



NORTHERN INDIANA COMMUTER TRANSPORTATION DISTRICT

TRANSIT ASSET MANAGEMENT PLAN



SEPTEMBER
2018



TRANSIT ASSET MANAGEMENT PLAN

SEPTEMBER 2018

Prepared with support from:



APPROVAL

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1 EXECUTIVE SUMMARY

This Transit Asset Management (TAM) Plan provides an organization-wide view of the asset management work necessary for the NICTD to deliver transit services for the Northwest Indiana region. The TAM Plan was created in compliance with the requirements set out in MAP-21 and the Federal Transportation Administration's (FTA) subsequent TAM Final Rule. This document represents the first version of NICTD's TAM Plan and will be revised and improved upon over time.

1.1 TAM PLAN PURPOSE

The purpose of this TAM Plan is to comply with the requirements of MAP-21 and to:

- Consider how NICTD's levels of service affect and are affected by asset management activities.
- Document the asset portfolio – including nature, extent, age, and condition of NICTD's physical assets.
- Define action plans to improve NICTD's asset management organization, roles and responsibilities, key asset management business processes in place to assist and guide NICTD in delivering the TAM Plan, and the information systems to support work planning, scheduling and management.
- Identify lifecycle management needs by asset class – including maintenance, overhaul, renewal, and replacement.
- Assess the capital and operating budgets required to support safe and reliable service delivery.
- Create a link between investment decisions and specific asset goals.
- Identify the resources required to carry out this TAM Plan.

This initial NICTD TAM Plan provides a baseline from which NICTD will continue to build and improve our asset management capability. The TAM Plan will be updated, extended, and improved in future versions.

1.2 GUIDING PRINCIPLES: NICTD'S ASSET MANAGEMENT POLICY

NICTD has developed an Asset Management Policy that sets the overall direction for all asset management activities at NICTD. The policy describes several core principles around which NICTD will establish asset management strategies and plans:

- 1 *All asset management activities are undertaken within a transparent, integrated NICTD-wide framework.*
- 2 *Risk management is used to inform the asset management decision-making process.*
- 3 *Asset investment decisions will consider lifecycle costs and performance.*
- 4 *Enterprise technology will provide transparent meaningful data and information to support investment and management decisions.*
- 5 *Ownership, control, accountability, and reporting requirements for assets are established, clearly communicated, and implemented.*
- 6 *NICTD will continuously improve our asset management systems, processes, and practices.*

1.3 NICTD'S ASSETS AND THEIR CONDITION

The first step to improving the condition of NICTD's assets is to identify and document the portfolio of assets under NICTD's control. The TAM Plan brings together inventory information from numerous sources, and documents the various vehicles, facilities, stations, communications assets, information technologies, and other assets that allow NICTD to operate service.

The next step to improving the condition of NICTD's assets is to determine their current condition. Reliable knowledge of asset condition will enable NICTD to better justify capital programs and more knowledgably prioritize investment across divisions and asset classes.

It is critical that NICTD has clear knowledge of the condition and performance of our assets. In order to better communicate our needs and the risks of underinvestment, NICTD must have a good understanding of our state of good repair needs - informed by condition assessments. This condition data will be a key input of NICTD's prioritization process to ensure efficient and effective use of public funding. NICTD's 2018 condition targets are laid out in

Table 1-1 below. In 2018, NICTD engaged WSP to conduct an independent assessment of our facilities, which produced revised condition ratings for a portion of NICTD's facilities.

Table 1-1: Asset Overview and Performance Targets

| ASSET OVERVIEW | | | ASSET PERFORMANCE TARGETS | | | | NOTES |
|-------------------------|----------------------------------|-----------------|--|-------------|-------------------------|-------------|---|
| ASSET CLASS | ASSET TYPE | QUANTITY | PERFORMANCE METRIC | 2017 TARGET | 2017 ACTUAL PERFORMANCE | 2018 TARGET | |
| Rolling Stock | Passenger Rail Cars | 82 | No more than 0% of fleet have met or exceeded the useful life benchmark. | 0% | 0% | 0% | The useful life benchmark for NICTD's passenger cars is 40 years. |
| Equipment ¹ | Support and Maintenance Vehicles | 116 | No more than 35% of non-revenue service vehicles have met or exceeded their useful life. | 35% | 12% | 35% | The useful life benchmark varies by type. |
| Facilities ² | NICTD Facilities and Stations | 17 | No more than 0% of facilities rated below condition 3.0 on the TERM scale. | 0% | 0% | 0% | The TERM scale reflects a facility's overall condition. A rating of 3.0 means that the building is in adequate condition. |
| Infrastructure | Rail Fixed Guideways | 102 track miles | No more than 2% of track segments with performance restrictions. | 2% | 1.5% | 2% | There is a performance restriction when the maximum speed for a vehicle is less than the track's design speed at 9:00 am on the first Wednesday of each month (as designated by FTA). |

¹ NICTD 2017 Assessment

² Data from independent facilities assessment, not inclusive of all NICTD facilities. Additional facilities are ones for which NICTD does not have capital responsibility, and therefore condition assessments are not required for annual NTD reporting. This also excludes substations.

1.4 LIFECYCLE MANAGEMENT STRATEGIES AND ASSET MANAGEMENT ENABLERS

NICTD's core objective is to provide a safe, reliable, efficient commuter rail service. NICTD currently employs a variety of lifecycle management strategies to achieve this objective which are detailed in several NICTD documents. NICTD's asset lifecycle management strategies fall into the following categories:

- **Acquisition** activities to procure, design, build, and transfer assets, taking into account long-term maintenance and operations.
- **Maintenance** activities including inspection/monitoring, preventive maintenance, and corrective maintenance.
 - **Inspection/monitoring** activities to confirm the asset is able to function in its required state and provide a safe operational environment.
 - **Preventive maintenance** activities to achieve a required level of asset performance and maintain a safe operational environment.
 - **Corrective maintenance** activities to return the asset to its required function and restore a safe operational environment.
- **Overhaul/Rehabilitation** to restore the asset to an operational design standard and maintain performance.
- **Capital Replacement** to renew the asset.
- **Disposal** to ensure compliant, efficient, cost-effective retirement of assets.

1.5 INVESTMENT PRIORITIZATION

NICTD's investment decision making is based upon the understanding of our assets and their current levels of service gained through various targeted and documented processes. NICTD's facilities are inspected by NICTD staff annually utilizing the TERM rating system. This rating system is used to identify defects and document if and when a facility or its subcomponent assets require maintenance or further attention. NICTD also maintains a 5 Year Maintenance Plan for track and signal assets, with the current edition projecting through 2020. The NICTD Quality Assurance Manual describes the current 1-5/N/X rating methods the agency uses to determine the condition of bridges and culverts. NICTD also inspects rolling stock during routine inspection and maintenance, and conducts in-depth inspections at key times, such as prior to mid-life or end-life renewal programs. NICTD also has documented processes for the inspection of track and electrical assets in compliance with the relevant regulations and codes of practice.

The above condition assessment and inspection processes are the key criteria used in support of decision-making regarding programs, projects, and capital investment for NICTD with regards to our various assets. NICTD's other criteria include safety, affordability, reliability, maintainability, constructability, current performance, and ridership impacts.

1.6 IMPLEMENTATION AND EVALUATION PLAN

NICTD has identified discrete initiatives that will improve our asset management capabilities. Foremost among these are:

- Formal adoption of the Asset Management Policy contained within the TAM Plan by NICTD's top management, which directs the development of future asset management initiatives.
- Formal adoption of this TAM Plan by NICTD, to be used to guide the delivery of maintenance and capital programs.
- The condition targets shall be monitored. Failure to meet targets will be reviewed by NICTD and will result in recommendations for corrective action as appropriate, ensuring that we remain able to deliver the required condition target for each asset class.
- The asset portfolio and condition information shall be updated annually as part of NTD reporting.

At a minimum, this plan will undergo a comprehensive update and review every four years, with a preferred update cycle of every three years to coincide with the FTA triennial review process. The plan will also be updated when major changes in NICTD's assets occur, such as acquisition of a new fleet. Certain aspects of the plan will be reviewed more frequently, on an annual cycle. This includes a review of asset condition, performance targets (as part of annual submissions to the NTD), and progress against asset management objectives.

2 INTRODUCTION

This Transit Asset Management Plan sets out NICTD's approach to managing the assets that deliver public transportation services in the Northwest Indiana region.

2.1 NICTD BACKGROUND

The Northern Indiana Commuter Transportation District (NICTD) operates the South Shore Line train with service from Millennium Station in Chicago to the South Bend International Airport in South Bend, Indiana. Approximately 11,700 passengers ride the South Shore Line on an average weekday, primarily commuting between Indiana and downtown Chicago for work.

Between Millennium Station and 115th street in Chicago, the South Shore Line operates on track, and stops at six stations, owned and maintained by the Metra Electric District. From 115th street to South Bend Airport, NICTD manages 180 miles of track and 13 stations (one in Chicago and 12 in Indiana). NICTD's passenger rail fleet is composed of 72 electric multiple unit cars (EMUs) and 10 trailer cars.

The South Shore Line was originally built from 1901 to 1908 by the Chicago, Lake Shore and South Bend Railway. In 1989, NICTD assumed responsibility for operating passenger service on the line. NICTD is governed by a 10-member Board of Trustees, with two representatives from each of the four Indiana counties served by the South Shore Line (Lake, Porter, La Porte, and St. Joseph), and two appointed by Indiana's Governor.

NICTD generates operating revenues through farebox collections and other sources (e.g. parking, advertising, real estate, and investments), and receives supplemental revenue to cover operating expenses from local, state, and federal sources. Capital funding is provided by the federal government and State of Indiana. In total, NICTD's annual operating budget is approximately \$49 million and the capital budget is \$49 million.

2.2 BACKGROUND ON TRANSIT ASSET MANAGEMENT

In July 2012, the U.S. Government enacted the Moving Ahead for Progress in the 21st Century (MAP-21) Act, a funding and authorization bill that places specific asset management requirements on transit operators across the U.S. MAP-21 requires all transit agencies to develop and update an Asset Management Plan.³ An Asset Management Plan provides an organization wide view of the work necessary to deliver the organization's goals and objectives.

The Federal Transit Administration (FTA) released the Transit Asset Management (TAM) Final Rule in July 2016, which sets an October 2018 completion date for each agency's initial TAM Plan. Section 2.8 lists the requirements of FTA's TAM Final Rule and describes how the contents of this document relate to these requirements.

³ While the Fixing America's Surface Transportation (FAST) Act was enacted in December 2015 and now supersedes MAP-21, the asset management requirements of MAP-21 remain unchanged.

2.3 ACCOUNTABLE EXECUTIVE

625.25 (a)(3) A provider's Accountable Executive is ultimately responsible for ensuring a TAM Plan is developed and carried out in accordance with this part.

The Accountable Executive with responsibility for carrying out asset management practices is NICTD's President and Chief Executive Officer.

2.4 SCOPE OF THE TAM PLAN

The TAM Plan covers the following asset types across NICTD's South Shore Line:

- Rolling stock
 - Non-revenue vehicles and equipment
 - Maintenance and administrative facilities
 - Passenger stations and parking facilities
 - Track
 - Bridges
 - Electric traction power
 - Signals
 - Telecommunications
-

2.4.1 NICTD SERVICES

NICTD's services interface with a variety of assets owned by a spectrum of institutions throughout northeast Illinois and northwest Indiana. These institutions include but are not limited to NICTD itself, Metra, the City of Chicago, the City of South Bend, and the City of Gary. NICTD owns the track from 115th Street in the City of Chicago to the South Bend International Airport. NICTD has no capital responsibilities for Metra stations, Hegewisch building, or the Beverly Shores station. While NICTD does not have capital responsibility for the aforementioned stations, NICTD does maintain the buildings at Hegewisch and the Beverly Shore station. NICTD owns the platform at Hegewisch. As for the Gary Metro Center Station NICTD owns the platform and stairwells leading up to the platform, however we do not hold any ownership in the access points to that station. The elevator providing access to the Gary Metro Station platform is owned by the City of Gary but is maintained by NICTD. The access points at the Gary Metro Center Station, the Gary Metro Center building and the walkway along Broadway, are maintained by the City of Gary. South Bend International Airport maintains the South Bend Airport station.

2.5 OBJECTIVES

This is the initial version of NICTD's Transit Asset Management Plan, which describes the asset maintenance, overhaul, replacement and enhancement strategies required to provide public transportation services in Northwest Indiana.

The purpose of this plan is to:

- Document the asset portfolio – including nature, extent, age, and condition of NICTD's physical assets;
- Identify existing and proposed levels of service to be achieved with these assets;
- Identify the normalized or steady state lifecycle management needs, including maintenance, replacement and enhancement for each asset class;
- Assess the capital budgets necessary to support safe and reliable transit services and to bring the assets to a state of good repair;
- Document the key processes, organization and technology tools the enable effective asset management; and
- Establish actions plans for improving NICTD's approach to asset management activities.

This initial TAM Plan provides a baseline from which NICTD will continue to build and improve our asset management practices.

2.6 RELATIONSHIP TO OTHER DOCUMENTS

NICTD's TAM Plan is informed by and aligned with several other NICTD documents, including:

- [20-Year Strategic Business Plan \(2014\)](#) sets forth the goals and objectives around which this TAM Plan is aligned.
- [Maintenance Standard](#) manual that describes in detail the set of procedures, policies, and standards incorporated into NICTD's maintenance of our assets.
- [Maintenance of Way Department Quality Assurance Manual](#) documents the procedures and standards for performing construction, maintenance, and inspection on Maintenance of Way department assets, including track, grade crossings, and bridges and culverts.
- [Track and Signal 5 Year Maintenance Plan \(2016 through 2020\)](#) describes maintenance work to be undertaken on NICTD track and signal assets.
- [Miscellaneous policies, procedures, standards, and plans](#), which document how NICTD operates, providing information used within this TAM Plan.

2.7 TAM PLAN PERIOD

625.29 Transit Asset Management plan: horizon period, amendments and updates. (a) *Horizon period.* A TAM Plan must cover a horizon period of at least four (4) years. (b) *Amendments.* A provider should amend its TAM Plan whenever there is a significant change to the asset inventory, condition assessments, or investment prioritization that the provider did not reasonably anticipate during the development of the TAM Plan. (c) *Updates.* A provider must update its entire TAM Plan at least once every four (4) years. A provider's TAM Plan update should coincide with the planning cycle for the relevant Transportation Improvement Program or Statewide Transportation Improvement Program.

This TAM Plan covers a four-year time horizon. This is consistent with the FTA-mandated time horizon, and with other relevant planning cycles such as the Northwest Indiana Regional Planning Commission's Transportation Improvement Program (TIP) and Indiana's State Transportation Improvement Program (STIP). Some elements of this plan consider even longer time horizons.

2.8 TAM PLAN REQUIREMENTS

Under 625 of Title 49 Code of Federal Regulations the FTA has introduced requirements for Transit Asset Management. These requirements are summarized in Table 2-1 and cross referenced to the sections in this TAM Plan.

Table 2-1: TAM Plan Requirements

| REF# | EXTRACT FROM 49 CFR PART 625 | TAM PLAN SECTION |
|------|---|------------------|
| 1 | 625.25 (a)(1) Each tier I provider must develop and carry out a TAM Plan that includes each element under paragraph (b) of this section. (2) Each tier II provider must develop its own TAM Plan or participate in a group TAM Plan. A tier II provider's TAM Plan and a group TAM Plan only must include elements under paragraphs (b)(1) through (4) of this section. | Entire Document |
| 2 | 625.25 (3) A provider's Accountable Executive. | 2.3 |
| 3 | 625.25 (b) A TAM Plan must include (1) An inventory of the number and type of capital assets. | 5.1, Appendix A |
| 4 | (2) A condition assessment of those inventoried assets for which a provider has direct capital responsibility. | 5.2 |
| 5 | (3) A description of analytical processes or decision-support tools that a provider uses to estimate capital investment needs over time and develop its investment prioritization; | 8.1 |
| 6 | (4) A provider's project-based prioritization of investments, | 8.2 |
| 7 | (5) A provider's TAM and SGR policy; | 3 |
| 8 | (6) A provider's TAM Plan implementation strategy; | 9 |
| 9 | (7) A description of key TAM activities that a provider intends to engage in over the TAM Plan horizon period; | 6, 7 |
| 10 | (8) A summary or list of the resources, including personnel, that a provider needs to develop and carry out the TAM Plan; and | 6 |
| 11 | (9) An outline of how a provider will monitor, update, and evaluate, as needed, its TAM Plan and related business practices, to ensure the continuous improvement of its TAM practices. | 6.7 |
| 12 | 625.33 Investment prioritization. (a) A TAM Plan must include an investment prioritization that identifies a provider's programs and projects to improve or manage over the TAM Plan horizon period the state of good repair of capital assets for which the provider has direct capital responsibility. (b) A provider must rank projects to improve or manage the state of good repair of capital assets in order of priority and anticipated project year. (c) A provider's project rankings must be consistent with its TAM policy and strategies. (d) When developing an investment prioritization, a provider must give due consideration to those state of good repair projects to improve that pose an identified unacceptable safety risk when developing its investment prioritization. (e) When developing an investment prioritization, a provider must take into consideration its estimation of funding levels from all available sources that it reasonably expects will be available in each fiscal year during the TAM Plan horizon period. (f) When developing its investment prioritization, a provider must take into consideration requirements under 49 CFR 37.161 and 37.163 concerning maintenance of accessible features and the requirements under 49 CFR 37.43 concerning alteration of transportation facilities. | 8 |
| 13 | 625.45 Setting performance targets for capital assets. (a) <i>General.</i> (1) A provider must set one or more performance targets for each applicable performance measure. (2) A provider must set a performance target based on realistic expectations, and both the most recent data available and the financial resources from all sources that the provider reasonably expects will be available during the TAM Plan horizon period. | 5.2 |

2.9 TAM PLAN STRUCTURE

The plan format shown below outlines the sections contained in this Transit Asset Management Plan.



3 ASSET MANAGEMENT POLICY

The Asset Management Policy defines the guiding principles by which NICTD will manage the assets we own and maintain. The policy establishes the direction and objectives for developing asset management capability and implementing an asset management plan.

625.25 (b) A TAM Plan must include (5) A provider's TAM and SGR policy;

The Northern Indiana Commuter Transportation District (NICTD) is committed to employing asset management strategies in order to provide the highest level of service possible by the most cost-effective means available. It is the policy of NICTD to manage our assets efficiently and effectively in order to improve the State of Good Repair and deliver on our mission of providing safe and reliable transportation to our customers.

NICTD will establish asset management strategies and plans according to **six core principles:**

- 1 All asset management activities are undertaken within a transparent, integrated NICTD-wide framework.** Asset management requires the delivery by all NICTD departments of their respective responsibilities to ensure that the goals and objectives of NICTD's service levels are effectively and efficiently supported.
- 2 Risk management is used to inform the asset management decision-making process.** NICTD will work to better understand the characteristics of our assets through a risk management framework that will advance preventive activities to reduce risks.
- 3 Asset investment decisions will consider lifecycle costs and performance.** Decisions will be based on a systems approach that combines the implications of managing all aspects of an asset's lifecycle. NICTD will manage lifecycle needs efficiently to maximize the ability to deliver reliable service amidst budget constraints.
- 4 Enterprise technology will provide transparent meaningful data and information to support investment and management decisions.** NICTD's enterprise asset management (EAM) systems will increasingly be used to initiate and record data on all activities relating to NICTD's assets. This data will be used to support optimized investment in maintenance and capital planning, for maximized benefits and lower life cycle costs.
- 5 Ownership, control, accountability and reporting requirements for assets are established, clearly communicated and implemented.** Stewardship roles and responsibilities for the fleet, facilities, and equipment will be clearly defined. NICTD leadership will support staff in their various roles to deliver on the defined asset management strategies.
- 6 NICTD will continuously improve our asset management systems, processes, and practices.** In order to deliver on our performance, efficiency and financial targets, NICTD is committed to continuous improvement. Asset management activities and processes will be reviewed periodically and as events determine, and will be open to internal audit.

4 LEVELS OF SERVICE

This section of the 2018 TAM Plan establishes the relationship between NICTD’s strategic goals, levels of customer service it provides and the required technical performance of assets.

4.1 OVERVIEW

One of the basic cornerstones of good asset management practice is to align asset management activities with an asset owner’s corporate objectives and customer levels of service, thereby ensuring that assets deliver the required levels of service efficiently and economically. This alignment enables the relationship to be determined between levels of service and the cost of service delivery. In turn, this relationship can be evaluated to:

- Determine the affordability of an assets operating and capital need to meet the customer service levels.
- Develop asset management strategies and plans to meet required performance targets.
- Monitor asset performance to enable NICTD to continue to meet defined levels of service.
- Where necessary, justify additional funding requirements or justify service cut-back requirements

4.2 SCOPE OF SERVICES

NICTD currently operates 43 scheduled trains in revenue service each weekday. Nine of these trains are inbound morning rush hour trains, and eight of these are outbound rush hour trains. Four of these trains are primarily positioning moves between the Michigan City Shops Storage Yard and South Bend, although all trains are revenue runs open to passengers.

NICTD provides commuter rail transportation services for the four Northern Indiana counties of Lake, Porter, La Porte, and St. Joseph. The South Shore Line runs between the South Bend Airport and Millennium Station in Chicago, serving South Bend, Hudson Lake, Michigan City (two stations), Beverly Shores, Dune Park, Portage / Ogden Dunes, Gary (three stations), East Chicago, Hammond, Hegewisch, Hyde Park, and downtown Chicago (three stations). South Shore Line riders come primarily from these four counties and southeast Chicago / south Cook County, Illinois, but are also drawn from adjacent Indiana counties and southwest Michigan. Figure 4-1, below, shows the entire NICTD rail system.

Figure 4-1: NICTD System Map



4.3 LEVEL OF SERVICE DEVELOPMENT

Following the publication of the **NICTD 20-Year Strategic Business Plan (May 2014)**, NICTD has an opportunity to align asset and asset management performance targets to corporate strategic goals. The relationship between NICTD's Strategic Priorities, Customer Objectives and Asset Performance Measures is highlighted below in Table 4-1: NICTD Service Performance Targets

Table 4-1: NICTD Service Performance Targets

| | Strategic Priority 1: South Shore Line Baseline | Strategic Priority 2: West Lake Extension | Strategic Priority 3: Market Expansion | Strategic Priority 4: South Shore Line Maintenance |
|--|---|--|---|---|
| Definition (from the 20 Year Strategic Business Plan) | Baseline investments to maintain service standards and reliability on the existing South Shore line. | A West Lake Extension linking downtown Chicago and the rapidly growing areas of central Lake County. | Major improvements to the existing South Shore Line to provide faster, more reliable trips. | Ongoing, regular system maintenance to maintain the South Shore Line in a state of good repair. |
| Investment Priorities | <ul style="list-style-type: none"> ▪ Positive Train Control ▪ New Car Orders ▪ Existing Car Overhauls ▪ Double Tracking ▪ Metra Facility Capacity Improvements | <ul style="list-style-type: none"> ▪ West Lake Extension | <ul style="list-style-type: none"> ▪ Portage/Ogden Dunes Hi-Level Platform ▪ Michigan City Realignment/Station ▪ South Bend Realignment ▪ Gary Station Improvements | <ul style="list-style-type: none"> ▪ Planned Annual Capital Investments |
| Customer Outcomes | <ul style="list-style-type: none"> ▪ Federally mandated safety infrastructure ▪ Replace/rehabilitate rolling stock in excess of 40 years in service ▪ Greater reliability and schedule flexibility ▪ Improved train operations by updating track and storage facilities | <ul style="list-style-type: none"> ▪ Service from Chicago to Lake County | <ul style="list-style-type: none"> ▪ Reduce dwell times and improve travel time ▪ Realignment of route through Michigan City; consolidate stations ▪ Realignment of approach into terminal station at the airport ▪ New station facilities serving Gary | <ul style="list-style-type: none"> ▪ Maintenance & state of good repair |
| Asset Performance Measures | <ul style="list-style-type: none"> ▪ % of on-time trains (less than 6-minute deviation from timetable) | <ul style="list-style-type: none"> ▪ N/A | <ul style="list-style-type: none"> ▪ N/A | <ul style="list-style-type: none"> ▪ N/A |

4.4 SERVICE TRENDS AND PROJECTIONS

NICTD currently has a Spare Ratio of 23%⁴. Although this is slightly high, and is the result of a fall in ridership since 2007, NICTD expects increases in ridership that will cause this ratio to decrease steadily over the next few years. Thus, as stated previously, NICTD expects the spare ratio to fall below 20% after several years. However, even assuming that there will be another recession with an accompanying fall off in ridership, by 2024 NICTD must consider ordering additional electric multiple

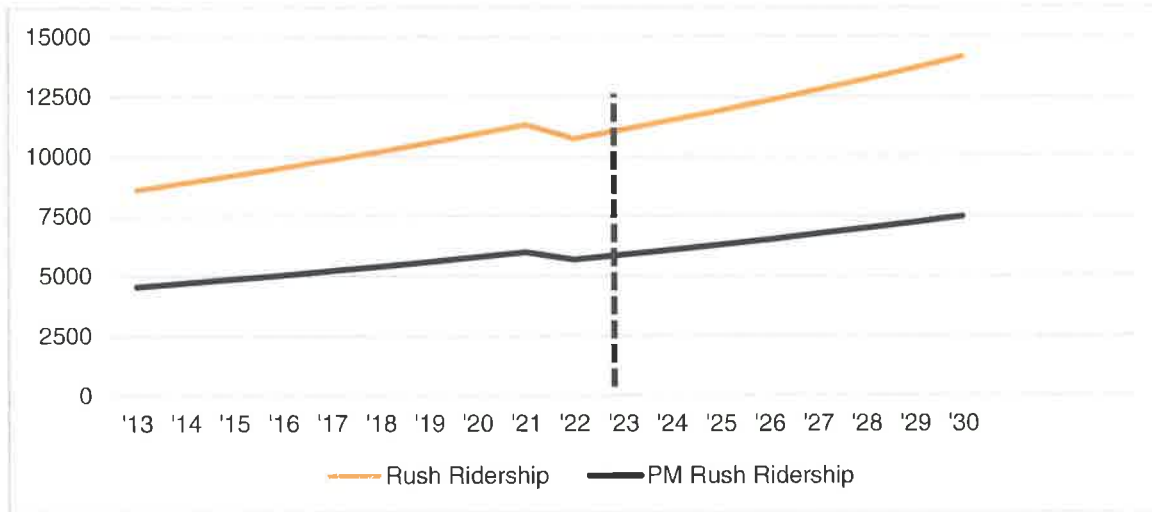
⁴ NICTD 2017 National Transit Database Report

unit cars for delivery by early 2026. NICTD will review our policies dependent on a potential timeline for the West Lake County Commuter Line to reflect the need for additional cars for that service. Projected fleet demand can be seen in Figure 4-2 below.

The improvements in the station facilities, improving economic conditions in downtown Chicago and the increase in gasoline prices will ultimately increase both rush hour and off-hour ridership. To what extent this additional patronage can be accommodated will be closely related to fleet size.

NICTD's service policy is for everyone on every train to have a seat. If needed, NICTD will submit the plans to acquire additional rail cars to the Northwestern Indiana Regional Planning Commission (NIRPC) to be incorporated into NIRPC's Long Range Plan.

Figure 4-2: Projected Ridership Demand (2013-2030)



5 ASSET PORTFOLIO


NICTD’s robust portfolio of assets enables rail service across 160 miles of NICTD- and Metra-owned track. NICTD owns 72 EMUs, 10 passenger trailer cars, 52 bridges, 11 stations, 10 electrical substations, and other assets. NICTD’s assets are located in the City of Chicago and throughout Northwest Indiana in counties of Lake, Porter, La Porte, and St. Joseph.

5.1 ASSET PORTFOLIO

625.25 (b) A TAM Plan must include (1) An inventory of the number and type of capital assets. The inventory must include all capital assets that a provider owns, except equipment with an acquisition value under \$50,000 that is not a service vehicle. An inventory also must include third-party owned or jointly procured exclusive-use maintenance facilities, passenger station facilities, administrative facilities, rolling stock, and guideway infrastructure used by a provider in the provision of public transportation. The asset inventory must be organized at a level of detail commensurate with the level of detail in the provider’s program of capital projects;

A summary of NICTD’s asset inventory is provided in Table 5-1 below, by asset class. NICTD’s inventory is constantly evolving, and this table represents NICTD’s assets to the best of our knowledge as of mid-2018. Additional information for each asset class can be found in Appendix A.

Table 5-1: NICTD Current Asset Portfolio⁵



| Rolling Stock | Equipment | Facilities | Infrastructure |
|--|---|---|--|
| 72 Passenger EMUs 10 Passenger Trailer Cars | 88 Non-Revenue Vehicles 28 Large Pieces of Equipment | 8 Maintenance and Administrative Facilities (incl. 3 combined passenger/administrative) 12 NICTD-owned Passenger Stations, and Adjacent Parking (incl. 3 combined passenger administrative) 7 Metra-owned Passenger Stations, and Adjacent Parking 1 Passenger Stations, and Adjacent Parking, owned by others | 103 miles of NICTD-owned Track 52 Bridges, spanning 8325 feet 10 Substations 103 miles of mainline catenary 29 Signal Control Points 21 Intermediate Signal Locations 74 Telecommunications Assets |

⁵ NICTD Property Insurance Schedule, 2017 Inventory Listings

5.2 ASSET CONDITION + PERFORMANCE

625.25 (b) A TAM Plan must include: (2) A condition assessment of those inventoried assets for which a provider has direct capital responsibility. A condition assessment must generate information in a level of detail sufficient to monitor and predict the performance of the assets and to inform the investment prioritization

625.45 Setting performance targets for capital assets. (a) General. (1) A provider must set one or more performance targets for each applicable performance measure. (2) A provider must set a performance target based on realistic expectations, and both the most recent data available and the financial resources from all sources that the provider reasonably expects will be available during the TAM Plan horizon period.

It is critical that NICTD has clear knowledge of the condition and performance of our assets. This information enables justification of capital program funding requests and project prioritization across divisions and asset classes. In order to better communicate needs and the risks of underinvestment, NICTD must have a good understanding of our state of good repair needs - informed by condition assessments. This condition data will be a key input of NICTD's prioritization process to ensure efficient and effective use of public funding.

5.2.1 CONDITION RATING METHODOLOGY

NICTD measures the condition of our assets in various ways, depending on the type of asset.

For facilities, NICTD has hired WSP USA to assess our facilities in accordance with the FTA's Facility Assessment Guidebook. Under this methodology, 10 primary level components of each station have been assigned a 1 to 5 score, where 1 indicates poor condition and 5 indicates excellent condition (see Table 5-2 for more detail), and these scores have been weighted and rolled up to create a composite score for each facility.

In alignment with FTA requirements for performance targets, NICTD measures condition of rolling stock and equipment based on useful life benchmarks.

NICTD measures infrastructure performance based on the presence of a performance restriction (i.e., when the maximum speed for a vehicle is less than the track's design speed) at 9:00 am on the first Wednesday of each month, as required by the FTA. In addition, NICTD monitors condition of our infrastructure assets via regular inspection. In the case of bridges and culverts, these inspections result in the assignment of a condition rating, using the scale shown in Table 5-2.

5.2.2 CURRENT CONDITION INFORMATION + PERFORMANCE TARGETS

NICTD's 2017 condition targets are laid out in a NICTD Resolution "Transit Asset Management Targets" as seen in Table 5-3.

5.2.3 CHANGES TO CONDITION

Future versions of this TAM Plan will highlight any significant changes to condition since the previous report. All changes will be reflected in the annual NTD reporting.

Table 5-2: NICTD Condition Rating Scales

| RATING | FACILITIES | BRIDGES | CULVERTS |
|--------|--|---|---|
| 5 | Excellent – No visible defects, new or near new condition, may still be under warranty if applicable | Excellent condition- no cause for concern | Acceptable condition and functioning as intended- No repairs necessary at this time |
| 4 | Good – Good condition, but no longer new, may be slightly defective or deteriorated, but is overall function | Good condition- low levels of deterioration/ corrosion- continue to observe at next scheduled inspection | Below minimum acceptable condition- Low priority for repairs |
| 3 | Adequate - Moderately deteriorated or defective, but has not exceeded useful life | Fair condition - Moderate deterioration levels – No immediate repairs required - Note items to be observed carefully during subsequent inspections - Observe all noted items carefully at the next scheduled inspection. | Presence of distress or deterioration not functioning as intended- Medium priority for replacement, repair, and/or slow order |
| 2 | Marginal – Defective or deteriorated and in need of replacement; exceeded useful life | Repairs recommended - Repairs to be completed as soon as practical - Might require a slow order until the repairs are completed. May also require shorter inspection intervals. Also used to indicate that a special detailed inspection or other study is needed - Might require a slow order until the bridge is subjected to a detailed study. | Hazardous condition or severe distress or deterioration- High priority for replacement, repair, and/or slow order |
| 1 | Poor – Critically damaged or in need of immediate repair; well past useful life | Immediate Action- Emergency repairs are required before trains can be allowed on the structure. On completion of the emergency repairs, the structure should be upgraded to a condition index of 2, until a detailed investigation can be conducted. | Danger of collapse- Immediate replacement, and/or repair required as soon as possible |
| N | Not Applicable | Not Accessible | Element cannot be visually inspected |
| X | Not Applicable | Not Applicable | Element not applicable to this culvert |

Table 5-3: NICTD Performance Targets

| ASSET OVERVIEW | | | ASSET PERFORMANCE TARGETS | | | | |
|----------------|----------------------------------|----------|--|-------------|-------------------------|-------------|---|
| ASSET CLASS | ASSET TYPE | QUANTITY | PERFORMANCE METRIC | 2017 TARGET | 2017 ACTUAL PERFORMANCE | 2018 TARGET | NOTES |
| Rolling Stock | Passenger Rail Cars | 82 | No more than 0% of fleet have met or exceeded the useful life benchmark. | 0% | 0% | 0% | The useful life benchmark for NICTD's passenger cars is 40 years. |
| Equipment | Support and Maintenance Vehicles | 116 | No more than 35% of non-revenue service vehicles have met or exceeded their useful life. | 35% | 12% | 35% | The useful life benchmark varies greatly by type. |
| Facilities | NICTD Facilities and Stations | 15 | No more than 0% of facilities rated below condition 3.0 on the TERM scale. | 0% | 0% | 0% | The TERM score reflects a facility's overall condition. A rating of 3.0 means that the building is in adequate condition. |
| Infrastructure | Rail fixed guideways | 180 | No more than 2% of track segments with performance restrictions. | 2% | 1.5% | 2% | There is a performance restriction when the maximum speed for a vehicle is less than the track's design speed at 9:00 am on the first Wednesday of each month (as designated by FTA). |

6 ASSET MANAGEMENT ENABLERS

Asset Management at NICTD is carried out by numerous departments within the agency. Core business processes and support technologies enable asset management decisions and practices.

6.1 OVERVIEW

This section describes the organization of NICTD, including the roles and responsibilities for asset management, and the resources that will be needed to carry out the activities outlined within this plan. It also covers the core business processes in place to assist and guide NICTD in delivering Asset Management, and the information and technology systems that support asset management, work planning, and decision making.

6.2 ORGANIZATION AND RESOURCE PLAN

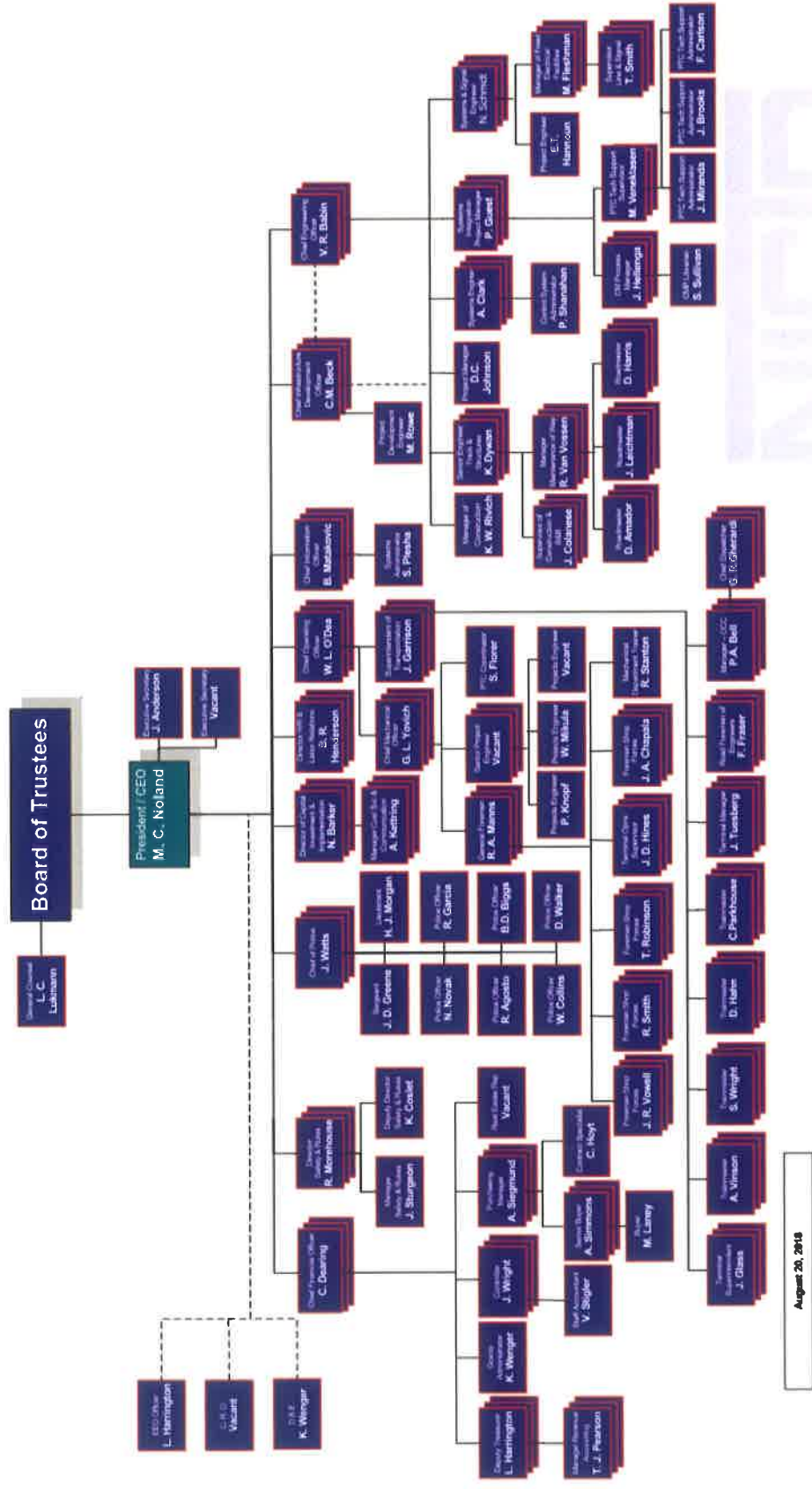
625.25 (b) A TAM Plan must include: (8) A summary or list of the resources, including personnel, that a provider needs to develop and carry out the TAM Plan

NICTD's President and Chief Executive Officer is the Accountable Executive for Asset Management, and is responsible for ensuring that this TAM Plan is developed and carried out. The creation of NICTD's TAM Plan has been guided by an interdepartmental effort that includes staff from the Mechanical, Line & Signal, Track & Structures and Buildings and Bridges divisions, and is led by the NICTD Grant Administrator, who is responsible for coordination of the asset management program at NICTD. Figure 6-1 depicts leadership responsibilities at NICTD.

The NICTD Grant Administrator is the key organizational resource for NICTD's TAM Plan. NICTD has hired WSP to develop and draft the full Transit Asset Management plan prior to the Federal Transit Administration's deadline of October, 1 2018. The NICTD team is working with various departments collaboratively, as true asset management is the responsibility of everyone in the organization. Each individual in the organization interfaces with NICTD's assets through the completion of their key responsibilities at the agency. The final TAM Plan will be disseminated throughout the organization to ensure transparency and effectiveness of the future of asset management at NICTD.

Moving forward, resources from across NICTD will be required to implement elements of the TAM Plan. Staff from the Bridges and Buildings department or consultants will need to carry out the required facility condition assessments every four years, and staff from all asset departments will play a role in ensuring accurate annual NTD reporting. The Grant Administrator will continue to develop performance targets and measure progress, and will also consolidate inventory and condition data for NTD reporting, with support from asset owners.

Figure 6-1: NICTD Organizational Chart



6.3 CORE BUSINESS PROCESSES

625.25 (b) A TAM Plan must include: (7) A description of key TAM activities that a provider intends to engage in over the TAM Plan horizon period

Several core business processes enable NICTD's ability to develop and implement TAM activities, as described in Table 6-1.

Table 6-1: Key Business Processes

| KEY BUSINESS PROCESS | CURRENT STATUS |
|--|---|
| Strategic Planning | NICTD recently developed our 20 Year Strategic Business Plan. This was in coordination with the Regional Development Authority of northwest Indiana. This study includes regional social and economic trends and details of investment programs. |
| Capital Planning | NICTD's 20 Year Strategic Business Plan identifies a four-part investment strategy focused on baseline investments, West Lake Extension, Market Expansion, and state of good repair. |
| Performance measurement, management and review | The Grant Administrator will collect performance data for the four performance targets specified in the TAM Final Rule annually and present it to the board for agreement and sign-off by the President and Chief Executive Officer. On time performance will continue to be measured and reviewed on a daily basis. |
| Standard operating procedures (SOPs) | NICTD keeps policies and standard operating procedures regarding all areas of our business, including 25 that specifically refer to procurement throughout the asset lifecycle process. These policies document standard operating procedures for actions ranging from vendor contacts, hazardous materials, contract terms, and surplus and scrap disposal. |
| Maintenance planning and scheduling, definition and audits | NICTD has a rigorous maintenance plan outlined in 2016-2020 Track and Signal Plan. NICTD maintains our revenue rolling stock in compliance with the Federal Railroad Administration set regulations. NICTD also considers the spare ratio, and assumes this ratio should decline over time as ridership increases. NICTD is undergoing mid-life and end-life rebuilds for the current rail fleet, and is actively considering fleet increases per our capital program. NICTD also has a thorough Maintenance Standard (for Mechanical Assets) and Quality Assurance Manual (for Maintenance of Way Assets), which summarize maintenance and inspections for NICTD's various assets. |
| Compliance, assurance and audit | NICTD is in conformance with Governmental Accounting Standards Board (GASB) Statement 20, Indiana Code 8-5-15-19, and Title 2 U.S. Code of Federal Regulations Part 200, <i>Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards</i> (Uniform Guidance). |
| Project Management and asset transitioning | NICTD maintains a comprehensive construction management plan manual for signal, catenary, positive train control and substations. In the future, this will include track as well. |
| Management of Change | Policy changes (e.g., related to preventive maintenance practices) are communicated via Modification/Change Request Form, and ultimately incorporated into the NICTD Configuration Management spreadsheet. ⁶ If the change is also PTC related, a PTC Change Request form is also filled out, which is then incorporated into the NICTD Talon CM system. |

⁶ NICTD Change Management Procedure

6.4 STANDARDS, LEGISLATION, REGULATION, AND OTHER MANDATED REQUIREMENTS

NICTD's maintenance procedures and schedules, specifically designed to address the needs of NICTD's unique type of service, are based on Federal Railroad Administration (FRA), American Public Transportation Association (APTA), and Original Equipment Manufacturer (OEM) required and recommended procedures. With regard to signals, NICTD uses the AREMA C&S manual and 459CFR 236, and in compliance with Positive Train Control, NICTD relies AAR. In some cases, NICTD exceeds these recommendations to account for asset age and the additional asset wear that results from the frequent starts and stops associated with operating passenger rail service in an urbanized area.

Maintenance practices are periodically revised based on NICTD experience, manufacturers' recommendations, or availability of better materials and products. Maintenance of rolling stock is governed through the Federal Railroad Administration (FRA) regulations. The FRA has set guidelines for mandated inspections that NICTD schedules in accordance with set regulations. These inspections identify areas that require preventative maintenance in order to extend vehicle longevity. The policies and procedures associated with inspection and maintenance of continuous welded track are upheld to 49 CFR Part 213 Track Safety Standards.

The Maintenance Department is committed to revising, when necessary, the Maintenance Standard manual for NICTD. This manual has incorporated the following documents: 1) Nippon Sharyo's Complete Maintenance Manual, Running Maintenance and Service Manual, and Heavy Maintenance Manual, 2) APTA's Manual of Standards and Recommended Practices for Rail Passenger Equipment, 3) CFR Title 49: 200-399, and 4) Terminal Carmen's Training Manual.

6.5 TECHNOLOGY

(3) A description of analytical processes or decision-support tools that a provider uses to estimate capital investment needs over time and develop its investment prioritization;

NICTD's core technology systems underpin our effective operating model, and are key to our ability to manage our assets. Particular technologies can be seen in Table 6-2 below.

Table 6-2: NICTD Core Technology Systems

| <i>TECHNOLOGY</i> | <i>DESCRIPTION / PURPOSE</i> |
|---------------------------------|--|
| Blackbaud Fundware | This is an accounting software used for Fixed Asset Record keeping. This system produces reports in a text format. Separate departments also keep records for their specific assets, which could be Excel or Word documents. |
| TALON ⁷ | Used as a tool for asset lifecycle management. It is capable of reporting and producing specific asset data information. Currently TALON is used for PTC Configuration Management. |
| Signal & Train Control Software | The Signal & Train Control Software Configuration Management Plan (S&TCSMP) was developed in compliance with the AREMA Recommended Configuration Management Plan for Railroads as described in the AREMA C&S Manual, Section 17.5.1. |
| Mastercar | This is an access database built by IT to track rolling stock failures. The database uses a 3-tier hierarchy based on the OEM O&M manuals. The old system used to be paper-based. |

⁷ PTC Configuration Management Plan

7 LIFECYCLE MANAGEMENT STRATEGIES

Lifecycle management strategies have been further developed as part of this TAM Plan to capture the baseline or steady state activities necessary to achieve and maintain a state of good repair, and to ensure NICTD's assets are functional, reliable, and are able to continue to support a safe, efficient, and sustainable regional operation.

7.1 OVERVIEW

625.25 (b) A TAM Plan must include:

(7) A description of key TAM activities that a provider intends to engage in over the TAM Plan horizon period;

NICTD's core objective is to provide a safe, reliable, efficient commuter rail service. NICTD currently employs a variety of lifecycle management strategies to achieve this objective which are detailed in NICTD documents such as the Maintenance Standard manual, the Maintenance of Way Department Quality Assurance Manual, and the Track and Signal 5 Year Maintenance Plan. NICTD's asset lifecycle management strategies fall into the following categories:

- **Acquisition** activities to procure, design, build, and transfer assets, taking into account long-term maintenance and operations.
- **Maintenance** activities including inspection/monitoring, preventive maintenance, and corrective maintenance.
 - **Inspection/monitoring** activities to confirm the asset is able to function in its required state and provide a safe operational environment.
 - **Preventive maintenance** activities to achieve a required level of asset performance and maintain a safe operational environment.
 - **Corrective maintenance** activities to return the asset to its required function and restore a safe operational environment.
- **Overhaul/Rehabilitation** to restore the asset to an operational design standard and maintain performance.
- **Capital Replacement** to renew the asset.
- **Disposal** to ensure compliant, efficient, cost-effective retirement of assets.

The sections that follow describe NICTD's strategies with respect to each of these in more detail.

7.2 ACQUISITION

NICTD maintains a comprehensive set of formal policies describing our acquisition practices.⁸ These policies ensure that the agency is acquiring goods and services consistent with state and federal procurement laws. This includes maintaining a complete record of each procurement to be reviewed by the Department Heads, Purchasing Department and Accounting Department, following practices outlined within FTA Circular 4220.1F and FTA's Best Practices Manual, and striving to obtain quotes, bid, or proposals from three or more sources in the open market.

⁸ Procurement Policies 3, 3A, 5, 6, 17, 22

In addition to these general principles, NICTD's acquisition policies range from managing change orders, price and cost analysis, formal bids and awards, blanked purchase orders and release notice policy, and responsible contractors and pre-qualifications.

7.3 MAINTENANCE

Maintenance and inspection regimens follow requirements of the FRA, EPA, ADA Act, and any other government regulations, as well as recommendations from the manufacturer, the American Public Transportation Association (APTA), and the Association of American Railroads (AAR). Where appropriate, manufacturer's technical manuals and OEM based instructions serve as standard operating procedures (SOPs) for many assets.

INSPECTION/MONITORING

NICTD undertakes routine inspections of many critical assets to prevent unexpected failures, in line with government regulations and industry best practice. The frequency and depth of inspections varies by asset class. For example, The FRA requires NICTD's rail cars to be inspected at intervals of 92 days, six months, one year, and three years. NICTD tries to inspect rail cars more frequently, with a periodic basic inspection every 60 days, as well as the 92-day inspection carried out at alternative 60-day intervals, such that each car is in the shop approximately once every 30 days.

NICTD annually inspects our facilities with a standard process that involves identifying deficiencies in the categories of facility substructure, shell, interiors, conveyance, plumbing, HVAC, fire protection, electrical, equipment/fare collection, and site. In 2018, this process was updated to be compliant with the FTA's facility condition rating guidance.

Main tracks and sidings are inspected twice per week by an inspector riding a Hi-rail vehicle or on foot, and receives more detailed inspections at less frequent intervals. Bridges receive annual inspections, as well as period or special inspections as necessary. Other applicable assets also receive some form of inspection at least once per year.

PREVENTIVE MAINTENANCE

NICTD's thorough maintenance manuals and processes attempt to prevent emergency and corrective maintenance through inspection and early intervention; however, preventive maintenance is typically limited. The majority of maintenance work performed is reactive in response to inspections.

CORRECTIVE MAINTENANCE

Corrective maintenance is identified through the various inspection processes that NICTD completes for our assets on an annual (or more frequent) basis. The corrective actions range from immediate to year-long time frames to implement a fix. Defects are generally recorded on a paper-based report, then programmed for corrective maintenance by the appropriate department. Corrective maintenance on many assets is performed in-house by NICTD employees, however, NICTD has contracted with third party vendors for corrective maintenance as needed.

7.4 OVERHAUL/REHABILITATION

NICTD has a thorough rehabilitation program for our rolling stock assets, including both mid-life and end-life programs. To promote long-term high reliability of the fleet, NICTD has undertaken mid-life rebuilds of our rail car fleet. The program began in 1998/1999 when the eligible rail cars were 16 or 17 years old, and restored the fleet to like-new condition. The rebuild has allowed the fleet to exceed the federally expected minimum life of 25 years of revenue service. Major modifications made to subsequent rolling stock purchases will be evaluated and included in the scope of future overhauls as appropriate.

NICTD received grants from the FTA permitting mid-life rebuild of all 58 of the rail cars delivered to NICTD in the years 1982, 1983 and 1992. As of April 1, 2013, NICTD had completed all the mid-life work on all 58 of these cars. However, NICTD has determined that mid-life rebuild work is needed for the cars that went into revenue service in 2001, and that an end of life rebuild program is needed for select 1982-83 cars that last went through rebuilding in 2000 and 2001. NICTD is now preparing to begin that work. NICTD has determined that no more than two (2) revenue service cars will be held out of service for rebuild at any one time.

Assessment of NICTD's long term needs for repair facilities resulted in a corollary FTA grant to construct a building adequate for conducting mid-life overhaul (and other car repair activities in the future). These facilities were placed in service late in 1996 and are still in good operating condition.

Typically, the rebuild work NICTD is considering requires about three months' work for each car. Cars are brought in on a staggered basis based on job completion. End of life work will be performed to allow the fleet to exceed the federally mandated minimum ten (10) additional years of revenue service. Identified preferred modifications of future car purchases will be captured to be included in the rebuild of current cars, to maintain consistency across cars. NICTD projects that it will complete this end-life program by the end of calendar year 2025.

Overhauls of other assets, such as bridges, stations, or other facilities, are based on criticality and need, which is determined by subject-matter experts and funding availability.

7.5 CAPITAL REPLACEMENT

NICTD prefers to exhaust all possible maintenance and overhaul/rehabilitation options prior to replacing a capital asset. A 2016 Carshell Assessment provided a detailed report weighing the options of the 10 and 15-year life extension program. This program is for the oldest cars in NICTD's fleet; therefore, NICTD will not be undergoing capital replacement for our rolling stock due to the aging of these assets in the near future.

Discrete projects to replace equipment, infrastructure, and facilities are created and prioritized according to the capital investment prioritization process.

7.6 DISPOSAL

There are 6 categories NICTD utilizes when deciding how to dispose of surplus or scrap items; sell in other markets, return to suppliers, rework to new configuration, rework to salvage components, destroy, and use for nonproduction purposes.

Inventory items that have been identified as inactive within the last 24 months will be consulted on future needs with the user.⁹ If it is determined that there is no need, the item will be declared as surplus. The Purchasing Manager will send a copy of the inactive list to the Accounting Department, who will enter the book value of the surplus units. This list with the valuation will then be sent to the Purchasing Manager, who will coordinate with the appropriate buyers for disposal.

⁹ Procurement Policies 15, 16

8 INVESTMENT PRIORITIZATION

As part of our 20-year Strategic Business Plan, NICTD has proposed a \$31.4 billion capital investment program that prioritizes projects throughout our Baseline Program, Market Expansion Program, and Westlake Extension Program. This section focuses on a 4-year time horizon, following the previously identified Transit Asset Management Plan period.

625.25 (b) A TAM Plan must include: (4) A provider's project-based prioritization of investments;

625.33 Investment prioritization. (a) A TAM Plan must include an investment prioritization that identifies a provider's programs and projects to improve or manage over the TAM Plan horizon period the state of good repair of capital assets for which the provider has direct capital responsibility. (b) A provider must rank projects to improve or manage the state of good repair of capital assets in order of priority and anticipated project year. (c) A provider's project rankings must be consistent with its TAM policy and strategies. (d) When developing an investment prioritization, a provider must give due consideration to those state of good repair projects to improve that pose an identified unacceptable safety risk when developing its investment prioritization. (e) When developing an investment prioritization, a provider must take into consideration its estimation of funding levels from all available sources that it reasonably expects will be available in each fiscal year during the TAM Plan horizon period. (f) When developing its investment prioritization, a provider must take into consideration requirements under 49 CFR 37.161 and 37.163 concerning maintenance of accessible features and the requirements under 49 CFR 37.43 concerning alteration of transportation facilities.

8.1 DESCRIPTION OF ANALYTICAL PROCESSES FOR INVESTMENT PRIORITIZATION

NICTD's decision process is based upon our understanding of our assets and their current levels of service gained through various targeted and documented processes. NICTD's facilities are inspected by staff annually, and in 2018 were also assessed by WSP USA following FTA guidance and utilizing the TERM rating system. This rating system is used to identify defects and document if and when a facility or its systems require maintenance or further attention. NICTD also maintains a 5 Year Maintenance Plan for track and signal assets, with the current edition projecting through 2020. The NICTD Quality Assurance Manual describes the current 1-5/N/X rating methods the agency uses to determine the condition of bridges and culverts. NICTD also inspects rolling stock during routine inspection and maintenance, and conducts in-depth inspections at key times, such as prior to mid-life or end-life renewal programs. NICTD also has documented processes for the inspection of track and electrical assets in compliance with the relevant regulations and codes of practice.

The above condition assessment and inspection processes are the key criteria used in support of decision-making regarding programs, projects, and capital investment for NICTD with regards to our various assets. NICTD's other criteria include safety, affordability, reliability, maintainability, constructability, current performance, and ridership impacts.

8.2 PROJECT-BASED PRIORITIZATION OF CAPITAL INVESTMENTS

Investment prioritization is a key part of the NICTD TAM program. Based on the decision processes described above, NICTD has identified our priority capital projects as reflected in the 2018-2021 Transportation Improvement Program. These project priorities can be seen, along with their priority ranking and annual costs, in Table 8-1. Unranked projects (those marked with an asterisk) are not SOGR funded projects, but rather represent either annual 5307 funding (Maintenance Overhaul), or major new projects (Double Track between Gary and Michigan City, South Bend Realignment, and West Lake Development and Construction) that may be funded through discretionary grants.

Table 8-1: Prioritization of Capital Projects

| RANK | PROJECT | 2018 | 2019 | 2020 | 2021 | TOTAL |
|------|-------------------------------------|----------------------|----------------------|----------------------|----------------------|------------------------|
| 1 | Positive Train Control | \$1,500,000 | \$1,250,000 | \$- | \$- | \$2,750,000 |
| 2 | Catenary Replacement | \$2,100,000 | \$2,100,000 | \$2,100,000 | \$2,100,000 | \$8,400,000 |
| 3 | End of Life - 1982 Cars | \$3,650,318 | \$2,375,000 | \$2,375,000 | \$2,500,000 | \$10,900,318 |
| 4 | Replacement Rail | \$750,000 | \$750,000 | \$750,000 | \$1,000,000 | \$3,250,000 |
| 5 | Substation Improvements | \$2,000,000 | \$2,000,000 | \$2,000,000 | \$2,000,000 | \$8,000,000 |
| 6 | Inward Facing Cameras | \$- | \$2,000,000 | \$- | \$- | \$2,000,000 |
| 7 | Facility Improvement | \$2,500,000 | \$- | \$- | \$- | \$2,500,000 |
| 8 | Bridge Rehabilitation | \$1,850,000 | \$1,625,000 | \$1,625,000 | \$1,625,000 | \$6,725,000 |
| 9 | Rolling Stock Acquisition | \$- | \$- | \$8,000,000 | \$8,000,000 | \$16,000,000 |
| 10 | Maintenance/Support/Police Vehicles | \$550,000 | \$550,000 | \$550,000 | \$562,500 | \$2,212,500 |
| 11 | Replacement Lighting - Shops Yards | \$1,500,000 | \$- | \$- | \$- | \$1,500,000 |
| 12 | Mid-Life 2000 Cars | \$1,560,000 | \$625,000 | \$625,000 | \$625,000 | \$3,435,000 |
| 13 | Station Improvements | \$1,750,000 | \$- | \$1,283,341 | \$1,284,008 | \$4,317,349 |
| 14 | Train Control Improvements | \$412,500 | \$- | \$- | \$- | \$412,500 |
| 15 | Track Equipment | \$950,000 | \$650,000 | \$650,000 | \$675,000 | \$2,925,000 |
| 16 | Add Track 7 - Millennium Station | \$4,696,575 | \$8,773,256 | \$- | \$- | \$13,469,831 |
| * | Double Track Gary Michigan City | \$30,800,000 | \$143,500,000 | \$134,400,000 | \$500,000 | \$309,200,000 |
| * | Maintenance Overhaul | \$5,281,263 | \$5,153,750 | \$5,256,250 | \$5,362,500 | \$21,053,763 |
| * | PTC (non-federally funded) | \$25,000,000 | \$25,000,000 | \$- | \$- | \$50,000,000 |
| * | South Bend Realignment Construction | \$5,000,000 | \$5,000,000 | \$15,000,000 | \$- | \$25,000,000 |
| * | West Lake Project | \$46,200,000 | \$252,300,000 | \$230,700,000 | \$112,600,000 | \$641,800,000 |
| | Grand Total | \$123,700,338 | \$441,552,006 | \$388,464,591 | \$121,609,008 | \$1,075,325,943 |

8.3 ESTIMATION OF AVAILABLE CAPITAL FUNDING

In order to pay for our capital investments over the four-year TAM Plan period, NICTD will rely on funding from the sources described in Table 8-2, **Error! Reference source not found.** Table 8-3, and Table 8-4.¹⁰

Table 8-2: Baseline Program Capital Cash Flow, 2018-2021

| <i>SOURCES OF FUNDS</i> | <i>2018</i> | <i>2019</i> | <i>2020</i> | <i>2021</i> | <i>TOTAL</i> |
|---|---------------------|---------------------|----------------------|----------------------|----------------------|
| Positive Train Control Bond Proceeds | \$10,000,000 | \$- | \$- | \$- | \$10,000,000 |
| New Car Order Bond Proceeds | \$- | \$- | \$80,000,000 | \$80,000,000 | \$160,000,000 |
| Double Tracking Bond Proceeds | \$8,200,000 | \$8,200,000 | \$8,200,000 | \$8,200,000 | \$32,800,000 |
| NICTD Capacity Bond Proceeds | \$5,000,000 | \$5,000,000 | \$- | \$- | \$10,000,000 |
| FTA 5309 (Core Capacity): Double Tracking and NICTD Cap. | \$13,200,000 | \$13,200,000 | \$8,200,000 | \$8,200,000 | \$42,800,000 |
| Available 5337 SOGR Funds after Debt Service (calculated above) | \$10,318,146 | \$9,964,640 | \$6,754,174 | \$2,595,299 | \$19,324,431 |
| Available Situs Bond Funds after Debt Service | \$3,690,401 | \$3,677,075 | \$2,945,994 | \$2,024,809 | \$12,347,279 |
| <i>Placeholder for New Capital Funding Source</i> | \$7,467,500 | \$7,691,525 | \$7,922,271 | \$8,159,939 | \$31,243,235 |
| Grand Total | \$57,876,047 | \$47,733,240 | \$114,022,439 | \$109,180,047 | \$318,514,945 |

Table 8-3: Market Expansion Capital Cash Flow, 2018-2021

| <i>SOURCES OF FUNDS</i> | <i>2018</i> | <i>2019</i> | <i>2020</i> | <i>2021</i> | <i>TOTAL</i> |
|--|---------------------|---------------------|---------------------|---------------------|----------------------|
| Federal Funding Share (Discretionary 5309) | \$18,347,270 | \$14,697,270 | \$14,697,270 | \$14,697,270 | \$62,439,080 |
| Bond Proceeds and Other New Investments | \$18,347,270 | \$14,697,270 | \$14,697,270 | \$14,697,270 | \$62,439,080 |
| <i>New Capital Funding Source Required</i> | \$7,792,400 | \$7,792,400 | \$7,792,400 | \$7,792,400 | \$31,169,600 |
| Grand Total | \$44,486,940 | \$37,186,940 | \$37,186,940 | \$37,186,940 | \$156,047,760 |

Table 8-4: West Lake Extension Capital Cash Flow, 2018-2021

| <i>SOURCES OF FUNDS</i> | <i>2018</i> | <i>2019</i> | <i>2020</i> | <i>2021</i> | <i>TOTAL</i> |
|---|----------------------|---------------------|---------------------|---------------------|----------------------|
| Federal Funding Share (Discretionary 5309) | \$285,500,000 | \$- | \$- | \$- | \$285,500,000 |
| Bond Proceeds for West Lake Extension | \$285,500,000 | \$- | \$- | \$- | \$285,500,000 |
| Incremental Federal 5337 SOGR Funds | \$- | \$- | \$- | \$- | \$- |
| Drawdown from Dedicated Fund Source Accumulated Surplus | \$- | \$- | \$- | \$- | \$- |
| Lake County CEDIT | \$6,461,344 | \$6,622,877 | \$6,788,449 | \$6,958,161 | \$26,870,831 |
| RDA Payments | \$6,461,344 | \$6,622,877 | \$6,788,449 | \$6,958,161 | \$26,870,831 |
| <i>Placeholder for Debt Service Funding Source</i> | \$- | \$- | \$- | \$- | \$- |
| Grand Total | \$583,922,688 | \$13,245,754 | \$13,576,898 | \$13,916,322 | \$624,741,662 |

¹⁰ NICTD 20-Year Strategic Business Plan Appendix A

8.4 OPERATIONS AND MAINTENANCE FORECASTS

Operating and maintenance forecasts described in NICTD's 20-Year Strategic Business Plan detail the cash flows for the plan's three major segments, two of which have operations and maintenance impacts on this TAM Plan period. These forecasts, can be seen below in Table 8-5, Table 8-6, and Table 8-7.

Table 8-5: Baseline Program Operating Expenses, 2016-2021

| <i>SOURCES OF FUNDS</i> | <i>2016</i> | <i>2017</i> | <i>2018</i> | <i>2019</i> | <i>2020</i> | <i>2021</i> | <i>TOTAL</i> |
|-------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|
| General Expenses | \$43,894,078 | \$44,991,430 | \$46,116,216 | \$47,269,121 | \$48,450,849 | \$49,662,121 | \$280,383,815 |
| Contract Labor & Fringe Contingency | \$620,000 | \$635,000 | \$650,000 | \$666,250 | \$682,906 | \$699,979 | \$3,954,135 |
| NICTD Expense Contingency | \$200,000 | \$200,000 | \$200,000 | \$200,000 | \$200,000 | \$200,000 | \$1,200,000 |
| Grand Total | \$44,714,078 | \$45,826,430 | \$46,966,216 | \$48,135,371 | \$49,333,755 | \$50,562,100 | \$296,337,950 |

Table 8-6: Baseline Program Operating Revenues, 2016-2021

| <i>SOURCES OF FUNDS</i> | <i>2016</i> | <i>2017</i> | <i>2018</i> | <i>2019</i> | <i>2020</i> | <i>2021</i> | <i>TOTAL</i> |
|--------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|
| Passenger Fare Revenue | \$20,824,027 | \$21,264,546 | \$21,714,384 | \$22,173,737 | \$22,642,808 | \$23,121,801 | \$131,741,303 |
| Federal Maintenance Grant (5307) | \$ 4,585,954 | \$ 4,585,954 | \$ 4,585,954 | \$ 4,585,954 | \$ 4,585,954 | \$ 4,585,954 | \$27,515,724 |
| NICTD PSA | \$3,700,000 | \$3,700,000 | \$3,700,000 | \$3,700,000 | \$3,700,000 | \$3,700,000 | \$22,200,000 |
| CSS ROI | \$1,263,784 | \$1,289,060 | \$1,314,841 | \$ 1,341,138 | \$ 1,367,961 | \$ 1,395,320 | \$7,972,104 |
| Fed Grant Credit to Expense | \$ 30,000 | \$ 30,000 | \$ 30,000 | \$ 30,000 | \$ 30,000 | \$ 30,000 | \$180,000 |
| Misc. | \$500,000 | \$500,000 | \$500,000 | \$500,000 | \$500,000 | \$500,000 | \$3,000,000 |
| CRSF | \$ 8,985,298 | \$ 9,129,063 | \$ 9,275,128 | \$ 9,423,530 | \$ 9,574,307 | \$ 9,727,496 | \$56,114,822 |
| ERSF | \$ 203,058 | \$ 203,871 | \$ 204,686 | \$ 205,505 | \$ 206,327 | \$ 207,152 | \$1,230,599 |
| PMTF | \$ 5,333,714 | \$ 5,360,383 | \$ 5,387,185 | \$ 5,414,121 | \$ 5,441,191 | \$ 5,468,397 | \$32,404,991 |
| <i>New Operating Source Required</i> | \$- | \$- | \$2,000,000 | \$2,060,000 | \$2,121,800 | \$2,185,454 | \$8,367,254 |
| Grand Total | \$45,425,835 | \$46,062,877 | \$48,712,178 | \$49,433,985 | \$50,170,348 | \$50,921,574 | \$290,726,797 |

Table 8-7: Market Expansion Program Operating Revenues, 2016-2021

| <i>SOURCES OF FUNDS</i> | <i>2016</i> | <i>2017</i> | <i>2018</i> | <i>2019</i> | <i>2020</i> | <i>2021</i> | <i>TOTAL</i> |
|---|-------------|-------------|-------------|-------------|--------------------|--------------------|--------------------|
| Additional Passenger Fare Revenues – Ridership Growth | \$- | \$- | \$- | \$- | \$2,546,679 | \$5,199,719 | \$7,746,398 |
| Grand Total | \$- | \$- | \$- | \$- | \$2,546,679 | \$5,199,719 | \$7,746,398 |

9 IMPLEMENTATION AND EVALUATION PLAN

NICTD recognizes that this TAM Plan is only the first step in achieving the organization's asset management goals and commits to embarking on the improvement initiatives listed here in order to enhance our asset management practices over time.

625.25 (b) A TAM Plan must include: (6) A provider's TAM Plan implementation strategy; (8) A summary or list of the resources, including personnel, that a provider needs to develop and carry out the TAM Plan; (9) An outline of how a provider will monitor, update, and evaluate, as needed, its TAM Plan and related business practices, to ensure the continuous improvement of its TAM practices

This plan is a living document which is relevant and integral to daily activity, and NICTD commits to carrying out the activities within this plan.

To ensure the plan remains useful and relevant, the following on-going monitoring and review activities will be undertaken:

- Formal adoption of the Asset Management Policy contained within the TAM Plan by NICTD's top management, which directs the development of future asset management initiatives.
- Formal adoption of this TAM Plan by NICTD, to be used to guide the delivery of maintenance and capital programs.
- The condition targets shall be monitored. Failure to meet targets will be reviewed by NICTD and will result in recommendations for corrective action as appropriate, ensuring that we remain able to deliver the required condition target for each asset class.
- The asset portfolio and condition information shall be updated annually as part of NTD reporting.
- NICTD's maintenance documents will be periodically monitored and updated, to ensure that the lifecycle management strategies contained therein continue to adequately address our assets' maintenance needs.

In addition, this plan will undergo a comprehensive update and review every four years, with a preferred update cycle of every three years to coincide with the FTA triennial review process. The plan will also be updated when major changes in NICTD's assets occur, such as acquisition of a new fleet, facility, or infrastructure. Certain aspects of the Plan will be reviewed more frequently, on an annual cycle. This includes a review of asset condition, performance targets (as part of annual submissions to the NTD), and progress against asset management objectives.

The NICTD Grant Administrator is the central point of contact for the TAM Plan implementation and improvement actions. The Grant Administrator is being supported by WSP USA, who are providing consulting expertise to assist in the implementation of the improvements. This plan's implementation is the responsibility of all NICTD employees as the agency builds a culture of proactive asset management. Each sector of the agency has a role to play in the management of our collective assets. The implementation of this asset management plan will improve alignment of asset management to organizational goals, establishment of performance monitoring and management, enhancement of supply chain management, improvement of capital planning delivery, and more.

APPENDIX A: DETAILED INVENTORY

ROLLING STOCK

Table A-1: Rolling Stock Inventory

| TYPE | MANUFACTURER | YEAR | QUANTITY |
|--------------|---------------|--------|-----------|
| EMU-1 | Nippon Sharyo | 1982/3 | 34 |
| EMU-1A | Nippon Sharyo | 1983 | 7 |
| EMU-2 | Nippon Sharyo | 1992 | 7 |
| TMU-1 | Nippon Sharyo | 1992 | 10 |
| EMU-3 | Nippon Sharyo | 2001 | 10 |
| EMU-4 | Nippon Sharyo | 2009 | 14 |
| Total | | | 82 |

EQUIPMENT

Table A-2: Non-Revenue Vehicles Inventory

| MAKE | MODEL | YEAR RANGE | QUANTITY |
|--------------|------------------------------|------------|----------|
| Chevy | 4500 - Aerial Bucket | 2007 | 1 |
| | 550 Welder (Hi-rail) | 2007 | 1 |
| | Silverado | 2019 | 1 |
| | Silverado 1500 4x2 | 2016 | 3 |
| | Silverado 1500 4x4 | 2012-2017 | 11 |
| | Silverado 2500 4x4 | 2016-2017 | 3 |
| | Silverado 2500 4x4 (Hi-rail) | 2015 | 1 |
| | Silverado 2500 4x4 (Plow) | 2012-2018 | 2 |
| | Silverado 3500 (Dump) | 2017 | 1 |
| | Silverado 3500 4x4 | 2012 | 1 |
| Ford | ADA Transit Bus | 2017 | 1 |
| | E350 Passenger Van | 2006 | 1 |
| | Econoline Van | 2009 | 2 |
| | Escape | 2008 | 1 |
| | Escape XLS | 2009 | 2 |
| | Escape XLT | 2008-2010 | 2 |
| | Explorer | 2013-2015 | 3 |
| | Explorer XLT 4x4 | 2007 | 1 |
| | F-150 | 2018 | 2 |
| | F150 4X2 | 2010 | 2 |
| | F150 4x4 | 2008 | 1 |
| | F250 (Hi-rail) | 2017 | 1 |
| | F250 (V Plow & Fuel) | 2015 | 1 |
| | F250 4x4 (Hi-rail) | 2017 | 1 |
| | F350 | 2015 | 1 |
| | F350 (Plow) | 2015 | 1 |
| | F550 | 2016 | 1 |
| | F550 Signal Crew | 2011 | 1 |
| | Police Interceptor | 2014-2018 | 8 |
| | Tower Truck (Hi-rail) | 2004-2005 | 2 |
| Freightliner | CC | 2015 | 1 |
| | Crane Truck | 2011 | 1 |
| | Digger Derrick | 2014 | 1 |

| MAKE | MODEL | YEAR RANGE | QUANTITY |
|---------------|---------------------------|------------|----------|
| | Dump Truck | 2011 | 1 |
| | M2-106 | 2015-2016 | 3 |
| | M2-106 (Hi-rail) | 2015 | 1 |
| | Tandem Axle Dump Truck | 2011 | 1 |
| | Welder Truck (Hi-rail) | 2014 | 1 |
| GM | Digger Derrick | 2002-2010 | 2 |
| GMC | Bucket Truck (Hi-rail) | 2000 | 1 |
| | CC Flat Bed | 2006 | 1 |
| International | 4400 Flatbed CC (Hi-rail) | 2008 | 1 |
| Subaru | Outback | 2011-2017 | 14 |
| Total | | | 88 |

Table A-3: Equipment Inventory

| DESCRIPTION | YEAR ACQUIRED |
|----------------------------------|---------------|
| Ballast Regulator | 2015 |
| Case 580SM Backhoe | 2007 |
| Case 580SM Loader Backhoe | 2009 |
| Case 721B Front End Loader | 1996 |
| Case 721F Wheel Loader | 2012 |
| Dual Anchor Adjuster | 2013 |
| Dual Anchor Spreader | 2013 |
| EMD GP38-2 Locomotive | 2000 |
| Fairmont Tamper Undercut | 1996 |
| Freightliner CC | 2015 |
| Harsco Production Tamper Model | 2008 |
| Harsco Tamper Model #6700 | 2008 |
| John Deere Tractor/Backhoe | 1997 |
| Knorr Brake Test Bench Equipment | 2011 |
| Lathe | 2004 |
| Locomotive Simulator | 2009 |
| Multi Rail Passenger Program | 2008 |
| Nordco CX Track Spiker | 2005 |
| Nordco Spike Puller | 2013 |
| Nordco-Jackson Tamper | 2016 |
| Racine OTM Reclaimer | 2010 |
| Racine Tie Plate Inserter | 2010 |
| Stanray Wheel Truing Machine | 1990 |
| Swing Master Spd. Swing Crane | 1993 |
| Takeuchi Mini Excavator TB153F | 2014 |
| Track Stabilizer TS-30-27 | 2001 |
| Tripp Tie Inserter/Remover | 2008 |
| Wheel Loader Model 721D | 2003 |
| Total | 28 |

FACILITIES

Table A-4: Maintenance and Administrative Facilities Inventory

| SITE | NAME | ADDRESS | YEAR | CONDITION | SQ. FT. | PARKING |
|---------------------|--|---|------|----------------------|---------------------------|--------------------------|
| Carroll Avenue Site | General Office Building | 503 N. Carroll Ave. | 1994 | 3 | 5,824 | 60 |
| Carroll Avenue Site | Operations Control Center | 503 N. Carroll Ave. | 2005 | 4 | 7,400 | 87 |
| Hammond Compound | Maintenance Facilities | 4528 Johnson Ave, Hammond, IN | 1964 | 3 | 640 | 63 |
| Dune Park | Administrative Offices | 33 E. Hwy. 12, Chesterton, IN | 2000 | 5 (incl. station) | 12,800 (incl. station) | 480 (incl. station) |
| East Chicago | Administrative Offices | 5615 Indianapolis Blvd., East Chicago, IN | 2004 | 4 (incl. station) | 12,600 (incl. station) | 1,277 (incl. station) |
| Roeske Avenue Site | Carmen Building | 601 N. Roeske Ave., Michigan City, IN | 1984 | 3 | 2,500 | N/A |
| Roeske Avenue Site | Mechanical Shops and Line & Signal Building | 601 N. Roeske Ave. Michigan City, IN | 2000 | 3 | 56,590 | 100 |
| Roeske Avenue Site | Engineering and Midlife Shop | 601 N. Roeske Ave., Michigan City, IN | 1996 | 5 | 29,640 | 38 |

Table A-5: Passenger Stations and Parking Facilities Inventory

| NAME | ADDRESS | YEAR | CONDITION | SQ. FT. | PARKING |
|---|---|--------------------|--------------------|-------------------------|------------------------|
| Hegewisch Station Platform Only | 13730 South Brainard Ave. | Unknown | 5 | 17,400 | 0 |
| Hammond Station | 4531 Hohman Ave., Hammond, IN | 1996/7 | 4 | 21,000 | 680 |
| East Chicago Station | 5615 Indianapolis Blvd., East Chicago, IN | 2004 | 4 (incl. admin) | 17,000 (incl. admin) | 1,277 (incl. admin) |
| Gary/Chicago Airport Station | Clark Road & 2 nd Ave., Gary, IN | Unknown | 5 | 3,000 | 85 |
| Gary Metro Center Station | 200 W 4 th Ave., Gary, IN | 1984 | 3 | 11,500 | 0 |
| Miller (Gary) Station | 56650 E. Dunes Hwy., Miller, IN | 1997 | 3 | 6,200 | 290 |
| Portage/Ogden Dunes Station | US Hwy 12 & Hillcrest Road, Portage, IN | 1997 | 3 | 9,700 | 240 |
| Dune Park Station | 33 E. Hwy. 12, Chesterton, IN | 1986 | 5 (incl. admin) | 18,800 (incl. admin) | 480 (incl. admin) |
| Beverly Shores Station | 525 Broadway, Beverly Shores, IN | 1932 | 3 | 1,500 | 38 |
| Michigan City 11 th St. Station | 114 East 11 th Street, Michigan City, IN | 2007 (Shelter) | 4 | 192 | 38 |
| Carroll Ave Station | 503 N. Carroll Avenue, Michigan City, IN | 2015 | 4 | 3,600 | 100 |
| Hudson Lake Station | County Rd. 700N and Chicago Rd., La Porte County | Unknown | 4 | 300 | 20 |
| South Bend Airport Station | 4477 Progress Drive, South Bend, IN | Not Owned by NICTD | | | |
| South Bend (Amtrak) Passenger Facility | 2702 W. Washington Ave, South Bend, IN | 1970 | 3 | 5250 | 35 |

NICTD does not own the parking facility at the Gary Metro Station. That is owned and maintained by the City of Gary. In addition to the stations listed in Table A-5 NICTD also uses seven stations owned by Metra: Millennium, Van Buren Street, Museum Campus/11th Street, McCormick Place, 57th Street (Hyde

Park), and 63rd Street stations. Hegewisch station is also owned by Metra however the platform is owned by NICTD and all maintenance at that station is provided by NICTD.

INFRASTRUCTURE

NICTD operates on 102 miles of NICTD-owned track, as well as 57 miles of Metra owned track. Along this track are 52 bridges. Overhead catenary spans the entire track, including 102 miles owned by NICTD, and is powered by 11 substations (10 of which are owned by NICTD). Fifty signal locations and over 70 telecommunications assets also support NICTD's rail service. Table A-6 through Table A-9: Signals Inventory

| SIGNAL TYPE | COUNT |
|---------------------|-------|
| Control Point | 29 |
| Intermediate Signal | 21 |
| Total | 50 |

Table A-10 contain more detail on the inventory for each of these infrastructure assets.

Table A-6: Track Inventory

| TRACK OWNER | START MP | END MP | NUMBER OF TRACKS IN RANGE | TOTAL TRACKAGE (MILES) |
|-------------|----------|--------|---------------------------|------------------------|
| Metra | 0 | 1.2 | 3 | 3.6 |
| | 1.2 | 14.5* | 4 | 53.2 |
| | | | Metra Total: | 56.8 |
| NICTD | 75.3* | 58.1 | 2 | 34.8 |
| | 58.1 | 54 | 1 | 4.1 |
| | 54 | 47.5 | 2 | 13 |
| | 47.5 | 43.7 | 1 | 3.8 |
| | 43.7 | 43 | 2 | 1.4 |
| | 43 | 38.6 | 1 | 4.4 |
| | 38.6 | 37.9 | 2 | 1.4 |
| | 37.9 | 36 | 1 | 1.9 |
| | 36 | 35.2 | 2 | 1.6 |
| | 35.2 | 19.1 | 1 | 16.1 |
| | 19.1 | 18.5 | 2 | 1.2 |
| | 18.5 | 10.3 | 1 | 8.2 |
| | 10.3 | 9.8 | 2 | 1 |
| 9.8 | 0 | 1 | 9.8 | |
| | | | NICTD Total: | 102.3 |

* Note MP 14.5 on Metra is MP 75.3 on NICTD (Kensington)

Table A-7: Bridge Inventory

| BRIDGE LOCATION | MP | MATERIAL | SPAN TYPE | LENGTH (FT) |
|-----------------|-------|----------------|-------------|-------------|
| Geyer Ditch | 8.18 | Steel | 1 Beam | 33 |
| U.S. 20 | 13.32 | Steel | 1 Beam | 38 |
| Lake Park | 15.93 | Steel | 1 Beam | 67 |
| Galena Road | 20.28 | Cast Iron Pipe | Pipe | 10 |
| Rolling Prairie | 20.57 | Steel | Thru Girder | 65 |
| Chiddick Road | 21.57 | Steel | Thru Girder | 65 |
| Galena River | 24.65 | Concrete | Slab | 24 |
| State Road 39 | 25.29 | Steel | 1 Beam | 88 |
| Andry | 26.9 | Culvert | Culvert | 15 |
| Indiana 212 | 30.4 | Culvert | Culvert | 10 |
| C&O | 31.5 | Culvert | Culvert | 16 |
| Trail Creek | 31.79 | Steel | Deck Girder | 86 |
| Lake Park Ave. | 36.2 | Culvert | Culvert | 6 |

| BRIDGE LOCATION | MP | MATERIAL | SPAN TYPE | LENGTH (FT) |
|-----------------------------|-------|-----------------|---------------------------|------------------------|
| Pines | 37.5 | Culvert | Culvert | 12 |
| Kelser | 39.9 | Culvert | Culvert | 6 |
| Tremont | 42.6 | Culvert | Culvert | 9 |
| Tremont | 43.2 | Cast Iron Pipe | Culvert | 5 |
| Waverly Road | 43.9 | Culvert RCC Box | Culvert | 18 |
| Wigwam | 44.51 | Culvert RCC Box | Culvert | 27 |
| Main Entrance Drive | 47.32 | Steel | Thru Girder, Ballast Rock | 128 |
| NS Railroad | 47.41 | Steel | Thru Girder | 308 |
| Air Products | 48.48 | Culvert | Culvert | 24 |
| Burns Ditch | 50.11 | Steel | Thru Girder | 205 |
| Burns Ditch | 50.11 | Steel | Thru Girder | 205 |
| Hobart Road | 54.62 | Steel | Thru Girder | 67 |
| B&O Railroad | 54.73 | Steel | Truss | 148 |
| Broadway | 58.84 | Steel | Deck Girder | 128 |
| NS Railroad | 61.07 | Steel | Thru Girder | 308 |
| NS Railroad | 61.07 | Steel | Thru Girder | 278 |
| 3rd Ave | 61.18 | Steel | Deck Girder | 148 |
| 3rd Ave | 61.18 | Steel | Deck Girder | 148 |
| EJ&E Railroad | 63.37 | Steel | Thru Girder | 120 |
| EJ&E Railroad | 63.37 | Steel | Deck Girder | 27 |
| EJ&E Railroad | 63.37 | Steel | Thru Girder | 123 |
| EJ&E Railroad | 63.37 | Steel | Deck Girder | 20 |
| Kennedy Avenue | 65.32 | Steel | Thru Girder | 276 |
| Shell Access Road | 65.81 | Steel | Thru Girder | 80 |
| Indianapolis Boulevard | 66.33 | Steel | Thru Girder | 117 |
| Grand Calumet River | 66.97 | Steel | Thru Girder | 1893 |
| 150th Street | 67.32 | Steel | Thru Girder | 144 |
| 149th Street | 67.45 | Steel | Thru Girder | 126 |
| Hoffman Street | 67.62 | Steel | Thru Girder | 190 |
| Chicago Street | 67.87 | Steel | Thru Girder | 288 |
| Columbia Avenue | 68.01 | Steel | Thru Girder | 635 |
| Ash Avenue | 68.19 | Steel | Thru Girder | 56 |
| Torrance Avenue | 71.67 | Steel | Deck Girder & Truss | 642 |
| Calumet River | 72.38 | Steel | Truss | 272 |
| Calumet River | 72.38 | Steel | Deck Girder | 148 |
| ICG Access Road | 72.57 | Steel | Stringers | 116 |
| I-94 | 73.14 | Steel | Thru Girder | 161 |
| I-94 | 73.14 | Steel | Thru Girder | 161 |
| Kensington Maintenance Road | 75.37 | Concrete | Slab | 35 |
| Total: | | | | 52 bridges / 8325 feet |

Table A-8: Electrical Inventory

| ELECTRICAL ASSET TYPE | NAME | YEAR (BUILDING) |
|-----------------------|---------------------------------------|---------------------------------|
| Substations | Wickliffe Substation | 2009 (rehab in 2016) |
| | Eastport Substation | Unknown (roof replaced in 2000) |
| | Grandview Substation | 1995 |
| | Hegewisch Substation (owned by Metra) | 1999 (new roof in 2004) |
| | Carroll Street Substation | 2010 |
| | Tee Lake Substation | 2010 |
| | New Carlisle Substation | 2007 |
| | Columbia Substation | Unknown |
| | Madison Substation | 1992 |
| | Furnessville Substation | Unknown (roof replaced in 2001) |
| | Total Substations | 10 |
| Catenary Wire | Total Miles of Catenary Wire | 103 |

Table A-9: Signals Inventory

| SIGNAL TYPE | COUNT |
|---------------------|-------|
| Control Point | 29 |
| Intermediate Signal | 21 |
| Total | 50 |

Table A-10: Telecommunications Inventory

| TELECOMMUNICATS ASSET TYPE | TELECOMMUNICATIONS ASSET SUB-TYPE | QUANTITY | |
|------------------------------------|--------------------------------------|---------------------------------|---|
| Passenger Communications Systems | Paging System (Hammond) | 1 | |
| | PA Systems at Train Platforms | 1 | |
| | Paging System (East Chicago) | 1 | |
| | Comm System Analyzer with Cable Feet | 1 | |
| Phone System | Lighting Protection Phone Switch | 1 | |
| | M120 TDD Pay Phone (Hegewisch) | 1 | |
| | Message Archive System | 1 | |
| | Phone Switch (Dune Park) | 1 | |
| | Phone Switch (Michigan City) | 1 | |
| | Power System-GOB | 1 | |
| | Supercom TDD Machine (ADA) | 1 | |
| | UPS For Phone System | 1 | |
| Radio | 2500 Mobile Radios | 2 | |
| | 2500 Portable Radios | 4 | |
| | Analog Base Station Repeater | 1 | |
| | APX7000 Digit Police Radios | 8 | |
| | HT1250 Police Radios | 2 | |
| | ICOM Mobile Radios | 11 | |
| | Locomotive Radio | 1 | |
| | Motorola MT1000 Portable Radio | 1 | |
| | Police Base Station Radio Sys | 1 | |
| | Radio Equipment | 1 | |
| | Radio Enclosure Kits | 12 | |
| | Spectra R/R Mobile Radio | 5 | |
| | Safety and Security | Alarm System (Randolph Street) | 1 |
| | | Alarm System (Dune Park Office) | 1 |
| | | Camera Equipment (Kensington) | 1 |
| | | Camera (Dune Park) | 1 |
| Camera & Monitor (Randolph Street) | | 1 | |
| Cameras on Trains | | 1 | |
| CCTV System | | 1 | |
| Homeland Security-Video System | | 1 | |
| Microphones and Cameras CCTV | | 1 | |
| Rebel X-S Camera | | 1 | |
| Security System (Randolph Street) | | 1 | |
| Time Lapse Camera & VCR Recorder | 1 | | |
| Video Surveillance Equipment | 1 | | |
| Total | | 74 | |