Chicago Metropolitan Agency for Planning

Transportation Technology and Operations Coalition

February 2nd, 2023

9:30 – 11:30 a.m.

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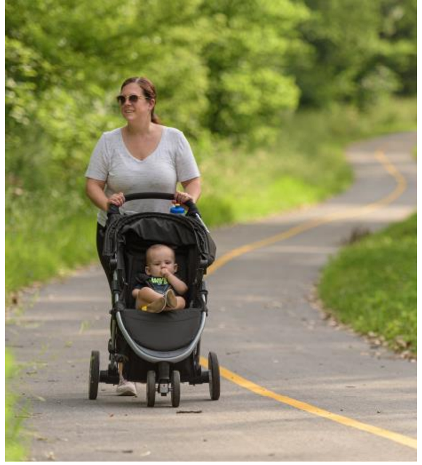

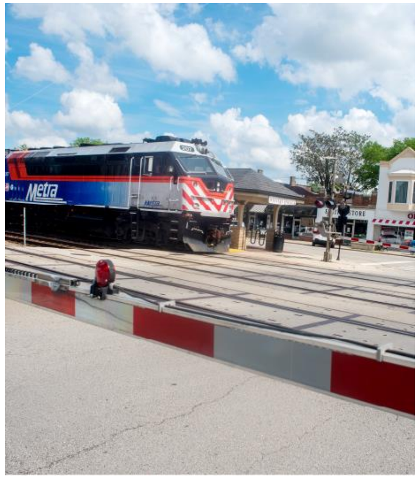

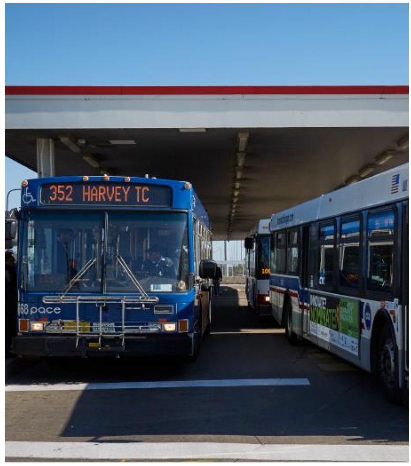

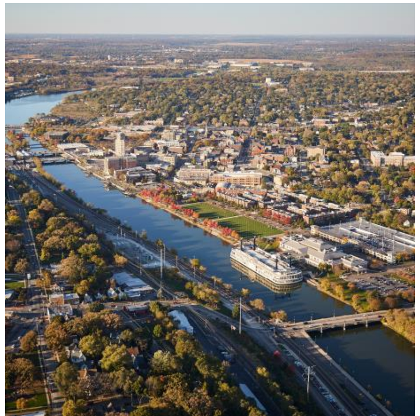

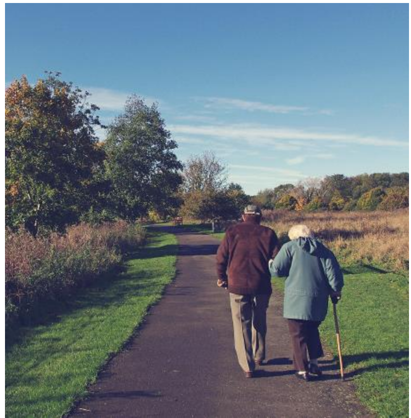

1.0 Welcome and announcements

Stephen Zulkowski, Kane County
Division of Transportation (Chair)

2.0 Agency updates

TTOC Members

3.0 CMAP announcements

Aaron Brown and Noah Harris, CMAP

4.0 HSIP program and scoring criteria

Tim Peters, IDOT

Jonathan Lloyd, IDOT

IDOT HSIP Program History & What Makes For Good Applications

Tim Peters PE
Local Policy and Technology Engineer
Central Bureau of Local Roads and Streets

Characteristics of the HSIP Program

Federal Program administered by IDOT

Separate State and Local HSIP Programs

HSIP Program

- Federal Program Managed by IDOT
- Split into State and Local HSIP programs
- State program focuses on State roadways
- Local HSIP intended for non-State/Local roadways
- Local HSIP is an annual call for projects   IDOT.click/T2
- Interested agencies may submit applications during the call
- Applications are reviewed by IDOT at the District Level and at the State Level

BIL (IIJA) and HSIP

- BIL continues the Highway Safety Improvement Program (HSIP) to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned public roads and roads on tribal land. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance.

- The BIL does not extend the FAST Act prohibition (FAST Act § 1401) on using HSIP funds to purchase, operate, or maintain an automated traffic enforcement system.

- **<u>Vulnerable Road User Safety Special Rule</u>**
- The BIL establishes a new special rule, which—
  - applies to each State in which vulnerable road user fatalities account for not less than 15% of all annual crash fatalities; and
  - requires a State subject to the special rule to obligate not less than 15% of its HSIP funds the following FY for highway safety improvement projects to address vulnerable road user safety. [§ 11111(a)(5); 23 U.S.C. 148(g)(3)]

- SS4A - Not HSIP, but additional money for safety – Comprehensive Safety Action Plan Required

Changes to HSIP as a result of IIJA

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History of HSIP Program

Fiscal Year	Number of Applications	Applications Funded	Mark	BSPE Statewide Transfer	Awarded Funds	Adjustments	Unawarded Fun
FY15 and Prior						$ 200,000	$ (200,000)
FY 16 (no solicitation)	NA	NA	$ 14,739,000		$ -	$ -	$ 14,739,000
FY 17 & FY 18	30	27	$ 31,174,000		$ 23,300,092	$ 1,965,294	$ 5,908,614
FY 19	43	34	$ 15,853,000		$ 20,651,604	$ 802,711	$ (5,601,315)
FY 20	36	24	$ 16,174,000		$ 25,964,192	$ 453,630	$ (10,243,822)
FY 21	39	26	$ 16,090,800		$ 23,198,905	$ 881,521	$ (7,989,626)
FY22	38	16	$ 16,090,800	$ 2,820,630	$ 18,638,161		$ 273,269
FY23	37	19	$ 19,997,651	$ 3,358,214	$ 19,785,406	$ 386,675	$ 3,183,784
FY24	43	28	$ 30,633,000	$ -	$ 30,622,364	$ -	$ 10,636
D1 Relinquished Funds*							$ 2,492,400
Total			**$ 160,752,251**		**$ 162,160,724**	**$ 4,689,831**	**$ 2,572,940**

Evolution of the HSIP Program

In the early years of the program a large number of projects focused on guardrail

Eventually a $1M limit for guardrail projects was added

There was a strong desire to focus on items other than guardrail.

Future - VRUs

Evolution of the HSIP Program

- Early HSIP was strictly driven by B/C ratio
- B/C ratio is still important, but not paramount
- Systemic changes are acceptable
  - (We have 2 similar locations, 1 has a significant crash history, the other does not can we apply similar treatments to both locations?)

Poor choices for HSIP applications

Railroads

Bridges

Upgrades for both railroads and bridges are available through other programs such as Section 130, Illinois Special Bridge, Township Bridge Program.

Railroad crossing improvements and bridges are both expensive.

Dealing with a state route

- Definitely involve your district
- Generally, improvements for state routes should be funded by state HSIP.
- Crossing or intersecting a state route significantly complicates a project.
- District approval is required for anything involving a state route.

Single application vs. bundled application

Does it make sense? i.e. One general location, contiguous route

What synergy is involved in the combination?

Small applications may be funded with remainders

Is the administration of the project clear?

How are applications reviewed

- Districts perform an initial review
- Results are forwarded to the central office
- Committee meets and selects the winning applications
- Representatives from BSPE, BLRS, and FHWA make up the committee

Things that help an application

- Focus on safety features
- Consistent crash type and appropriate treatment
- RORI tool
- Tell a story or make a case for why this improvement is necessary
- Pictures, maps and diagrams help
- Have you tried low-cost improvements? Are you asking for low-cost improvements?
- Is the proposed treatment appropriate for the crash types?
- Are bicycles and pedestrians considered?

Now is a great time to ask for help

- Don’t wait for the call for applications to ask for help?
- Once the call is open, IDOT’s ability to help with applications is limited.
- IDOT District 1, Central Local Roads and BSPE can answer questions and provide technical assistance.
- Once the call for applications is open, our ability to provide support is reduced.

Questions?

IDOT HSIP Scoring & Evaluation Criteria

Jonathan Lloyd, PE, RSP

IDOT District One Traffic Studies Engineer

HSIP Program

- Highway Safety Improvement Program (HSIP)
- Federally funded program
- Intended to reduce severe/fatal injury crashes
- 90%/10% split

HSIP Program

- Managed by IDOT
- Split into State and Local HSIP programs
- State program focuses on State roadways
- Local HSIP intended for non-State/Local roadways
- Local HSIP is an annual call for projects
- Interested agencies may submit applications during the call
- Applications are reviewed by IDOT

HSIP Application Requirements

- Crash Analysis
- Countermeasure Selection
- Cost Estimate
- Benefit/cost ratio (B/C)
- Project Timeline
- Project Narrative
- Application Form
- Supporting Documentation

Ranking Criteria

- Cost
- Frequency of severe/fatal injury crashes
- Identification of notable crash patterns
- Appropriateness of countermeasure selection
- B/C ratio
- Address identified emphasis areas in Strategic Highway Safety Plan
- Other emphasis areas and/or countermeasures in circular letter.
- Compared against other submittals

What makes a better application?

- High frequency of severe/fatal injury crashes
- Location identified as a high/critical safety tier and/or emphasis area
- Accuracy of crash data including, type, circumstances, and causes
- Effectiveness of chosen countermeasures for identified crash patterns
- Cost
- Location

Common Issues

- Incomplete application
- Inaccurate or missing data
- Low B/C (less than 1.0)
- High Cost
- Ineffective countermeasures/connection to crash patterns
- State versus Local program (some exceptions)
- Perceived versus actual safety

Suggestions

- When in doubt, reach out
- Use Department provided resources (Heat Maps, Data Trees, etc)
- Listen to Department feedback
- Denied application may be better suited for other funding
- HSIP website: Highway System (illinois.gov)

Crash data

- Use IDOT's online safety information and request system Roadway Safety (illinois.gov)
- Contact appropriate District and Central Office Staff
- Contact Law Enforcement/Local Agencies
- Safety Portal: https://webapps.dot.illinois.gov/SafetyPortal/
- Strategic Highway Safety Plan

Questions?

5.0 Traffic signal asset condition study

Ryan Fries, Southern Illinois
University Edwardsville

OPTIMUM TRAFFIC SIGNAL CONDITION ASSESSMENT AND STRATEGIC MAINTENANCE PLANNING (ICT R27-251)

Summary and Progress Update

PRESENTATION OUTLINE

Project Tasks

Literature Key Findings

- Condition Assessment and Standards
- Financial Awareness
- Asset Management

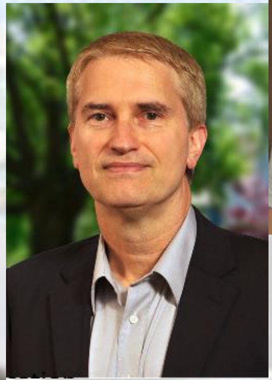
Condition Assessment

Next Steps

MEET THE TEAM

- Principal Investigator: Ryan Fries, PhD, PE
- Co-PI: Yan Qi, PhD, PE
- Key Personnel
  - Gregory Owens, PE
  - Shawn Leight, PE, PTOE, PTP
  - Jacob Kaltenbronn, EI
  - Anne Werner, PhD, PE
  - Ujwal Sah, MS Candidate
  - Srisha Devkota, MS Student






PROJECT SCHEDULE

Project Milestones	2022					2023												2024							
Month	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
Kickoff Meeting																									
Task 1: Review the current state of knowledge																									
Task 2: Develop recommended condition assessment procedures																									
Task 3: Recommend condition standards																									
Task 4: Develop companion procedures																									
Task 5: Reporting																									
TRP Meetings																									

TASK 1: REVIEW CURRENT KNOWLEDGE (8/16/22 – 11/30/22)

Condition Assessment and Condition Standards
- Selection of performance measures
- Measurement of current conditions
- Selection of desired conditions

Financial Awareness
- Installation cost of signal assets
- Life cycle cost without Maintainance
- Life cycle cost with preventive maintainance

Risk Mitigation through Proactive Management
- Indentification of life cycle risks for signal assets
- Development of procedure to reach desired condition
- Consider available funding

TASK 2: DEVELOP CONDITION ASSESSMENT PROCEDURES (10/1/22 – 8/31/23)

- Focus Areas
  - Structure
    - Bases, poles, mast arms/span wire, conduit, wiring, pull boxes, and displays/indications
  - Cabinet
    - Exterior, interior components, detection, and power supply
  - Controller
    - Type, make/model, firmware, and communication links

TASK 2 STEPS

1. Draft assessment procedure
2. TRP input and revisions
3. Broader stakeholder input and revisions
   - In-person interviews or survey
4. Case study to refine procedure

TASK 3: RECOMMEND CONDITION STANDARDS (1/1/23 – 12/31/23)

- Include knowledge from previous tasks
- Collect input from Illinois stakeholders
  - Concurrent with Task 2 meetings
- Gather TRP input on minimum and ideal conditions standards

TASK 4: DEVELOP COMPANION PROCEDURES (7/1/23 – 5/31/24)

- Identify current IDOT asset management practices
- Consider signal management best practices
- Consider cost-recovery options
- Choose appropriate deliverable format
- Gather TRP input and refine

TASK ONE KEY FINDINGS

- **Condition Assessment and Standards**
- **Financial Awareness**
- **Asset Management**

CONDITION ASSESSMENT AND STANDARDS

- Assessing traffic signals' physical integrity and dependability
- Common Practice: Performance Metrics to evaluate traffic signals
- Condition Standards: Keep track of progress + Direct the resources

PERFORMANCE METRICS AND STANDARDS ESTABLISHED BY U.S. CITY & DOTS

Agency	Performance Measure	Criteria	Source
City of Columbus, Ohio	Physical condition	Very Good, Good, Fair, and Poor	(Minnesota DOT, 2020)
Portland, Oregon	Age	30-year life	(Portland Bureau of Transportation, 2017)
Seattle DOT, Washington	Physical and Operational condition	Good, Fair, and Poor	(Seattle DOT, 2015)

PERFORMANCE METRIC CONTINUED

Agency	Performance Measure	Performance Metric	Performance Target	Classification	Source
Connecticut DOT	Age	Percentage of signals that are under 25 years (state of good repair - SOGR)	80%	Age > 25 years: Poor Age 16-25 years: Fair Age < 16: Good	(Connecticut DOT, 2019)
Utah DOT	Electronics and Physical equipment condition obtained through an annual inspection	Percentage above poor condition	95%	Good, Average, or Poor	(Utah DOT, 2019)
Minnesota DOT	Age	Percentage of signals that were past their 30-year useful life	2% or less		(Minnesota DOT, 2019)
Colorado DOT	Physical Condition	Percentage of signal in severe condition	2% or less		(Colorado DOT, 2016)
Washington State DOT	Frequency of repair	Number of repairs/years		A: One / 2 years B: One / year C: Two / year D: Three / year F: Four / year	(NCHRP, 2012)
Virginia DOT	Physical Condition	General Condition Rating (GCR)		Good, Fair, Bad, Critical, and Failing	(Virginia DOT, 2021)

PERFORMANCE ASSESSMENT

- Frequently based on Age
- Shifting towards visual condition scores, asset age, and component level assessments, e.g. Connecticut DOT
- Establish expected service life of components

EXPECTED LIFE OF SIGNAL COMPONENTS

Signal Component	Expected life, years (Source)
Signal Controller	20 (San Jose DOT, 2010)
	15 (Pennsylvania DOT, September 2020)
	15 (Colorado DOT, 2016)
	5-10 (Indiana DOT response, (Minnesota DOT, 2020))
	7 (Ontario Ministry of Transportation response, (Minnesota DOT, 2020))
	4-20, average 13.5 (Markow, 2008)
	8.2 for the state, 9.6 for the County, 9.8 for the City/Municipality, with 9.4 as the national average (National Operations Center of Excellence and Institute of Transportation Engineers, 2019)
	15 (Kloos & Bugas-Schramm, 2005)
Cabinet	
	20 (Indiana DOT response, (Minnesota DOT, 2020)
	15 (Indiana DOT response, (Minnesota DOT, 2020)
	10-30, average 18 (Markow, 2008)
	20 (Ontario Ministry of Transportation response, (Minnesota DOT, 2020))

EXPECTED LIFE CONTINUED

Signal Component	Expected life, years (Source)
Pole and Mast Arm	20 (Pennsylvania DOT, September 2020)
	30 (Colorado DOT, 2016)
	25 (Indiana DOT response, (Minnesota DOT, 2020))
	30 (Ontario Ministry of Transportation response, (Minnesota DOT, 2020))
	25 (Kloos & Bugas-Schramm, 2005)
	Tubular Steel: 10-50, average 24.6 Tubular Aluminum: 20-35, average 24.3 (Markow, 2008)
Span Wire	with a wooden pole: 2-30, average 15.1 (Markow, 2008)
	With steel pole: 2-30, average 15.1 (Markow, 2008) 20 (Pennsylvania DOT, September 2020)
	with Concrete pole: 2-30, average 15.1 (Markow, 2008)
Traffic Signal Head	7-30, average 18.8 (Markow, 2008)
	10 (Ontario Ministry of Transportation response, (Minnesota DOT, 2020))
Pedestrian Signal Head	15 (Markow, 2008)

EXPECTED LIFE CONTINUED

Signal Component	Expected life, years (Source)
Lamps (Light Emitting Diodes - LED)	8-9 (Connecticut DOT, 2019)
	5 (Ontario Ministry of Transportation response, (Minnesota DOT, 2020))
	5-10, average 7.2 (Markow, 2008)
	5 (Institute of Transportation Engineers and International Municipal Signal Association, 2010)

Signal Timing	3-5 (Michigan DOT, 2018)
Traffic Loop Detector	14 (Minnesota DOT, 2019)
	7.5 (Pennsylvania DOT, September 2020)
	3-20, average 8.6 (Markow, 2008)
Communication Cable	Fiber Optic, 20-30, average 23.6 Twisted Copper, 10-30, average 17.5 (Markow, 2008)
	Fiber Optic, 20; Twisted Copper, 20
Cabinet Filter	1 (Minnesota DOT, 2019)

FINANCIAL AWARENESS

- Develop an effective investment plan
  - Valuation of existing infrastructure
  - Funding needed to meet the desired condition

VALUATION OF EXISTING INFRASTRUCTURE

Replacement Value: Replaces the device using current market pricing

Condition-based Valuation: Replacement Value + Depreciation for wear

Example of Colorado DOT (2016 Dollar)

- Replacement value = $962.52 million
- Percent value remaining = 54.1%
- Current value = $520.71 million

FUNDING NEEDED TO REACH DESIRED CONDITIONS

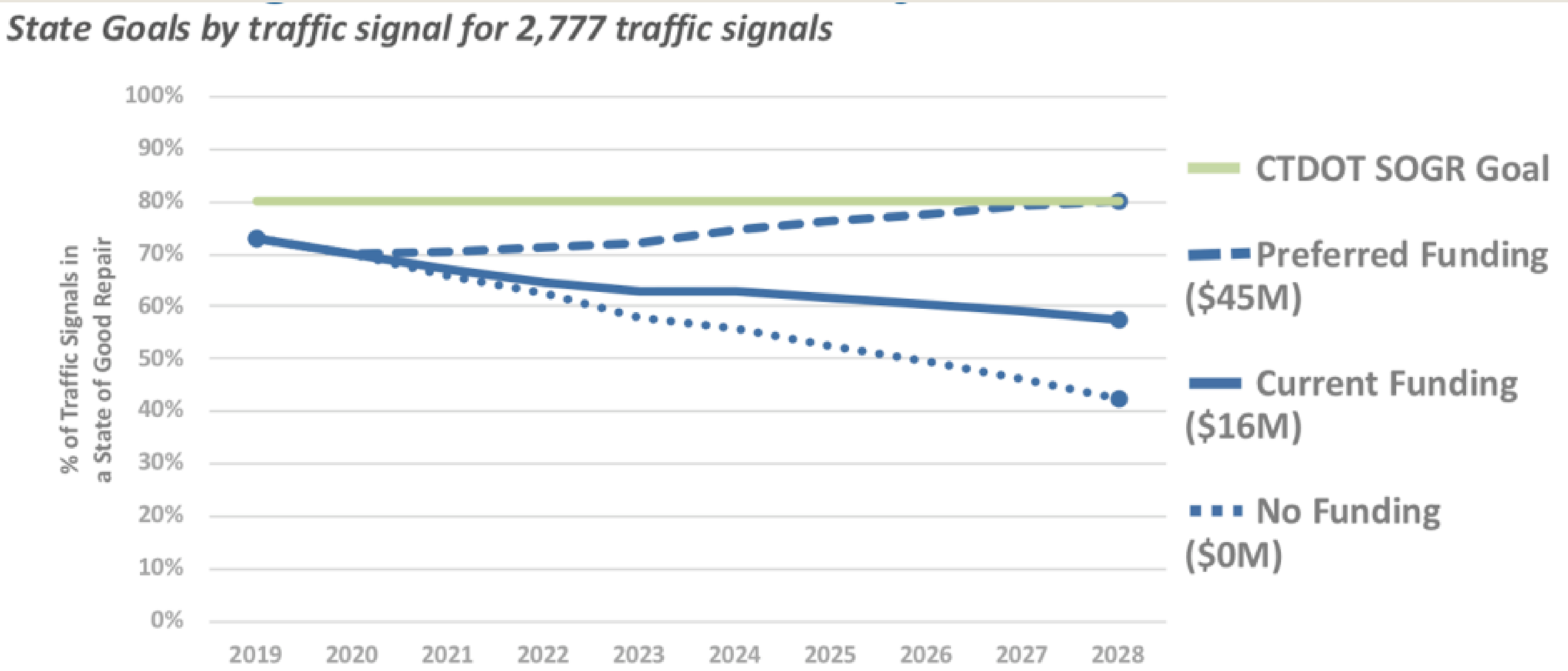
- Performance gap: Present condition - State DOT condition standards
- Information on funds required to reach the desired condition standard
- plan for additional funds compared to current funding

Source: (Connecticut DOT, 2019)

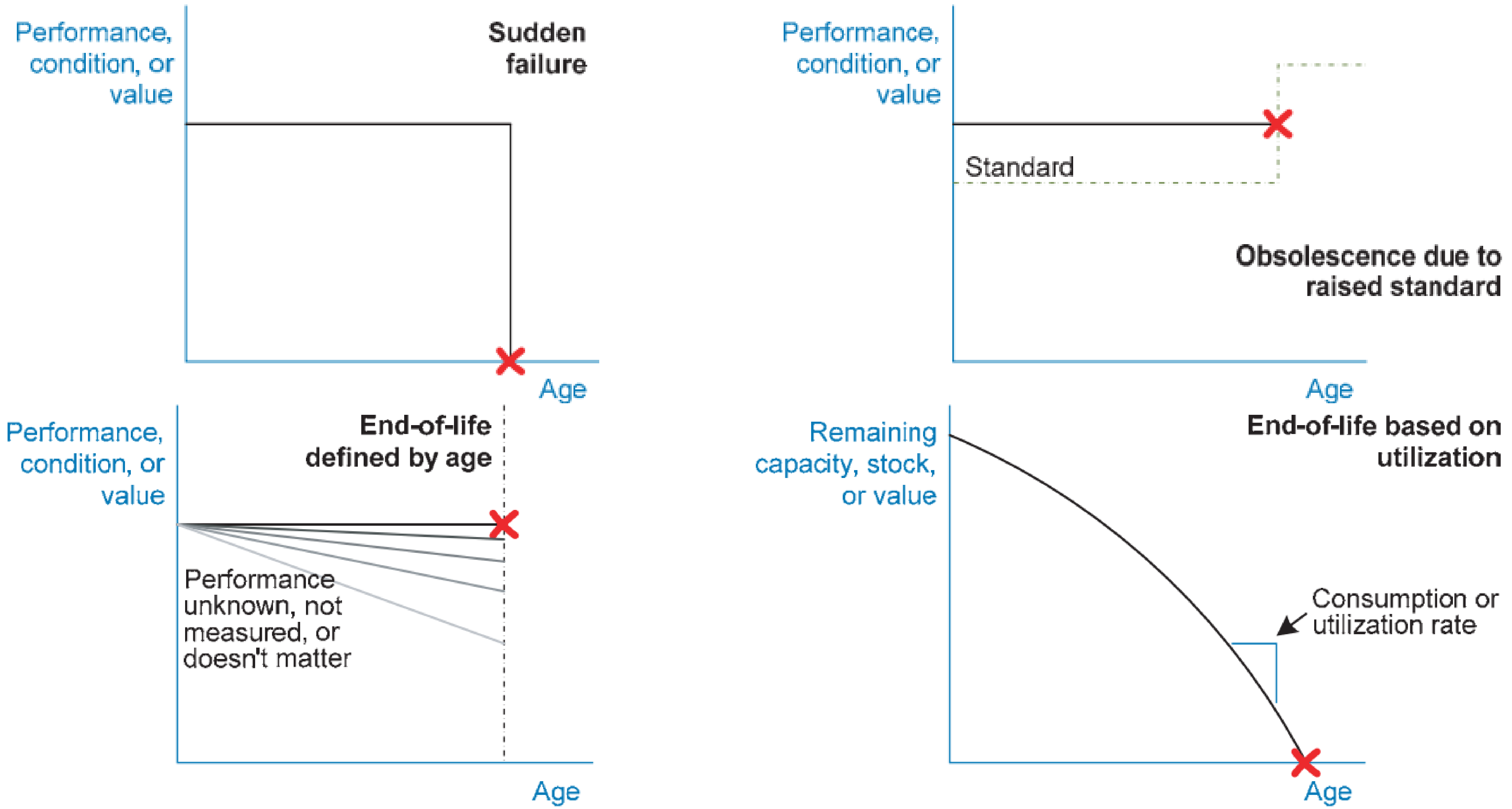
Figure 1: Signal Performance Projections by Connecticut DOT at different funding levels

EXAMPLE: CONNECTICUT DOT

- Condition standard: 80 % of traffic signals in good repair
- Funding needed: $45 million per year (in 2019 Dollars) to replace and repair signals



END-OF-LIFE CRITERIA



Source: (NCHRP, 2012)

PROACTIVE MAINTENANCE OF SIGNALS

Requires data collection on traffic signal components

Traffic Signal Asset Management Systems (TSAMS)

TSAMS advantages:

- increased staff awareness of traffic signal system failure
- improved asset prioritization,
- improvements to maintenance procedures,
- improvements to monitoring and reaction to failure

Typical TSAMS modules:

- Inventory Modules: History of removed components, snapshot of the existing components and subcomponents
- Maintenance Modules: what modifications were made, who made them, how they were made, and why they were made

TSAMS EXAMPLE: PENNDOT

pennsylvania
DEPARTMENT OF TRANSPORTATION

TSAMS

Traffic Signal Asset Management System

WELCOME to PennDOT's Traffic Signal Asset Management System (TSAMS).

TSAMS is a web-based application for managing...

- Signal and Non-Signal Asset Inventories
  - Traffic Signals
  - Emergency Traffic Signals
  - Electronic Signs
  - Flashing Warning Devices
  - In-Roadway Warning Lights
  - Intersection Control Beacons
  - Ramp Meters
  - Rectangular Rapid Flashing Beacons
  - School Zone Speed Limit Signs
- GIS Integration
- Maintenance Activity Tracking
- Signal and Non-Signal Systems Identification
- Approved Products Database
- Reporting & Advance Search

It is available **FREE** of cost to all stakeholders. If you are a new user click **here** for information on how to obtain access to **TSAMS**.

Login

- Registered TSAMS users
- Returning Guest
- First Time Guest

REGISTER

Quick Links

Release: 18.0

Fri, Nov 25, 2022 9:13:38 PM EST

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RELIABILITY-CENTERED MANAGEMENT

Steps of RCM involve

- Defining organization objectives
- Identifying each component, and defining how and why each fails

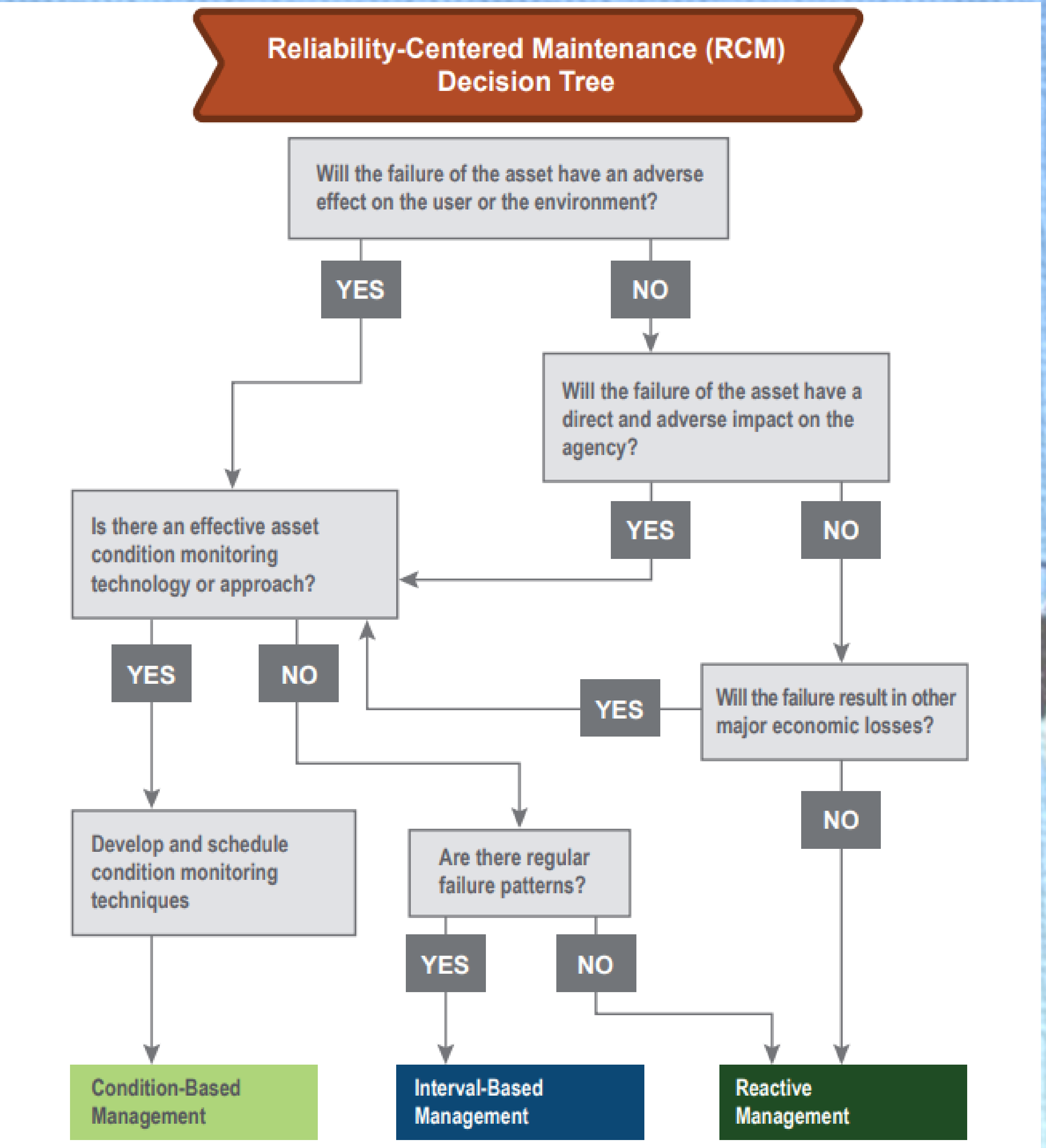
Three maintenance management strategies:

- Condition-Based Maintenance
- Interval-Based Maintenance
- Reactive Maintenance

RCM EXAMPLE: VDOT

Condition-based maintenance on the structures

Interval-based strategy for traffic signal heads



CONDITION-BASED MANAGEMENT

- Life Expectancy Models and Deterioration Models are useful when components condition is based on components age
- Example: Weibull equation for survival probability of signal controllers

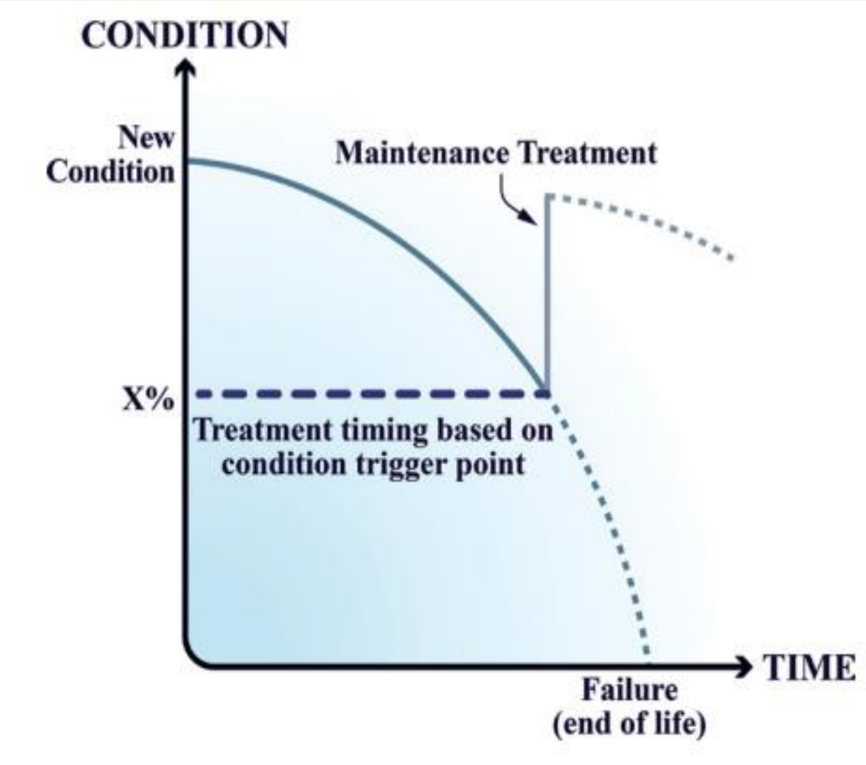


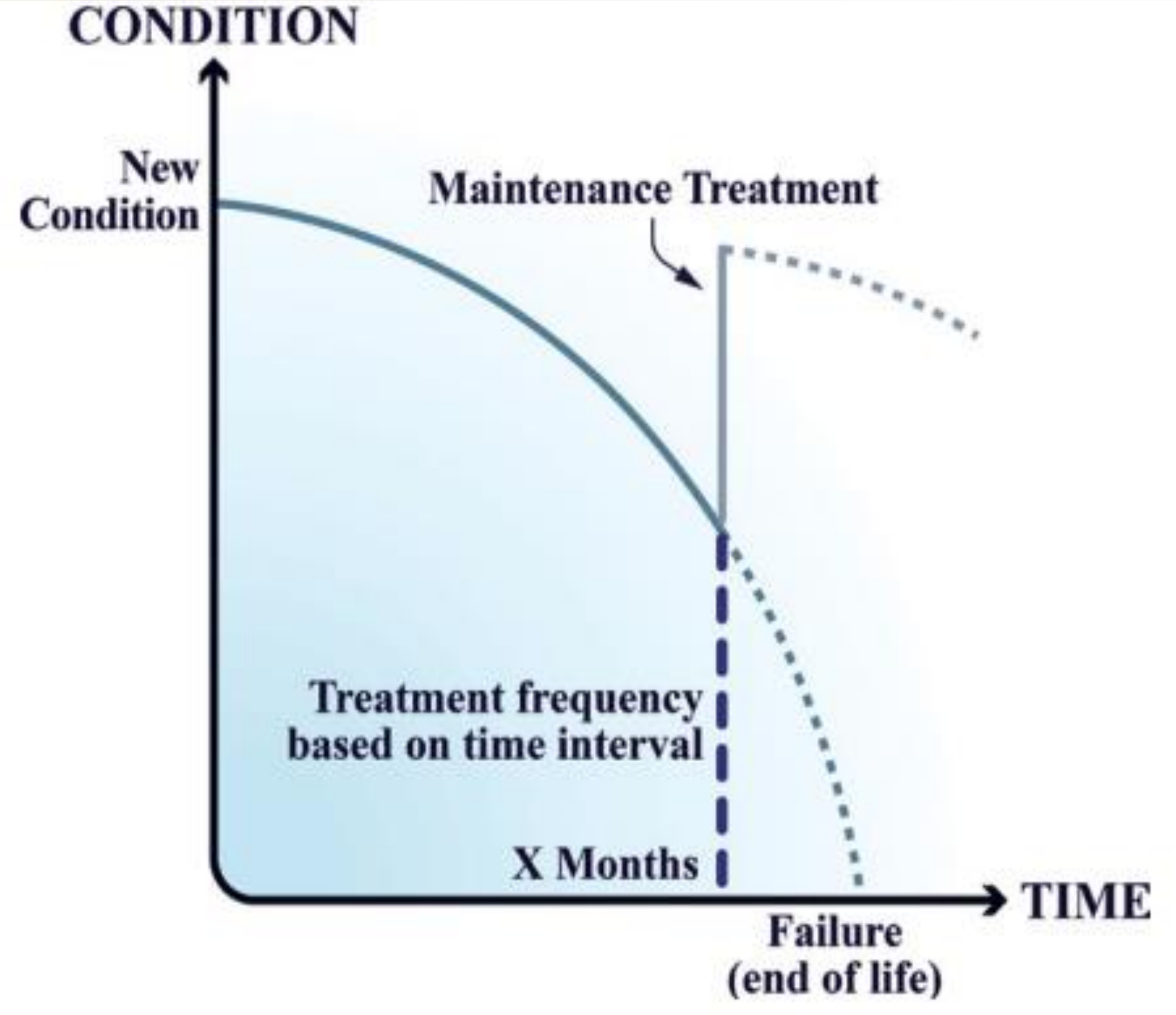
Figure 8: Graph showing asset deterioration curves
Source: (FHWA, 2022)

$$y_{1g} = \exp\left(-1.0 \times (g/\alpha)^{\beta}\right)$$

where y_{1g} is survival probability as a function of age
g ≡ age, the survival probability is sought for in years
b = the shape parameter, 1.415, and the scaling parameter α is determined as presented below

$$\begin{aligned}\alpha = \exp\big(9.343 &- 0.101 * (\text{average wind speed in mph}) \\ &- 0.108 * (\text{average annual temperature in °F}) \\ &+ 0.139 * (1 \text{ if pre-timed or semi-actuated signal, } 0 \text{ otherwise}) \\ &- 0.288 * (1 \text{ if on a city street, } 0 \text{ otherwise}) \\ &- 0.583 * (1 \text{ if supported by a mast arm, } 0 \text{ otherwise}) \\ &+ 0.352 * (1 \text{ if part of a closed loop or hardwire interconnected}) \\ &- 0.319 * (1 \text{ if fiber-optic cables, } 0 \text{ otherwise})\big)\end{aligned}$$

Figure 9: Weibull equation for survival probability of signal controllers Source: (NCHRP, 2012)



Source: (FHWA, 2022)

INTERVAL-BASED MAINTENANCE

Maintenance tasks are planned at predetermined intervals

REACTIVE MAINTENANCE

- Maintenance in reaction to events or reported asset failures
- Response interval: between notice and arrival of staff
- Repair Interval: during repairs
  - Temporary repair means or modes
  - Final repair or replacement

Source: (FHWA, 2022)

TASK ONE FINDINGS

TSAM is a deliberate and purposeful approach to managing, maintaining, and improving traffic signal physical resources.

- Best management approach may differ by signal component

Need for a component-specific management plans

- varied deterioration rates of components
- different impact severity

Data collection is required to support TSAM decisions

- Baseline conditions
- Ranking of needs

Funding is vital to reaching system goals

TASK TWO UPDATES

- Divided system into key components
- Presenting draft assessment categories and methods to TRP
- Seeking input
  - Scope of regular assessments
  - Format of assessment data collection
  - Proposed assessment practices

ASSESSMENT TYPES

- Annual condition assessment
  - Routine inspection
- Performance assessment
  - Service inspection
- Initial inspection
- In-Depth inspection
- Trouble-shooting

EXAMPLE ASSESSMENT PROCEDURE (1 OF 2)

Structure	What to Inspect	Reason	Procedure	Inspection Type	Inspection interval
Foundation	Inspect foundations for damage (Cracking, Spalling, Reinforcement exposure)	Prevent pole or cabinet failure	Inspect visible components of pole and cabinet foundations to identify cracks, evidence of corrosion, and level of decay.	Annual condition assessment/routine inspection	1
Base	Coating condition (power-coating, galvanization, paint)	Prevent Corrosion	Visually inspect the protective metal coating of all bases. Any cracks or patches of missing coating can cause the underlying metal to corrode. Check for signs of corrosion.	Annual condition assessment/routine inspection	1
	Obstructions in the drain at the pole base	Prevent collection inside the pole	View storm water drains at pole bases to identify any obstructions. If present, remove and note any standing water.	Annual condition assessment/routine inspection	1
	Grout or Rodent screen at pole bases	Prevent Infestation	Visually inspect the grout or rodent screen to identify gaps. Replace screen as necessary.	Annual condition assessment/routine inspection	1
	Anchor bolts	Anchor bolt weathering	Visually inspect for loose nuts and damage. Remove any debris, and examine the anchor bolts for signs of bending, cracking, etc. Strike bolts with a hammer, listen for a ringing sound. If the sound is abnormal or lacks ringing (e.g. thud), check for corrosion or concrete deterioration.	Annual condition assessment/routine inspection	1
Junction Boxes and Conduit	Junction boxes and handholes	Minimize water collection	Visually inspect junction boxes and handholes to identify missing or adjar covers and/or water intrusion problems.	Annual condition assessment/routine inspection	1
	Presence of exposed conduit (that should be buried)	Protect conduit	Check that no conduit is visible (at or above grade), broken, or damaged	Annual condition assessment/routine inspection	1

EXAMPLE ASSESSMENT PROCEDURE (2 OF 2)

Structure	What to Inspect	Reason	Procedure	Inspection Type	Inspection interval
Structural Connections	Foundation and base plate connection	Prevent pole failure	Verify that leveling nuts are in a snug-tight condition with the bottom of the base plate. Snug-tight is defined as the full force of a person on a 1-inch wrench.	Annual condition assessment/routine inspection	1
			Verify that a washer is present under each top nut to provide full bearing and seal bolt-hole gaps	Initial inspection	0
			Visually verify that nuts are free of corrosion.	Annual condition assessment/routine inspection	1
	Bolted connections	Prevent pole and mast arm failure	Visually confirm that the connection is tight with no visible gap between the connection or flange plates, bolts, nuts, and/or washers. Binoculars (or similar) should be used to view overhead structures.	Annual condition assessment/routine inspection	1
		Prevent pole and mast arm failure	Visually confirm that the connection is tight with no visible gap between the connection or flange plates, bolts, nuts, and/or washers.	in-depth inspection	at 15 years and at least every 5 years thereafter
	Welded connections	Prevent pole and mast arm failure	Visually confirm there are no cracks in or near welds. Check the top and bottom of vertical connections for cracks. Look for bending or deformation of connection or surrounding area. Binoculars (or similar) should be used to view overhead structures.	Annual condition assessment/routine inspection	1
		Prevent pole and mast arm failure	Visually confirm there are no cracks in or near welds. Check the top and bottom of vertical connections for cracks. Look for bending or deformation of connection or surrounding area. A bucket truck (or similar) should be used to provide close access.	in-depth inspection	at 15 years and at least every 5 years thereafter

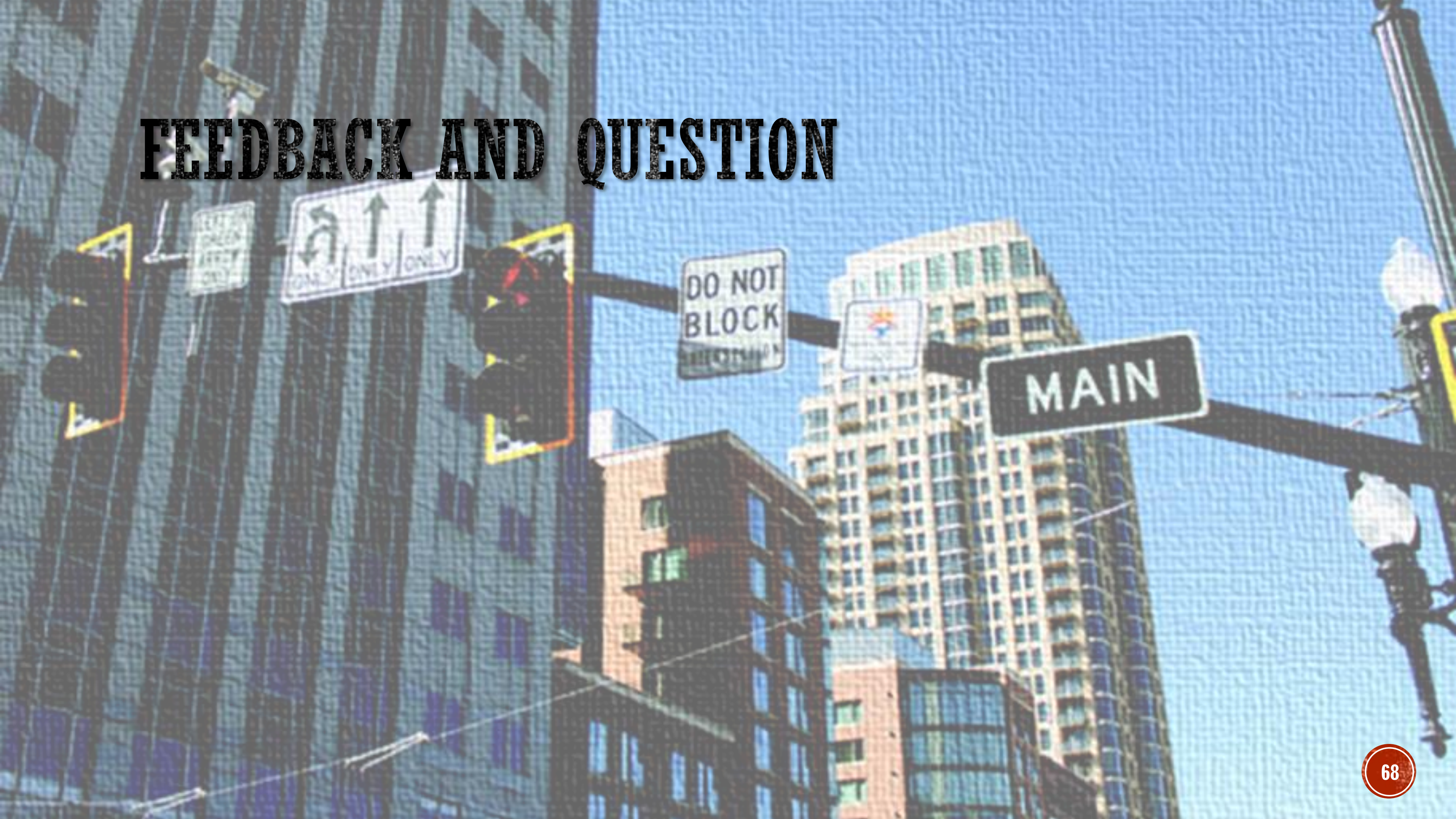
EXAMPLE OF CONDITION RATING

Structure	What to Inspect	Inspection interval	Condition Rating, Score, and Description				
			Best			Worst	
Foundation	Inspect foundations for damage (Cracking, Spalling, Reinforcement exposure)	1	Good, 1, no cracks	Fair, 2, no cracks larger than 1/32" and no reinforcement corrision stains	Poor, 3, crack larger than 1/16" and/or reinforcement damage/exposure, and/or efflorescence observed	Critical, 4, concrete chipped, exposing steel reinforcement	
Base	Coating condition (power-coating, galvanization, paint)	1	Good, 1, no coating loss or corrosion	Fair, 2, some coating loss and/or minimal corrosion	Poor, 3, significant coating loss and/or corrosion that requires maintenance		
	Obstructions in the drain at the pole base	1	Good, 1, no obstructions	Fair, 2, minor obstructions to drain, but appears to operate well	Poor 3, signs of saturation due to drainage issue		
	Grout or Rodent screen at pole bases	1	Good, 1, present and functioning	Fair, 2, present with minor damage	Poor, 3, holes or breaks effect function of screen	Critical, 4, screen missing	

NEXT STEPS

- Collect feedback and refine condition assessment procedures
- Draft and refine condition thresholds
- Recommend companion procedures

FEEDBACK AND QUESTION



Next meetings

Stephen Zulkowski, Kane County Division of Transportation (Chair)

Our remaining meeting schedule for the year will be:

- Thursday, May 4, 2023 (9:30-11:30am)
- Thursday, August 3, 2023 (9:30-11:30am)
- Thursday, November 2, 2023 (9:30-11:30am)

6.0 Adjournment

Chicago Metropolitan
Agency for Planning

Transportation Technology and Operations Coalition

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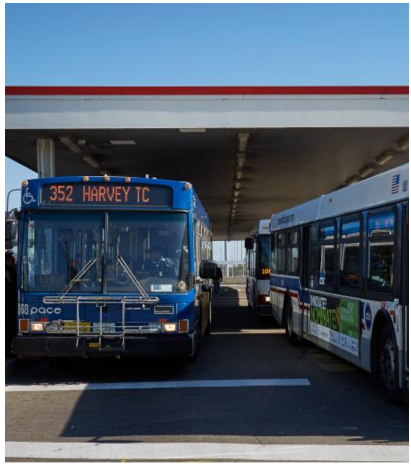

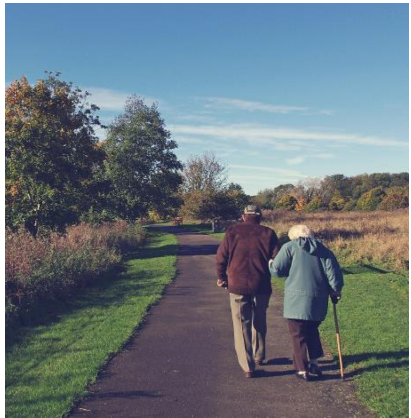

Chicago Metropolitan Agency for Planning

Thank you!

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