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# Linking Condition Assessment to State of Good Repair: An Open-Source Approach for Transit

*presented to*

*Transportation Asset and Infrastructure Management Conference*

*presented by*

*Cambridge Systematics, Inc.*

*Tom Harrington, Principal*

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# Agenda

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Transit Asset Management Challenges



Agency-Led Response: Teaming Together



The Pennsylvania Story

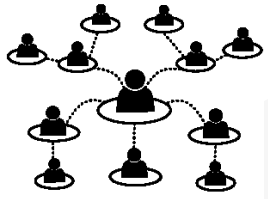


Benefits of Open Source TAM Solutions

# FTA Transit Asset Management Requirements

FTA's 2016 TAM Final Rule, transit agencies must:

- Develop TAM plan
- Complete National Transit Database TAM inputs
- Conduct and report facility condition assessments
- Set performance targets
  - » Rolling stock: % of revenue vehicles exceeding ULB
  - » Equipment: % of nonrevenue service vehicles exceeding ULB
  - » Facilities: % of facilities rated under 3.0 on the TERM scale
  - » Infrastructure: % of track segments under performance restriction



# Transit Asset Management Challenges

## Transit Agencies

- Increased **reporting requirements**
- **Data quality**: Data **siloes** in multiple departments
- **Capital planning** for SOGR\*
- Implementing a platform with **limited resources**

## State DOT+Planning Partners

- **Out-of-date** asset data
- Disparate **formatting** of agency data
- Capital project planning **coordination w/sub-recipients**
- Integrated **regional planning**

# Agency-Led Response –Teaming Together



## TransAM

### Inception

- 1st open source transportation asset management software solution
- Funded through **FTA State of Good Repair (SGR) Grant**
- Commissioned by Virginia Department of Rail and Public Transportation (DRPT) and **Pennsylvania DOT Bureau of Public Transportation (BPT)**

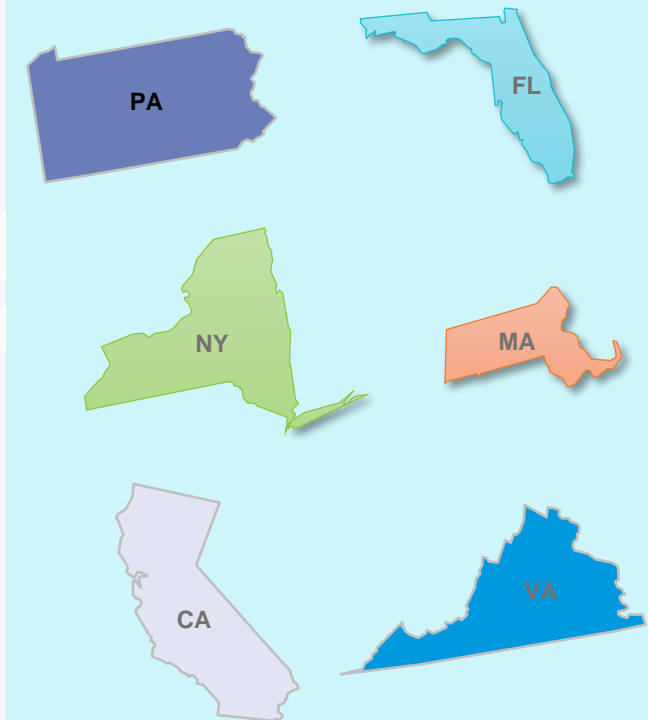


### Applicability

- **Specialized requirements:** 
  - » Automated NTD reporting
  - » TAM performance targets setting & reporting
  - » Capital project planning (for SOGR, customized & auto-generated w/scenarios)
- **FTA-compliant** hierarchy & architecture 
- **API** for seamless integration

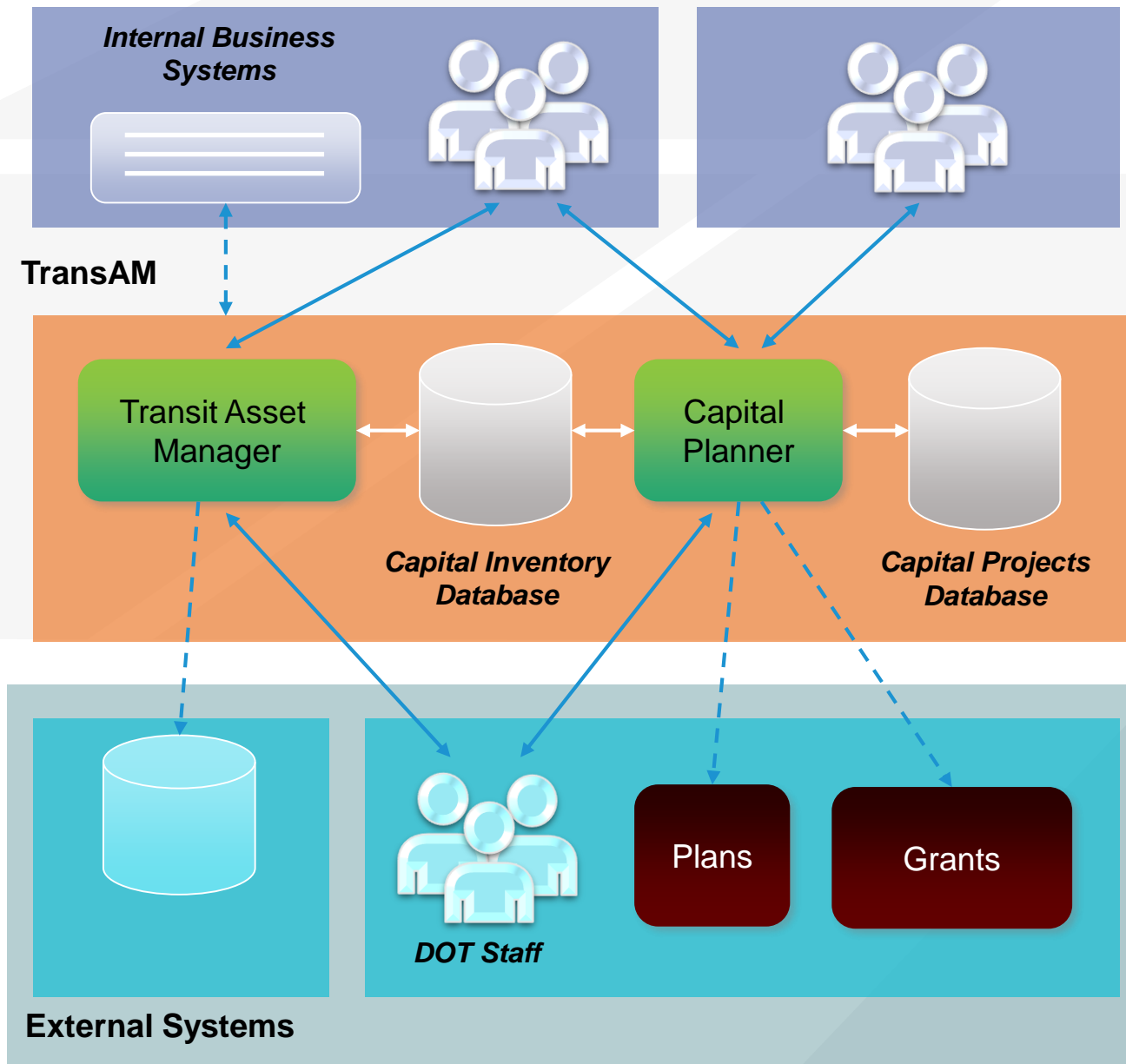
### Expansion

- **300+ agencies** and growing



## Transit Organizations

## Planning Partners

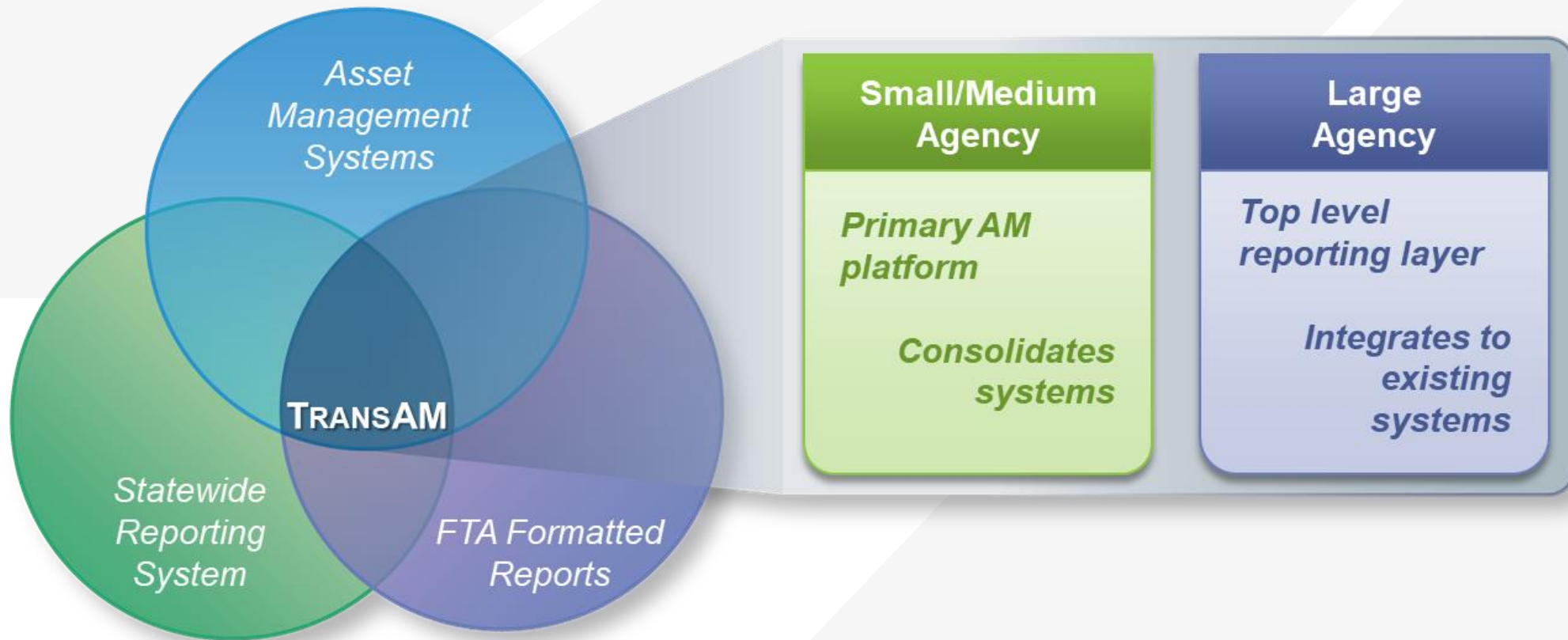


**TransAM can serve as the bridge between internal data tracking and coordination needs and external reporting requirements.**

# Agency-Led Response –Teaming Together

## Agency Use Cases

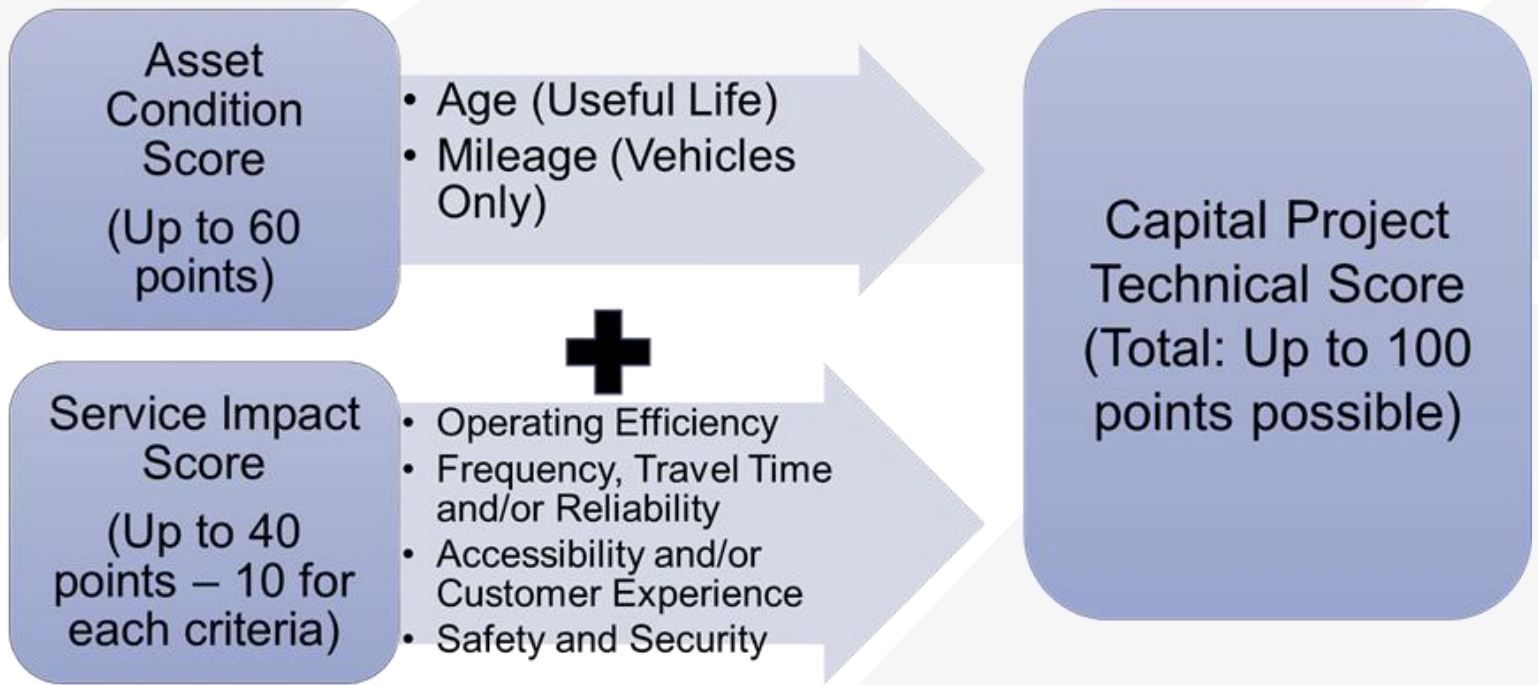
For adopters, TransAM has become the **single source of truth for asset information** across **multiple reporting levels**.



# Virginia DRPT

## Applying TransAM for Funding Prioritization

➤ Project-based prioritization process for allocating state capital funding for transit





# PennDOT – Bureau of Public Transportation

## TransAM Statewide Overview

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- “Capital Planning Tool (CPT)” used by:
  - » BPT
  - » 63 transit agencies
  - » 24 planning agencies
- Includes 321,000+ total assets. Reporting viewable by BPT and regional partners (region-specific) at any time
- Replaced excel and miscellaneous data exports for BPT / transit agency asset data coordination

# PennDOT – Bureau of Public Transportation Reporting

- Multiple TAM reports with agency, regional, and statewide versions





Asset Service Life Summary Report FTA Asset Category  Months Past ESL Min  Months Past ESL Max   [Actions](#)

Organization	Subtype	Quantity	# Past ESL (Mo.)	Pcnt	# Past ESL (Mi.)	Pcnt	# Past TERM Threshold	Pcnt
All (Filtered) Organizations	Bus < 30 FT	2,306	980	42%	736	32%	685	30%
All (Filtered) Organizations	Bus 30 FT	162	41	25%	38	23%	58	36%
All (Filtered) Organizations	Bus Articulated	171	13	8%	0	0%	74	43%
All (Filtered) Organizations	Bus Commuter/Suburban	69	15	22%	0	0%	16	23%
All (Filtered) Organizations	Bus Std 35 FT	454	136	30%	61	13%	150	33%
All (Filtered) Organizations	Bus Std 40 FT	2,420	797	33%	475	20%	340	14%
All (Filtered) Organizations	Bus Trolley Std	71	9	13%	0	0%	11	15%
All (Filtered) Organizations	Commuter Locomotive Electric	23	8	35%	0	0%	8	35%
All (Filtered) Organizations	Commuter Rail Car Trailer	53	53	100%	0	0%	0	0%
All (Filtered) Organizations	Commuter Rail Self Propelled (Elec)	351	231	66%	0	0%	0	0%
All (Filtered) Organizations	Heavy Rail Car	371	151	41%	0	0%	0	0%
All (Filtered) Organizations	Incline Railway Car	2	2	100%	0	0%	2	100%
All (Filtered) Organizations	Light Rail Car	242	141	58%	0	0%	100	41%
All (Filtered) Organizations	Sedan/Station Wagon	30	12	40%	7	23%	12	40%
All (Filtered) Organizations	Van	617	367	59%	354	57%	315	51%
	<b>Totals</b>	<b>7,342</b>	<b>2,956</b>	<b>40%</b>	<b>1,671</b>	<b>23%</b>	<b>1,771</b>	<b>24%</b>

# PennDOT – Bureau of Public Transportation

## Yearly Asset Audit

- ➔ **Yearly audit feature** for updating mileage, condition, and service status

Capital Planning Tool (QA)    

Home

Audit Summary

Annual Inventory Update Results		
ACTS	Revenue Vehicles	100%
AMTRAN	Communications Equipment	100%
AMTRAN	IT Equipment	100%
AMTRAN	Maintenance Equipment	100%
AMTRAN	Office Equipment	100%
AMTRAN	Revenue Vehicles	100%
AMTRAN	Signals/Signs	100%

### Capital Planning Tool (QA)

Home > Revenue Vehicles > Buses (Rubber Tire Vehicles) > #273 > Mileage Update

#### Asset

#### Profile

Owner CAT  
 Description FRD Champion  
 Asset Tag #273  
 External ID PT Bus #273  
 Manufacturer FRD  
 Class Revenue Vehicles  
 Type Bus < 30 FT  
 Status In Service

Age 2 yrs  
 Mileage 41,209  
 Reported Adequate  
 Condition

#### Mileage

#### \* Current Mileage

#### \* Date of Mileage

#### Comments

Enter any additional comments...

Update the mileage

# PennDOT – Bureau of Public Transportation

## Asset Replacement Policies

- Statewide **asset replacement policies**
- Agencies can update for their own targets – only if change **extends estimated service life**
- Increases transparency, automates creation of most capital projects
- **Maximizes asset useful life**

Asset Replacement/Rehabilitation Policy

Policy Owner PennDOT Bureau of Public Transportation  
 Description FY 2016 Statewide Transit Policy  
 Active ✓

Policy Rules

Revenue Vehicles Stations/Stops/Terminals Support Facilities Support Vehicles Maintenance Equipment Facility I

Service Life Calculation Method			Repl. Cost Calculation Method			Ar
Age and Mileage			Purchase Price + Interest			
Asset Subtype	Fuel Type	ESL (Mo)	ESL (Mi)	Repl. Cost	Cost FY	Replace New
Bus Std 40 FT		144	500,000	\$395,500	FY 10-11	✓
Bus Std 35 FT		144	500,000	\$375,000	FY 10-11	✓
Bus 30 FT		120	350,000	\$317,000	FY 10-11	✓
Bus < 30 FT		60	150,000	\$267,500	FY 10-11	✓
Bus School		144	300,000	\$200,000	FY 10-11	✓
Bus Articulated		144	500,000	\$650,000	FY 10-11	✓
Bus Commuter/Suburban		144	500,000	\$490,000	FY 10-11	✓
Bus Intercity		144	500,000	\$490,000	FY 10-11	✓

# PennDOT – Bureau of Public Transportation

## TransAM Statewide Overview

- Leverages TransAM to generate a capital plan of asset replacement projects across 12-year planning horizon

Project Planning

Project flags... Project types... Asset types... Actions

	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29
<b>Project</b>	\$2,332,151	\$2,053,988	\$0	\$1,044,190	\$148,212	\$2,594,544	\$178,080	\$5,827,644	\$506,703	\$2,205,549	\$1,043,830	\$207,061
COLTS 17-18 #3034 Total Cost \$2,190,285 Type Replacement SOGR Yes <input type="checkbox"/> Edit	Purchase - Replacement Bus STD 35 Ft Diesel Fuel assets. 11.12.02 9 assets \$2,190,285 (e)											
COLTS 17-18 #3040 Total Cost \$141,866 Type Replacement SOGR Yes <input type="checkbox"/> Edit	Acquisition ADP Software assets. 11.42.08 1 assets \$18,047 (e)											
	Acquisition Support Vehicles Gasoline assets. 11.42.11 5 assets \$123,819 (e)											
COLTS 18-19 #3028 Total Cost \$2,036,985 Type Replacement SOGR Yes <input type="checkbox"/> Edit		Purchase - Replacement Bus STD 35 Ft Diesel Fuel assets. 11.12.02 5 assets										

# PennDOT – Bureau of Public Transportation

## TransAM Statewide Overview

### Project Planning

FY 19-20  
\$4,453,621

**Project**

AMTRAN 19-20 #4001 ▲

Total Cost \$3,780,000

Type Replacement

SOGR Yes

[Edit](#)

**Purchase - Replacement Bus STD 35 Ft DF-Diesel Fuel assets.**

11.12.02

5 assets ▲

\$2,700,000

📅
📄
🔍
➡

**Purchase - Replacement Bus 30 Ft DF-Diesel Fuel assets**

11.12.03

2 assets

\$1,080,000

📅
📄
🔍
➡

➤ Agencies can even postpone only certain assets within projects to future years. This creates a new project in a future year and leaves the original project with its remaining assets in its current FY.

AMTRAN 19-20 #4001: Purchase - Replacement Bus STD 35 Ft DF-Diesel Fuel assets. X

☰ Move selected to fiscal year ▾ Deselect all

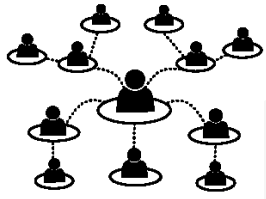
Tag	Asset Subtype	Fuel	Description	Age	Bcklg	Mileage	Cond.	Policy FY	Orig. Cost	Book Val.	Sch. Cost	
<input type="checkbox"/> 086560	Bus Std 35 FT	DF	GIL 35-foot low-floor (used and rehabbed)	4		52,494	-	FY 21-22	\$152,960	\$103,035	\$161,560	<span style="color: blue;">i</span> <span style="color: red;">▲</span>
<input type="checkbox"/> 086561	Bus Std 35 FT	DF	GIL 35-foot low-floor (used and rehabbed)	4		49,956	-	FY 21-22	\$152,960	\$104,097	\$161,560	<span style="color: blue;">i</span> <span style="color: red;">▲</span>
<input type="checkbox"/> 712	Bus Std 35 FT	DF	GIL 35-foot low-floor (used and rehabbed)	3		49,577	-	FY 21-22	\$152,960	\$116,844	\$158,063	<span style="color: blue;">i</span> <span style="color: red;">▲</span>
<input type="checkbox"/> 713	Bus Std 35 FT	DF	GIL 35-foot low-floor (used and rehabbed)	3		11,866	-	FY 21-22	\$152,960	\$117,906	\$158,063	<span style="color: blue;">i</span> <span style="color: red;">▲</span>
<input type="checkbox"/> 714	Bus Std 35 FT	DF	GIL 35-foot low-floor (used and rehabbed)	3		9,924	-	FY 21-22	\$152,960	\$118,968	\$158,063	<span style="color: blue;">i</span> <span style="color: red;">▲</span>
<b>Totals for 5 assets</b>									<b>\$764,800</b>	<b>\$560,850</b>	<b>\$797,309</b>	

# PennDOT – Bureau of Public Transportation

## TransAM Statewide Overview

- Creates a capital needs lists at multiple levels: transit agency, regional, statewide
- Ties funding sources to capital projects





# Benefits of Open Source TAM Solutions

## Transit Agencies

- Standardized **reporting** to meet FTA requirements
- **Integration** of asset data across multiple departments
- **Affordability** – no license fees
- **Ease of Use** – Web-based solution that is relatively easy to learn
- Shared investment across **user community**

## State DOT+Planning Partners

- **Consistent** asset data submitted by agencies across the state over time
- Ability to monitor ESL **compliance** and statewide capital needs (support Tier 2 TAM planning)
- **Coordinated** regional planning and tracking progress towards achieving performance targets



# Contact Information

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