Using National Transit Database Data to Support TAM
May 20, 2020

Alexandra Galanti
Data Analyst
FTA Office of Budget and Policy
Nationwide Asset Data

• NTD Year 1 Fact Sheets: Summary of data reported by transit agencies for 2018

  https://www.transit.dot.gov/TAM/NTDfactsheet_overview

• Baseline TAM Data in the NTD straight-to-recording webinar: Covers how to access and use the public 2018 TAM data reported

  https://www.youtube.com/watch?v=PtwGS0xSN_g&feature=youtu.be
NTD Data (Incl. Performance Targets)

https://www.transit.dot.gov/ntd/ntd-data
TAM Plan Template (TAMPLATE)

- Technical assistance tool to assist Tier I and Tier II transit providers, as well as Group TAM Plan Sponsors, in developing their TAM plans.

TAM Roundtable 2020

• Due to the COVID-19 public health emergency, the TAM Roundtable scheduled for July 2020 in Boston will be a virtual event.

July 28, 2020
1:00 - 3:00 P.M. EDT

Details and Registration:
USING NTD DATA TO SUPPORT TAM

Presented by Tina Ignat
Asset Management Analyst @Metra
May 2020
What to Expect

- Objective
- Context of Metra
- TAM Timeline
- NTD Reporting Tips
- Data, Performance Measures, and how Metra uses data for TAM Program
- Lessons Learned
OBJECTIVE
I will share key challenges and lessons learned from submitting national asset data to the NTD, and using that process to support the broader TAM program. The webinar will also cover setting performance targets and how agencies can use target-setting to measure success and communicate with stakeholders.
About Metra

WHO WE ARE

FTA
FEDERAL TRANSIT ADMINISTRATION
76.1 million passenger trips in 2018
280,000 daily riders
690 weekday trains
260 Saturday trains
175 Sunday trains
242 train stations
1,200 miles of track
483 route miles
164 locomotives
854 diesel railcars
186 electric railcars
24 rail yards
90,626 parking spaces
500+ grade crossings
12 fuel facilities
847 bridges
Governance in Illinois

- MPO
- Oversight Agency to Service Boards

- Bus & Heavy Rail
- Commuter Rail
- Suburban Bus & Paratransit
TAM timeline @Metra

2010-2016
Initial TAM collaboration with RTA, CTA, and PACE on Capital Optimization Support Tool Project

2016-2018
• Developed initial TAM Plan
• Communicated TAM Performance Measures & Targets to RTA, CMAP

2016-2018
• Submitted first NTD Asset Inventory Module Forms
• Communicated Performance Measures & Targets Internally/Externally
• TAM Plan reviewed at Triennial

April 2019 – Sept 2019
• Submitted second NTD Report and first Narrative
• Collaboration with RTA, CMAP continues with COST
• Decision Support Tool
• TAM Implementation

TAM Journey Continues

April 2020
Call, email NTD with questions, they are there to help you
https://www.transit.dot.gov/ntd

Connect with your NTD Analyst

Take the NTI course on NTD Reporting
https://www.ntionline.com/national-transit-database-urban-reporting/
Comprehensive

Contents of form are helpful providing make, model, date built, rehab date, useful life. Just need to add replacement costs.

Rolling Stock | A-30
Comprehensive

Contents of this form are most helpful providing, make, model, quantity, date of manufacture, useful life and replacement costs.

Equipment | A-35
Comprehensive

Contents of form are helpful providing facility list, type, date built, condition, square footage. Square footage used for cost.

Facilities | A-15
Definitions

Turnouts vs switches, elevated retained fill vs retaining walls, etc..

Data

Too high level in form, but backup data gets fed into decision support tool

Reconciliation

This is an arduous process but we are putting NTD fields into MMS
Decision Support Tool

- Assumptions
- Inventory of Capital Assets
- Decay Curves
- Asset Condition Forecast
- Capital Costs Forecast
- Summary of Results
COMMUNICATING TAM INTERNALLY

TAM targets

- What percentage of our Facilities are not in a State of Good Repair?
- What percentage of our Equipment are not in a State of Good Repair?

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Rolling Stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>Number</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Replacement</td>
</tr>
<tr>
<td>Item Type</td>
<td>Item Type</td>
</tr>
<tr>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>110</td>
<td>20</td>
</tr>
<tr>
<td>90</td>
<td>30</td>
</tr>
<tr>
<td>NA</td>
<td>10</td>
</tr>
</tbody>
</table>

Communicating TAM
Communicating TAM

OUR MPO CMAP & RTA used our NTD and TAM Data in these documents to communicate regional performance measures and needs for public transit.
REBUILD Illinois

$4.7B for mass transit throughout the state, including to RTA for Metra, CTA, and Pace

Link to info:
https://idot.illinois.gov/about-idot/stay-connected/blog/rebuild-illinois

The Illinois Legislature this year approved the first new statewide infrastructure program since 2009, and Metra expects its share of funding from the program to total about $1.5 billion over the next six years. Metra is particularly pleased that the funding includes an annual, stable and sustainable allotment of capital funding as well as a significant additional amount from a bond program. We will use this new funding to begin to tackle our biggest capital priorities, including locomotives, railcars, stations and bridges. We also will be looking to invest in projects that could help us grow our ridership. While Metra still could use additional capital funding, we are grateful for Springfield’s assistance and its recognition of the important role that transit plays in the Illinois economy and environment.
# Connecticut Tier I Transit Asset Management Plan

## Bus Rolling Stock

### Description
- CTDOT serves four bus systems in Hartford, New Haven, Stamford, Waterbury, New Britain, Bristol, Meriden and Middletown. It operates these under the CTtransit brand name. CTODT owns all the rolling stock it operates under the transit services. CTODT operates roughly 80% of annual bus miles in Connecticut.
- CTODT also owns the bus rapid transit system in Hartford which includes fixed guideway between Hartford and New Britain.
- CTODT’s bus rolling stock inventory includes four types of buses: transit bus, articulated bus, over-the-road bus, and cutaway bus.

### Inventory and Condition

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Condition</th>
<th>Year (Expected)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit Bus</td>
<td></td>
<td>12</td>
<td>81%</td>
</tr>
<tr>
<td>Articulated Bus</td>
<td></td>
<td>51</td>
<td>100%</td>
</tr>
<tr>
<td>Over-the-road Bus</td>
<td></td>
<td>60</td>
<td>97%</td>
</tr>
<tr>
<td>Cutaway Bus</td>
<td></td>
<td>42</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Performance Measures

The performance of revenue vehicles within a particular asset class that have either met or exceeded their useful life is indicated.

- Useful life benchmark (UUB) defined as the operating useful life, specified in terms of age, mileage and/or equivalent service units (ESU). This is calculated using the FTA’s default UUB values or as set by the provider. CTODT has worked with its transit service provider partners to define custom values.
- A revenue vehicle that has exceeded its useful life (UUB) and is considered to have met the performance metric.

### Current Performance and Targets

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>% Vehicles Below UUB</th>
<th>Current Performance</th>
<th>Performance Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit Bus</td>
<td>83%</td>
<td>16%</td>
<td>14%</td>
</tr>
<tr>
<td>Articulated Bus</td>
<td>100%</td>
<td>0%</td>
<td>14%</td>
</tr>
<tr>
<td>Over-the-road Bus</td>
<td>97%</td>
<td>3%</td>
<td>14%</td>
</tr>
<tr>
<td>Cutaway</td>
<td>100%</td>
<td>0%</td>
<td>17%</td>
</tr>
</tbody>
</table>

*Note: Performance measures herein are for FTA reporting purposes only. Due to the variability of mechanical reliability and operating environment, the life-based metrics prescribed by FTA does not accurately reflect UUB needs.

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**APTA SGR/TAM Working Committee**

- Communication and Coordination with External Stakeholders for Transit Asset Management

**APTA LINK TO TAM DOCS:**

[https://www.apta.com/research-technical-resources/standards/explore-standards/](https://www.apta.com/research-technical-resources/standards/explore-standards/)
Lessons Learned

Collaborate
Talk with people. TAM is collaborative.

Make Mistakes
It's inevitable. The sooner you accept it, the sooner you can move on. It's the only way you will learn and grow.

It's a Journey
TAM is a journey, not a destination
Citations

Tim Pitzen
Roadway Engineer

Barry Butler Photography
Follow on Facebook

Mark Llanuza
Coach Cleaner

Metra Media Department
Shout out to Katie Dahlstrom,
Courtney Aubrecht and Sylvia Ortiz-Cooper
Let's Talk

TINA IGNAT, AIA

547 West Jackson Boulevard
Chicago, IL 60661
Like us on Facebook: Metra
Follow us on Twitter: @Metra
Visit us at www.metrarail.com

LinkedIn: www.linkedin.com/in/tina-ignat-1720064

Phone Number
312.322.1466

Email Address
tignat@metrarail.com
TAM Performance Measures and Targets

FTA Webinar

Jordan Holt
Director of Performance
Washington Metropolitan Area Transit Authority
jhholt@wmata.com
Agenda

- Why Performance Measures and Targets?
- Metro’s Process and Lessons Learned
- Going Beyond the Basic Requirements
**Metro at a Glance**

**Third busiest rail transit system; sixth busiest bus network in the U.S.**

**1 million average weekday passenger trips**

**$235 billion of property value is within a half-mile of Metrorail stations**

**159 bus lines**

**91 rail stations**

- 40 DC
- 26 MD
- 25 VA

**118 miles of rails**

- 9 Aerial
- 58 Surface
- 51 Subway
Metro’s Process and Lessons Learned
Metro’s Process: April - June

What is our current inventory and condition?
- Define Useful Life Benchmarks for rolling stock and equipment [Fleet Plan]
- Collect current inventory [Maximo]
- Determine current condition [Facility Condition Database, Maximo]

What will change in the next 18 months?
- FY20 and FY21 Capital Program
  - Rehab/Replace
  - Expand

What risks could prevent us from delivering?
- Funding shortfalls
- Procurement delays
- Construction delays
- Delivery delays

What should our targets be?
- Calculate targets
- Identify gaps/areas of need
- Sign-off by accountable executive
- Notify MPO [June 30th]
- Submit to FTA [October]
Metro’s Internal Stakeholders

What is our current inventory and condition?

What will change in the next 18 months?

What risks could prevent us from delivering?

What should our targets be?

**Transit Performance Management**: facilitate process, crunch numbers, liaise with MPO, draft narrative

**Asset Owners**: verify inventory, condition, capital plans; identify risks; approve target recs

**Transit Asset Management**: provide inventory & condition data

**Capital Planning**: provide 10 year capital program, track outages

**Counsel**: interpret rule

**Real Estate**: identify sales/ acquisitions of facilities

**Executives**: approve targets

**Accounting**: submit inventory, condition and targets to NTD

**FEDERAL TRANSIT ADMINISTRATION**
Metro’s Internal Stakeholders

Asset Owners
- Verify inventory, condition, capital plans, identify risks.

Capital Planning
- Provide 10 year capital program, track outages.

Real Estate
- Identify sales/acquisitions of facilities.

Transit Asset Management
- Provide inventory and condition data.

Accounting
- Submit targets, condition, inventory to NTD.

Transit Performance Management
- Facilitate target-setting.

Counsel
- Interpret rule, negotiate agreement with MPO.

Executives
- Approve targets.
Add sample target-setting slide

Rail: Revenue Fleet  % of railcars meeting or exceeding useful life benchmark

<table>
<thead>
<tr>
<th>Current FY19 Target</th>
<th>0%</th>
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</thead>
<tbody>
<tr>
<td>Recommended FY20 Target</td>
<td>0%</td>
</tr>
<tr>
<td>Projected FY24 Target</td>
<td>5%</td>
</tr>
<tr>
<td>Projected FY26 Target</td>
<td>5%</td>
</tr>
</tbody>
</table>

**Methodology**
- Inventory includes all railcars on property
- ULB = 40 years for 2K, 3K, 6K and 7K

**Key Actions**
- Accept remaining 7K cars, for a total 7K fleet size of 748 by end of FY20
- Decommission and remove remaining 5K cars from property by end of FY20
- Start 8K program to replace 2/3K

**Risks**
- 8K procurement slower than anticipated, impacting out years

<table>
<thead>
<tr>
<th>Series</th>
<th>Projected as of 6/30/19</th>
<th>Projected as of 6/30/20</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>2000</td>
<td>40</td>
<td>76</td>
</tr>
<tr>
<td>3000</td>
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<td>7000</td>
<td>40</td>
<td>696</td>
</tr>
<tr>
<td>8000</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>FY</th>
<th>Count</th>
<th>Cumulative</th>
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<tbody>
<tr>
<td>2023</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2024</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>2025</td>
<td>88</td>
<td>158</td>
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<tr>
<td>2026</td>
<td>90</td>
<td>248</td>
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<td>2027</td>
<td>45</td>
<td>293</td>
</tr>
<tr>
<td>2028</td>
<td>59</td>
<td>352</td>
</tr>
<tr>
<td>2029</td>
<td>6</td>
<td>358</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>358</td>
<td>358</td>
</tr>
</tbody>
</table>

**Target** in out-years depends on timing of 8K procurement, which is currently expected to start the beginning of FY2025.

**Target ULB** 0.4%  0%

As of 5/24/19, 36 5K railcars remain on property. Assume dispose 6/30/19 for next 5 weeks
As of 5/29/19, 660 7K accepted. Assume 16 more accepted before 6/30/19
FTA Guideway Condition

Current FY19 Target: 2.1% [PROJ: 1.7%]
Recommended FY20 Target: 3.8%
FY24 and FY26 Target Projections: Unplanned <1%

Methodology
- Percentage of track under performance restriction at 9am the first Wednesday of the month
- Calculate impact of FY20 planned Revenue Service Adjustments (RSAs)
- Assume unplanned speed restrictions (SPDR) continue at same rate as FY19

Key Actions
- Extended shutdowns/continuous single-tracking
  - July 1 - Sept 8: South of National (shutdown)
  - Sept 8 - Oct 6: J02-J03 (single-tracking)
  - 3 weeks: B08-B10 (shutdown)
  - May 23 - June 30: E07-E10 (shutdown), K06-K08 (single-tracking)
- PM program to continue to reduce delays related to infrastructure defects, improve overall condition

Risks
- Planned work extends to another first Wednesday of the month

FY20 target: 3.8%
- Unplanned SPDR - 0.7% (Same as FY19)
- Planned work - 3.1%
  - Jul 3: South of C10 (~123,000 ft with J line)
  - Aug 7: South of C10 (~123,000 ft with J line)
  - Sep 4: South of C10 (~123,000 ft with J line)
  - Oct 2: J02-J03 Track 1 (~20,000)
  - Nov 6
  - Dec 4
  - Jan 1: B08-B10 Tracks 1&2 (~22,000)
  - Feb 5
  - Mar 5
  - Apr 2
  - May 6
  - Jun 3: E07-E10 Tracks 1&2 (~76,500), K06-K08 (~25,500)
<table>
<thead>
<tr>
<th>Period</th>
<th>Preparation</th>
<th>Launch</th>
<th>Submit to FTA</th>
<th>Submit to FTA</th>
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<tbody>
<tr>
<td>FY2015-2016</td>
<td>• Compile inventory</td>
<td>• Consultant support</td>
<td>• Streamline process; incorporate with corporate KPI target setting</td>
<td>• Start with FY18 NTD submission</td>
<td>• Start with FY19 NTD submission</td>
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<tr>
<td></td>
<td>• Launch facility condition assessment</td>
<td>• Official launch</td>
<td>• Add 4-6 year outlook</td>
<td>• Closer coordination with capital planning</td>
<td>• Include benchmarking results</td>
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<tr>
<td></td>
<td>• Multiple meetings with asset owners; get common understanding of definitions</td>
<td>• Multiple meetings with asset owners; get common understanding of definitions</td>
<td>• Expand documentation</td>
<td>• Simplify facility inventory</td>
<td>• Don’t worry about decommissioned fleet</td>
</tr>
<tr>
<td></td>
<td>• Heavily relied on counsel</td>
<td>• Heavily relied on counsel</td>
<td>• Sign MPO MOU</td>
<td>• Expand documentation</td>
<td>• Round up</td>
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<tr>
<td>FY2017-2018</td>
<td>• Compile inventory</td>
<td>• Consultant support</td>
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<td>• Streamline process; incorporate with corporate KPI target setting</td>
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<td>• Round up</td>
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<td>FY2022</td>
<td>• Compile inventory</td>
<td>• Consultant support</td>
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</tbody>
</table>

**Submit to FTA**

- New facility condition assessment scores/process
- Automated data extraction
Lessons Learned

- Involve a broad group of internal stakeholders
- Data completeness and accuracy is a journey
- Don’t round down
- Be honest about risks
- Document assumptions
- Avoid making things too complicated
- Develop crosswalks between agency and FTA asset hierarchies
How is WMATA Using Performance Measures and Targets?
1. Compliance

- MAP-21 and FAST Act require transit properties to:
  - Set annual performance targets
  - Report targets to FTA and their MPO
  - Submit annual narrative report to the NTD describing progress towards meeting targets

<table>
<thead>
<tr>
<th>Measure</th>
<th>WMATA Assets</th>
<th>FY 2020 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of Equipment Beyond its Useful Life Benchmark</td>
<td>Steel-w heeled (206)</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>Autos (173)</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>Trucks and Other Rubber-Tired (1,338)</td>
<td>16%</td>
</tr>
<tr>
<td>Percentage of Rolling Stock Beyond its Useful Life Benchmark</td>
<td>Railcars (1290)</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Buses (1597)</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>Vans (775)</td>
<td>11%</td>
</tr>
<tr>
<td>Average Percentage of Guideway Track Miles with Performance Restrictions</td>
<td>234 miles</td>
<td>3.8%</td>
</tr>
<tr>
<td>Percentage of Facilities with a Condition Rating &lt;3</td>
<td>Passenger and Parking (91 stations and 78 parking lots/garages)</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>Administrative and Maintenance (127 buildings)</td>
<td>11%</td>
</tr>
</tbody>
</table>
Go beyond “we spent this much $”…

…to “we delivered what we planned”

$2 Billion Reduction in State of Good Repair Backlog

2016 Backlog: $7.08B

- Vehicles: $0.8
- Track & Structural: $1.62
- Fixtures: $0.83
- Systems: $2.73
- Fencing: $1.10

2018 Backlog: $5.04B

- Vehicles
- Track & Structural
- Fixtures
- Systems
- Fencing

FTA
FEDERAL TRANSIT ADMINISTRATION
3. Set expectations with stakeholders.

- Articulates what will be accomplished with available resources and current priorities
  - Programmed funding
  - 1-year time frame
- Sets up conversation about what it would take to get different outcomes
- Provides context: this is how we compare to peer/regional properties
How Does Metro Compare?

Our targets reflect the recent investments we have made in our rolling stock.

Bus Target: % Fleet Beyond its Useful Life Benchmark in FY19

Railcar Target: % Fleet Beyond its Useful Life Benchmarking in FY19

Source: FY19 NTD Performance Targets

National Peers  Regional Agencies

FTA
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How Does Metro Compare?

As a result of recent investments, our guideway condition compares favorably.

Guideway Condition Target: %
Track Under Performance
Restriction in FY19

- LA Metro: 0.8%
- BART: 0.9%
- NYCT: 2.0%
- WMATA: 2.1%
- MTA-Baltimore: 3.5%
- MARTA: 5.0%
- CTA: 9.0%

Source: FY19 NTD Performance Targets
How Does Metro Compare?

We are middle-of-the-road with our facilities. This is currently a focus of our capital program.

Admin/Maintenance Facilities
Target: % Inventory in Poor Condition

Passenger Facilities Target: % Inventory in Poor Condition

Source: FY19 NTD Performance Targets
Going Beyond the Basics
Going Beyond the Basics

Mid- and Long-Term Targets

Using Performance Targets to Drive a Transit Asset Management Program

Abstract: This white paper describes a strategy for setting short-, mid- and long-term targets for measures of the condition of transit assets and how to use performance targets to drive an agency’s transit asset management (TAM) program.

Keywords: asset condition, capital programs, performance, targets, transit asset management

Summary: This document describes a strategy for setting and reporting short-, mid- and long-term targets for state of good repair performance measures for key assets, as required by federal regulations, and the associated benefits for transit agency capital programs.

Scope and purpose: This document explains the benefits of setting and reporting short-, mid- and long-term performance targets for TAM programs beyond the federal required annual targets.

<table>
<thead>
<tr>
<th>Target</th>
<th>Inputs</th>
<th>What do the targets tell us?</th>
<th>Who is the audience?</th>
<th>How are targets used?</th>
<th>Risks to setting or achieving targets</th>
</tr>
</thead>
</table>
| Short  | • Age/condition of existing assets  
         • Capital plan for next year | What impact will this year’s capital program have on asset condition? | • FTA  
         • MPO  
         • Executives  
         • Public | Communicate intended impact of current-year capital program, evaluate how well an agency executed the current program | Failure to achieve targets can be due to delayed procurement, construction delays, late delivery, failure to receive grant money or revenue shortfalls |
| Mid    | • Age/condition of existing assets  
         • Capital plan for next four to six years | How will planned revenues, prioritization and capital packages impact asset condition? | • MPO  
         • Executives  
         • Board | Communicate intended impact of planned capital program | Emergencies or other decisions that result in reprogramming of funds can result in changes to the targets |
| Long   | • Age/condition of existing assets  
         • Planned investments in the TAM plan, TIP  
         • Revenue and expense projections  
         • Executive input | What will the condition be if we execute projects included in the TAM plan or TIP? What do we want the condition of our assets to be given current conditions and expected funding? | • MPO  
         • Executives  
         • Board | Define state of good repair  
         • Communicate projected impact of TAM plan  
         • Drive project prioritization  
         • Communicate additional funding needed to meet targets | Changes in revenues, expenses can result in fewer resources available and inability to execute all prioritized projects |