



FEDERAL TRANSIT ADMINISTRATION

Making the TAM Connection: Capital  
Planning and Investment Prioritization  
May 25, 2021



**TRANSIT  
ASSET  
MANAGEMENT**



U.S. Department of Transportation  
Federal Transit Administration

# Reminder

## 2021 FTA TAM Virtual Roundtable

**June 22, 2021**

**1:00 - 3:30 PM EDT**

**Register using the link below  
(and on the TAM website) before June 16, 2021:**

**<https://bit.ly/3bJWiGx>**

# Today's Speakers

## **Jim Morrill**

Senior Analyst, Asset Management Unit  
San Francisco Municipal Transportation Agency

## **Chris Ward**

Maintenance Asset Manager  
Transit Authority of River City (TARC)



**SFMTA**

San Francisco Municipal Transportation Agency

# Asset Management Supports Capital Planning

FTA Webinar Series  
May 25, 2021



# Who we are

6,046



SFMTA employees

2,630



Muni Operators

901



Muni buses and Trolleys

215



Light Rail Vehicles (LRV's)  
149 Breda; 66 LRV4

77



Historic streetcars

40



Cable cars

1,247



Signalized  
intersections

156



Paratransit vehicles

210



Miles of Bike Route

Over 700,000 average daily weekday boardings (pre-pandemic)



An aerial photograph of San Francisco, showing the city skyline, the bay, and the Golden Gate Bridge. The image is used as a background for the left side of the slide.

# Asset Snapshot

**\$16.88 Billion**

Total Asset Replacement Value

**\$3.85 Billion**

Asset Replacement Backlog

**\$2.5 Billion**

Target FY 2022 Budget

**\$632 Million**

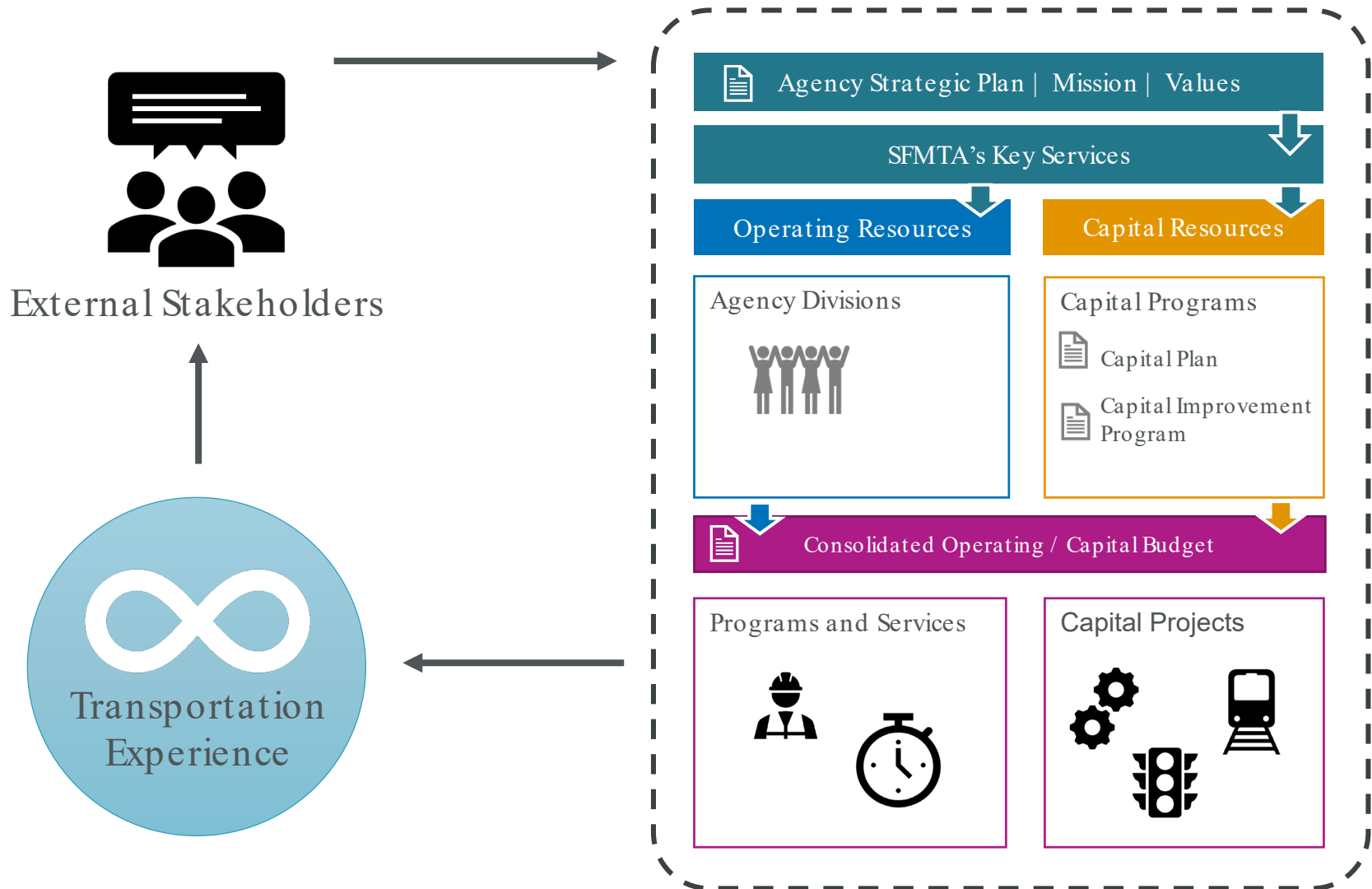
Annual State of Good Repair Need

# Overview of AM Activities @SFMTA



Moved from Long Range Planning Section to Finance and IT.

# Agency Ecosystem





# Capital Program Managers



Communications  
& IT



Facilities



Fleet



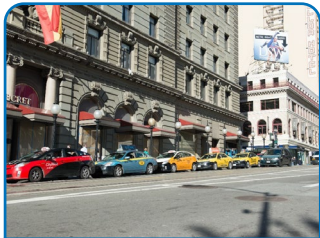
Parking



Security



Streets



Taxi



Traffic Signals



Transit Fixed  
Guideway



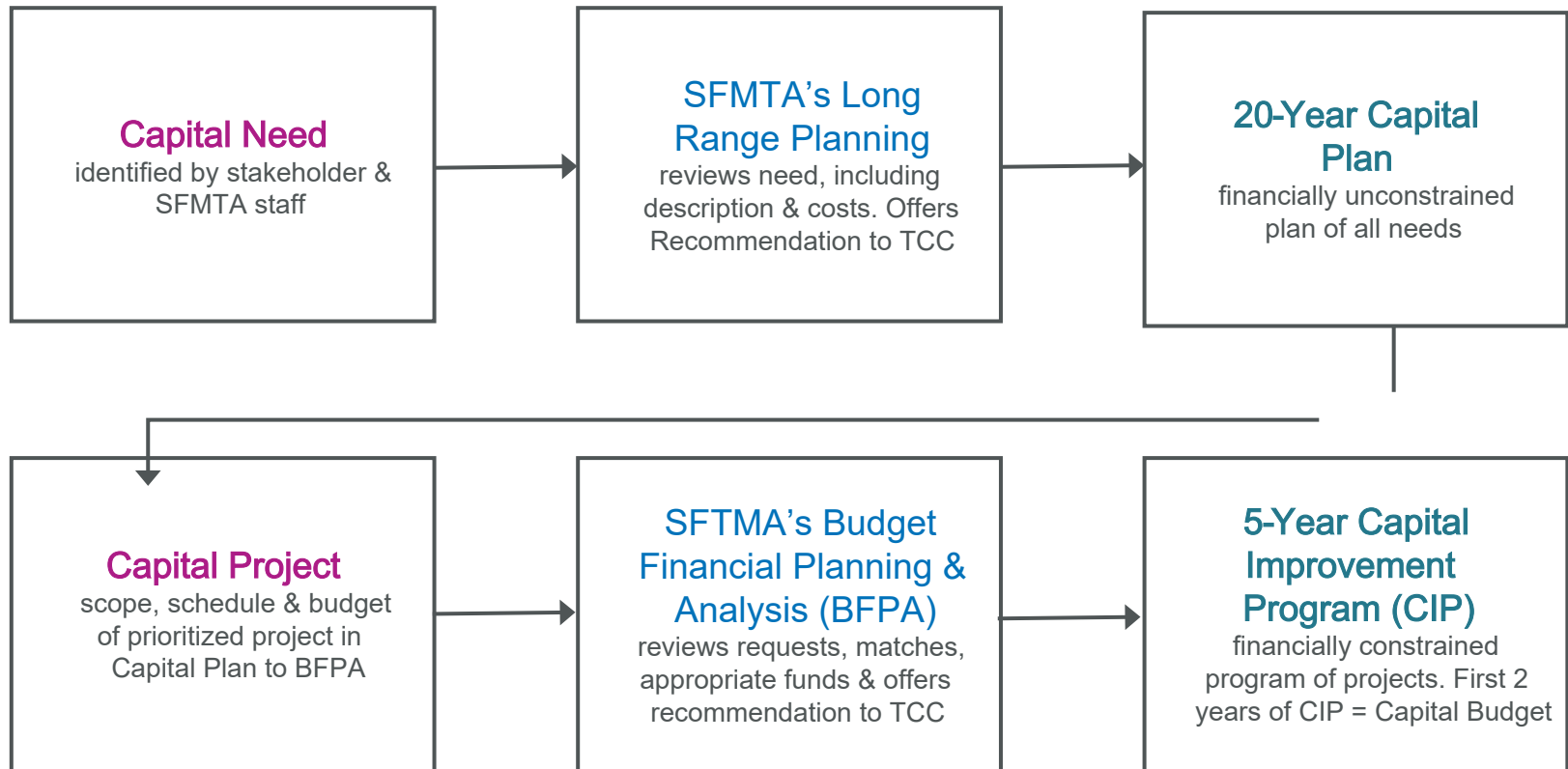
Transit  
Optimization &  
Expansion



→ Transportation Capital Committee



# Capital Planning Process



# The Facilities Replacement Problem

## 2015 State of Good Repair Report:

### High Value Assets and Increasing Investment Need :

- \$1.75 billion of Facilities Assets (2015 \$'s)
- \$1 billion in projected needs over the next 20 years

### Aging Infrastructure

- Age based condition score of 3.14 out of 5
- 70% of the assets were rated “adequate” or lower

### Missing Data

- No recent condition assessment
- Inventory refresh needed

No investments scheduled after Fiscal Year 2017

# Asset Management and Long-Term Planning Solution

## 2017 Facilities Framework

### Inventory

- Mapped and inventoried all facilities, components and uses

### Condition Assessment and Prioritization

- Assessed 18 facilities to prioritize deferred maintenance backlog
- Evaluated needs for:
  - Safety
  - Cost efficiency
  - Functional use





Established phasing principles for short, mid and long term investments

- Allows Capital Program Manager to schedule prioritized projects



# Facilities Framework

## Recommended Next Steps

	Dec 2016 Executive Direction	Jan - Mar 2017 Refine & Analyze	Apr - Jun 2017 Refine & Analyze	Jul - Sep 2017 Refine & Analyze	Oct- Dec 2017 Executive Direction	Jan 2018 Start Project
Framework Scenarios	5 Scenarios 1, 1A, 1B, 2A, 2B	3 Scenarios 1A, 1B, 2A	2 Scenarios 1A or 1B, & 2A	2 Scenarios 1A or 1B, & 2A	1 Scenario	
MAINTENANCE		Update CIP Select and set up procurement				
NEW FACILITY	Eliminated Scenario 1	SFMTA finalize program including swing needs Developer revise plans, costs and confirm purchase terms			Compare Scenarios refined scope, schedule, and budget  Select Scenario	
POTRERO PRESIDIO KIRKLAND		EIR Study RFP TOD Study RFP Due Diligence Reports	EIR Initial Study TOD Initial Study			
SWING	Approved MME for swing; eliminated Scenario 2B	Define trolley swing needs for New Facility in Scenario 1A/1B and MME in Scenario 2A	Develop MME swing/rail and back shop program and concept for Scenario 2A			
15TH STREET (ENFORCEMENT)	Approved exchange of 15th St for Bryant St	Start jurisdictional transfer Refine program and concept	Select and set- up renovation procurement			
PARATRANSIT		Analyze and select preferred option and eliminate Sce- nario 1A or 1B				

# Facilities Capital Improvement Program Comparison: Fiscal Years 2015-2019 vs 2021-2024

## Planned Investments by Capital Program: All Investments FY 2015-2019 Capital Improvement Program (CIP)

Includes State of Good Repair, Expansion Projects & Enhancements Projects  
All amounts shown in Millions (\$M)

Capital Program	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	CIP Total
Central Subway	\$203.4	\$190.9	\$150.0	\$150.0	\$98.5	\$792.9
Security	\$7.1	\$10.1	\$10.1	\$3.0	\$3.0	\$33.3
Bicycle	\$33.5	\$35.5	\$23.5	\$12.6	\$14.2	\$119.2
Pedestrian	\$15.5	\$18.3	\$13.4	\$10.4	\$13.3	\$70.8
Transit Optimization/ Expansion	\$125.7	\$162.4	\$193.3	\$53.6	\$117.6	\$652.7
Traffic/Signals	\$18.3	\$24.9	\$17.3	\$9.6	\$4.5	\$74.6
Transit Fixed Guideway	\$72.0	\$33.6	\$30.3	\$27.1	\$54.7	\$217.7
Fleet	\$230.0	\$321.0	\$199.7	\$205.0	\$124.5	\$1,080.3
Facility	\$52.2	\$45.8	\$35.0	\$1.0	\$1.0	\$134.9

## Facility

Acquire and/or rehabilitate maintenance facilities used for transit, traffic, and parking operations.

Project Name	CIP ID	Total Carryforward Budget	CIP Total	Total
Facility Reserve	FC000		10,219,329	10,219,329
Facility Condition Assessment Implementation	FC014	500,000	7,724,975	8,224,975
Castro Station Accessibility Improvement Project	FC050	1,958,000	15,657,590	17,615,590
1200 15th Street Renovation	FC066	830,000	8,570,905	9,400,905
Muni Metro East Expansion - Trolley Yard	FC068	3,487,532	116,917,573	120,405,105
Woods Facility Modernization	FC073	521,953	3,500,000	4,021,953
Potrero Modernization Project	FC074		35,300,809	35,300,809
Bus Simulator	FC078	612,500	305,052	917,552
BART Canopies/Market Street Entrance Modernization	FC088		42,080,000	42,080,000
SFMTA Facilities Framework - Parking Facilities Plan	FC089		800,000	800,000
Facilities Campaign Planning	FC090		100,000	100,000
Bus Washer Renovation Campaign	FC091		1,353,000	1,353,000
<b>Total</b>		<b>7,909,985</b>	<b>242,529,233</b>	<b>250,439,218</b>

Facilities projects planned for the next five years include...

### 11 Projects, \$243 M Investment

- More efficient maintenance facilities
- Fewer delays due to vehicle maintenance
- Better working environment for SFMTA employees

Key Capital  
Project Locations





**SFMTA**

# Thank You.

San Francisco Municipal Transportation Agency





## ASSET CONDITION AND TRANSITION

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Prioritizing the Old with the New



## ABOUT TARC

- Tier 1, bus only
  - Kentucky and Indiana
  - 28 routes
  - 235 fixed-route buses, 15 electric
  - 645 team members
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- 2 campuses
  - 10 buildings
  - Fixed-route fleet
  - Paratransit fleet
  - Service vehicles
  - On-route chargers



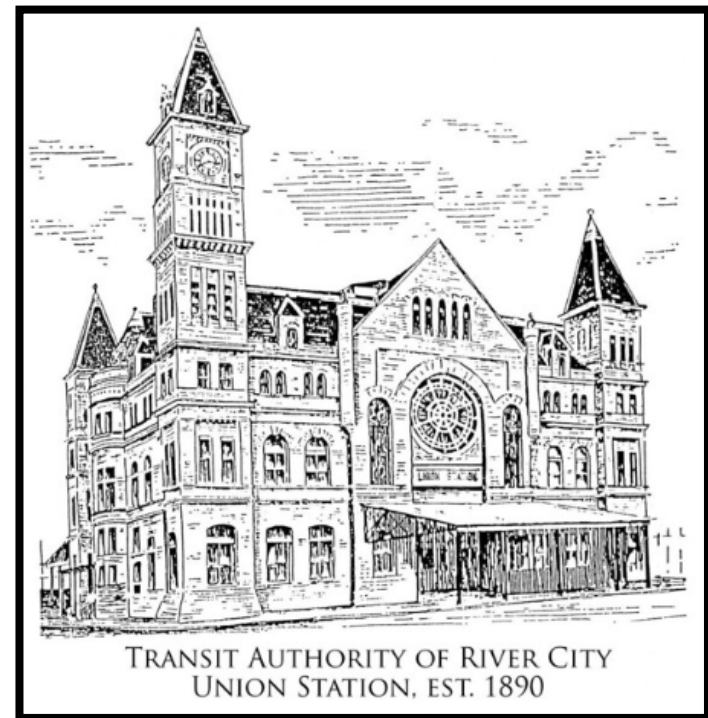
## WAYFINDING

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- **Inventory of assets**
- **Decision support tool(s)**
- **TAM & SGR policy**
- **Prioritization**

## FACILITIES

### UNION STATION



# FACILITIES

## UNION STATION







# FACILITIES

## ALYCE FRENCH-JOHNSON TRAINING CENTER



**TRANSIT AUTHORITY OF RIVER CITY (TARC) MAINTENANCE FACILITY**  
LOUISVILLE, KENTUCKY

**80%** reduction in potable water use

**90.7%** decrease in stormwater quantity, volume and rate leaving the site

**335.8 tons** of on-site generated waste diverted from landfill

**LEED® Facts**  
TARC Maintenance Facility  
Louisville, Kentucky

LEED for New Construction  
Certification awarded August 22, 2011

**Gold 42 points\***

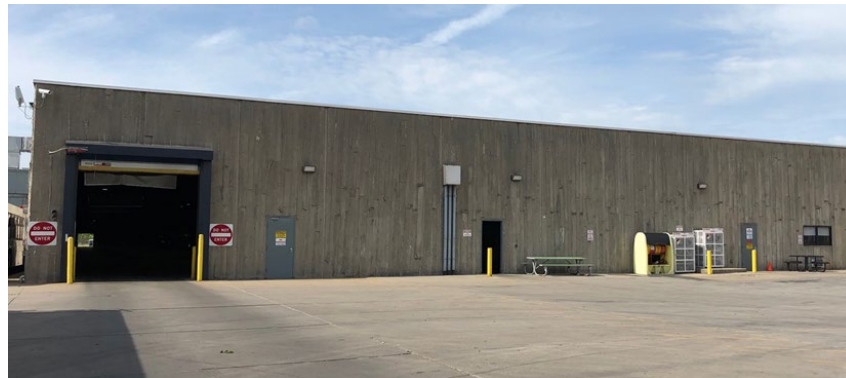
Sustainable Sites	11/14
Water Efficiency	5/5
Energy & Atmosphere	6/17
Materials & Resources	7/13
Indoor Environmental Quality	9/15
Innovation & Design	5/5

\*Out of a possible 69 points

The information provided is based on that stated in the LEED® project certification documents. USGBC and CH2MHill do not warrant or represent the accuracy of this information. Green building, when performed, is based on the project's design, construction, operation, and maintenance. Energy efficiency and sustainable materials are key.

## FACILITIES

### UMTA ERA (1976-1984 BUILT OR REPURPOSED)



## TURNING 50

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- Substructure** ➡ Foundation heave, poor fill
- Shell** ➡ Roof replacements (ARRA)  
Overhead doors
- Interiors** ➡ Worn / Dated / Inefficient
- Conveyance** ➡ Elevators
- Plumbing & Fire Protection** ➡ Supply lines
- HVAC** ➡ 2 replacements, 1 pending
- Conveyance** ➡ Elevators
- Equipment** ➡ In-ground lifts



# ELECTRIC BUSES







## DECISION SUPPORT TOOLS

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- **ABB / Ellipse EAM – Source**
- **Microsoft Power BI – Visualization**
- **TransTrack – Reporting data from Ellipse**
- **Excel – Where the prioritization work will be done**

## DECISION SUPPORT TOOLS

- **ABB / Ellipse EAM – Source**
- **Microsoft Power BI – Visualization**
- **TransTrack – Reporting data from Ellipse**
- **Excel – Where the prioritization work will be done**

Work Request	Request Description 1	Classification...	Request Type ...	Raised Date
✕	✕	✕	✕	✕
000000000005	Solar Array for Union Station Barn	Facility	Capital Request	07/02/2019
000000000006	Construct Extended Bay - Diesel West	Facility	Capital Request	07/02/2019
000000000007	Renovate Transportation dispatch office	Facility	Capital Request	07/03/2019
000000000009	R&R 6 in-ground lifts, +1 in steam room	Facility	Capital Request	07/03/2019
000000000010	Spec Roof replacement, Union Station	Facility	Capital Request	07/03/2019
000000000011	Purchase automated fuel mgmt system	Facility	Capital Request	07/09/2019
000000000021	Replace sixteen 40' buses acquired 2005	Bus	Capital Request	08/13/2019
000000000023	Replace ten (10) 2011 cutaways	Bus	Capital Request	09/09/2019

# DECISION SUPPORT TOOLS

Asset Management System Risk Matrix							LIKELIHOOD					
							Improbable (1)	Not Likely to Occur (2)	Could Occur (3)	Known to Occur (4)	Common Occurrence (5)	
		Service Impact	Health and Safety	Environmental Impacts	Financial and Asset Loss	Reputational Damage	Regulatory / Legal Impact	Likely to occur once in 10 or more years	Likely to occur once in 5 to 3 years	Likely to occur once in 2 to 4 years	Likely to occur once a year	Likely to occur more than once a year
IMPACT	Very High (5)	Complete loss of service	One or more fatalities. Irreversible health problems for employees and/or community.	A release to the environment with major (sub-surface) impacts; impacts non-agency property; requires regulatory reporting; extensive remediation required	Severe financial loss or asset replacement cost impact. (>\$500,000)	National loss of reputation; damaging national exposure	Potential for significant, serious penalties and/or sanctions, etc. or multiple major litigations	Medium Risk Undesirable - Management Decision (5)	Medium Risk Undesirable - Management Decision (10)	High Risk Unacceptable - Action Required (15)	High Risk Unacceptable - Action Required (20)	High Risk Unacceptable - Action Required (25)
	High (4)	Partial loss of service	Partial or medium-term disabilities or major health problems for employees and/or customers.	A release to the environment with moderate (superficial) impacts; impacts non-agency property; requires regulatory reporting; limited remediation required	Major financial loss or asset cost impact. (>\$200,000-\$500,000)	Significant regional loss of reputation	Potential for penalties, fines or sanctions of a lesser but still material nature / single major litigation or multiple moderate litigations	Low Risk Acceptable with Review (4)	Medium Risk Undesirable - Management Decision (8)	Medium Risk Undesirable - Management Decision (12)	High Risk Unacceptable - Action Required (16)	High Risk Unacceptable - Action Required (20)
	Moderate (3)	Service delay of 1 hour or more	Lost-time injuries or potential medium-term health problems for employees and/or community.	A release to the environment with minor (impervious surface) impacts; impacts non-agency property; requires regulatory reporting and/or site restoration	Moderate financial loss or asset cost impact. (>\$75,000-\$200,000)	Moderate loss of regional reputation	Potential for minor penalties or fines / Single moderate litigation or multiple minor litigations	Low Risk Acceptable with Review (3)	Medium Risk Undesirable - Management Decision (6)	Medium Risk Undesirable - Management Decision (9)	Medium Risk Undesirable - Management Decision (12)	High Risk Unacceptable - Action Required (15)
	Low (2)	Service delay of less than 1 hour	Minor, very short-term health concerns or Recordable injury cases.	A release to the environment with minor impacts; contained to agency property; no regulatory notification required	Tolerable financial loss or asset cost impact. (\$35,000-\$75,000)	Light impact on reputation	Breach of company policy or single minor litigation	Low Risk Acceptable with Review (2)	Low Risk Acceptable with Review (4)	Medium Risk Undesirable - Management Decision (6)	Medium Risk Undesirable - Management Decision (8)	Medium Risk Undesirable - Management Decision (10)
	Minor (1)	Not likely to impact service	Inherently safe. Unlikely to cause health problems.	A contained release (e.g., a minor spill) with little to no environmental impact; no regulatory notification needed	Relatively low financial loss or asset cost impact. (<\$35,000)	No impact on reputation	No impact to regulations or legal obligations	Low Risk Acceptable with Review (1)	Low Risk Acceptable with Review (2)	Low Risk Acceptable with Review (3)	Low Risk Acceptable with Review (4)	Medium Risk Undesirable - Management Decision (5)

## DECISION SUPPORT TOOLS

### RISK SCORES ONLY, SCALE 1 - 25

Asset Risk Scoring - Individual										
Risk Identification			Risk Analysis							
Risk ID	Project #	Project Name	Highest Impact Category	Pre-Mitigation Impact (1-5)	Pre-Mitigation Likelihood (1-5)	Pre-Mitigation Risk Score (1-25)	Post-Mitigation Impact (1-5)	Post-Mitigation Likelihood (1-5)	Post-Mitigation Risk Score (1-25)	Risk Reduction Score
FC-0002	0008	Patch and recoat shop floors (USTA)	Health and Safety	2	2	4	1	1	1	3
FC-0003	0009	Remove and replace 6 in-ground lifts	Financial and Asset Loss	3	3	9	2	2	4	5
FC-0004	0010	Spec roof replacement, Union Station	Financial and Asset Loss	3	2	6	1	1	1	5
IS-0001	0011	Purchase automated fuel mgmt system	Regulatory / Legal Impact	2	2	4	1	2	2	2
BU-0001	0020	Replace five 40' buses acquired 2004	Service Impact	3	4	12	2	2	4	8



## GETTING STARTED

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- **Endorsed by Finance, then Executive Director**
  - **Increased interest and involvement from staff**
  - **New processes needed to collect and package requests**
  - **Weighting expected to be SGR and safety heavy**
- 
- **Focus is on maintaining facilities from the last 50 years**
  - **Social, economic, and environmental well-being**



## POLICIES

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### TARC Mission:

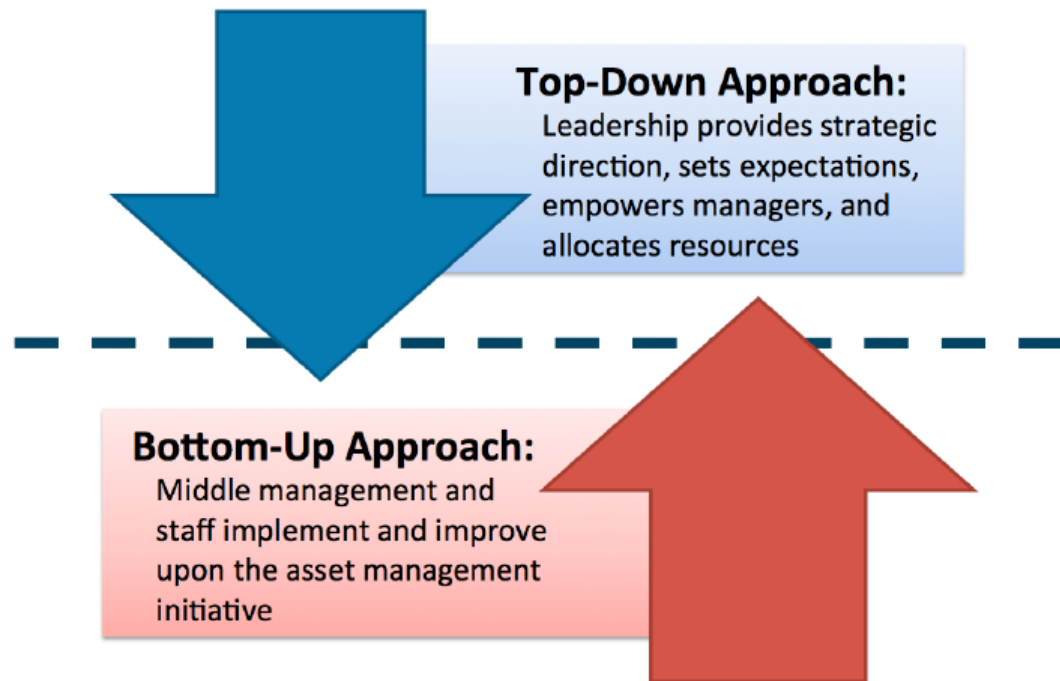
To explore and implement transportation opportunities that enhance the **social, economic, and environmental well-being** of the Greater Louisville community.

### TAM Policy Commitment:

TARC is committed to maintaining assets in a **state of good repair to support safe, efficient, reliable** transportation.

# INPUTS

**Figure 3-12**  
*Asset Management-  
 Focused Capital  
 Program Prioritization  
 Inputs*



FTA Report No. 0098, p.73

## CHANGE

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### INTERNAL

- **New Executive Director**
- **New Board of Directors**
- **New departmental directors**
- **Generational turnover**
- **Retention**
- **COVID response**



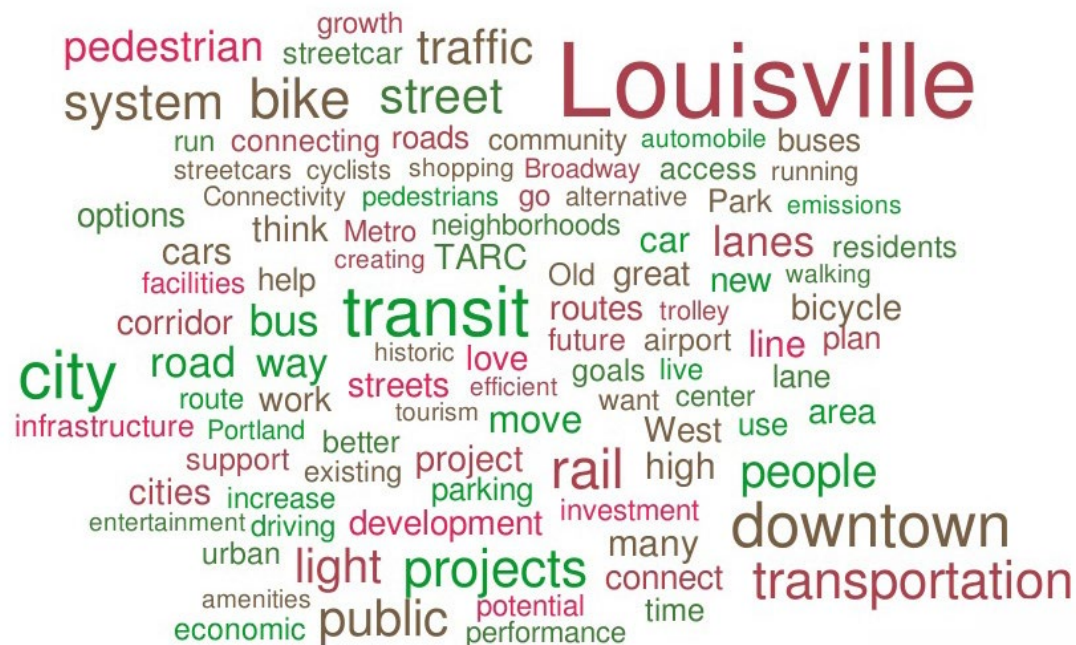


## CHANGE

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### EXTERNAL

- **Global – COVID, climate change**
- **Federal – Proposed \$25 billion for electric buses**
- **Regional – MPO and city government**



## CHANGE

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### **2 additional routes over the next 3 – 5 years**

- **Do not cover the service currently provided**
- **Finds roughly \$10 million for service**
- **Additional and sustainable revenue is essential**
- **\$20 million in operating funds per year**



**2035 Transportation Plan**  
Louisville Metro Government  
Mayor Greg Fischer, 2016

# CHANGE

About The New Dixie Highway Project







## OPPORTUNITY

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### TOOLS

- **Comprehensive Operational Analysis (2021)**
- **Long-Range Plan (2022)**
- **Zero Emission Fleet Strategic Transition Plan**
- **Catalog Options to Provide Transit Access to Exurban Location**
- **Connecting Kentuckiana 2050, MTP**





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