



**CITY OF DURHAM (GoDurham)
TRANSIT ASSET MANAGEMENT PLAN**

July 2017

City of Durham Transit Asset Management Plan

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1.0 INTRODUCTION

1.1 EXECUTIVE SUMMARY

Asset Management is a broad term that encompasses the various actions that the City of Durham undertakes to ensure that its assets are efficiently planned for, delivered, managed, and reviewed in a cost effective and sustainable manner. The Durham community is continuously seeking improved services, such as safer roads, an attractive transit system, better parks, and enduring facilities. However, the funds available cannot keep pace with public demand. Best Practice Asset Management plans allow available funds to go further by “doing more with less” through identifying all assets and their condition and incorporating an Asset Management strategy to monitor the effect of the City’s actions. A proactive approach to maintenance and planning to address issues prior to costly and dangerous asset failures are key to sound Asset Management.

1.2 This strategy aims to raise the City of Durham’s Transit Asset Management activities to the level of best appropriate practice. By increasing the transit division’s ability to manage its assets and by improving its knowledge of those assets, a sustainable community will be able to be maintained in a manner that delivers economic, environmental and social value.

1.3 The Federal Transit Administration (FTA) has new requirements for transit agencies related to asset management in Moving Ahead for Progress in the Twenty-First Century (MAP-21) and Fixing America’s Surface Transportation (FAST Act). The regulations require all recipients or sub-recipients of federal financial assistance under 49 U.S.C. Chapter 53 to prepare a Transit Asset Management Plan (TAMP). As a recipient of these funds, the City of Durham Transit (GoDurham) must comply with the new regulations. This plan satisfies the FTA TAMP requirement. The plan, together with its maintenance outlook, also meets the requirements of the Fleet Management Plan. GoDurham’s operations fall into Tier II classification for transit providers because it operates fewer than 100 vehicles at peak revenue service. The required elements of the TAMP for Tier II providers are summarized in the table below.

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Tier II TAMP Requirements

1	Inventory of Capital Assets
2	Condition Assessment
3	Decision Support Tools
4	Investment Prioritization

The for all capital assets has been determined and is summarized in the table below.

FTA Condition Assessment Summary

Assessment Measure	Condition Rating
FTA State of Good Repair (SGR) Criteria	52% of all capital assets are in a SGR
FTA Performance Measures	<p>Rolling Stock</p> <ul style="list-style-type: none"> ○ 44% of rolling stock meets or exceeds Useful Life Benchmark (ULB) <p>Equipment</p> <ul style="list-style-type: none"> ○ 78% of equipment meets or exceeds ULB <p>Facility</p> <ul style="list-style-type: none"> ○ 100% of units are rated above 3 on the TERM scale all meet SRG gauge.

In addition to the application of FTA State of Good Repair (SGR) criteria and performance measures as required by the TAMP, this report further analyzes the capital asset inventory using methods recommended by the American Public Transportation Association (APTA). Results of the assessment are summarized in the table below.

GoDurham Inventory Analysis Results based on APTA’s Recommended Format

Analytic Applied	Result
System Replacement Value (Rolling Stock & Equipment Only)	\$29,515,000 (Estimated)
Normal Reinvestment (over 10 years)	\$16,135,000 (Estimated)
Capital Asset Backlog	\$12,975,000 (Estimated)
SGR Need (over 10 years)	\$29,110,000 (Estimated) \$2,911,000 (Annual SGR Need)

1.4 TRANSIT ASSET MANAGEMENT PLAN (TAMP) SCOPE AND REVISIONS

This TAMP has a scope of five years. This plan will be revised at a minimum of every five years, or more frequently if significant changes occur to the assets or the system. The next FTA mandatory plan update is due on March 23, 2021.

The current North Carolina Statewide Transportation Improvement Program (STIP) was finalized in August 2016, and runs through 2025. Updates to this plan are being coordinated with the state’s transportation improvement updates and related amendments. GoDurham will update its plans in line with the implementation of the STIP program.

2.0 FTA DEFINITIONS

The following definitions are defined by the FTA in the final rule regarding Transit Asset Management requirements, published in July 26, 2016.

2.1 CAPITAL ASSET

According to the FTA, a capital asset includes the categories of rolling stock, equipment, infrastructure, and facilities. Capital assets can include those a transit provider owns, operates, manages, leases, or operates under contract. **Rolling Stock** refers to revenue vehicles used in providing public transportation, including vehicles used for carrying passengers on fare-free services. **Equipment** is defined as an article of nonexpendable, tangible property having a useful life of not less than one year. **Infrastructure** refers to the underlying framework or structures that support a public transportation system. A **facility** is a building or structure that is used to provide public transportation. The definition of a facility is further clarified by APTA as: “structures that enclose or support maintenance, operations and administrative activities, including those that house specialized equipment that support the operations and maintenance of the vehicles.” These definitions are summarized below in Table 1. GoDurham’s does not have any infrastructure in its asset inventory to report on.

Table 1. FTA Capital Asset Definitions

Capital Asset	Definition
Rolling Stock	A revenue vehicle used in providing public transportation, including vehicles used for carrying passengers on fare-free services
Equipment	Nonexpendable, tangible property with a useful life of not less than one year
Infrastructure	The underlying framework or structures that support a public transportation system

Facilities	Building or structure used in providing public transportation
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2.2 STATE OF GOOD REPAIR

The FTA defines a SGR as: **“the condition in which a capital asset is able to operate at a full level of performance.”** Further, a capital asset is in a SGR when the following criteria are met: 1) it is able to perform its designated function, 2) it does not pose a known unacceptable safety risk, and 3) its lifecycle investments must have been met or recovered including all preventive maintenance, rehabilitation, and replacements.

Table 2. FTA SGR Criteria

1. Asset is able to perform its designated function
2. Asset does not pose a known unacceptable safety risk
3. Asset lifecycle investments have been met or recovered

2.3 SGR PERFORMANCE MEASURES

If an asset meets the SGR criteria and is determined to be in a state of good repair then its performance can be measured. The FTA proposes an SGR performance measure for each asset that is the least burdensome to measure while still efficient. For the measurement of rolling stock and equipment, the FTA proposes an age-based assessment which would measure the percentage of revenue vehicles within a particular asset class that have either met or exceeded their useful life benchmark (ULB). Length of useful life for each unit is determined by a FTA based agency depreciation schedule, which groups assets into 8 categories, and varies by asset type within a range of 4 to 12 years or 100,000 to 500,000 miles. The depreciation schedule is provided in Table 4 and Appendix A. The City Durham (GoDurham) does not currently own any infrastructure assets. Therefore, performance measures for that asset category will not be discussed. The FTA suggests a condition-based assessment of facilities using the **Transit Economic Requirements Model (TERM)** scale to discover the percentage of facilities within an asset class rated below 3 on the TERM scale (1=poor to 5=excellent).

Table 3. Proposed FTA Performance Measures

Asset Category	Classes Measured	Performance Measure
Rolling Stock	All revenue vehicles	Percentage of revenue vehicles within a particular asset class that have either met or exceeded their ULB
Equipment	Non-revenue vehicles Maintenance equipment	Percentage of vehicles and equipment that have met or exceeded their ULB
Facilities	All buildings or structures	Percentage of facilities within an asset class, rated below 3 on the Transit Economic Requirements Model (TERM) scale (1=poor to 5=excellent)

3.0 CAPITAL ASSET INVENTORY

This inventory includes all agency capital assets, as defined by the FTA. Capital asset categories are limited to rolling stock, equipment, and facilities as noted above. The City of Durham (GoDurham Transit) uses FASTER Fleet Management software which tracks assets including rolling stock, equipment, and facilities. In addition, each asset listed is maintained using a manufacturer recommended preventive maintenance (PM) schedule and/or is inspected annually. PM programs and inspections have been entered into the FASTER program and managers are alerted to scheduled maintenance through a forecasting calendar.

3.1 ROLLING STOCK

The City Transit system (GoDurham) currently owns 102 units of rolling stock in revenue service. These units include heavy-duty buses, light transit vehicles, and minivans. GoDurham also owns 18 support vehicles.

For all 102 units of rolling stock (fixed route & paratransit), a SGR requirement has been determined and a performance measure can be applied. The FTA performance measure for rolling stock is the percentage of units that have either met or exceeded their ULB. The length of useful life for each unit is determined by an FTA based agency depreciation schedule, which groups assets into 8 categories, and varies by vehicle type within a range of 4 to 12 years or 100,000 to 500,000 miles. The depreciation schedule is provided in Table 4 and Appendix A. Table 5 provides the rolling stock inventory with the age of the vehicle, depreciation category, and indicates whether or not the unit has met or exceeded its ULB as determined by the depreciation schedule. In order to meet or exceed the benchmark a unit must fulfill the criteria for age or mileage. Currently 46 % or 47 of the 102 units of rolling stock exceed their ULB, while 54% or 55 meet the expected ULB (in SGR).

Table 4. City of Durham (GoDurham) Useful life & Depreciation Schedule

Category	Vehicle Type	ULB
1	Large (35'-40'), heavy-duty buses	12 yrs. or 500,000 miles
2	Medium (30'), heavy-duty buses	10 yrs. or 350,000 miles
3	Medium (30'), medium-duty buses	7 yrs. or 200,000 miles
4	Medium (25'-35'), light-duty buses	5 yrs. or 150, 000 miles
5	Small (16'-28'), light-duty buses	4 yrs. or 100,000 miles
6	Other Revenue Vehicles (minivans)	5 yrs. or 100,000 miles
7	Non-Revenue Vehicles	5yrs. or 100,00 miles
8	Furniture, fixtures, machinery and equipment	3, 5, 7 or 10 yrs.

The items highlighted are the current vehicle types in the City's fleet inventory.

**Table 5. Rolling Stock ULB
(Buses)**

	Vehicle Number	Vehicle Year	Make/Model	In Service Date	Age	Reached or Not Reached ULB
1	801	2008	Gillig 40Ft Low-Floor Bus	7/1/2008	9	Not Reached ULB
2	802	2008	Gillig 40Ft Low-Floor Bus	7/1/2008	9	Not Reached ULB
3	803	2008	Gillig 40Ft Low-Floor Bus	7/1/2008	9	Not Reached ULB
4	804	2008	Gillig 40Ft Low-Floor Bus	7/1/2008	9	Not Reached ULB
5	805	2008	Gillig 40Ft Low-Floor Bus	7/1/2008	9	Not Reached ULB
6	806	2008	Gillig 40Ft Low-Floor Bus	7/1/2008	9	Not Reached ULB
7	808	2008	Goshen Cutaway	7/1/2008	8	***Retired***
8	1001	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
9	1002	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
10	1003	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
11	1004	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
12	1005	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
13	1006	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
14	1007	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
15	1008	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
16	1009	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
17	1010	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
18	1011	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
19	1012	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
20	1013	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB

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21	1014	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
22	1015	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
23	1016	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
24	1017	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
25	1018	2010	Gillig 40Ft Low-Floor Hybrid Bus	7/1/2010	7	Not Reached ULB
26	1019	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
27	1020	2010	Gillig 40Ft Low-Floor Hybrid	7/1/2010	7	Not Reached ULB
28	1201	2012	Gillig 40Ft Low-Floor Hybrid	7/1/2012	5	Not Reached ULB
29	1202	2012	Gillig 40Ft Low-Floor Hybrid	7/1/2012	5	Not Reached ULB
30	1203	2012	Gillig 40Ft Low-Floor Hybrid	7/1/2012	5	Not Reached ULB
31	1204	2012	Gillig 40Ft Low-Floor Hybrid	7/1/2012	5	Not Reached ULB
32	1205	2012	Gillig 40Ft Low-Floor Hybrid	7/1/2012	5	Not Reached ULB
33	301	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
34	302	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
35	303	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
36	304	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
37	305	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
38	308	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
39	309	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
40	310	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
41	311	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
42	312	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
43	315	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
44	316	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
45	317	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
46	320	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
47	322	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
48	324	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
49	325	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
50	326	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
51	327	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
52	328	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
53	329	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
54	331	2003	Gillig 40Ft Low-Floor Bus	7/1/2003	14	Reached ULB
55	501	2005	Gillig 40Ft Low-Floor Bus	7/1/2005	12	Reached ULB

(Paratransit)

	Vehicle Number	Year of Purchase	Make/Model	In Service Date	Age	Reached or Not Reached ULB
1	1602	2016	DODGE CARAVAN-LOW FLOOR	10/10/2016	1	Not Reached ULB
2	1603	2016	DODGE CARAVAN-LOW FLOOR	10/10/2016	1	Not Reached ULB
3	1604	2016	FORD SENATOR II 22 FT LTV	10/24/2016	1	Not Reached ULB
4	1605	2016	FORD SENATOR II 22 FT LTV	10/24/2016	1	Not Reached ULB
5	1606	2016	FORD SENATOR II 22 FT LTV	10/24/2016	1	Not Reached ULB
6	1607	2016	DODGE CARAVAN-LOW FLOOR	10/10/2016	1	Not Reached ULB
7	1608	2016	FORD SENATOR II 22 FT LTV	10/24/2016	1	Not Reached ULB
8	1609	2016	FORD SENATOR II 22 FT LTV	10/24/2016	1	Not Reached ULB
9	1610	2016	FORD SENATOR II 22 FT LTV	10/24/2016	1	Not Reached ULB
10	1611	2016	FORD SENATOR II 22 FT LTV	10/24/2016	1	Not Reached ULB
11	1612	2016	FORD SENATOR II 22 FT LTV	10/24/2016	1	Not Reached ULB
12	1613	2016	FORD SENATOR II 22 FT LTV	10/24/2016	1	Not Reached ULB
13	1614	2016	FORD SENATOR II 22 FT LTV	10/24/2016	1	Not Reached ULB
14	1615	2016	FORD SENATOR II 22 FT LTV	10/24/2016	1	Not Reached ULB
15	8	2008	FORD HIGH TOP VAN	7/1/2008	9	Reached ULB
16	9	2008	FORD HIGH TOP VAN	7/1/2008	9	Reached ULB
17	11	2008	FORD HIGH TOP VAN	7/1/2008	9	Reached ULB
18	12	2008	FORD HIGH TOP VAN	7/1/2008	9	Reached ULB
19	F-15	2010	FORD CHAMPION 22FT LTV CDL	7/1/2010	7	Reached ULB
20	F-16	2010	FORD CHAMPION 22FT LTV CDL	7/1/2010	7	Reached ULB
21	F-20	2010	FORD CHAMPION 20FT LTV	7/1/2010	7	Reached ULB
22	F-24	2010	FORD CHAMPION 20FT LTV	7/1/2010	7	Reached ULB
23	F-26	2010	FORD CHAMPION 22FT LTV CDL	7/1/2010	7	Reached ULB
24	F-27	2010	FORD CHAMPION 22FT LTV CDL	7/1/2010	7	Reached ULB
25	F-28	2010	FORD CHAMPION 22FT LTV	7/1/2010	7	Reached ULB
26	F-29	2010	FORD CHAMPION 22FT LTV	7/1/2010	7	Reached ULB
27	F-30	2010	FORD CHAMPION 22FT LTV CDL	7/1/2010	7	Reached ULB
28	F-31	2010	FORD CHAMPION 22FT LTV	7/1/2010	7	Reached ULB
29	F-33	2010	FORD CHAMPION 22FT LTV	7/1/2010	7	Reached ULB
30	F-34	2010	FORD CHAMPION 22FT LTV	7/1/2010	7	Reached ULB
31	F-37	2010	FORD CHAMPION 22FT LTV	7/1/2010	7	Reached ULB
32	F-41	2010	FORD CHAMPION 20FT LTV	7/1/2010	7	Reached ULB
33	F-42	2010	FORD CHAMPION 22FT LTV	7/1/2010	7	Reached ULB
34	F-43	2010	FORD CHAMPION 22FT LTV	7/1/2010	7	Reached ULB
35	F-49	2010	FORD CHAMPION 20FT LTV	7/1/2010	7	Reached ULB
36	F-50	2010	FORD CHAMPION 20FT LTV	7/1/2010	7	Reached ULB

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37	F-51	2010	FORD CHAMPION 20FT LTV	7/1/2010	7	Reached ULB
38	H-23	2011	FORD CHAMPION 22FT LTV	7/1/2011	6	Reached ULB
39	H-25	2011	FORD CHAMPION 22FT LTV	7/1/2011	6	Reached ULB
40	H-38	2011	FORD CHAMPION 22FT LTV	7/1/2011	6	Reached ULB
41	H-39	2011	FORD CHAMPION 22FT LTV	7/1/2011	6	Reached ULB
42	H-44	2011	FORD CHAMPION 22FT LTV	7/1/2011	6	Reached ULB
43	H-45	2011	FORD CHAMPION 22FT LTV	7/1/2011	6	Reached ULB
44	H-46	2011	FORD CHAMPION 22FT LTV	7/1/2011	6	Reached ULB
45	H-52	2011	FORD CHAMPION 22FT LTV	7/1/2011	6	Reached ULB
46	H-53	2011	FORD CHAMPION 22FT LTV	7/1/2011	6	Reached ULB
47	H-54	2011	FORD CHAMPION 22FT LTV	7/1/2011	6	Reached ULB

3.2 EQUIPMENT

Eighteen units of non-revenue/support vehicles owned by GoDurham Transit meet the FTA definition of equipment or “Nonexpendable, tangible property with a useful life of not less than one year... including nonrevenue vehicles and maintenance shop equipment.” A performance measure was applied to the equipment or support vehicle inventory. The FTA performance measure for equipment is the percentage of units that have either met or exceeded their ULB. Length of useful life for each unit is determined by an FTA regulation based agency depreciation schedule and varies from 4 to 10 years. See Appendix A for the full depreciation schedule. Table 6 provides the equipment inventory with the age of the equipment, depreciation category, and indicates whether or not the unit has met or exceeded its ULB as determined by the depreciation schedule. A unit must fulfill the criteria for age or mileage in order to meet or exceed the benchmark. Currently 22% or 4 of the 18 equipment exceeded their ULB as noted below.

Table 6. Equipment (Non-Revenue/Support Vehicles) ULB

Fleet ID #	Year	Description	In service date	Age	Location	Reached or Not Reached ULB
48145	2017	FORD FUSION S	01/04/17	0	0U05	Not Reached ULB
48101	2016	FORD FUSION S	04/22/16	1	0U05	Not Reached ULB
48144	2015	FORD FUSION S	04/29/15	2	0U05	Not Reached ULB
48203	2016	CHEVY EQUINOX	06/24/16	1	0U05	Not Reached ULB
48205	2016	CHEVY EQUINOX	06/24/16	1	0U05	Not Reached ULB
48206	2016	FORD F250	08/26/16	1	0U05	Not Reached ULB
48207	2016	FORD F250	08/10/16	1	0U05	Not Reached ULB
48304	2012	FORD E350 ECONOLINE	05/18/12	5	0U05	Not Reached ULB
48306	2016	CHEVY MALIBU	11/14/12	5	0U05	Not Reached ULB
9050	2017	NISSAN ROGUE	03/22/17	0	0U05	Not Reached ULB
48302	2012	FORD E150 VAN	08/15/12	5	0U05	Not Reached ULB
48296	2015	FORD ESCAPE	03/25/15	2	0U05	Not Reached ULB
48297	2015	FORD TRANSIT	05/20/15	2	0U05	Not Reached ULB
48300	2012	FORD F350	09/07/12	5	0U05	Not Reached ULB

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11101	1999	CHEVY CAVALIER	09/30/99	18	0U05	Reached ULB
48286	2003	FORD F350	06/25/03	14	0U05	Reached ULB
48142	2006	FORD TAURUS	03/22/06	11	0U05	Reached ULB
48143	2006	FORD TARUS	03/22/06	11	0U05	Reached ULB

3.3 FACILITIES

According to the FTA asset definition, facilities include a “Building or structure used in providing public transportation.” The definition of a facility is further clarified by the APTA as structures that enclose or support maintenance, operations and administrative activities, including those that house specialized equipment that supports the operations and maintenance of the vehicles. Six buildings or facilities owned by the City of Durham (GoDurham) fit this definition. These transit buildings meet the FTA criteria for inclusion in the asset (facilities) category, and all these units meet the criteria for SGR criteria determination. The performance measure for this asset class is the percentage of units rated below 3 on the TERM scale (1= poor to 5 = excellent). The TERM scale is shown in Table 7 which provides both a qualitative and numeric condition rating. The facility units and their TERM ratings are shown in Table 7. Currently 0% or no facility units are rated below 3 on the TERM scale.

Table 7- FTA TERM Scale*

Rating	Condition	Description
Excellent	4.8-5.0	No visible defects, near new condition.
Good	4.0-4.7	Some slightly defective or deteriorated components.
Adequate	3.0-3.9	Moderately defective or deteriorated components.
Marginal	2.0-2.9	Defective or deteriorated components in need of replacement.
Poor	1.0-1.9	Seriously damaged components in need of immediate repair.

* Source: Transit Economic Requirements Model

Table 8. City of Durham (GoDurham) Facility TERM Rating

	Equipment ID	Const. Year	Equipment description	TERM Rating
1	505 Pettigrew St	2009	Durham Station Bus Transfer Center	4.8
2	1907 Fay St	2007	Bus Operations Bldg. 1907 Fay St	4.7
3	1911 Fay St	2007	Paratransit Operations Bldg. 1911 Fay St	4.7
4	1907 Fay St	2007	Transit Admin Bldg. 1907 Fay St	4.7
5	1820 N. Miami Blvd	2007	Bus Maintenance Bldg. 1820 N. Miami Blvd	4.7
6	1824 N. Miami Blvd	2007	Van Maintenance Bldg. 1824 N. Miami Blvd	4.7

4.0 CONDITION ASSESSMENT

The TAMP condition assessment process is comprised of two steps. First, the application of FTA SGR criteria and second, a performance assessment with differing FTA measures for each asset category. Results of the condition assessment are summarized in Table 9. The application of the FTA criteria for SGR shows that out a total of 126 asset classes, 53% or **67** of the total capital assets of City of Durham (GoDurham) units including rolling stock, equipment, and facilities are in a SGR. Furthermore,

- 46% of all Rolling Stock (Revenue Vehicles) is in a SGR;
- 78% of all Equipment including non-revenue vehicles is in a SGR; and
- 100% of Facility units meet the SGR criteria.

Of the remaining 61 assets that exceed the SGR benchmark, the following applies

- 54 % of Rolling Stock have exceeded their ULB;
- 22% of Equipment units have exceeded their ULB.

Table 9. FTA Condition Assessment

Assessment Measure	Condition Rating
FTA SGR Criteria	52% of all capital assets are in a SGR
FTA Performance Measures	Rolling Stock <ul style="list-style-type: none"> ○ 44% of rolling stock reached ULB Equipment <ul style="list-style-type: none"> ○ 78% equipment reached ULB Facility <ul style="list-style-type: none"> ○ 100% all of units are rated above 3 on the TERM scale all meet SRG gauge

4.1 ASSET CONDITION ANALYSIS

In addition to the application of FTA SGR criteria and performance measures as required by the TAMP, this report further analyzes the capital asset inventory using methods recommended by APTA. The APTA recommended method of inventory assessment was developed by the Chicago Regional Transportation Authority (RTA) and put forth by the APTA in their 2013 Standards Development Program publication, *Capital Asset Inventory and Condition Assessment*.

The excerpted methodology is provided in Appendix B. This method of assessment prescribes analysis of the capital asset inventory resulting in the following data shown in Table 10: System Replacement Value, Normal Reinvestment, Asset Backlog, and State of Good Repair Need (SGR Need).

System Replacement Value is defined as the cost to replace all assets with new assets. This cost is based on the last actual cost of replacing an asset in that category, when available. For assets where this data is not available, the original purchase price of the asset is used. The **Normal Reinvestment** figure is the anticipated cost for asset replacements/investments over a 10 year period. **Asset Backlog** is defined by APTA as the cost to replace all assets that have exceeded their useful life. In this analysis the FTA ULB criteria is used to determine the useful life of an asset. Thus, the Backlog will include assets that have exceeded their ULB as well as those that have met their ULB. **A SGR Need** is defined as the sum of the Backlog and Normal Reinvestment quantities, and represents the total projected monetary investment needed for a 10 year period. For the APTA analytics, facility asset data are only used in the calculation of the System Replacement Value.

The decision not to include facility assets in the SGR need calculation is based on the fact that most facility assets are less than 10 years old and are fairly new, with many years of useful life remaining (and no Backlog). Additionally, they have a limited history of expenditure/investment to inform a Normal Reinvestment estimate, and no replacements are anticipated during the 10 year period.

Table 10. Capital Asset Inventory Analysis

	Applied Analytic	Result
4.1	System Replacement Value (including all Rolling Stock & Equipment)	\$29,515,000 (Estimated)
4.2	Normal Reinvestment (over 10 years for rolling stock and equipment in the current <i>do not exceed</i> now category but will exceed in the next 10 years)	\$16,135,000 (Estimated)
4.3	Capital Asset Backlog	\$12,975,000 (Estimated)
4.4	SGR Need (over 10 years)	\$29,110,000 (Estimated) \$2,911,000 (Annual SGR Need)

4.2 SYSTEM REPLACEMENT VALUE (ROLLING STOCK & EQUIPMENT ONLY)

The System Replacement Value or cost to replace all capital assets with new assets is estimated at \$29,515,000. This figure is a sum of the current estimated cost (when available), or the original cost for all capital assets including rolling stock and equipment only.

4.3 NORMAL REINVESTMENT

Normal Reinvestment, or anticipated asset replacements/investment cost over a 10 year period is estimated to be \$16,135,000. This figure is a sum of the estimated rolling stock Normal Reinvestment of \$15,685,000 and the estimated equipment Normal Reinvestment cost of \$450,000. No Normal Reinvestment cost has been estimated for facility assets.

4.4 ASSET BACKLOG

The total asset Backlog or replacement cost for all capital assets that have met or exceeded their useful life is estimated at \$12,975,000. This figure is a sum of the estimated rolling stock Backlog of \$12,845,000 and the estimated equipment Backlog of \$130,000. There is no facilities Backlog.

4.5 SGR NEED

The sum of the total Normal Reinvestment and capital asset Backlog amounts, the SGR Need, is estimated at \$29,110,000 for a 10 year period. The annual SGR Need (for 10 years) is estimated at \$2,911,000. The SGR Need for Rolling Stock is estimated to be \$28,530,000. Equipment SGR Need is an estimated at \$580,000. No SGR Need has been calculated for facility assets.

5.0 DECISION SUPPORT TOOLS

The City of Durham (GoDurham) primarily utilizes FASTER software to aid in the development of capital project prioritization. The information that is collected and organized by this software is used to guide investment prioritization.

5.1 FASTER

FASTER is the City of Durham (GoDurham's) data clearinghouse for all asset management related data. FASTER stores all equipment records, including maintenance records, preventive maintenance schedules, fuel records, mileage history, parts usage, and labor and parts allocation to work order. This single source allows GoDurham to see a comprehensive history of the maintenance failures and repairs made to each asset, as well as usage and service history. This data is then tracked by asset type in an attempt to see maintenance cost by asset type and age.

Currently, the City of Durham (GoDurham) has access to approximately six years of detailed records (how long FASTER software has been in place). While this provides some useful information, it is not sufficient to predict maintenance costs and needs over the course of a 12 year vehicle life. Over these six years, accuracy has increased as employee training has improved, and the organization has learned how to better utilize the software. The value of this decision support tool will increase as we accumulate more data in coming years.

6.0 INVESTMENT PRIORITIZATION

It is estimated that 102 revenue vehicles, or 88% of the Authority's revenue rolling stock, will have met or exceeded its useful life within the five year forecast of this plan. While this number seems high, all of our current paratransit vehicles have a useful life of four years or less so all vehicles in these two categories would be eligible for replacement regardless of their current condition.

Vehicle replacement prioritization is a fluid process as the transit system is regularly replacing rolling stock. At the time of this report, funding for some of the replacement vehicles has been identified through local funding sources, state grant funds, and anticipated federal funding appropriations. Additionally, medium and small size transit

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vehicles are being prioritized in order to service low-ridership routes in part because identifying funding for large buses is significantly more challenging than for other vehicles.

Replacement asset prioritization for GoDurham is outlined in Table 11. Replacement of current assets is rated as high priority, medium priority, or low priority investment. Replacement of vehicles has been prioritized in chronological order from oldest to newest. Unfortunately, investment priority is directly related to available funding which is inconsistent in the current political climate. The following is the lists of the investment prioritization for capital assets over the next five years:

Twenty-two (22) buses are rated as high priority for replacement due to age and current condition. The high priority buses and paratransit LTVs have a replacement value of \$10,925,000.

Twelve (23) paratransit vehicles are rated as high priority for replacement due to age and current condition. The high priority paratransit vehicles have a replacement value of \$1,380,000. Ten (10) paratransit vehicles that have a 2017 replacement value of \$600,000 are rated as medium priority.

One (1) Non-Revenue/Support Vehicle is rated as high priority for replacement due to age and current condition. The high priority Non-Revenue/Support Vehicle has a replacement value of \$30,000. One (1) Non-Revenue/Support Vehicles is rated as medium priority for replacement due to age and condition. The medium priority Non-Revenue/Support Vehicle has a replacement value of \$40,000. Lastly, two (2) Non-Revenue/Support Vehicles are rated as low priority for replacement due to age or current condition. The low priority Non-Revenue/Support Vehicle have a replacement value of \$60,000.

Table 11. Capital Asset Investment Prioritization

BUS

Priority	Vehicle	Year	Make/Model	VIN	Date in Revenue Service	Date Removed/Planned from Service	Useful Life Year	Actual Life Yea	Useful Life Miles	Actual Mileage as of 05/01/17	Replacement Cost
High	301	2003	Gillig 40Ft Low-Floor Bus	15GGD201731073946	7/1/2003	6/1/2015	12	13	500,000	561,315	\$ 475,000
High	302	2003	Gillig 40Ft Low-Floor Bus	15GGD201931073947	7/1/2003	6/1/2015	12	13	500,000	665,576	\$ 475,000
High	303	2003	Gillig 40Ft Low-Floor Bus	15GGD201031073948	7/1/2003	6/1/2015	12	13	500,000	784,532	\$ 475,000
High	304	2003	Gillig 40Ft Low-Floor Bus	15GGD201231073949	7/1/2003	6/1/2015	12	13	500,000	654,219	\$ 475,000
High	305	2003	Gillig 40Ft Low-Floor Bus	15GGD201931073950	7/1/2003	6/1/2015	12	13	500,000	718,279	\$ 475,000
High	308	2003	Gillig 40Ft Low-Floor Bus	15GGD201431073953	7/1/2003	6/1/2015	12	13	500,000	713,014	\$ 475,000
High	309	2003	Gillig 40Ft Low-Floor Bus	15GGD201631073954	7/1/2003	6/1/2015	12	13	500,000	703,295	\$ 475,000
High	310	2003	Gillig 40Ft Low-Floor Bus	15GGD201831073955	7/1/2003	6/1/2015	12	13	500,000	537,052	\$ 475,000

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High	311	2003	Gillig 40Ft Low-Floor Bus	15GGD201X31073956	7/1/2003	6/1/2015	12	13	500,000	692,456	\$	475,000
High	312	2003	Gillig 40Ft Low-Floor Bus	15GGD201131073957	7/1/2003	6/1/2015	12	13	500,000	659,394	\$	475,000
High	315	2003	Gillig 40Ft Low-Floor Bus	15GGD201131073960	7/1/2003	6/1/2015	12	13	500,000	719,663	\$	475,000
High	316	2003	Gillig 40Ft Low-Floor Bus	15GGD201331073961	7/1/2003	6/1/2015	12	13	500,000	697,300	\$	475,000
High	317	2003	Gillig 40Ft Low-Floor Bus	15GGD201531073962	7/1/2003	6/1/2015	12	13	500,000	719,533	\$	475,000
High	320	2003	Gillig 40Ft Low-Floor Bus	15GGD201031073965	7/1/2003	6/1/2015	12	13	500,000	639,620	\$	475,000
High	322	2003	Gillig 40Ft Low-Floor Bus	15GGD201431073967	7/1/2003	6/1/2015	12	13	500,000	731,250	\$	475,000
High	324	2003	Gillig 40Ft Low-Floor Bus	15GGD201831073969	7/1/2003	6/1/2015	12	13	500,000	704,026	\$	475,000
High	325	2003	Gillig 40Ft Low-Floor Bus	15GGD201431073970	7/1/2003	6/1/2015	12	13	500,000	644,717	\$	475,000
High	326	2003	Gillig 40Ft Low-Floor Bus	15GGD201631073971	7/1/2003	6/1/2015	12	13	500,000	698,316	\$	475,000
High	327	2003	Gillig 40Ft Low-Floor Bus	15GGD201831073972	7/1/2003	6/1/2015	12	13	500,000	728,218	\$	475,000
High	328	2003	Gillig 40Ft Low-Floor Bus	15GGD201X31073973	7/1/2003	6/1/2015	12	13	500,000	768,155	\$	475,000
High	329	2003	Gillig 40Ft Low-Floor Bus	15GGD201131073974	7/1/2003	6/1/2015	12	13	500,000	676,683	\$	475,000
High	331	2003	Gillig 40Ft Low-Floor Bus	15GGD201531073976	7/1/2003	6/1/2015	12	13	500,000	680,858	\$	475,000
Medium	501	2005	Gillig 40Ft Low-Floor Bus	15GGD201351073977	7/1/2005	6/1/2017	12	11	500,000	567,643	\$	475,000

PARATRANSIT

Priority	Vehicle	Model Year	Make/Model	VIN	Date in Revenue Service	Date Removed/Planned from Service	Useful Life Years	Actual Life Years	Useful Life Miles	Actual Mileage as of 05/01/2017	Replacement Cost
High	8	2008	FORD HIGH TOP VAN	1FT2S34L98DB16973	7/1/2008	6/1/2013	4	9	100,000	262,200	60,000
High	9	2008	FORD HIGH TOP VAN	1FT2S34L98DA63952	7/1/2008	6/1/2013	4	9	100,000	300,294	60,000
High	11	2008	FORD HIGH TOP VAN	1FT2S34LX8DA63927	7/1/2008	6/1/2013	4	9	100,000	259,400	60,000
High	12	2008	FORD HIGH TOP VAN	1FT2S34L78DB16972	7/1/2008	6/1/2013	4	9	100,000	289,398	60,000
High	F-15	2010	FORD CHAMPION 22FT LTV CDL	1FDDE4FS7ADA20926	7/1/2010	6/1/2015	4	7	100,000	271,209	60,000
High	F-16	2010	FORD CHAMPION 22FT LTV CDL	1FDDE4FS7ADA23163	7/1/2010	6/1/2015	4	7	100,000	299,578	60,000
High	F-20	2010	FORD CHAMPION 20FT LTV	1FDDE3FL6ADA15411	7/1/2010	6/1/2015	4	7	100,000	361,795	60,000
High	F-24	2010	FORD CHAMPION 20FT LTV	1FDDE3FL0ADA23164	7/1/2010	6/1/2015	4	7	100,000	294,085	60,000
High	F-26	2010	FORD CHAMPION 22FT LTV CDL	1FDDE4FS4ADA34718	7/1/2010	6/1/2015	4	7	100,000	238,381	60,000
High	F-27	2010	FORD CHAMPION 22FT LTV CDL	1FDDE4FS2ADA34720	7/1/2010	6/1/2015	4	7	100,000	249,961	60,000
High	F-28	2010	FORD CHAMPION 22FT LTV	1FDDE4FS9ADA20930	7/1/2010	6/1/2015	4	7	100,000	283,515	60,000

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High	F-29	2010	FORD CHAMPION 22FT LTV	1FD FE4FS5ADA231 62	7/1/2010	6/1/2015	4	7	100,000	230,584	60,000
High	F-30	2010	FORD CHAMPION 22FT LTV CDL	1FD FE4FS1ADA347 25	7/1/2010	6/1/2015	4	7	100,000	227,196	60,000
High	F-31	2010	FORD CHAMPION 22FT LTV	1FD FE4FS7ADA347 28	7/1/2010	6/1/2015	4	7	100,000	286,823	60,000
High	F-33	2010	FORD CHAMPION 22FT LTV	1FD FE4FS9ADA347 29	7/1/2010	6/1/2015	4	7	100,000	262,458	60,000
High	F-34	2010	FORD CHAMPION 22FT LTV	1FD FE4FS6ADA347 19	7/1/2010	6/1/2015	4	7	100,000	269,571	60,000
High	F-37	2010	FORD CHAMPION 22FT LTV	1FD FE4FS5ADA347 27	7/1/2010	6/1/2015	4	7	100,000	283,924	60,000
High	F-41	2010	FORD CHAMPION 20FT LTV	1FD EE3FLXADA127 54	7/1/2010	6/1/2015	4	7	100,000	314,910	60,000
High	F-42	2010	FORD CHAMPION 22FT LTV	1FD FE4FS4ADA347 21	7/1/2010	6/1/2015	4	7	100,000	224,991	60,000
High	F-43	2010	FORD CHAMPION 22FT LTV	1FD FE4FS6ADA347 22	7/1/2010	6/1/2015	4	7	100,000	227,196	60,000
High	F-49	2010	FORD CHAMPION 20FT LTV	1FD EE3FL8ADA154 09	7/1/2010	6/1/2015	4	7	100,000	299,578	60,000
High	F-50	2010	FORD CHAMPION 20FT LTV	1FD EE3FL6ADA231 67	7/1/2010	6/1/2015	4	7	100,000	293,260	60,000
High	F-51	2010	FORD CHAMPION 20FT LTV	1FD EE3FL4ADA154 10	7/1/2010	6/1/2015	4	7	100,000	294,994	60,000
Medium	H-23	2011	FORD CHAMPION 22FT LTV	1FD FE4FLOBDA828 73	7/1/2011	6/1/2016	4	6	100,000	183,490	60,000
Medium	H-25	2011	FORD CHAMPION 22FT LTV	1FD FE4FL1BDA828 79	7/1/2011	6/1/2016	4	6	100,000	215,839	60,000
Medium	H-38	2011	FORD CHAMPION 22FT LTV	1FD FE4FL8BDA828 77	7/1/2011	6/1/2016	4	6	100,000	125,814	60,000
Medium	H-39	2011	FORD CHAMPION 22FT LTV	1FD FE4FL8BDA828 80	7/1/2011	6/1/2016	4	6	100,000	144,492	60,000
Medium	H-44	2011	FORD CHAMPION 22FT LTV	1FD FE4FL4BDA828 75	7/1/2011	6/1/2016	4	6	100,000	215,925	60,000
Medium	H-45	2011	FORD CHAMPION 22FT LTV	1FD FE4FLXBDA828 78	7/1/2011	6/1/2016	4	6	100,000	154,342	60,000
Medium	H-46	2011	FORD CHAMPION 22FT LTV	1FD FE4FL9BDA828 72	7/1/2011	6/1/2016	4	6	100,000	151,034	60,000
Medium	H-52	2011	FORD CHAMPION 22FT LTV	1FD FE4FL2BDA828 74	7/1/2011	6/1/2016	4	6	100,000	141,153	60,000
Medium	H-53	2011	FORD CHAMPION 22FT LTV	1FD FE4FLXBDA828 81	7/1/2011	6/1/2016	4	6	100,000	97,078	60,000
Medium	H-54	2011	FORD CHAMPION 22FT LTV	1FD FE4FL1BDA828 82	7/1/2011	6/1/2016	4	6	100,000	140,097	60,000

NON-REVENUE/SUPPORT VEHICLES

Priority	Vehicle	Model Year	Make/Model	VIN	Date in Revenue Service	Date Removed/Planned from Service	Useful Life Years	Actual Life Years	Replacement Cost
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High	11101	1999	CHEVY CAVALIER	1G1JC5243X7311750 (TAG 27374V)	09/30/99	08/01/2009	10	18	30,000
Medium	48286	2003	FORD F350	1FTWF33P43ED34882 (TAG 27370V)	06/25/03	05/01/2003	10	14	40,000
Low	48142	2006	FORD TAURUS	1FAFP53U26A237812 (TAG 65675V)	03/22/06	02/01/2016	10	11	30,000
Low	48143	2006	FORD TARUS	1FAFP53U46A237813 (TAG 65676V)	03/22/06	02/01/2016	10	11	30,000

7.0 FLEET REQUIREMENTS

In order to operate an effective transit service, it is imperative that GoDurham’s fleet contain the appropriate number and type of vehicles, in addition to being in a state of good repair. This section analyzes fleet needs and presents a plan for vehicle replacement based on these needs.

7.1 FIXED ROUTE VEHICLE NEEDS

GoDurham operates 50 vehicles in peak service on a fixed route. Each route is assigned a type of vehicle, depending on the unique route requirements. These are heavy duty hybrid electric buses. Each route is evaluated on a monthly basis to determine if the requirements have changed. These requirements, applied in order, are:

Route	Vehicle Type	Vehicle Size	# of Vehicles
1	Gillig	40'	1
1A	Gillig	40'	1
1B	Gillig	40'	1
2	Gillig	40'	1
2A	Gillig	40'	1
2B	Gillig	40'	1
3	Gillig	40'	2
3A	Gillig	40'	1
3B	Gillig	40'	1
3C	Gillig	40'	1
4	Gillig	40'	2
5	Gillig	40'	3
5K	Gillig	40'	2
6	Gillig	40'	1
6B	Gillig	40'	1
7	Gillig	40'	2
8	Gillig	40'	2
9	Gillig	40'	2
9A	Gillig	40'	2
9B	Gillig	40'	2
10	Gillig	40'	2

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10A	Gillig	40'	3
10B	Gillig	40'	2
11	Gillig	40'	2
12	Gillig	40'	3
14	Gillig	40'	1
15	Gillig	40'	1
20	Gillig	40'	2
23	Gillig	40'	1
Bull City Connector	Gillig	40'	3

7.2 FIXED ROUTE VEHICLE SPECIFICATIONS

To best meet the needs of passengers, three types of fixed route vehicles have been determined to be valuable to the fleet. Each requires some specifications:

7.2.1 HEAVY DUTY BUS (HHD)

The primary fixed route vehicle is a heavy duty bus. GoDurham currently operates Gillig buses. Heavy duty buses are ordered as 40' low floor buses for maximum cost efficiency, and convenience to customers. GoDurham is currently looking into the possibility of including smaller (30ft buses) in the mix of vehicles operated on all fixed routes. Also, GoDurham will be piloting a new total electric vehicle on a select fixed route in 2019 using an electric vehicle purchased through Congestion Mitigation Air Quality (CMAQ) grant.

7.3 PARATRANSIT VEHICLE NEEDS

GoDurham ACCESS currently operates up to 40 paratransit vehicles at peak hours. This number is based on service demand and can vary. It is reevaluated annually. The service utilizes cutaway vehicles with a capacity of two wheelchair positions, and up to eight passenger seats. While it may be beneficial to have one or two vehicles with a smaller capacity (such as one wheelchair position and two or three seats), the majority of vehicles need the larger capacity or service would be inefficient. At this time, no smaller capacity vehicles have been identified that would fulfill the need at a reasonable cost. All our paratransit vehicles are powered by gasoline engines.

7.4 NON-REVENUE VEHICLE NEEDS

GoDurham utilizes a variety of non-revenue vehicles in support of daily operations and administration. The following list outlines the non-revenue vehicle needs.

- Two service trucks for maintenance of bus stops, facilities, and road call response
- Three administrative vehicles for business travel, road supervision, and accident response
- One administrative vehicle for the 5310 program
- Three retired paratransit vans for fixed route operator relief driver transportation

7.5 SPARE RATIO REQUIREMENTS

Fleet requirements or replacement are based on the mileage and age each vehicle will be required to operate, versus the mileage put on the vehicle each year. For example, a heavy duty bus is Altoona tested for 12 years or 500,000 miles. If the bus will be required to last 12 years, it should average 41,700 miles per year of service. Therefore, for every 41,700 miles of scheduled service to be performed each year by a heavy duty bus, one such bus is required. Fewer vehicles would require the remaining vehicles to operate in revenue service beyond their tested service life.

These two factors combined, with the vehicle requirements determined to be the higher number for each vehicle category, either based on the average age dictated spare ratio, or on the number of vehicles needed to maximize life and utilization of the vehicle category.

The charts and calculations used by GoDurham are included in Appendix C. The results are as follows:

	Max in Service	Vehicles Needed	Spare Ratio
Heavy Duty Bus	45	54	20%
Paratransit	40	46	15%

7.6 CURRENT FLEET ANALYSIS AND PLAN

GoDurham currently owns about the same number of vehicles, including spare ratio, that the plan identifies. Current need, compared to actual ownership, is shown in the chart below:

	Vehicles Needed	Vehicles Owned
Heavy Duty Bus	45	54
Paratransit	46	46

8.1 ADOPTION

The City of Durham Transportation Department hereby adopts this GoDurham Transit Asset Management Plan on _____, 2017.

 Director of Transportation
 City of Durham

APPENDIX A**DEPRECIATION SCHEDULE**

Depreciation is calculated by the straight-line method over an estimated useful life. The FTA determines the estimated useful life for each type of asset. The City of Durham (GoDurham) has adopted the following depreciation schedule in line with the TAMP requirement:

1. Large (35'-40'), heavy-duty buses = 12 yrs. or 500,000 miles
2. Medium (30'), heavy-duty buses = 10 yrs. or 350,000 miles
3. Medium (30'), medium-duty buses = 7 yrs. or 200,000 miles
4. Medium (25'-35'), light-duty buses = 5 yrs. or 150,000 miles
5. Small (16'-28'), light-duty buses = 4 yrs. or 100,000 miles
6. Other Revenue Vehicles = 5 yrs. or 100,000 miles
7. Non-Revenue Vehicles = 5 yrs. or 100,000 miles
8. Furniture, fixtures, machinery and equipment = 3, 5, 7 or 10 yrs.

APPENDIX B**INVENTORY ASSESSMENT METHODOLOGY**

Excerpted from the APTA Standards Development Program Recommended Practice, Capital Asset Inventory and Condition Assessment © 2013 American Public Transportation Association

Inventory Assessment Methodology (Developed by Chicago Regional Transportation Authority [RTA]) the following recommended steps are herewith offered in order to follow a relatively easy, seamless, affordable and understandable procedure in developing an asset inventory and asset condition assessment.

1. Based on the agreed upon condition assessment strategy and agency may assemble an inventory assessment team composed of in-house asset stewards and contracted asset type experts to form a project team to collect and assemble the data into the inventory/assessment (I/A). The in house staff may be asked to work part time on the I/A or to take it on as a temporary full time project.
2. Review sample I/A within this report, and select one or more to use as a guide for your I/A. Guidance and templates for this process will be forthcoming.
3. Define, tally, categorize and construct a living listing of every asset type, to form the basis of your agencies I/A. This is meant to be a large exhaustive list of every asset type within the agency's properties. For example a large transit system may include as many as 100 asset types broken into as many as 10 categories. These may include facilities, structures, rolling stock, track, yards etc. When assembling an inventory for the first time, asset data will most likely need to be obtained from a variety of sources. Potential asset data sources include:
 - Prior I/A efforts
 - Maintenance Management Systems (MMS, e.g., Maximo, Ellipse, etc.)
 - Fleet roster (for vehicles)
 - Department level / asset manager records: which may exist in spreadsheet format
 - Fixed Asset Ledger (accounting system): Generally not a preferred source for larger assets but useful for small value items such as radios, shelters, and non-revenue vehicles
 - Primary data collection
4. Create a recording template for each asset type (using the guide documents noted above). The templates should be designed to provide enough data to document each asset's type, date built or acquired (to assess age), quantity, unit cost and condition.
5. Determine estimated useful life for each asset. These may be copied from the provided guide document samples or determined by the I/A team.
6. Establish age for each asset. Should the actual purchase or installation date be unavailable, proxies (estimates) must be used to determine these quantities.
7. The ratio of age to useful life can be used to group assets into age quintiles and these quintiles can then be used as simple measures of asset condition as follows:
 - 5 = 25% of useful life consumed
 - 4 = 26% to 50% of useful life consumed
 - 3 = 51% to 75% of useful life consumed
 - 2 = 76% to 100% of useful life consumed

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- 1 = > 100% of useful life consumed
8. Populate the asset type templates with available data. Proxies (educated estimates) must be used for any unavailable data in order for the I/A to be as complete as possible.
 9. Perform an inspection of a sampling segment of each asset type in order to verify the consistency of the calculated conditions above with the observed conditions. This activity may necessitate changes to some of the condition ratings of the I/A.
 10. Determine replacement costs (Cost to replace with new asset) for each asset. Knowledge of the original cost is helpful in this task. If unavailable; a proxy must be used to estimate such. This quantity represents the System Replacement Value. How do we handle betterment of an asset? Technology, etc.
 11. Calculate the replacement cost for all assets that exceed their useful life (i.e., rated 1 using the condition measure suggested above). This quantity represents the Backlog.
 12. Determine the time period for the asset condition assessment. For consistency it is recommended that a 10 year period be utilized by all agencies. Create a 10 year matrix using Excel or other to record the following.
 13. Determine any anticipated asset replacements (example bus fleet replacements) and any anticipated large capital investments (example locomotive half-life overhaul) over the 10 year period. This quantity represents the Normal Reinvestment. Plot these on the 10 year matrix.
 14. Add the quantities Backlog and Normal Reinvestment. This quantity represents the SGR Need for the 10 year period.

In order for different agencies' quantities to be comparable, a level of consistency is important. As mentioned in item 12, it is recommended that all agencies utilize a consistent 10 year I/A period. In that same spirit, it is also recommended that the quantities used throughout the assessment period remain in starting dollar quantities, without addition of yearly inflationary adjustments. These costing upgrades may be added separately to individual reports. It is further recommended that a consistent 20% to 30% be added to all quantities to account for soft costs, including force account and contingencies. It is recommended that after performing a Capital Asset Inventory and Condition Assessment, that it be upgraded every year for five years in order to maximize its accuracy. A computerized, continual, living, work authorization SGR tracking system by in house maintenance specialists for the purpose of keeping the SGR accurately definable over time is an excellent goal.

APPENDIX C

VEHICLES NEEDED BY AGE ONLY:

	Ave. Fleet Age	Max in Service	Vehicles Needed
Gillig	10	45	54
Paratransit	5	40	46
Minivans	1	2	3

VEHICLE NEED BY MILEAGE:

	Life Expectancy	Mileage Expectancy	Miles per Year	Annual Miles Used	# vehicles Needed
Gillig	12	500,000	41,667	902,078	22
Cutaway	5	150,000	30,000	320,346	11
Minivans	5	100,000	20,000	3000	3