

User Training Transit Economic Requirements Model Overview



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What is TERM?

- FTA's Capital Needs Analysis Tool
 - Used to assess the current physical condition and future ____ investment needs of the nation's transit assets / operators



Investment Expenditures by Existing vs Expansion



What is TERM?

- Transit Economic Requirements Model
- National level analysis of:
 - State of Good Repair backlog
 - Asset conditions
 - 20-year projection of reinvestment needs
 - Impact of variations in funding
- Approximately \$5 million in development since 1995





What is TERM?

- Determines level of investment required to:
 - Maintain condition/performance
 - Improve condition/performance
- Assesses impact of constrained investment on future conditions / performance
- Cost effectiveness of proposed investments (benefit–cost analyses)
- Results reported in the transit sections of the "Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance" (C&P)



In Addition to the C&P Report, TERM is Used to **Develop Related Reports**

The National Surface Transportation **Commission** examined the condition and future needs of the nation's surface



The Rail Modernization Study assessed the reinvestment needs of the nine largest rail operators

The National State of Good *Repair* assessed the investment backlog and capital investment backlog and capital reinvestment needs of the transit industry







Capital Needs Assessments Include all Asset Types



Data on the Condition of Some Asset Types have been Obtained Through Inspections





The Transit Economic Requirements Model (TERM) was developed to answer the question, "Where will we be in 20 years?"

The answer depends on three primary factors. The following questions are open ended but are eventually translated into relational tables that allow TERM to simulate a 20-year scenario.



What does your inventory look like today?





How much can you spend in each year?

What is most important for you? Safety? Reliability? Something else?



Do we know our inventory?

Knowing your inventory is the first step to being able to analyze the true cost ownership.

- What types of assets do we have?
- How many assets do we have of each kind and how big are they?
- What is the age of each asset? And is the condition appropriate for its age?
- How often must an asset be rehabilitated and at what cost?
- What is the cost to replace one unit of each asset type?
- What assets can never be replaced?
- Do we have redundant or non-essential inventory?



How much can we spend?

The future condition of your portfolio depends on a complex combination of capital replacement programs, operations, maintenance & sustainment practices, worker training, investments in tools, and strategic planning. All of these require funding. Future funding is rarely known but typical scenarios include the following:

- Continue to spend some historical flat amount each year.
- Increased flat funding each year
- Increased short-term funding to reduce deferred maintenance followed by a historical flat amount.
- Unlimited funding
- No funding





What are our priorities?

Every asset in your inventory contributes to meet your organization's goals and mission objectives. If they don't, you should probably decommission them. When funds are constrained, budget planners must consider where to spend the available money first. Criteria that is most often considered for a transit planner include the following:

- Safety & Security
- Reliability
- Operations & Maintenance Impact
- Customer Experience
- Asset Condition





TERM Simulates how you Invest in your Assets

Once the current inventory, spending constraints, prioritization criteria, and a few other economic assumptions are provided, TERM simulates up to 30 years of aging, wear & tear, rehabilitation, maintenance, and replacement for a collection of assets.



TERM is an MS Access-based tool designed for use by a novice

The analyst controls the simulation by using the following modules:

- Inventory Publisher: Transferring inventory data from MS Excel to TERM
- **Prioritization Settings**: Assign priority weights to each of five criteria and score each asset type on those five criteria
- **Expenditure Constraints**: Specify the maximum annual funding available to the simulator
- Backlog Target Seek: Optimize funding to achieve a specific reduction in backlog
- Inventory Management: Add, delete, or modify the inventory details
- **Expansion Analysis:** Review the impact of adding new capacity on annual expenditure needs and long-term backlog growth/decline
- Life Cycle Cost: Edit assumptions regarding number and cost of interval rehabilitations, unit replacement cost, and useful life by asset type
- Inflation Module: Specify how costs should be escalated over time and how results are displayed



Inventory Publisher

TERM-Lite is developed in MS Access. Users that are comfortable using Access may choose to become familiar with the tables and manage the data directly in the model.

However, FTA has developed an MS Excel-based Inventory Publisher which helps format data to conform to TERM's business rules.

È	TED		ama Dashilah an	Delete Records with no Description														
E E	IERI	wi-Lite invent	ory Publisher	Currently, there are	Currently, there are 500 records													
_ ≧	for the Transit Economic Requirements Model			Delete Selected Records	+10 record(s)	Add			*				Base Year				Show	Hide Optional Fields
ا							*	Repl	acement Cos	st		*	2014					
Ē.		\star (mandatory)	*	*	*	Expan	Year	Unit A	cquisition	Repl.	Soft	Cost	Repl.		*		Data I	nformation
L.	Recor	d Mode	Description	Asset Classification	Quantity Unit	sion?	Built	Cost (\$)	Cost (\$)	Cost (\$)	Cost	Year	Cost (\$)	Useful Life	Priority	Additional Notes	Year	Source
1	1	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	50.48 LF	No	2011	116.15		5,863.25		2011	6,487.46	40 Yrs	Normal	WEST VALLEY LIGHT RAIL TI		
1	2	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	220.92 LF	No	2011	116.15		25,659.86		2011	28,391.61	40 Yrs	Normal	Mid Jordan Horizontal Align		
1	3	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	100. LF	No	1999	116.15		11,615.00		1999	20,700.26	40 Yrs	Normal	L53 RR As-Builts DMJM C03		
1	4	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	281.32 LF	No	2012	116.15		32,675.32		2012	34,955.09	40 Yrs	Normal	Provo to Salt Lake Horizonta		
1	5	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	100.19 LF	No	1999	116.15		11,637.07		1999	20,739.59	40 Yrs	Normal	L53 RR As-Builts DMJM C02		
1	6	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	99.64 LF	No	1999	116.15		11,573.19		1999	20,625.74	40 Yrs	Normal	L53 RR As-Builts DMJM C02		
1	7	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	238.2 LF	No	2008	116.15		27,666.93		2008	33,871.36	40 Yrs	Normal	Parsons Weber County to Sa		
1	8	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	300. LF	No	2000	120.00		36,000.00		2000	62,795.30	0 Yrs	Normal			
1	9	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	198.31 LF	No	2008	116.15		23,033.71		2008	28,199.12	40 Yrs	Normal	Parsons Weber County to Sa		
1	10	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	125. LF	No	2008	116.15		14,518.75		2008	17,774.64	40 Yrs	Normal	Parsons Weber County to Sa		
1	11	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	112.43 LF	No	2012	116.15		13,058.74		2012	13,969.86	40 Yrs	Normal	Provo to Salt Lake Horizonta		
1	12	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	200. LF	No	1999	116.15		23,230.00		1999	41,400.53	40 Yrs	Normal	L53 RR As-Builts DMJM C02		
1	13	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	1. EA	No	2008	25,000.00		25,000.00		2008	30,606.36	32 Yrs	Normal	Parsons Weber County to Sa		
1	14	LR - Light Rail	Guideway Elements - Ballasted,	11201 - Guideway Elements, Track	4,786.21 LF	No	2011	116.15		555,918.29		2011	615,101.53	40 Yrs	Normal	Mid Jordan Horizontal Align		
1	15	IP IS	Guide Coments - Ballactod		10 C	N-	-			200,297		2008	217 215 56	20 Vrc	-	Parsons M		

Prioritization Settings

TERM-Lite simulates the longterm impact of *constrained* funding scenarios using a robust prioritization algorithm. The model considered five dimensions of priority: Asset Condition, Safety & Security, Reliability, O&M Cost Impact, and one User Defined criteria. The User is in control of how each asset type scores against other asset types. The User also determines how each criteria is weighted against other criteria.

== Scenario	Settings			Close f	orm before runnir	ng model				23
Prioritizati	on Settings	Expendit	ure Constraints	Backlog Ta	arget Seek					
Prioriti	zation	Criter	ia Setting	S						
Prioritiza	tion Criteria	Weights		Crite	ria Weights- Mi	ist sum to 1	00% A weight of	f o% for any crite	erion removes th	at
Asset Condition: 65.0% Safety & Security: 15.0% Reliability: 15.0% O&M Cost Impact: 5.0% User Defined Criterion: 0.00% Weights must sum to 100%: 100.0%			Crite criteric Guid (exclud Crite ROI im weight	Criteria Weights: Must sum to 100%. A weight of 0% for any criterion removes that criterion from investment prioritization scoring. Guide: This input form allows the user to establish ratings for four of the five criterion (excluding asset condition) as well as the weighting for all five criterion. Criteria Ratings: User can set the criteria ratings (from 1 to 5) for safety, reliability and ROI impact on an asset-by-asset type basis. A score of '5' represents the highest weighting and a score of '1' represents the least amount of weight.						
Fixed Cito		•	Cub Catalana		Jser can only edit	t Safety, Kelli	ability and U&M Cos	st Impact fields. U	ser can sort on ar	ny field
10000	Guideway El	ements	Sub-Category	•	Element	· ·	Sub-Element	A Safety & Se		JUST A
10000	Guideway El	ements	Guideway			CE	2	4	3	
10002	Guideway El	ements	Guideway	-		H	R	4	3	
10003	Guideway El	ements	Guideway	-		LR	l	4	3	
10110	Guideway El	ements	Guideway	At Gra	de Ballast	-		2	3	
10111	Guideway El	ements	Guideway	At Gra	de Ballast	CF	2	2	3	
10112	Guideway El	ements	Guideway	At Gra	de Ballast	H	R	2	3	
10113	Guideway El	ements	Guideway	At Gra	de Ballast	LR	L	2	3	-
Record: M	< 1 of 560	▶ ▶ ▶	Ҡ No Filter 🛛 Sear	rch	•					

Expenditure Constraints

The User controls the amount of funding that is available for each of the years of analysis.

The User can specify whether unspent funds are carried over to future year or returned to the funding authority based on that agency's unique circumstances.

A built-in 'Large Record Test' will help the User evaluate of the inventory is structured optimally for TERM-Lite analysis.

Scenario Settings		Close	form before	running model		23			
Prioritization Settings Expenditure Constra			Backlog	Target Se <mark>e</mark>	k				
Expenditure	Constrair	nts							
Annual Expendit	ture Constraints		*Note: Ba	Carry	/ over of unused cap	Guide: Values establish the maximum level o expenditure on capital replacement activities each year of analysis. Budget amounts that unused in any given period (i.e., are more than			
Year 1 (2013)	\$U \$148,242,000	Year 11 (202	3) \$10	7.450.000	Year 21 (2033)	\$221 870 000	required to address outstanding needs) will be carried forward to cover the cost of expenditures		
Year 2 (2014)	\$148,242,000	Year 12 (202	(4) \$10	17,450,000	Year 22 (2034)	\$221,870,000	Backlog Year: Level of expenditures for the		
Year 3 (2015)	\$148,242,000	Year 13 (202	!5) \$10	7,450,000	Year 23 (2035)	\$221,870,000	year immediately preceding the first year of analysis (Year 1). For unconstrained analysis,		
Year 4 (2016)	\$148,242,000	Year 14 (202	(6) \$10	7,450,000	Year 24 (2036)	\$221,870,000	the user can set this value high enough for the		
Year 5 (2017)	\$148,242,000	Year 15 (202	2 7) \$10	7,450,000	Year 25 (2037)	\$221,870,000	For constrained analyses, value should set to		
Year 6 (2018)	\$156,826,000	Year 16 (202	(8) \$19	3,528,000	Year 26 (2038)	\$182,762,000	zero (\$0). Alternatively, user can set this value to some non-zero value to account for capital		
Year 7 (2019)	\$156,826,000	Year 17 (202	(9) \$19	3,528,000	Year 27 (2039)	\$182,762,000	reinvestment that has occurred between (1) the		
Year 8 (2020)	\$156,826,000	Year 18 (203	IO) \$1 9	3,528,000	Year 28 (2040)	\$182,762,000	2010) and (2) the start of the desired period of		
Year 9 (2021)	\$156,826,000	Year 19 (203	11) \$1 9	3,528,000	Year 29 (2041)	\$182,762,000	analysis (January 2012).		
Year 10 (2022)	\$156,826,000	Year 20 (203	12) \$19	3,528,000	Year 30 (2042)	\$182,762,000	unconstrained needs analysis, set the budget		
ar 9 (2021) ar 10 (2022) ge Record Test	\$156,826,000 \$156,826,000 Click to view list of a	Year 19 (203 Year 20 (203 ssets with replace	11) \$19 12) \$19 ment values)3,528,000)3,528,000 greater than c	Year 29 (2041) Year 30 (2042)	\$182,762,000 \$182,762,000 dget constraint	Unconstrained: Analysis: To run an unconstrained needs analysis, set the budget constraint value for each year well in excess of that required to address any future needs (e.g., \$50B annually).		



Backlog Target Seek

In contract to using the Expenditure Constraints module, the User can also specify a performance outcome by reducing existing backlog to a specific level within a desired period of time. TERM-Lite calculates the annual funding required to achieve this objective.



Inventory Management

The User can review, perform quality assurance, edit, delete, or modify individual asset records. Each record can include a unique cost basis, quantity, useful life, and age.

Each asset can be tagged as one be of four levels of "overriding" priority (Funded, Deficient, Normal, or Exclude).

In addition, twenty (20) fields are available to track metadata that is important to the agency.

nga			Description: Vehicles - Commuter Rail, Acquired in 2007								
-				Quantity	: 8		Year Built	: 2007	Existing/Expansion:	Existing Asset	-
				Unit	EA		Cost Yea	: 2010	Agency Soft Cost:	0	0.00%
				Useful Life (Yrs)	: 35		Priority Statu	Normal 💌	Unit Cost (2010\$):	\$2,269,47	3.00
				Data Year	: 0			Acq	uisition Cost (2010\$):	\$18,155,78	4.00
				Data Course				Roph	amont Cast (20126)	\$10,100,10	0.00
Input Data		(lose form bef	Data Source	: 0			Repla	cement cost (20125):	\$19,422,51	9.63
set Invent	Life Cycle Costs	Inflation		Hide Location [-]	(Optiona	l Fields)					
sset In	ventory (Free	sion assets are th	ose built in i	Agency Asset Type	102604		Segment/Rt:		Address:		
	inclucing series		Constant and	Barley (Standal			Charles [User Calif.		
View By:	 All Assets 	Priority:	• All	wake/wodel	Siemen	s Desiro	Start:		User Field 1:		
201001000	O Existing Assets	ODeficient	O Funded	Agency Condition Score	:		End:		User Field 2:		
	O Execution Assots	O Evelude	O Normal	Agency Asset ID	:		Latitude:		User Field 3:		
	O expansion Assets	O Exclude	Orienmai	Agency Asset Parent ID			Longitude:		User Field 4:		
tailed Listi	ng			Una (Division			N				
Existing/E	xpansion - Priority Statu	a _ Date Built	- Mode	Line / Division	·		Notes:	L02604			
Existing	Normal	2006	CR	Branch / Garage							
Existing	Normal	2009	CR								
Existing	Normal	2008	CR	Dept Asset Owner	Vehicle:	s/Fleet					
Existing	Normal	2006	CR	Project Number							
Existing	Normal	2008	CR	Troject Nomber							
Existing	Normal	2007	CR		1		X				
Existing	Normal	1973	CR					1	1		
Existing	Normal	2007	CR				Save	Cancel			
Existing	Normal	2007	CR	L				S			
Existing	Normai	1998	DR	Vehicles-Demand F 5	1926	Vehicles	Reve	nue Vehicle			
Existing	Normal	2007	DR	Vehicles - Demand F 5/	2527	Vehicles	Reve	nue Vehicle			
Existing	Normal	2011	LR	Guideway Elements 1	1201	Guideway El	ements Trac	owork			
Existing	Normal	2008	LR	Guideway Elements 1	1201	Guideway El	ements Trac	work			
Existing	Normal	1999	LR	Guideway Elements 1	1201	Guideway El	ements Trac	work			
Existing	Normal	2012	LR	Guideway Elements 1	1201	Guideway El	ements Trac	owork			
Existing	Normal	2008	LR	Guideway Elements 1	1201	Guideway El	ements Trac	owork			
Existing	Normal	2008	18	Guideway Elements 1	1201	Guideway El	ements Trac	work			
Existing	Normal	2000	1.8	Guideway Flemente 1	1201	Guideway El	ements Trac	ownrk			
Evicting	Normal	2008	1.9	Guidaway Elements 1	1201	Guidaway El	amonte Trac	wards w			
Constitute.	in the second se	1.0110	11032	i tribular prementer t		Constraint and PA	and a second				

Mode: CR - Commuter Rail

Asset Classification: [51302], [Vehicles], [Revenue Vehicles], [Commuter Rail], [Passenger Car]

-

Add / Update Asset Inventory All Fields Required



Expansion Analysis

The User can choose to include planned or prospective capital improvements in the analysis. This "what-if" scenario analysis allows a thorough review of the impacts of such improvements on spending needs and, when funding is constrained, on overall portfolio performance (as measured by average age, and condition).



Life Cycle Cost and Inflation

Users can customize the rehab and replacement cost assumptions for each asset type. This customization can include up to five (5) intermediate rehabs stated as a percentage of the replacement cost.

Assets that are typically maintained for an indefinite period (tunnels or historic assets), an annual capital cost can be defined to allow for regular investments in rehab.

TERM-Lite analysis can be run using any desired assumed inflation rate.





Reports help the analyst visualize the resulting condition and service performance of the asset inventory based on the input settings. Comparing multiple scenarios side by side help build a business case to support "right funding" of the portfolio





















Questions?

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Appendix A - Useful Constrained Expenditure Scenarios

Scenario	Purpose / Value	How to Define
Maintain Current Spending	 What is the impact on the SGR backlog and prioritization of continuing to reinvest at the current (historical) rate? 	 Enter \$0 for year 0 For years 1 to 20 enter avg. level of Service Board reinvestment for past 5 to 10 years Can adjust for inflation
Maintain Backlog	 What level of investment will maintain the current size of the backlog (either in dollar terms or as a percent of all asset holdings)? 	 User must enter test values for years 1 to 20 (enter same value for each year) and run the model multiple times until value of backlog in year 20 = value in year 0.
SGR in 20 Years	 What level of annual reinvestment is required to eliminate the SGR backlog in 20 years? 	• User must enter test values for years 1 to 20 (e.g., enter same value for each year) and run the model multiple times until value of SGR backlog = \$0 in year 20.
Un-constrained	 What would avg. annual reinvestment be if there was no backlog? Investment must be higher than this to reduce the backlog 	 Enter a very high level of investment (e.g., \$500B) for years 0 (backlog year) through year 20
"Planned" or "Budgeted"	 Enter year by year funding amounts that are bot timing of known major reinvestment needs Output will show impact of plan on future SGR b 	h (1) financially sustainable and (2) correspond with backlog and help prioritize needs



Appendix B - How to Define a Scenario

Scenario Control (Location)	Description & Use	Example Uses
Expenditure Constraints (Scenario Settings Form)	User controls level of expenditures for projection years 0 through 30	 Sample scenarios include: Unconstrained needs
	 Used to assess impact of varying rates of reinvestment on conditions, prioritization and the SGR backlog 	 Maintain current spending Level of funding to attain SGR
Prioritization Settings (Scenario Settings Form)	 While typically held fixed, user can change investment scoring to assess impact on priority rankings, composition of reinvestment activities, and SGR backlog 	 User can alter: Criteria weights (simple adjustment) Fixed criteria scoring (detailed change)
Inflation (Input Data Form)	 Sets assumed rate of inflation for analysis period from year 0 to 30 – same rate applied across all years 	 User can select: Current year dollars – in Start Year dollars as input on Main Menu
	 "Sensitivity" factor allows user to simultaneously adjust all projection costs up or down by the same set amount (default value is 100%) 	 Year of Expenditure – based on user entered rate

Appendix B - How to Define a Scenario

Scenario Control (Location)	Description & Use	Example Uses		
Asset Useful Life (Asset Inventory Update	 User can alter the useful life values of individual assets 	 e.g., change the useful life of "twelve year) buses to 14 years 		
Tab: Input Data Form)	Description & UseExample Uses• User can alter the useful life values of individual assets• e.g., change the useful life of "twell year) buses to 14 years• Extending asset useful lives will lower long-term needs as assets require less frequent replacement• e.g., change the useful life of "twell year) buses to 14 years• Assign one of four levels of priority • Funded (highest priority) • Deficient • Normal • Exclude (from analysis)• These settings only emphasize ce assets of another. However, each scenario is still subject to the maximum annual funding available• User can alter number, timing and cost of rehabs 			
Override	 Assign one of four levels of priority 	These settings only emphasize certain		
(Asset Inventory Update	 Funded (highest priority) 	assets of another. However, each scenario is still subject to the maximum annual funding available.		
	Deficient			
	Normal			
	 Exclude (from analysis) 			
Life Cycle Costs	 User can alter number, timing and cost of rehabs 	User can assess impact on needs of		
(Input Data Form)	 Also controls cost of annual capital maintenance 	increasing/reducing number and/or cost of rehabs (note: will not impact condition measures)		
Useful Life Factor (Main Menu)	 When set to values other than 100%, assets will be kept in service longer or shorter than their expected useful lives 	 Note: Useful life values are not altered (hence, if factor is set to 110%, assets will be kept in service until 110% of 		
	 This single factor allies to all assets 	their expected useful life but will be overage one they exceed 100% of useful life)		

Appendix C – Reports

Report	Туре	Content
Asset Inventory Record Ages	Input Data	 Analysis of the age of the tools' asset records
Asset Inventory Replacement Value	 Inventory 	Total replacement value of allGrouped by mode and asset category
Asset Types	Input Data	 Asset types recognized by the database Data tab provides detail on asset life-cycle cost assumptions
Average Annual Expenditures Forecast	 Needs forecast 	 Average annual level of dollar investment needs over 20-years of model run (based on scenario inputs)
Condition Distribution Forecast	Condition	 Forecast of percent of assets in excellent, good, fair, marginal and poor condition
Expenditures Forecast	 Needs forecast 	 Forecast of prioritized annual investment needs (based on scenario inputs)

Appendix C – Reports

Report	Туре	Content
Over Age Asset Forecast	Condition	 Forecast of percent of assets that exceed their useful life (based on scenario inputs)
Priority Scores: Backlog Investments by Asset Record (Detail)	 Prioritization scores 	 Record level prioritization scores for investments to reduce current backlog (year 0)
Priority Scores: Backlog Investments by Asset Type by Location	 Prioritization scores 	 Prioritization scores for investments to reduce current backlog (year 0) grouped by asset type and location
Priority Scores: Backlog Investment by Asset Type (Base 100)	 Prioritization scores 	 Prioritization scores for investments to reduce current backlog (year 0) grouped only by asset type
Priority Scores: Summary Scores By Asset Type for Next 10 Years	 Prioritization scores 	 Prioritization scores grouped only by asset type for projection years 0 to 20
SGR Backlog Forecast	Backlog	 Projection of SGR backlog for years 0 through 20 (based on scenario inputs)



					Text
		Required		Data	Field
Field Name	Description	Field?	Notes	Туре	Size
			Optional asset identifier		
Asset ID	Unique Asset ID	No	number	Integer	
Agency ID					
Code	Agency ID Code	Yes	Use "9999" for default value	Text	25
		Recomme			
Transit System	Agency Name	nded		Text	50
			Two (2) letter FTA transit mode		
Mode Code	NTD mode code	Yes	BRT, VP	Text	25
Description	Agency specified asset type name	No	Asset Description	Text	50
			Must be selected from asset		
Asset Type	TERM Asset Type Code (5 digit		type codes populated in		
Code	code)	Yes	tbl05AssetTypes (5 digit code)	Integer	
Category	TERM Asset Category	Yes		Text	50
Sub-Category	TERM Asset Sub-category	Yes		Text	50
Element	TERM Asset Element	Yes		Text	50
Sub-Element	TERM Asset Sub-element	Yes		Text	50
			Can be entered as decimal		
Quantity	Unit quantity	Yes	value	Double	
	Type of units (e.g., each, sq feet,	Recomme			
Units	miles, spaces)	nded		Text	25



					Text
		Required		Data	Field
Field Name	Description	Field?	Notes	Туре	Size
	Year asset was built / entered		Enter four digit value for year		
Date Built	service life	Yes	"XXXX"	Integer	
			Indicate yes if asset has		
	Has asset been rehabbed: False or		undergone significant rehab	True/Fa	
Rehabed	True	Yes	investments	lse	
	Dollar year replacement costs are		e.g., \$2012; Enter four digit		
CostYr	denominated in	Yes	value for cost year "XXXX"	Integer	
Agency_SoftC			Will be added to rehab and		
ost	Assumed soft-cost factor	Yes	replacement cost calculations	Percent	
Unit					
Replacement	Unit replacement cost		Enter full value, including cents		
Cost	denominated in "CostYr" dollars	Yes	if needed (e.g., \$X,XXX.XX)	Double	
Current			Tool will auto-populate this field		
Dollars Total	Total replacement cost		when model is run based on		
Cost	denominated in "CostYr" dollars	No	unit cost and unit quantity	Double	
Total	Total replacement cost		Tool will auto-populate this field		
Replacement	denominated in model start year		when model is run based on		
Cost	dollars	No	unit cost and unit quantity	Double	



					Text
		Required		Data	Field
Field Name	Description	Field?	Notes	Туре	Size
			Default value is "Normal":		
			Funded and Deficient forces		
			highly prioritized asset		
			replacement (or highest priority		
	Assigns assets to one of four levels		for replacement). Assets with		
	of priority stauts: Funded,	Recomm	Exclude selected will not be	True/Fa	
PriorityStatus	Deficient, Normal, Exclude	ended	included in needs analysis.	lse	
Condition	Observed, actual condition rating		Informational only / will be used		
Rating	for asset	No	in future	Double	
	Date the asset record was last	Recomm			
Data Date	updated	ended		Integer	
		Recomm			
Data Source	Source of asset data	ended		Text	50
		Highly	Tool will utilize default useful life		
Agency_Usefu	Expected useful life of asset in	Recomm	value from asset types table if		
ILife	years (e.g., "50")	ended	not populated	Integer	
	Additional details on asset (type,				
Notes	history, special considerations)	No		Text	255

Taxt



					Text
		Required		Data	Field
Field Name	Description	Field?	Notes	Туре	Size
	Allows user to specify an asset				
	replacement age in years that		Useful for forced scheduling of		
	differs from Useful life (e.g.,		asset replacement (e.g., based		
DelayReplaceAge	"55")	No	on planned procurement)	Integer	
	Enter "Existing" for assets				
	currently in service /				
	"Expansion" for (non-				
Existing_Expansio	replacement) assets to be		Date built values for expansion		
n	acquired in a future year	No	assets occur in the future	Text	50
	Start year for model run		Please enter expected start		
	(temporary field that will be		year of analysis (this field to be		
Start_Year	removed) entered as "XXXX"	Yes	eliminated) entered as "XXXX"	Integer	
Agency_Asset_Ty	Optional: User defined asset				
ре	type	No		Text	50
Make_Model	Optional: Asset make/model	No		Text	50
	Optional: User defined asset				
Agency_Asset_ID	ID #	No		Text	50

Taxt



					Text
		Required		Data	Field
Field Name	Description	Field?	Notes	Туре	Size
Agency_Asset_Par	Optional: User defined parent	No	Used to group related agency asset IDs to a parent number. Example would be to group individual agency asset IDs for components of a maintenance facility (roof, HVAC, etc.) to a common parent ID. Recommended to populate with asset ID if there is no parent ID (to support grouping at Parent ID level)	Text	50
	Optional: Bail line or bug	INO		ΤΟΛΙ	50
Line Division	division	No		Text	50
	Optional: Rail branch or bus				
Branch_Garage	garage	No		Text	50
	Optional: Rail segment or bus				
Segment_Route	route	No		Text	50
	Optional: Mile post marker				
Start	start	No		Text	50
End	Optional: Mile post marker end	No		Text	50



					Text
		Required		Data	Field
Field Name	Description	Field?	Notes	Туре	Size
	Optional: Asset location				
Latitude	latitude	No		Text	50
	Optional: Asset location				
Longitude	longitude	No		Text	50
Address	Optional: Asset street address	No		Text	255
	Optional: User defined field				
	(open to user to determine				
UserField1	field contents)	No		Text	100
	Optional: User defined field				
	(open to user to determine				
UserField2	field contents)	No		Text	100
	Optional: User defined field				
	(open to user to determine				
UserField3	field contents)	No		Text	100
	Optional: User defined field				
	(open to user to determine				
UserField4	field contents)	No		Text	100
	Optional: Identifies which				
Dept_Asset_Owne	agency department is				
r	responsible for the asset	No		Text	50



					Text
		Required		Data	Field
Field Name	Description	Field?	Notes	Туре	Size
	Optional: Identifies project		E.g., various segments of		
Agency_Project_N	number asset would be		trackwork might be grouped		
umber	grouped with for reinvestment	No	together into a single project	Text	30
	Optional: Identifies type or name assets with same				
	Agency_Project_Number		E.g., various types of trackwork		
Agency_Project_C	would be grouped with for		might be grouped together into		
ategory	reinvestment	No	a single project type	Text	150
	Optional: Provides project or asset specific description for				
Agency_project_D	assets grouped with same				
esc	Agency_Project_Number	No		Text	100