standard, only a few of these remain on the system. The GRS Model 55 switch machines are no longer available and replacement parts are hard to obtain. The signal houses are rusted and have no air conditioning. At the time of field verification this Interlocking is used for emergency purposes only and no daily normal switch movements are made. | A-1, p. 3 |
| Commun-ications | Loyola Station (Fare Collection / Comm) | 2, 4 | 2, 4 | Fuller is the public address audio system installed at this station. This system was installed in 2002 and therefore has a conditional rating of 2 based on a 10-year life cycle. EDI is the public address VMS system installed at this station. This system was installed in 2002 and therefore has a conditional rating of 2 based on a 10 ear life cycle. QEI is the SCADA system installed at this station. This system was installed in 2002 and therefore has a conditional rating of 2 based on a 10 year life cycle. Fiber Optic Backbone System – Lucent DMXtend is the Fiber Optic Backbone System installed at this station. This system was installed in 2005 and therefore has a conditional rating of 4 based on a 10 year life cycle. All observations are consistent with useful life condition ratings. | A-1, p. 6 |
| Sub-stations | Franklin and Broadway Substation | 1 | 1 | FRANKLIN: Maintenance of the equipment is hindered due to the difficulty in obtaining replacement parts. Based on equipment age, inability of obtaining spare parts, the location of the substation and kilowatt usage, the substation is a condition 1 asset rating. Loss of either of the two rectifiers would result in reduced service conditions and most probably reduced train speed. BROADWAY: Similar to the Franklin Substation, maintenance is costly and spare parts are either discontinued or purchased as a special order at a premium cost. Based on the information supplied and observations, the substation is a condition 1 asset rating. | A-1, p. 8 |
| Rolling Stock Buses | Forest Glen Bus Garage Flexible 6000 | 1 | 2 | These vehicles are active and in revenue service two (2) years past their useful life. Interiors are clean and in very good condition. Driver's seat/compartment and passenger seats are in marginal to good condition, exterior paint is in marginal to good condition except for some paint peeling off the body, very little rust, windows not damaged, undercoating missing from mid-half of bus toward the engine compartment due to age/wear. The marine grade plywood flooring is still in good condition. Found no evidence of graffiti on these vehicles. Visual observation does not assess the mechanical condition of the buses. | A-1, p. 12 |
| Rolling Stock Buses | Nova 6400 Bus Series | 3 | 3 | Interiors/exteriors in good condition, driver's and passenger seats in marginal to good condition/flooring in good condition, windows not damaged, paint good/very little rusting on bodies, minor or no accident damage, engine power plant/no major fluid or oil leaks, tires tread/wheels above average. Under coat is very good. No evidence of graffiti on these vehicles. The appearance and mechanical condition of these vehicle show that when they approach mid-life the only major task that may be necessary will be to repower with engines of transmissions. Visual observation does not assess the mechanical condition of the buses. | A-1, p. 12 |
| Stations/ Facilities | 98th Street Shop, LaSalle/ Van Buren Loop Station, Harrison Station, South Shops, Forest Glen Garage | 98th. St. Rail Shop - 2, LaSalle/ Van Buren Loop - 1, Harrison Red Line - 3, South Shops - 1, Forest Glen Garage - 1 | 98th. St. Rail Shop - 2, LaSalle/ Van Buren Loop - 1, Harrison Red Line - 3, South Shops - 1, Forest Glen Garage - 1 | 98th. St. Rail Shop - Serviceable. LaSalle/ Van Buren - could use restoration. Harrison Red Line - Most features have been servicably rehabbed, not upgraded. South Shops - needs upgrading. Forest Glen Garage - generally in poor condition. | A-1, p. 15 |

NOTE: Results of additional asset sampling is provided in Appendix A-1

**Table 4-2 Metra Sampling Results**

| Asset | Asset ID and Location | Condtion Rating by Age | Sampling Observed Condition Rating | Comment | Appendix Refer-ence |
|---|---|---|---|---|---|
| Bridges | BRNO 1304.5 UP-N Montrose Ave. , BRNO 1304.75 UP-N Sunnyside Ave. BRNO 1305.25 UP-N Wilson Ave. , BRNO 1305.5 UP-N Leland Ave. , BRNO 1305.75 UP-N Lawrence Ave. , BRNO 1306 UP-N Winnemac Ave. , BRNO 1306.25 UP-N Foster Ave. BRNO 1306.75 UP-N Balmoral Ave. | 3 ( by Metra inspections) | 2 - 3 | Bridges showed some deterioration of the ballast pans and paint failure throughout the structures. Condition-wise, bridges appeared adequate. Based on age and potential load or fatigue ratings, they may be reaching useful life in the foreseeable future. | A-1, p. 19 |
| Signals | Randolph St. Station | 1 | 1 | Most of the equipment is over 20 years old and seems to be maintained in good condition. The Interlocking is controlled from Metra's Consolidated Control Facility (CCF). An emergency control panel could be used by the dispatcher located in the Tower if anything happens to CCF. The US&S M3 switch machines seem to be in good condition with regular maintenance. The signal house roof is showing signs of rusting due to leaks in the ceiling. The Interlocking is heavily used during rush hour on weekdays. | A-1, p. 20 |
| Rolling Stock | Western Avenue Rail Car Shop Budd Cars Series # 8200 - 8224 | 5 ( by Metra inspections) | 4 | Passenger coaches, numbered 8203 and 8218 were in very good condition, with exterior stainless steel shell free of damage and graffiti. Undercar arrangements were also in good condition, as was piping and cabling. Metra personnel described door impingement due to dirt accumulation, along with a repair program to be initiated. | A-1, p. 23 |
| Rolling Stock | Western Avenue Rail Car Shop GMC/EMB F40 PH Locomotives # 100 to 127 | 3 - 5 ( by Metra inspections) | When Overhauled - 5, Others - 3 | Locomotive unit 102 has been fully refurbished, and was under review/test. The workmanship appeared to be of high quality, including wiring, piping, and paint finish. Metra personnel noted that the work performed by Progress yielded very highly reliable equipment. For unit 102, the work resulted in what is essentially a new locomotive. Also reviewed were units 105 and 108, which were the same configuration as unit 102, but had not been overhauled as yet. Units exhibited both interior and exterior corrosion, with notable corrosion at structure / floor plate seams at the exterior. Cab interiors showed signs of age degradation, seat wear, and floor wear. Cabling and hose assemblies showed signs of age degradation. | A-1, p. 23 |
| Stations/ Facilities | 115th. St. Station /Beverly Branch | 1 | 1 | Platform material is asphalt with a low timber retaining wall. It is in serviceable condition. Evidence of deterioration was observed in the stationhouse's roof and exterior walls. | A-1, p. 24 |
| Stations/ Facilities | Flossmoor Station / Round Lake Station | Flossmore - 1, Round Lake - 4 | Flossmore - 1, Round Lake - 4 | FLOSSMOOR STATION -The platform is of marginal quality. The deck is made of precast concrete panels with exposed aggregate. Most of the joints between panels have failed at the rail-side edges. The failures were cured by surface patches and timber shoring. Rust was common on canopy and enclosure structures. ROUND LAKE STATION - The mansard roof was degraded but serviceable. Platform material is asphalt with a low timber retaining wall. It is in serviceable condition. | A-1, p. 25 |

**Table 4-3 Pace Sampling Results**

| Asset | Asset ID and Location | Condtion Rating by Age | Sampling Observed Condition Rating | Comment | Appendix Refer-ence |
|---|---|---|---|---|---|
| Commun-ications | Northwest Divison Bus Garage | 1 | 1 | Due to the Federal Communications Commission (FCC) 800 MHz Band Reconfiguration plan adopted in 2004, radios are out of date. | A-1, p. 26 |
| Fare Collection | Northwest Divison Bus Garage | 1 | 1 | The electronic registering fareboxes are showing their age, but appear to be well maintained. The integrated Ticket Processing Units are also exhibiting evidence of age and normal external wear, but also appear to be well-maintained. The vaulting island equipment, where cashboxes from the fareboxes are emptied, is showing substantial signs of corrosion and other wear. These devices must be maintained to high levels of integrity to ensure the security of the collected cash; corrosion, peeling paint, and other visible signs of damage and wear can obscure evidence of tampering. | A-1, p. 27 |
| Rolling Stock, Buses | Northwest Divison Bus Garage | 1 | 1 | Average bus age 7.4 years. Buses 6 -17 years old are receiving mid-life work and engine replacement. Visual observation does not assess the mechanical condition of the buses. | A-1, p. 28 |
| Facilities | Northwest Divison Bus Garage | 1 | 1 | Facility is, as a whole, functionally obsolete, with half of the bus fleet stored outside year-round in all weather conditions | A-1, p. 31 |
| Facilities | Elgin Transportation Center | 1-3 | 1-3 | The building and building structure are in marginal condition with typical maintenance required such as painting, window replacement and repair of roof leaks. At this age, it is also typical that the building heating, air conditioning, and water heating will need repair or replacement in the near future if not already done. The pavement structure is compiled of two unique components. The first-- the concrete driveway approaches -- are in need of repair or replacement. They are showing multiple patches from annual maintenance and upkeep. The bridge deck portion of the facility seems to be in marginal condition. The current deck overlay wearing surface is in need of some repairs, and based upon a bi-annual inspection of the bridge, additional repairs may be necessary. | A-1, p. 32 |

# 5

## 10-Year Capital Needs Assessment

This initial 10-year capital needs assessment is based on cost components for backlog, normal replacement and capital maintenance (Table 5-1). The **backlog** component is the value placed upon replacement of assets characterized by an age greater than their useful life. These assets are still in service and typically have not been replaced within their useful life due to a lack of sufficient funding. **The normal replacement costs** are the planned replacement cost for assets that will reach the end of their useful life during the 10-year program, 2010-2019. These assets are still in service and would be scheduled for replacement during the 10-year program if sufficient funding was available. The **capital maintenance component** is the cost associated with keeping an asset in a State of Good Repair. Capital maintenance costs are typically significant and anticipated and are associated with keeping the asset in service for the full term of its useful life. Capital maintenance costs are characterized by replacement or rehabilitation of asset components, but not replacement of the entire asset. Assets in service beyond their useful lives will typically require increased capital maintenance costs.

In addition to backlog, normal replacement and capital maintenance costs, soft cost and contingency costs were added to the total cost of assets. The majority of soft costs are expended in the planning, engineering, and project management efforts. These services include; in-house agency staff, government related support staff, and the use of consultants for particular tasks. Project start-up and initiation expenses are also included in this cost category. Contingency costs are costs for unforeseen emergencies or design shortfalls typically identified after a project commences. A contingency cost is included in project costs so that projects can proceed with minimal interruption due to changes or cost overruns. All 10-year need costs for each asset type are summarized for the CTA, Metra and Pace respectively in Appendix A-2b, A-3b and A-4b under separate cover.

**Table 5-1 Definitions of Asset Cost Terms**

| | |
|---|---|
| **BACKLOG** | **The replacement cost for assets characterized by an age greater than their useful life. These assets are still in service and typically have not been replaced within their useful life due to a lack of sufficient funding.** |
| **NORMAL REPLACEMENT COSTS** | **The replacement cost for assets that will reach the end of their useful life during the 10-year program, 2010-2019. These assets are still in service and would be scheduled for replacement during the 10-year program if sufficient funding was available.** |
| **CAPITAL MAINTENANCE COSTS** | **The cost associated with keeping an asset in a state of good repair. Capital maintenance costs are typically significant and anticipated and are associated with keeping the asset in service for the full term of its useful life. Capital maintenance costs are characterized by replacement or rehabilitation of asset components, but not replacement of the entire asset. Examples of typical capital maintenance costs are bus overhauls (CTA, Pace), rail car overhauls (CTA, Metra), structure component replacement such as flange angles, foundations or connection angles (CTA, Metra).** |
| **SOFT COSTS** | **RAIL & BUS INFRASTRUCTURE COMPONENTS: Additional 22.7% of total base cost including miscellaneous costs related to development of passenger services.<br>RAIL AND BUS ROLLING STOCK AND EQUIPMENT: Additional 15% of total base cost including miscellaneous costs related to development of passenger services.<br>The majority of soft costs are expended in the planning, engineering, and project management efforts. These services include in-house agency staff, government related support staff, and the use of consultants for particular tasks. Project start-up and initiation expenses are also included in this cost category. Project financing cost and an "other" expense line item, which includes any reconciliations and unaccountable costs, comprise the full range of project development capital costs. (Federal Transit Administration definition)** |
| **CONTINGENCY COSTS** | **RAIL & BUS INFRASTRUCTURE COMPONENTS: Additional 20% of total base cost including miscellaneous costs related to development of passenger services.<br>RAIL & BUS EQUIPMENT & ROLLING STOCK: Additional 15% of total base cost including miscellaneous costs related to development of passenger services.<br>These costs are budgeted for unforeseen emergencies or design shortfalls typically identified after a project commences. The contingency is included in the budget so the project can proceed with minimal interruption for changes or cost overruns.** |

The final inventory asset tables (Appendices A-2a, A-3a, and A-4a) and corresponding 10-year needs tables (Appendices A-2b, A-3b and A-4b) form the basis for the 10-year capital needs assessment. This chapter provides a summary of the inventory asset data, a summary of asset condition ratings, cost components for backlog, normal replacement and capital maintenance and an overall summary of the 10-year needs assessment.

## Condition Ratings

Results of the condition rating analysis based on asset age are provided in Appendices A-5, A-6 and A-7 for CTA, Metra and Pace respectively. The appendices provide both a bar chart and a pie chart to represent the condition of all assets for which specific age information was collected. A summary of the average condition rating by asset and Service Board is presented in Table 5-2.

## Overall Results of 10-Year Needs Assessment

A summary of all 10-year needs assessment costs including backlog costs, 10-year replacement costs and 10-year capital maintenance costs for each Service Board is presented in Tables 5-3, 5-4 and 5-5 for CTA, Metra, and Pace respectively. The 10-year needs of the Service Boards are comprised of current backlog, and 10-year replacement and capital maintenance needs. Future ADA and other code requirements are not addressed as part of the 10-year needs with the exception of Positive Train Control (PTC) which is Federally mandated to be in place by 2015. CTA systems have PTC while Metra systems do not currently have PTC.

The total 10-year needs assessment cost for CTA is $14.999 billion. The total 10-year needs assessment cost for Metra is $7.374 billion. The total 10-year needs assessment cost for Pace is $2.255 billion. The 10-year needs of each of the Service Boards are based strictly on responsibilities of the agencies and do not include costs, needs or contributions of railroads or other entities.

**Backlog**. The backlog cost for each Service Board is shown in the column titled, "Backlog" in Tables 5-2, 5-3 and 5-4, respectively, for CTA, Metra and Pace. A summary of the results is described below. All soft costs and contingencies are included in these tables. Appendix A-8 provides the same information derived from the base cost figures (from Appendices A-2, A-3 and A-4).

**CTA –** The total backlog cost for CTA is $10.006 billion. The major asset components of the backlog include Stations & Parking Facilities at $3.576 billion, Rail Revenue Vehicles at $2.044 billion, Track Structures at $986 million, Bus and Rail Maintenance Facilities at $815 billion, Buses at $636 million, Subway Fans at $417 million, Fare Collection at $299 million, Substations at $267 million, Ties at $192 million and ROW Traction Power at $146 million.

**Metra –** The total backlog cost for assets for which data was available for Metra is $3.701 billion. The major asset components of Metra's backlog include Stations & Parking at $1.222 billion, Maintenance Facilities at $756 million, Rail Revenue Vehicles - EMUs at $660 million, Track Structures at $425 million and Signal Controls at $165 million.

**Pace –** The total backlog cost for Pace is $115 million. The major asset components of the backlog include ADA Rolling Stock at $52 million, Suburban Services Rolling Stock at $29 million and Suburban Support Facilities and Equipment at $18 million.

**Normal Replacement of Assets** . The normal replacement cost of assets for each Service Board is shown in the column titled, "Normal Replacement" in Tables 5-2, 5-3 and 5-4, respectively,

for CTA, Metra and Pace. All soft costs and contingencies are included. A summary of the results is described below.

**CTA –** The total 10-year normal replacement cost for CTA is $3.222 billion. The major asset components of the normal replacement cost include Rail Revenue Vehicles at $1.095 billion and Stations and Parking at $778 million.

**Metra –** The total 10-year normal replacement cost for Metra is $1.704 billion. The major asset components of the normal replacement cost include Rail Revenue Vehicles - Coach Cars at $495 million and Rail Revenue Vehicles – EMUs at $383 million**.**

**Pace –** The total 10-year normal replacement cost for Pace is $1.932 billion. The major asset components of the normal replacement cost include Suburban Services Rolling Stock at $753 million and Suburban Support Facilities and Equipment at $360 million.

**Capital Maintenance**. The capital maintenance cost for each Service Board is shown in the column titled, "Capital Maintenance" in Tables 5-2, 5-3 and 5-4, respectively, for CTA, Metra and Pace. All soft costs and contingencies are included. A summary of the results is described below.

**CTA –** The total 10-year capital maintenance cost for CTA is $1.772 billion. The major asset components of the capital maintenance cost include Track Structures at $847 million, Rail Revenue Vehicles at $657 million and Buses at $268 million.

**Metra –** The total 10-year capital maintenance cost for Metra is $1.968 billion. The major asset components of the capital maintenance cost include Rail Revenue Vehicles – Coach Cars at $471 million and Locomotives at $173 million.

**Pace –** The total 10-year capital maintenance cost for Pace is $208 million. The major asset components of the capital maintenance cost include Suburban Services Rolling Stock at $196 million.

## Assumptions

The assumptions used during the asset assessment were compiled into a table and can be found in Appendix A-9. The table includes both asset costs assumptions and capital maintenance assumptions for each asset category. These assumptions include unit costs and cost sources, industry standards, limits of the assessment, replacement schedules, inflation rates, and general asset information.

**Table 5-2 Asset Average Condition Ratings by Service Boards**

| Asset Groups | Service Board: CTA – CTA Asset | CTA – Average Condition Rating | Metra – Metra Asset | Metra – Average Condition Rating | Pace – Pace Asset | Pace – Average Condition Rating |
|---|---|---|---|---|---|---|
| Track and Structures | CTS1 Track Structures | 3.21 | MTS1 Track Structures | 3.30 | | |
| | CTS2 Ties | 3.69 | MTS2 Ties | N/A | | |
| | CTS3 Rail | 3.08 | MTS3 Rail | | | |
| | CTS4 Grade Crossing Rail | 4.77 | MTS4 Grade Crossings | | | |
| | CTS5 Special Trackwork | 3.77 | MTS5 Special Trackwork | | | |
| Electrical and Subway Equipment | CES1a Substations | 2.27 | MES1 Substations | 2.13 | | |
| | CES1b Substations Distribution | 3.02 | MES2 ROW Traction Power | 2.39 | | |
| | CES2 ROW Traction Power | 2.20 | MES3 Catenary | 2.72 | | |
| | CES3 - Subway Electrical Service | 1.79 | | | | |
| | CES4 Subway fans | 1.32 | | | | |
| | CES5 Subway Illumination | 1.00 | | | | |
| | CES6 Subway Pumps | 4.81 | | | | |
| Systems | CSCF1 Interlockings | 3.96 | MSCF1a Interlockings | 3.20 | | |
| | CSCF2 Cab Signals | 3.76 | MSCF1b UP Interlockings | | | |
| | CSCF3 Grade Crossing Signals | 4.87 | MSCF1c BNSF Interlockings | | | |
| | | | MSCF2a Signal Controls | 2.68 | | |
| | | | MSCF2b UP Signal Controls | 1.43 | | |
| | | | MSCF2c BNSF Signal Controls | 1.00 | | |
| | | | MSCF3a Grade Crossing Signals | N/A | | |
| | | | MSCF3b UP Grade Crossing Signals | | | |
| | | | MSCF3c BNSF Grade Crossing Signals | | | |
| | CSCF4 Fare Collection Equipment | N/A | MSCF4 Fare Collection Equipment | 1.97 | PSCF1 - Pace Fare Collection Equipment | 1.00 |
| | CSCF5 Bus and Rail Radio Systems | 1.00 | MSCF5 Radio Systems | 2.90 | PSCF2 - Pace Radio Systems | 1.59 |
| | CSCF6 GPS On-Board Bus | 3.69 | MSCF6a CCTV Vending | 1.00 | PSCF3 – Electric/Signal/ ITS (including IBS, AVL, MDT, TSP) | 2.91 |
| | CSCF7 CCTV Station | 4.02 | MSCF6b CCTV Homeland Security | 3.51 | | |
| | CSCF8 Cable Plant Fiber | 4.43 | MSCF7 Telephone Systems | 1.36 | | |
| | CSCF9 Fiber Optic Systems | 4.05 | MSCF8 Public Address Systems | N/A | | |
| | CSCF10a SCADA Systems Stations | 2.47 | MSCF9 Cable Plant | 3.00 | | |
| | CSCF10b Substation SCADA RTUs | 1.71 | MSCF10 Fiber Optic Backbone Network | 1.00 | | |
| | CSCF11a Public Address Systems Audio | 2.52 | MSCF11 Microwave | 2.33 | | |
| | CSCF11b Public Address Systems VMS | 2.52 | MSCF12 Wireless Telephone | 5.00 | | |
| Stations/ Garages/ Facilities | CFS1a Stations | 2.93 | MFS1a Stations | 3.04 | | |
| | CFS1b Station Parking | 2.89 | MFS1b Station Parking | 2.02 | | |
| | CFS2 Bus Passenger Facilities | 1.03 | MFS2 Maintenance and Yard Facilities | 3.79 | PFS1 - Pace Stations and Passenger Facilities (Pavement) | 2.88 |
| | CFS3a Bus and Maintenace Facilities: Bus Garages | 3.00 | MFS3 Headquarters | N/A | PFS2 - Pace Support Facilities & Equipment | 3.64 |
| | CFS3b Bus and Maintenace Facilities: Other Major Facilities | 2.63 | | | PFS3 - Pace Headquarters Building | N/A |
| | CFS3c Bus and Maintenace Facilities: Railcar Maintenance | 3.33 | | | | |
| | CFS4 Yard Facilities | 2.73 | | | | |
| | CFS5 Headquarters Building | N/A | | | | |
| Rolling Stock | CRS1 Rail Revenue Vehicles | 1.35 | MRS1a Rail Revenue Vehicles: Locomotives | 3.53 | PRS1a - Pace Rolling Stock (Non-Paratransit) | 3.19 |
| | CRS2 Buses | 3.56 | MRS1b Rail Revenue Vehicles: Coach Cars | 3.78 | PRS1b - Pace ADA Rolling Stock (Paratransit) | 3.14 |
| | | | MRS1b Rail Revenue Vehicles: EMUs | 1.72 | PRS1c - Pace ADA Rolling Stock (Para Vans) | 3.29 |
| | CRS 3 Non-Revenue Vehicles | 1.22 | MRS 2 Non-Revenue Vehicles | 1.60 | PRS 2 - Pace Non-Revenue Vehicles | 2.34 |
| | CRS 4 Work Equipment | 2.78 | MRS 3 Work Equipment | 3.00 | | |

| KEY: | |
|---|---|
| Asset In State of Good Repair | 3.00 and above |
| Asset Not In State of Good Repair | Below 3.00 |

**Table 5-3 CTA Assets: 10-Year Needs Assessment Components (in 000's)***

| Asset Groups | Assets | Cost Type | | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | TOTAL 10-YEAR Replace-ment & Cap Maint | TOTAL 10-YEAR PROGRAM NEEDS | Assets | Appendix A-3a Inventory Table page refr - | Appendix A-3b 10-year Needs, page refr - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Backlog $ | Normal Replacement $ | | | | | | | | | | | | | | | |
| | | | Capital Maintenance $ | | | | | | | | | | | | | | | |
| CTA TRACK & STRUC-TURES (CTS) | CTS1 - Track Structures | $985,552 | Normal Replacement $ | $54,226 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $54,226 | $1,886,874 | CTS1 - Track Structures | 1 | 1 |
| | | | Capital Maintenance $ | $84,710 | $84,710 | $84,710 | $84,710 | $84,710 | $84,710 | $84,710 | $84,710 | $84,710 | $84,710 | $847,096 | | | | |
| | CTS2 - ALL MAINLINE TIES | $192,064 | Normal Replacement $ | $314 | $24,738 | $63,433 | $0 | $3,235 | $1,874 | $3,212 | $58,233 | $0 | $0 | $155,039 | $347,103 | CTS2 - ALL MAINLINE TIES | 10 | 2 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CTS3 - Rail: Tangent + CTS3 - Rail: Curves < than 1500' radius | $83,197 | Normal Replacement $ | $1,239 | $0 | $0 | $6,770 | $6,130 | $367 | $13,765 | $1,457 | $1,339 | $2,897 | $33,963 | $117,160 | CTS3 - Rail: Tangent + CTS3 - Rail: Curves < than 1500' radius | 14 | 3 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CTS4 - Grade Crossing Track: High Auto Usage + CTS4 - Grade Crossing Track: Low | $0 | Normal Replacement $ | $616 | $0 | $0 | $0 | $0 | $0 | $548 | $411 | $616 | $0 | $2,192 | $2,192 | CTS4 - Grade Crossing Track: High Auto Usage + CTS4 - Grade Crossing Track: Low Auto Usage | 48 | 4 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CTS5 - Special Trackwork: Elevated + Ballasted + Concrete | $99,890 | Normal Replacement $ | $714 | $0 | $4,995 | $8,562 | $4,995 | $4,281 | $32,108 | $32,108 | $0 | $24,973 | $112,733 | $212,623 | CTS5 - Special Trackwork: Elevated + Ballasted + Concrete | 50 | 5 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| CTA ELECTRICAL & SUBWAY EQUIPMENT (CES) | CES1a - Substations: Equipment and Buildings | $267,249 | Normal Replacement $ | $7,786 | $0 | $23,356 | $0 | $0 | $0 | $0 | $0 | $7,786 | $16,353 | $55,281 | $322,529 | CES1a - Substations: Equipment and Buildings | 63 | 6 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CES1b - Substations Distribution | $11,988 | Normal Replacement $ | $0 | $0 | $0 | $1,241 | $0 | $0 | $0 | $0 | $0 | $0 | $1,241 | $13,230 | CES1b - Substations Distribution | 65 | 8 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CES2 - ROW Traction Power | $146,013 | Normal Replacement $ | $0 | $39,448 | $2,056 | $2,674 | $3,219 | $11,756 | $18,124 | $2,005 | $0 | $0 | $79,283 | $225,296 | CES2 - ROW Traction Power | 68 | 11 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CES3 - Subway Electrical | $44,627 | Normal Replacement $ | $0 | $0 | $0 | $0 | $1,528 | $0 | $0 | $4,585 | $0 | $0 | $6,113 | $50,740 | CES3 - Subway Electrical | 71 | 14 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CES4 - Subway Fans & Ventilation | $417,141 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $28,768 | $0 | $0 | $28,768 | $445,909 | CES4 - Subway Fans & Ventilation | 73 | 16 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CES5 - Subway Illumination | $7,102 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $7,102 | CES5 - Subway Illumination | 75 | 18 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CES6 - Subway Pumps | $0 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $150 | $0 | $0 | $0 | $150 | $150 | CES6 - Subway Pumps | 77 | 20 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| CTA SYSTEMS (CSCF) | CSCF1 - Interlockings | $94,182 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $5,708 | $5,708 | $0 | $4,281 | $0 | $15,697 | $109,879 | CSCF1 - Interlockings | 78 | 21 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CSCF2 - Cab Signals | $11,416 | Normal Replacement $ | $0 | $0 | $0 | $0 | $79,912 | $0 | $28,540 | $0 | $0 | $0 | $108,452 | $119,868 | CSCF2 - Cab Signals | 81 | 24 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CSCF3 - Grade Crossing Systems | $0 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $571 | $571 | $571 | CSCF3 - Grade Crossing Systems | 83 | 25 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CSCF4 - Fare Collection | $299,000 | Normal Replacement $ | $0 | $0 | $0 | $757 | $0 | $0 | $0 | $0 | $0 | $0 | $757 | $299,757 | CSCF4 - Fare Collection | 84 | 26 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CSCF5 - Radio Systems | $0 | Normal Replacement $ | $0 | $0 | $98,636 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $98,636 | $98,636 | CSCF5 - Radio Systems | 91 | 27 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CSCF6 - GPS Bus | $1,170 | Normal Replacement $ | $1,888 | $0 | $0 | $881 | $0 | $0 | $675 | $3,923 | $0 | $0 | $7,367 | $8,537 | CSCF6 - GPS Bus | 92 | 28 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CSCF7 - CCTV Station | $0 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $4,146 | $1,097 | $0 | $122 | $0 | $5,365 | $5,365 | CSCF7 - CCTV Station | 93 | 29 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CSCF8 - Cable Plant | $0 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $3,568 | $0 | $0 | $0 | $3,568 | $3,568 | CSCF8 - Cable Plant | 98 | 30 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |

**Table 5-3 CTA Assets: 10-Year Needs Assessment Components (in 000's) CONTINUED***

| Asset Groups | Assets | Cost Type: Backlog $ | Cost Type | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | TOTAL 10-YEAR Replace-ment & Cap Maint | TOTAL 10-YEAR PROGRAM NEEDS | Assets | Appendix A-3a Inventory Table page refr - | Appendix A-3b 10-year Needs, page refr - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CTA SYSTEMS (CSCF) | CSCF10 - Fiber Optic Systems | $0 | Normal Replacement $ | $0 | $0 | $0 | $0 | $1,805 | $18,872 | $0 | $0 | $2,954 | $0 | $23,631 | $23,631 | CSCF10 - Fiber Optic Systems | 100 | 31 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CSCF11a - Station SCADA Systems | $5,651 | Normal Replacement $ | $0 | $0 | $2,312 | $0 | $942 | $0 | $0 | $0 | $3,510 | $0 | $6,764 | $12,415 | CSCF11a - Station SCADA Systems | 104 | 35 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CSCF11 b- Substation SCADA RTUs | $19,627 | Normal Replacement $ | $0 | $0 | $1,668 | $0 | $1,410 | $0 | $19,627 | $0 | $0 | $1,668 | $24,373 | $44,000 | CSCF11 b- Substation SCADA RTUs | 108 | 40 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CSCF12a - Public Address Systems Audio | $9,007 | Normal Replacement $ | $0 | $0 | $2,781 | $0 | $1,590 | $0 | $265 | $133 | $5,298 | $0 | $10,067 | $19,075 | CSCF12a - Public Address Systems Audio | 113 | 46 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CSCF12b - Public Address Systems VMS | $11,009 | Normal Replacement $ | $0 | $0 | $3,401 | $0 | $1,942 | $0 | $324 | $161 | $6,476 | $0 | $12,304 | $23,313 | CSCF12b - Public Address Systems VMS | 117 | 50 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| CTA STATIONS, GARAGES, FACILITIES (CFS) | CFS1 - Stations & Parking Facilities | $3,575,738 | Normal Replacement $ | $309,553 | $49,060 | $845 | $121,482 | $13,728 | $21,639 | $49,214 | $124,985 | $21,027 | $66,798 | $778,331 | $4,354,070 | CFS1 - Stations & Parking Facilities | 121 | 54 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CFS2 - Bus Passenger Facilities | $186,224 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $186,224 | CFS2 - Bus Passenger Facilities | 126 | 60 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CFS3a - Bus Maintenance Facilities | $428,100 | Normal Replacement $ | $0 | $0 | $0 | $42,810 | $0 | $0 | $42,810 | $0 | $0 | $0 | $85,620 | $513,720 | CFS3a - Bus Maintenance Facilities | 129 | 61 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CFS3b - Maintenance Facilities - Other Major | $236,882 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $3,939 | $0 | $3,939 | $240,821 | CFS3b - Maintenance Facilities - Other Major | 130 | 62 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CFS3c - Railcar Maintenance Facilities | $149,835 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $149,835 | CFS3c - Railcar Maintenance Facilities | 131 | 63 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CFS4 - Yard Facilities | $0 | Normal Replacement $ | $11,085 | $0 | $0 | $13,632 | $0 | $0 | $0 | $0 | $0 | $0 | $24,717 | $24,717 | CFS4 - Yard Facilities | 132 | 65 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CFS5 - CTA Headquarters Building | $0 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | CFS5 - CTA Headquarters Building | - | - |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| CTA ROLLING STOCK (CRS) | CRS1 - Rail Revenue Vehicles | $2,043,600 | Normal Replacement $ | $0 | $306,800 | $119,600 | $0 | $0 | $0 | $5,200 | $192,400 | $462,800 | $7,800 | $1,094,600 | $3,794,960 | CRS1 - Rail Revenue Vehicles | 133 | 66 |
| | | | Capital Maintenance $ | $656,760 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $656,760 | | | | |
| | CRS2 - Buses | $636,188 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $249,730 | $0 | $52,813 | $0 | $302,543 | $1,206,660 | CRS2 - Buses | 134 | 67 |
| | | | Capital Maintenance $ | $44,070 | $0 | $0 | $209,625 | $0 | $14,235 | $0 | $0 | $0 | $0 | $267,930 | | | | |
| | CRS3 - Non-Revenue Vehicles | $30,963 | Normal Replacement $ | $1,551 | $1,290 | $1,047 | $0 | $30,963 | $1,550 | $1,290 | $1,047 | $0 | $30,963 | $69,700 | $100,663 | CRS3 - Non-Revenue Vehicles | 135 | 68 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | CRS4 - Work Equipment | $12,087 | Normal Replacement $ | $282 | $6,639 | $792 | $1,555 | $1,353 | $1,210 | $1,190 | $1,001 | $658 | $1,469 | $16,149 | $28,236 | CRS4 - Work Equipment | 136 | 69 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | GRAND TOTAL CTA TOTAL 10-YEAR NEEDS | $10,005,502 | Normal Replacement $ | $389,253 | $427,975 | $324,920 | $200,364 | $152,753 | $71,402 | $477,144 | $451,217 | $573,618 | $153,492 | $3,222,138 | $14,999,426 | GRAND TOTAL CTA TOTAL 10-YEAR NEEDS | | |
| | | | Capital Maintenance $ | $785,540 | $84,710 | $84,710 | $294,335 | $84,710 | $98,945 | $84,710 | $84,710 | $84,710 | $84,710 | $1,771,786 | | | | |
| | | | TOTAL Replacement & Cap. Maint. | $1,174,793 | $512,685 | $409,630 | $494,699 | $237,462 | $170,346 | $561,853 | $535,926 | $658,328 | $238,202 | $4,993,924 | | | | |
| | | TOTAL Backlog $ | YEAR | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | TOTAL 10-YEAR Replace-ment & Cap. Maint. | TOTAL 10-YEAR PROGRAM NEEDS | | | |

*NOTE: All costs include Soft Costs and Contingencies

**Table 5-4 Metra Assets: 10-Year Needs Assessment Components (in 000's)***

| Asset Groups | Asset | Cost Type: Backlog $ | Cost Type | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | TOTAL 10-YEAR Replacement & Cap Maint | TOTAL 10-YEAR PROGRAM NEEDS | Asset | App-endix A-3a Inven. Table page refr - | App-endix A-3b 10-year Needs, page refr - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METRA TRACK & STRUC-TURES (MTS) | MTS1 - Track Structures | $425,078 | Normal Replacement $ | $34,819 | $34,819 | $34,819 | $34,819 | $34,819 | $34,819 | $34,819 | $34,819 | $34,819 | $34,819 | $348,188 | $1,030,126 | MTS1 - Track Structures | 1 | 1 |
| | | | Capital Maintenance $ | $25,686 | $25,686 | $25,686 | $25,686 | $25,686 | $25,686 | $25,686 | $25,686 | $25,686 | $25,686 | $256,860 | | | | |
| | MTS2** - Ties | $0 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $279,806 | MTS2 - Ties | 40 | 2 |
| | | | Capital Maintenance $ | $27,981 | $27,981 | $27,981 | $27,981 | $27,981 | $27,981 | $27,981 | $27,981 | $27,981 | $27,981 | $279,806 | | | | |
| | MTS3** - TOTAL Rail: Tangent & Curve | $0 | Normal Replacement $ | $21,405 | $21,405 | $21,405 | $21,405 | $21,405 | $21,405 | $21,405 | $21,405 | $21,405 | $21,405 | $214,050 | $214,050 | MTS3 - TOTAL Rail: Tangent & Curve | 40 | 3 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | MTS4** - Grade Crossing Track | $0 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $85,620 | MTS4 - Grade Crossing Track | 40 | 4 |
| | | | Capital Maintenance $ | $8,562 | $8,562 | $8,562 | $8,562 | $8,562 | $8,562 | $8,562 | $8,562 | $8,562 | $8,562 | $85,620 | | | | |
| | MTS5** - Special Trackwork:ALL | $0 | Normal Replacement $ | $4,281 | $4,281 | $4,281 | $4,281 | $4,281 | $4,281 | $4,281 | $4,281 | $4,281 | $4,281 | $42,810 | $42,810 | MTS5 - Special Trackwork:ALL | 40 | 5 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| METRA ELECTRI-CAL & SUBWAY EQUIP-MENT (MES) | MES1 - Substations | $22,475 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $15,795 | $0 | $15,795 | $52,541 | MES1 - Substations | 41 | 6 |
| | | | Capital Maintenance $ | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $14,270 | | | | |
| | MES2 - ROW Traction Power | $31,388 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $3,502 | $0 | $0 | $0 | $0 | $3,502 | $34,890 | MES2 - ROW Traction Power | 42 | 7 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | MES3 - Catenary | $15,708 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $14,795 | $0 | $0 | $0 | $0 | $14,795 | $44,774 | MES3 - Catenary | 43 | 8 |
| | | | Capital Maintenance $ | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $14,270 | | | | |
| METRA SYSTEMS (MSCF) | MSCF1 - Interlockings | $132,711 | Normal Replacement $ | $0 | $0 | $0 | $0 | $9,989 | $8,562 | $0 | $0 | $0 | $0 | $18,551 | $179,802 | MSCF1 - Interlockings | 44 | 9 |
| | | | Capital Maintenance $ | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $28,540 | | | | |
| | MSCF2a - Metra Signal Controls | $165,247 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $7,492 | $0 | $0 | $7,492 | $201,278 | MSCF2a - Metra Signal Controls | 50 | 10 |
| | | | Capital Maintenance $ | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $28,540 | | | | |
| | MSCF2b - UP Signal Controls | $91,749 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $106,019 | MSCF2b - UP Signal Controls | 51 | 10 |
| | | | Capital Maintenance $ | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $1,427 | $14,270 | | | | |
| | MSCF2c - BNSF Signal Controls | $29,039 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $36,174 | MSCF2c - BNSF Signal Controls | 53 | 10 |
| | | | Capital Maintenance $ | $714 | $714 | $714 | $714 | $714 | $714 | $714 | $714 | $714 | $714 | $7,135 | | | | |
| | MSCF3a - Grade Crossing Signal Systems | $33,535 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $133,425 | MSCF3a - Grade Crossing Signal Systems | 56 | 11 |
| | | | Capital Maintenance $ | $9,989 | $9,989 | $9,989 | $9,989 | $9,989 | $9,989 | $9,989 | $9,989 | $9,989 | $9,989 | $99,890 | | | | |
| | MSCF4 - Fare Collection Equipment | $8,028 | Normal Replacement $ | $1,040 | $0 | $78 | $0 | $283 | $0 | $0 | $0 | $0 | $0 | $1,401 | $9,429 | MSCF4 - Fare Collection Equipment | 69 | 12 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | MSCF5 - Radio Systems | $3,351 | Normal Replacement $ | $0 | $0 | $7,020 | $0 | $2,080 | $0 | $0 | $520 | $585 | $1,950 | $12,155 | $15,506 | MSCF5 - Radio Systems | 70 | 13 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | MSCF6a - CCTV Vending | $448 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $448 | MSCF6a - CCTV Vending | 71 | 13 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | MSCF6b - CCTV Homeland Security | $42 | Normal Replacement $ | $0 | $66 | $0 | $285 | $0 | $103 | $0 | $174 | $0 | $0 | $628 | $670 | MSCF6b - CCTV Homeland Security | 72 | 13 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | MSCF7 - Telephone Systems | $393 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $39 | $0 | $39 | $432 | MSCF7 - Telephone Systems | 73 | 13 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |

**Table 5-4 Metra Assets: 10-Year Needs Assessment Components (in 000's) CONTINUED***

| Asset Groups | Asset | Cost Type | | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | TOTAL 10-YEAR Replacement & Cap Maint | TOTAL 10-YEAR PROGRAM NEEDS | Asset | Appendix A-3a Inven. Table page refr - | Appendix A-3b 10-year Needs, page refr - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Backlog $ | Normal Replacement $ | | | | | | | | | | | | | | | |
| | | | Capital Maintenance $ | | | | | | | | | | | | | | | |
| METRA SYSTEMS (MSCF) | MSCF8 - Public Address Systems | $2,427 | Normal Replacement $ | $0 | $0 | $0 | $31 | $0 | $20 | $0 | $0 | $0 | $0 | $51 | $2,479 | MSCF8 - Public Address Systems | 74 | 14 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | MSCF9 - Metra Cable Plant | $0 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $2,496 | $0 | $0 | $2,496 | $2,496 | MSCF9 - Metra Cable Plant | 75 | 14 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | MSCF 10 - Metra Fiber Optic Backbone Network | $3,746 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $3,746 | MSCF 10 - Metra Fiber Optic Backbone Network | 76 | 14 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | MSCF 11 - Metra Microwave | $407 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $407 | MSCF 11 - Metra Microwave | 78 | 14 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | MSCF 12 - Wireless Telephone | $0 | Normal Replacement $ | $0 | $0 | $218 | $0 | $0 | $0 | $0 | $218 | $0 | $0 | $437 | $437 | MSCF 12 - Wireless Telephone | 79 | 14 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| METRA STATIONS, GARAGES, FACILITIES (MFS) | MFS1 - Metra Stations & Parking | $1,222,126 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $1,427,996 | MFS1 - Metra Stations & Parking | 80 | 15 |
| | | | Capital Maintenance $ | $10,063 | $2,865 | $10,426 | $11,951 | $57,170 | $65,379 | $16,620 | $20,634 | $0 | $10,761 | $205,870 | | | | |
| | MFS2- Metra Maintenance Facilites | $756,310 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $856,200 | MFS2- Metra Maintenance Facilites | 89 | 15 |
| | | | Capital Maintenance $ | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $2,854 | $59,934 | $2,854 | $2,854 | $17,124 | $99,890 | | | | |
| | MFS3- Metra Headquarters Building | $18,133 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $24,126 | MFS3- Metra Headquarters Building | 90 | 16 |
| | | | Capital Maintenance $ | $4,188 | $428 | $856 | $521 | $0 | $0 | $0 | $0 | $0 | $0 | $5,993 | | | | |
| METRA ROLLING STOCK (MRS) | MRS1a - Rail Revenue Vehicles - Locomotives | $0 | Normal Replacement $ | $39,000 | $13,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $52,000 | $225,290 | MRS1a - Rail Revenue Vehicles - Locomotives | 91 | 17 |
| | | | Capital Maintenance $ | $0 | $9,100 | $26,650 | $20,150 | $19,890 | $18,200 | $19,500 | $20,800 | $19,500 | $19,500 | $173,290 | | | | |
| | MRS1b - Rail Revenue Vehicles- Coach Cars | $0 | Normal Replacement $ | $91,000 | $0 | $0 | $0 | $0 | $80,860 | $80,860 | $80,860 | $80,860 | $80,860 | $495,300 | $965,900 | MRS1b - Rail Revenue Vehicles- Coach Cars | 92 | 17 |
| | | | Capital Maintenance $ | $27,950 | $39,390 | $60,450 | $65,325 | $65,325 | $51,116 | $62,985 | $39,624 | $30,485 | $27,950 | $470,600 | | | | |
| | MRS1c - Rail Revenue Vehicles- EMUs | $659,750 | Normal Replacement $ | $96,850 | $93,990 | $84,630 | $107,120 | $0 | $0 | $0 | $0 | $0 | $0 | $382,590 | $1,094,340 | MRS1c - Rail Revenue Vehicles- EMUs | 93 | 17 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $26,000 | $26,000 | $52,000 | | | | |
| | MRS1d - Rail Revenue Vehicles- Support | $0 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $131,040 | MRS1d - Rail Revenue Vehicles- Support | - | 17 |
| | | | Capital Maintenance $ | $7,670 | $13,130 | $13,910 | $14,040 | $14,040 | $14,040 | $14,040 | $13,390 | $13,390 | $13,390 | $131,040 | | | | |
| | MRS2 - Non-Revenue Vehicles | $44,819 | Normal Replacement $ | $3,496 | $754 | $1,797 | $7,030 | $39,620 | $3,207 | $910 | $605 | $5,429 | $17,323 | $80,170 | $124,989 | MRS2 - Non-Revenue Vehicles | 94 | 18 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | MRS3 - Work Equipment | $34,587 | Normal Replacement $ | $426 | $1,209 | $2,960 | $273 | $2,535 | $858 | $975 | $845 | $1,710 | $12 | $11,803 | $46,389 | MRS3 - Work Equipment | 110 | 19 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | | |
| | GRAND TOTAL Metra TOTAL 10-YEAR NEEDS | $3,701,495 | Normal Replacement $ | $292,317 | $169,524 | $157,208 | $175,244 | $115,012 | $172,412 | $143,250 | $153,714 | $164,923 | $160,649 | $1,704,253 | $7,373,633 | GRAND TOTAL Metra TOTAL 10-YEAR NEEDS | | |
| | | | Capital Maintenance $ | $135,646 | $150,688 | $198,066 | $197,761 | $242,199 | $234,510 | $255,999 | $180,223 | $175,149 | $197,645 | $1,967,885 | | | | |
| | | | TOTAL Replacement & Cap. Maint. | $427,962 | $320,212 | $355,274 | $373,005 | $357,211 | $406,921 | $399,249 | $333,937 | $340,072 | $358,294 | $3,672,138 | | | | |
| | | TOTAL Backlog $ | YEAR | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | TOTAL 10-YEAR Replacement & Cap. Maint. | TOTAL 10-YEAR PROGRAM NEEDS | | | |

*NOTE: All costs include Soft Costs and Contingencies

**Table 5-5 Pace Assets: 10-Year Needs Assessment Components (000's)***

| Asset Groups | Asset | Cost Type: Backlog $ | Cost Type | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | TOTAL 10-YEAR Replace-ment & Cap Maint | TOTAL 10-YEAR PROGRAM NEEDS | Asset | App-endix A-4a Inven. Tables page refr - | App-endix A-4b 10-year Needs, page refr - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PACE SYSTEMS (PSCF) | PSCF1 - Fare Collection | $0 | Normal Replacement $ | $0 | $3,900 | $46,768 | $1,560 | $0 | $0 | $0 | $0 | $1,268 | $34,060 | $87,555 | | PSCF1 - Fare Collection | 1 | 1 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $87,555 | | | |
| | PSCF2 - Radio Systems | $1,950 | Normal Replacement $ | $0 | $23,400 | $23,400 | $9,100 | $0 | $0 | $0 | $0 | $3,900 | $9,100 | $68,900 | | PSCF2 - Radio Systems | 2 | 1 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $70,850 | | | |
| | PSCF3 – Electric/Signal/ ITS (including IBS, AVL, MDT, TSP) | $3,139 | Normal Replacement $ | $2,854 | $8,277 | $18,765 | $22,119 | $20,263 | $16,411 | $10,588 | $12,443 | $8,162 | $7,135 | $127,017 | | PSCF3 – Electric/Signal/ ITS (including IBS, AVL, MDT, TSP) | 50 | 1 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $130,157 | | | |
| PACE STATIONS, GARAGES, FACILITIES (PFS) | PFS1 - Passenger Facilities | $7,135 | Normal Replacement $ | $12,015 | $12,772 | $12,130 | $12,130 | $11,416 | $7,849 | $6,707 | $9,918 | $8,134 | $10,988 | $104,057 | | PFS1 - Passenger Facilities | 89 | 2 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $111,192 | | | |
| | PFS2a Suburban Support Facilities & Equipment (Excluding Farebox) | $17,629 | Normal Replacement $ | $23,450 | $41,537 | $109,166 | $25,426 | $23,157 | $19,387 | $19,735 | $29,351 | $37,816 | $31,087 | $360,112 | | PFS2a Suburban Support Facilities & Equipment (Excluding Farebox) | 90 | 3 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $377,741 | | | |
| | PFS2b ADA Support Facilities (Excluding Farebox) | $3,568 | Normal Replacement $ | $2,141 | $16,411 | $12,272 | $19,407 | $2,854 | $3,568 | $5,423 | $8,562 | $7,563 | $8,990 | $87,190 | | PFS2b ADA Support Facilities (Excluding Farebox) | - | 3 |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $90,757 | | | |
| | PFS3 - Pace Headquarters Building | $0 | Normal Replacement $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | PFS3 - Pace Headquarters Building | - | - |
| | | | Capital Maintenance $ | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | | |
| PACE ROLLING STOCK (PRS) | PRS1a - Suburban Services Rolling Stock | $29,250 | Normal Replacement $ | $58,929 | $77,207 | $79,333 | $35,809 | $187,759 | $25,350 | $63,414 | $39,475 | $104,813 | $80,431 | $752,518 | | PRS1a - Suburban Services Rolling Stock | 91 | 4 |
| | | | Capital Maintenance $ | $34,268 | $17,680 | $17,680 | $18,980 | $18,980 | $18,980 | $17,030 | $17,030 | $17,030 | $18,330 | $195,988 | $977,756 | | | |
| | PRS1b - ADA Rolling Stock | $52,000 | Normal Replacement $ | $0 | $98,800 | $8,125 | $8,125 | $8,125 | $98,800 | $8,125 | $8,125 | $8,125 | $98,800 | $345,150 | | PRS1b - ADA Rolling Stock | 122 | 4 |
| | | | Capital Maintenance $ | $0 | $1,300 | $1,300 | $1,300 | $1,300 | $1,300 | $1,300 | $1,300 | $1,300 | $1,300 | $11,700 | $408,850 | | | |
| | PRS2 - Non-Revenue Vehicles | Non-Revenue Vehicles 10-year needs included in PFS2a Suburban Support Facilities & Equipment (Above) | | | | | | | | | | | | | | PRS2 - Non-Revenue Vehicles | 127 | 5 |
| | GRAND TOTAL PaceTOTAL 10-YEAR NEEDS | $114,671 | Normal Replacement $ | $99,389 | $282,303 | $309,957 | $133,675 | $253,575 | $171,364 | $113,992 | $107,873 | $179,780 | $280,591 | $1,932,499 | | GRAND TOTAL Pace TOTAL 10-YEAR NEEDS | | |
| | | | Capital Maintenance $ | $34,268 | $18,980 | $18,980 | $20,280 | $20,280 | $20,280 | $18,330 | $18,330 | $18,330 | $19,630 | $207,688 | $2,254,858 | | | |
| | | | TOTAL Replacement & Cap. Maint. | $133,657 | $301,283 | $328,937 | $153,955 | $273,855 | $191,644 | $132,322 | $126,203 | $198,110 | $300,221 | $2,140,187 | | | | |
| | | TOTAL Backlog $ | YEAR | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | TOTAL 10-YEAR Replacement & Cap. Maint. | TOTAL 10-YEAR PROGRAM NEEDS | | | |

*NOTE: All costs include Soft Costs and Contingencies