

Updated Draft Report | 4/15/2021

Town of Vienna, VA

Leaf Collection Program Evaluation

Prepared by:

NewGen
Strategies & Solutions

April 15, 2021

David Donahue, P.E., Deputy Director
Town of Vienna
Department of Public Works
127 Center Street S
Vienna, VA 22180

Subject: Updated Town of Vienna Leaf Collection Program Evaluation Draft Report

Dear Mr. Donahue,

NewGen Strategies and Solutions, LLC (NewGen) is pleased to submit to the Town of Vienna (the Town) this updated report regarding our evaluation of the Town's Leaf Collection Program. This document reflects actual FY 2021 data and our analysis of the potential costs of alternative Leaf Collection programs based on the most recently available data.

It has been a distinct pleasure to work with the Town of Vienna on this project and this update. The dedication and assistance provided by Town Department of Public Works staff was essential to the completion of this study and should be acknowledged. Thank you for the opportunity to work with the Town on this important project.

Sincerely,



Eric Callocchia
Executive Consultant
NewGen Strategies and Solutions, LLC

Table of Contents

Section 1 Project Background, Scope of Work, Assumptions and Data	3
Project Background	3
Scope of Work – Report Update.....	3
Study Assumptions and Data.....	3
Units and Conversions	4
Program Cost Data	4
Program Operating Data	5
Historical Leaf Collection and Delivery Data	5
Section 2 Current Level of Service Costs.....	9
Total Program Cost at Current Level of Service	9
Section 3 Alternative Leaf Collection Programs	12
Hauling Alternative 1 – Consolidated Disposal (Short Haul)	12
Hauling Alternative 2 – Direct Disposal (Long Haul).....	14
Summary of Current and Alternative Leaf Programs	16
Section 4 Findings and Conclusions.....	17
Findings and Conclusions	17
Appendix – Current Program Detail	18

List of Tables and Exhibits

Table 1-1 Cubic Yard to Tons Conversions.....	4
Table 1-2 Cost Data and Estimates	4
Table 1-3 FY 2021 Program Data and Other Data Estimates	5
Table 1-4 Total Leaf Volume Collected (CY) – Past Four Fiscal Years	6
Table 1-5 Total Mulch Orders – Past Four Fiscal Years.....	6
Exhibit 1-6: FY 2018 – FY 2021 Load Profiles	7
Table 1-7 Total Loads Ordered and Volume Delivered – Past Four Fiscal Years	7
Exhibit 1-8: Total Mulch Orders and Loads FY 2005 – FY 2021.....	8
Table 2-1 Cost of Current Leaf Collection Program	9
Table 2-2 Leaf Collection Ten-Year Vehicle Replacement Plan	11
Table 3-1 Short Haul Leaf Collection Program.....	13
Table 3-2 Long Haul Leaf Collection Program	15
Table 3-4 Summary of Leaf Program Alternatives	16
Exhibit A-1: Current Service Area and FY 2021 Routes.....	18
Exhibit A-2: Vehicle #171 – Leaf Loader.....	19
Exhibit A-3: Vehicle #38 - Tandem Truck	20
Exhibit A-4: Beulah Road Location within the Town.....	21
Exhibit A-5: Beulah Road Site (Ground Level).....	22
Exhibit A-6: Vehicle #131 - Tub Grinder	22

Section 1

PROJECT BACKGROUND, SCOPE OF WORK, ASSUMPTIONS AND DATA

Project Background

The Town of Vienna (Town) operates a Leaf Collection Program that begins on October 1st each year and concludes on March 31st of the following year. The program is managed within the Public Works Department utilizing the Town's Street Maintenance workforce under the direction of the Operations Superintendent, the Deputy Director of Public Works, and ultimately the Director of Public Works. The program provides leaf collection service to all residents within the Town's corporate limits, the processing of leaves into mulch, and delivery of the mulch to both residents and businesses within the Town on an as requested basis. Historically, any mulch left over was hauled to businesses that would accept the material for free. However, for the FY 2021 program, this free disposal option was no longer available, therefore the Town incurred costs to dispose of un-delivered leaves.

The program is funded by general tax revenues and there is no additional cost to the residents or businesses at the time of collection or delivery.

NewGen delivered a draft report to the Town on October 2, 2020 and attended a conference session with Town Council on October 19, 2020 to discuss the draft report. The Town was notified several days before the conference session that its primary leaf disposal site was closing effective November 1, 2020, and the Town needed to evaluate alternative disposal sites and their cost. Also at that time, the Town's seventeen year old leaf grinder was out of service and in need of repair. The Town needed to evaluate alternative leaf grinding options, including renting a grinder or contracting out the grinding service.

Scope of Work – Report Update

In March 2021, the Town requested that NewGen update the leaf program evaluation given the following developments during the FY 2021 leaf program:

- The Town's primary disposal site did not close on November 1, 2020. However, the site began charging the Town \$9.00 per ton to dispose of leaves, when previously there was no cost to the Town.
- The Town made the decision to contract out grinding a portion of the total volume of leaves collected at a cost of \$4.00 per cubic yard. Grinding was completed in January 2021.

In order to properly evaluate program alternatives, the impact to the program of the above stated changes must be included in future cost projections. This updated report details the changes to the program's costs given these developments and how the Town may operate the program (or no program at all) in the future.

Study Assumptions and Data

Many data points are necessary to calculate the full cost of the Town's leaf collection program and any alternative programs. NewGen's updated analysis includes several actual FY 2021 program data points and several estimates and assumptions for data points that are not tracked by the Town. First, unit conversions of various materials and equipment capacity must be noted.

Units and Conversions

Leaves are collected and transported in both unground and ground state by various Town vehicles. For the purpose of estimating volume and weight, Table 1-1 shows the unit conversions used in this report.

Table 1-1
Cubic Yard to Tons Conversions

Item	Cubic Yards	lbs.	Tons
Leaves (Unground)	1	350	0.18
Leaves (Mulched)	1	450	0.23
30 Gallon Paper Bag (Unground)	0.15	53	0.03
Tandem Truck Capacity	20	7,000	3.50
Mulch Load (Delivered)	3	1,350	0.68

Program Cost Data

The Town's FY 2021 leaf collection program generated actual data related to labor, vehicles, fuel, and disposal costs that NewGen used to project the cost of the current and alternative programs. Table 1-2 shows the FY 2021 actual and estimated costs of various components of the Town's program.

Table 1-2
Cost Data and Estimates

Item	Amount	Source
Blended Labor Rate per Hour (including benefits/overhead)	\$55.00	FY 2021 Estimate
Maintenance Cost per Hour - Tandems	\$6.49	FY 2021 Actual
Maintenance Cost per Hour - Pickups	\$4.32	FY 2021 Actual
Maintenance Cost per Hour - Leaf Vacuums	\$17.48	FY 2021 Actual
Fuel Cost per Hour - Tandems	\$7.85	FY 2021 Actual
Fuel Cost per Hour - Pickups	\$3.00	FY 2021 Actual
Fuel Cost per Hour - Leaf Vacuums	\$4.89	FY 2021 Actual
Cost to Grind One CY of Leaves	\$4.00	FY 2021 Actual
New Trash Truck	\$295,000	Staff Estimate
New Tandem Truck	\$175,000	Staff Estimate
Three Month Rental of Trash Truck	\$19,500	Quote on 4/14/2021
New Leaf Box	\$7,547	Quote on 3/24/2021
Disposal at Loudoun Composting (per Ton)	\$9.00	FY 2021 Actual
Disposal at Fairfax County Transfer Station (per Ton)	\$42.00	FY 2021 Actual
Disposal at Freestate Farms (per Ton)	\$35.00	FY 2021 Actual

Program Operating Data

The leaf programs level of operation must be evaluated under each level of service scenario. For the purposes of comparing the options in this report, NewGen used the following actual and estimated values for various key items related to the program's operation.

Table 1-3
FY 2021 Program Data and Other Data Estimates

Item	Amount	Source
Labor Hours per Season - Regular	3,814	FY 2021 Actual
Labor Hours per Season - Overtime	416	FY 2021 Actual
Total Hours per Season - Tandems	988	FY 2021 Actual
Total Hours per Season - Pickups	1,323	FY 2021 Actual
Total Hours per Season - Leaf Vacuums	988	FY 2021 Actual
Miles per Leaf Collection Pass	65	Miles of Town roads
Cubic Yards Collected	8,400	Past three year average (rounded)
Cubic Yards Ground	3,500	Staff estimate of mulch demand
Loads Delivered	600	Past three year average (rounded)
Delivery Round Trip (miles)	6	Estimate
Delivery Round Trip (minutes)	45	Estimate
Cubic Yards Disposed	4,900	Collected minus Ground
Tons Disposed	858	Conversion of unground CY
Disposal at Loudoun Composting (Round Trip)	33	Rounded miles
Disposal at Fairfax County Transfer Station (Round Trip)	18	Rounded miles
Disposal at Freestate Farms (Round Trip)	44	Rounded miles
Disposal at Loudoun Composting (Hours)	1.5	Estimate
Disposal at Fairfax County Transfer Station (Hours)	2	Estimate
Disposal at Freestate Farms (Hours)	2.5	Estimate

Historical Leaf Collection and Delivery Data

A key piece of data that is necessary for the Town to determine the future of the Leaf Collection Program is the demand of leaf mulch delivery among its residents and businesses. The following tables show the past four years of leaf volume collected, ordered, and delivered. First, Table 1-4 shows the past four years of collected leaf volume.

**Table 1-4
Total Leaf Volume Collected (CY) – Past Four Fiscal Years**

	FY 2018	FY 2019	FY 2020	FY 2021
Total Passes	6	5	4	3
Volume Collected (CY)				
October	217	168	217	273
November	3,493	3,493	2,730	3,318
December	5,292	5,264	4,872	3,794
January	399	126	833	42
Total Collection Volume (CY)	9,401	9,051	8,652	7,427
<i>% Change</i>		<i>(3.7%)</i>	<i>(4.4%)</i>	<i>(14.2%)</i>

The total volume of leaves collected each year has been decreasing since FY 2018. The volume of leaves collected may vary for several reasons. First, the weather has an impact on when leaves fall, and the Town is dependent on homeowners to rake leaves to the curb. Second, new homeowners may not be aware of the leaf collection service and collect and/or dispose of their leaves themselves or with a landscape company's service. For the purposes of this report, NewGen assumes collection volume will remain at the three year average level, or about 8,400 cubic yards.

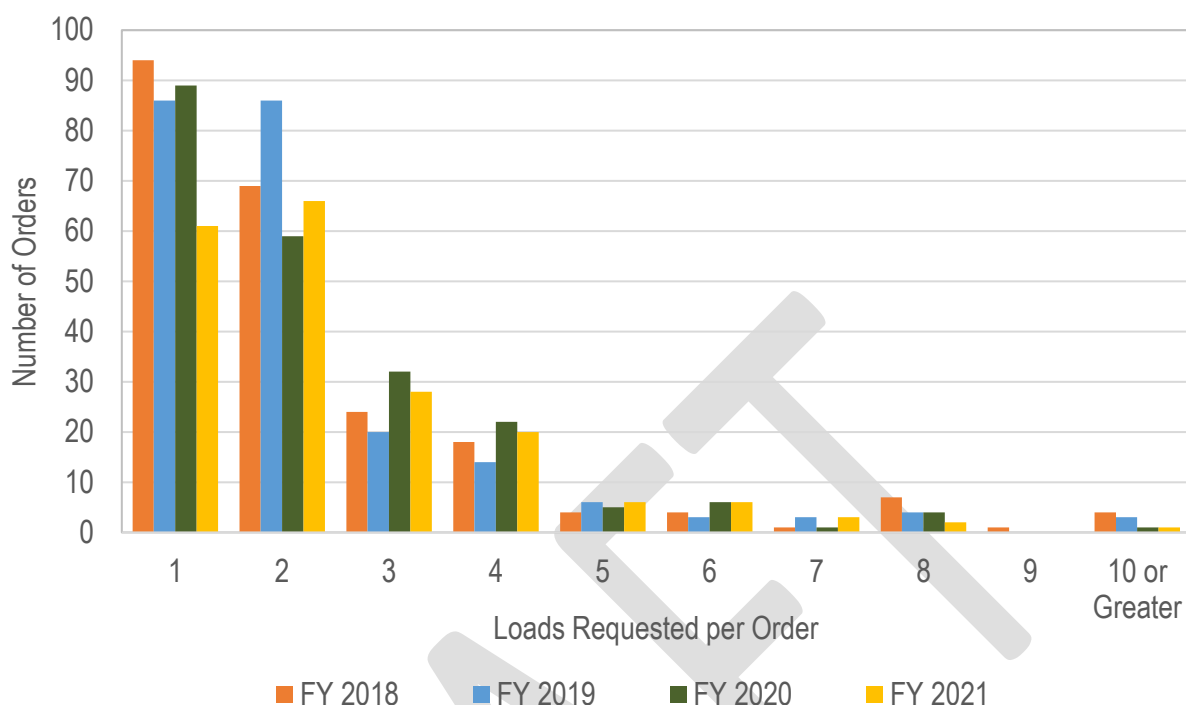
The next table shows the total mulch orders for the past four years.

**Table 1-5
Total Mulch Orders – Past Four Fiscal Years**

	FY 2018	FY 2019	FY 2020	FY 2021
January	181	149	135	61
February	206	153	95	92
March	-	24	-	50
Unfilled Orders	-	-	-	70
Total Orders	387	326	230	273
<i>% Change</i>		<i>(15.8%)</i>	<i>(29.4%)</i>	<i>18.7%</i>

A downward trend in mulch orders is also reflected in the data since FY 2018. In FY 2021, the Town had to cancel 70 orders for leaf mulch that came in after all leaves had been disposed of. In terms of the number of loads per order, most orders over the past four years have been for one or two loads. A load is equal to a rounded scoop of a front loader, about three or four cubic yards. NewGen assumes, for the purposes of projecting costs, three cubic yards per load. Exhibit 1-6 shows the number of loads per order for each of the past four years.

Exhibit 1-6: FY 2018 – FY 2021 Load Profiles



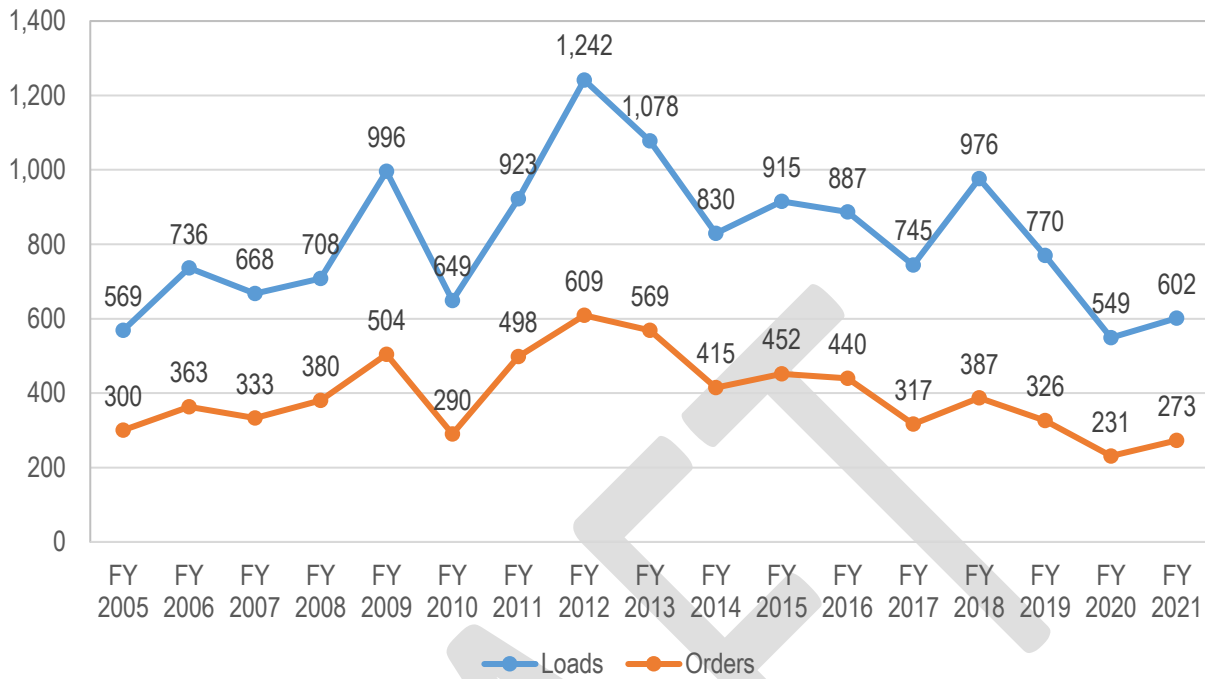
There is a downward trend in the number of loads delivered and delivered, consistent with the lower number of orders. Table 1-7 shows the number of mulch loads ordered and delivered over the past four years.

Table 1-7
Total Loads Ordered and Volume Delivered – Past Four Fiscal Years

	FY 2018	FY 2019	FY 2020	FY 2021
January	517	364	318	157
February	459	324	231	203
March	-	82	-	124
Unfilled Orders	-	-	-	118
Total Loads Ordered	976	770	549	602
% Change		(21.1%)	(28.7%)	9.7%
Total Volume Delivered (CY)	2,927	2,309	1,646	1,805
% Change		(21.1%)	(28.7%)	9.7%

The leaf program has not always been at its current level. The Town provided NewGen with order and delivery data going back to FY 2005. Since that time, demand increased until about FY 2012, then decreased to its current level. Exhibit 2-8 shows the trend in orders and loads delivered since FY 2005.

Exhibit 1-8: Total Mulch Orders and Loads FY 2005 – FY 2021



Based on an approximation of 5,000 households in the Town, and making the assumption that most orders are from residential customers, about five to seven percent of households have ordered mulch each year for the past five years.

Section 2

CURRENT LEVEL OF SERVICE COSTS

This section of the report will detail the cost of the current leaf program operation. The program's cost and efficiency depends on several factors, including weather, the demand for leaf mulch, and the cost of leaf disposal. The cost is broken down into the four components of leaf collection, grinding, delivery, and disposal.

Total Program Cost at Current Level of Service

Table 2-1
Cost of Current Leaf Collection Program

		Note
Number of Leaf Collection Passes	3	Minimum Guaranteed passes
Leaf Collection Volume (CY)	8,400	Average of past three years
Regular Labor Hours - Collection	3,814	
Overtime Labor Hours - Collection	416	
<i>Total Labor Hours - Collection</i>	<i>4,230</i>	
Labor Rate per Hour	\$55.00	
<i>Labor Cost of Collection</i>	<i>\$232,650</i>	
Tandem Hours - Collection	988	
Fuel Cost per Hour - Tandems	\$7.85	
Maintenance Cost per Hour - Tandems	\$6.49	
Total Cost per Hour - Tandems	\$14.35	
<i>Total Collection Cost - Tandems</i>	<i>\$14,175</i>	
Total Hours per Season - Leaf Vacuums	988	Assumes 100% of Leaf Vacuum hours are for collection
Fuel Cost per Hour - Leaf Vacuums	\$4.89	
Maintenance Cost per Hour - Leaf Vacuums	\$17.48	
Total Cost per Hour - Tandems	\$22.37	
<i>Total Collection Cost - Leaf Vacuums</i>	<i>\$22,105</i>	
<i>Total Cost of Leaf Collection</i>	<i>\$268,929</i>	
Volume of Leaves Ground (CY)	3,500	Staff estimate of future demand
Cost per CY	\$4.00	
Per-Season set up and tear down fee	\$800	
Total Cost of Leaf Grinding	\$14,800	

Table 2-1
Cost of Current Leaf Collection Program

		Note
Cubic Yards Delivered	3,500	Assumes all ground leaves are delivered to residents
Cubic Yards per Delivery Load	3	
Number of Delivery Round Trips	1,167	
Delivery Labor Hours	1,323	
Labor Rate per Hour	\$55.00	
<i>Delivery Labor Cost</i>	<i>\$72,765</i>	
Total Hours per Season - Pickups	1,323	Assumes 100% of Pickup Truck hours are for delivery
Fuel Cost per Hour - Pickups	\$3.00	
Maintenance Cost per Hour - Pickups	\$4.32	
Total Cost per Hour - Pickups	\$7.33	
<i>Total Delivery Cost - Pickups</i>	<i>\$9,692</i>	
Total Cost of Leaf Delivery	<u>\$82,457</u>	
Cubic Yards of Leaved Disposed	4,900	Collected minus ground/delivered
Tons per Cubic Yard (Unground)	0.18	
Tons of Unground Leaves Disposed	858	
Disposal Cost per Ton	\$9.00	Disposal at Loudoun Compost
<i>Leaf Disposal Cost</i>	<i>\$7,718</i>	
Tandem Load in Tons	3.50	
Round Trips to Loudoun Compost	245	
Hours per Round Trip	1.5	
Total Disposal Hours	368	
Disposal Labor Hours	368	
Labor Rate per Hour	\$55.00	
<i>Disposal Labor Cost</i>	<i>\$20,213</i>	
Tandem Hours - Disposal	368	
Fuel Cost per Hour - Tandems	\$7.85	
Maintenance Cost per Hour - Tandems	\$6.49	
Total Cost per Hour - Tandems	\$14.35	
<i>Total Disposal Cost - Tandems</i>	<i>\$5,272</i>	
Total Cost of Leaf Disposal	<u>\$33,202</u>	
Total Program Annual Cost	<u>\$399,389</u>	

The Town can maintain this level of service with its existing assets and would not need to purchase any additional trucks, leaf boxes, or trailers. The Town would continue to contract out the leaf grinding service and continue to deliver leaf mulch to residents and businesses.

In addition to the above stated annual operating costs, the Town plans to replace Leaf Collection Program related vehicles over the next ten years on the following schedule. The table below shows a summary of the currently planned ten-year replacement schedule for the Town's leaf collection program, adjusted for the fact that the vehicles purchased would be used elsewhere throughout the Town for part of the year. The table excludes the Town's leaf grinder.

Table 2-2
Leaf Collection Ten-Year Vehicle Replacement Plan

#	Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
27	1 Ton Truck							\$63,155			
28	2 Ton Truck	\$158,792									
32	Pickup Truck										\$38,991
38	Tandem Truck					\$195,654					
41	2 Ton Truck									\$230,970	
57	1 Ton Truck							\$65,192			
60	Pickup Truck					\$31,208					
65	Tandem Truck			\$181,679							
70	1 Ton Truck							\$70,776			
83	Tandem Truck		\$174,691					\$63,155			
92	1 Ton Truck										
144	Skid Steer									\$98,418	
171	Leaf Loader					\$42,618					
194	Leaf Loader						\$44,200				
195	Loader							\$233,126			
200	Leaf Loader			\$39,454							
258	Leaf Loader		\$37,872								
Total		\$158,792	\$212,563	\$221,133	\$ -	\$269,480	\$44,200	\$197,086	\$298,318	\$329,387	\$38,991

For the purposes of calculating the cost of these assets that is related to the Leaf Program, NewGen assumed that 20% of the cost of multi-purpose assets should be attributed to the Leaf Collection program. If the Town were to discontinue the Leaf Program, then the Town would no longer be required to own the grinder and leaf loaders. However, the Town would maintain ownership of the various trucks, which would be put to other Public Works uses.

The Town's replacement cycle is appropriate for the useful lives of the assets it plans to replace. Given the current level of service, the Town plans to spend an average of about \$176,000 per year over the next ten years on leaf collection related assets, excluding grinding equipment.

Section 3

ALTERNATIVE LEAF COLLECTION PROGRAMS

Part of NewGen's original scope was to evaluate the cost impacts of different approaches to the Town's leaf collection program. The Town's existing program provides an extremely high level of service, and Section 2 of this report detailed the costs to maintain that level of service. Because of the high level of service currently offered, NewGen did not identify any ways in which to increase the current level of service.

NewGen developed detailed estimates of two alternative programs that would continue the collection and disposal of leaves but would not include grinding and delivery of leaf mulch to residents. One option (Short Haul) would continue the use of the Beulah Road site as a staging area. The other, Direct Haul, would bypass the Beulah Road site and dispose of leaves directly from the collection routes.

Hauling Alternative 1 – Consolidated Disposal (Short Haul)

The first alternative level of service would remove the leaf grinding and mulch delivery services currently provided by the Town. Prior to September 2020, Town staff identified a business willing to take 100% of the Town's unground leaves if the Town were to deliver the leaves directly to the businesses. While that option is no longer available, as of the date of this report the Town is able to dispose of unprocessed leaves at a local business at a cost of \$9.00 per ton.

One way to dispose of unprocessed leaves is by consolidating the leaves, then transporting them to the local business. This would still require the use of either the existing Beulah Road site or an alternative site, however leaf grinding would no longer take place. Instead, this site would be used as a staging area where tandem trucks would unload leaves after collection. The leaves would then be taken to the local disposal site. This change in the level of service would mean residents and businesses would no longer be able to schedule mulch deliveries.

Table 3-1 details NewGen's cost estimate of the short haul alternative.

Table 3-1
Short Haul Leaf Collection Program

		Note
Number of Leaf Collection Passes	3	Minimum Guaranteed passes
Leaf Collection Volume (CY)	8,400	Average of past three years
Regular Labor Hours - Collection	3,814	
Overtime Labor Hours - Collection	416	
<i>Total Labor Hours- Collection</i>	4,230	
Labor Rate per Hour	\$55.00	
<i>Labor Cost of Collection</i>	<u>\$232,650</u>	
Tandem Hours - Collection	988	
Fuel Cost per Hour - Tandems	\$7.85	
Maintenance Cost per Hour - Tandems	\$6.49	
Total Cost per Hour - Tandems	\$14.35	
<i>Total Collection Cost - Tandems</i>	<u>\$14,175</u>	
Total Hours per Season - Leaf Vacuums	988	Assumes 100% of Leaf Vacuum hours are for collection
Fuel Cost per Hour - Leaf Vacuums	\$4.89	
Maintenance Cost per Hour - Leaf Vacuums	\$17.48	
Total Cost per Hour - Tandems	\$22.37	
<i>Total Collection Cost - Leaf Vacuums</i>	<u>\$22,105</u>	
Total Cost of Leaf Collection	<u>\$268,929</u>	
Cubic Yards of Leaved Disposed	8,400	Must dispose of all collected leaves
Tons per Cubic Yard (Unground)	0.18	
Tons of Unground Leaves Disposed	1,470	
Disposal Cost per Ton	\$9.00	Disposal at Loudoun Compost
<i>Leaf Disposal Cost</i>	<u>\$13,230</u>	
Tandem Load in Tons	3.5	
Round Trips to Loudoun Compost	420	
Hours per Round Trip	1.50	
Total Disposal Hours	<u>630</u>	
Disposal Labor Hours	630	Same as Tandem disposal hours
Labor Rate per Hour	\$55.00	
<i>Disposal Labor Cost</i>	<u>\$34,650</u>	

Table 3-1
Short Haul Leaf Collection Program

		Note
Tandem Hours - Disposal	630	
Fuel Cost per Hour - Tandems	\$7.85	Same as Tandem
Maintenance Cost per Hour - Tandems	\$6.49	Same as Tandem
Total Cost per Hour - Tandems	<u>\$14.35</u>	
Total Disposal Cost - Tandems	<u>\$9,038</u>	
Total Cost of Leaf Disposal	<u>\$56,918</u>	
 Total Program Annual Cost	 <u>\$325,847</u>	

The Town would be able to complete the short haul program without the purchase of additional leaf collection assets. Therefore, the average replacement cost of leaf assets would remain the same as the existing program, estimated to be approximately \$176,000 per year.

Hauling Alternative 2 – Direct Disposal (Long Haul)

The second alternative level of service would also remove the grinding and mulch delivery services currently provided by the Town. Under this alternative, the Town would collect leaves as they do now, but would not centralize leaf storage or grinding. Instead, the Town would immediately drive full tandem trucks to its local business partner that is willing to unprocessed leaf material at a cost of \$9.00 per ton.

Similarly to the short haul alternative, the Town would need to purchase additional assets to be able to provide a certain level of service. New tandem trucks are estimated to cost \$175,000 each and new leaf boxed are estimated to cost \$7,547 each based on a recent quote.

The Town would incur additional personnel, maintenance, and fuel costs under this scenario. The capital costs necessary to guarantee the above levels of service are high due to the need to invest in six new trucks and boxes. NewGen investigated the possibility of renting trucks and operators for the duration of the program each year, however at a cost of over \$90,000 per truck per year, the rental option is not a long term cost effective way to run the program.

A detailed cost breakdown of each long haul option is shown in Table 3-2.

Table 3-2
Long Haul Leaf Collection Program

		Note
Number of Leaf Collection Passes	3	Minimum Guaranteed passes
Leaf Collection Volume (CY)	8,400	Average of past three years
Regular Labor Hours - Collection	3,814	
Overtime Labor Hours - Collection	416	
<i>Total Labor Hours- Collection</i>	4,230	
Blended Labor Rate per Hour	\$40.28	Adjusted b/c of Temp Labor for 50% of Collection Labor
<i>Labor Cost of Collection</i>	<u>\$170,384</u>	
Tandem Hours - Collection	988	
Fuel Cost per Hour - Tandems	\$7.85	
Maintenance Cost per Hour - Tandems	\$6.49	
Total Cost per Hour - Tandems	\$14.35	
<i>Total Collection Cost - Tandems</i>	<u>\$14,175</u>	
Total Hours per Season - Leaf Vacuums	988	Assumes 100% of Leaf Vacuum hours are for collection
Fuel Cost per Hour - Leaf Vacuums	\$4.89	
Maintenance Cost per Hour - Leaf Vacuums	\$17.48	
Total Cost per Hour - Tandems	\$22.37	
<i>Total Collection Cost - Leaf Vacuums</i>	<u>\$22,105</u>	
Total Cost of Leaf Collection	\$206,663	
Cubic Yards of Leaved Disposed	8,400	Must dispose of all collected leaves
Tons per Cubic Yard (Unground)	0.18	
Tons of Unground Leaves Disposed	1,470	
Disposal Cost per Ton	\$9.00	Disposal at Loudoun Compost
<i>Leaf Disposal Cost</i>	<u>\$13,230</u>	
Tandem Load in Tons	3.5	
Round Trips to Loudoun Compost	420	
Hours per Round Trip	1.5	
Total Disposal Hours	<u>630</u>	
Disposal Labor Hours	630	Same as Tandem disposal hours
Labor Rate per Hour	\$55.00	
<i>Disposal Labor Cost</i>	<u>\$34,650</u>	

Table 3-2
Long Haul Leaf Collection Program

	Note
Tandem Hours - Disposal	630
Fuel Cost per Hour - Tandems	\$7.85
Maintenance Cost per Hour - Tandems	\$6.49
Total Cost per Hour - Tandems	<u>\$14.35</u>
Total Collection Cost - Tandems	<u>\$9,038</u>
Total Cost of Leaf Disposal	<u>\$56,918</u>
Total Program Annual Cost	<u>\$263,582</u>

Because the Town would need to purchase additional trucks with an assumed useful life of 15 years, the average long-term replacement cost of the Leaf Program vehicles would increase from \$176,000 to \$246,000 per year. To be clear, this impact would not raise the short-term vehicle replacement cost because the new Tandem trucks would not need to be replaced for fifteen years.

Summary of Current and Alternative Leaf Programs

Table 3-4
Summary of Leaf Program Alternatives

	Annual O&M Cost	Long-Term Vehicle Replacement	One-Time Vehicle Purchase	Vacuum Collection	Grinding	Delivery	Disposal
Current Program	\$399,389	\$176,000	\$ -	X	X	X	X
Short Haul	\$325,847	\$176,000	\$ -	X			X
Direct Haul	\$263,582	\$246,000	\$1,095,282	X			X

Section 4

FINDINGS AND CONCLUSIONS

Findings and Conclusions

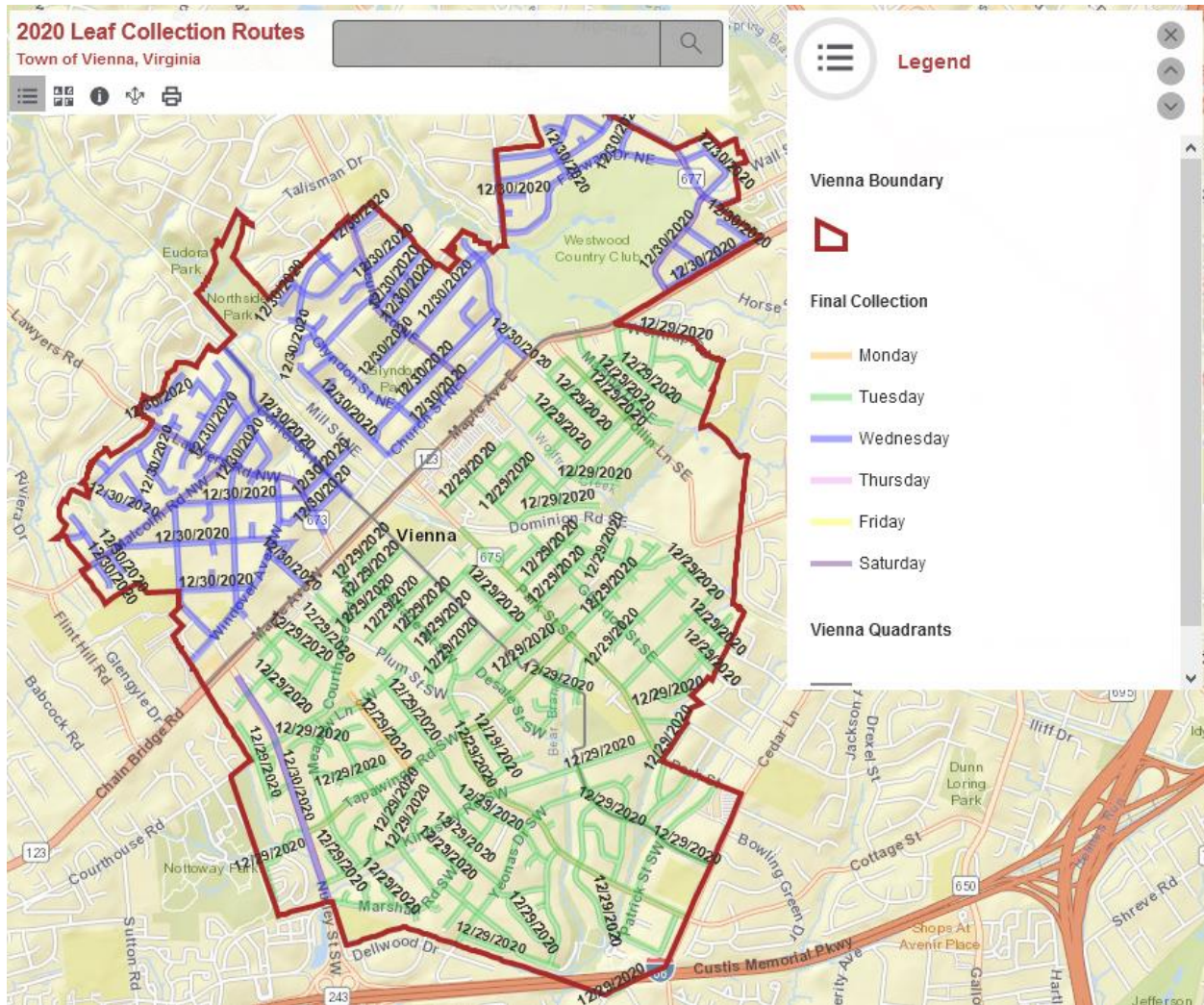
NewGen made the following findings and developed the following conclusions during the study.

- The Town's Leaf Collection Program provides a high level of service to Town's customers.
- The Town's program offers the highest level of service to its customers when compared to similar local programs.
- The Town uses in-house staff and assets to provide leaf collection, delivery and disposal services.
- The Town contracts out leaf grinding operation at a cost of \$9.00 per cubic yard in lieu of purchasing or renting a grinder.
- If the Town determines that the best course of action is to continue the program, then contracting out the grinding operation results in cost savings when compared to purchasing or renting a leaf grinder.
- There are alternative leaf collection and disposal options that would result in annual cost savings for the Town, however they necessitate the one-time purchase of additional vehicles.

APPENDIX – CURRENT PROGRAM DETIAL

The Town currently uses existing Public Works staff to operate the leaf collection program without any additional temporary workers. Residents rake leaves to the edge of their property and the Town uses leaf loaders trailing behind tandem trucks to vacuum up the leaves. The following map shows the FY 2021 routes and the final collection day for that year's program.

Exhibit A-1: Current Service Area and FY 2021 Routes



The following exhibits show examples of the Town's leaf collection rolling stock, specifically a Leaf Loader and a Tandem truck.

Exhibit A-2: Vehicle #171 – Leaf Loader

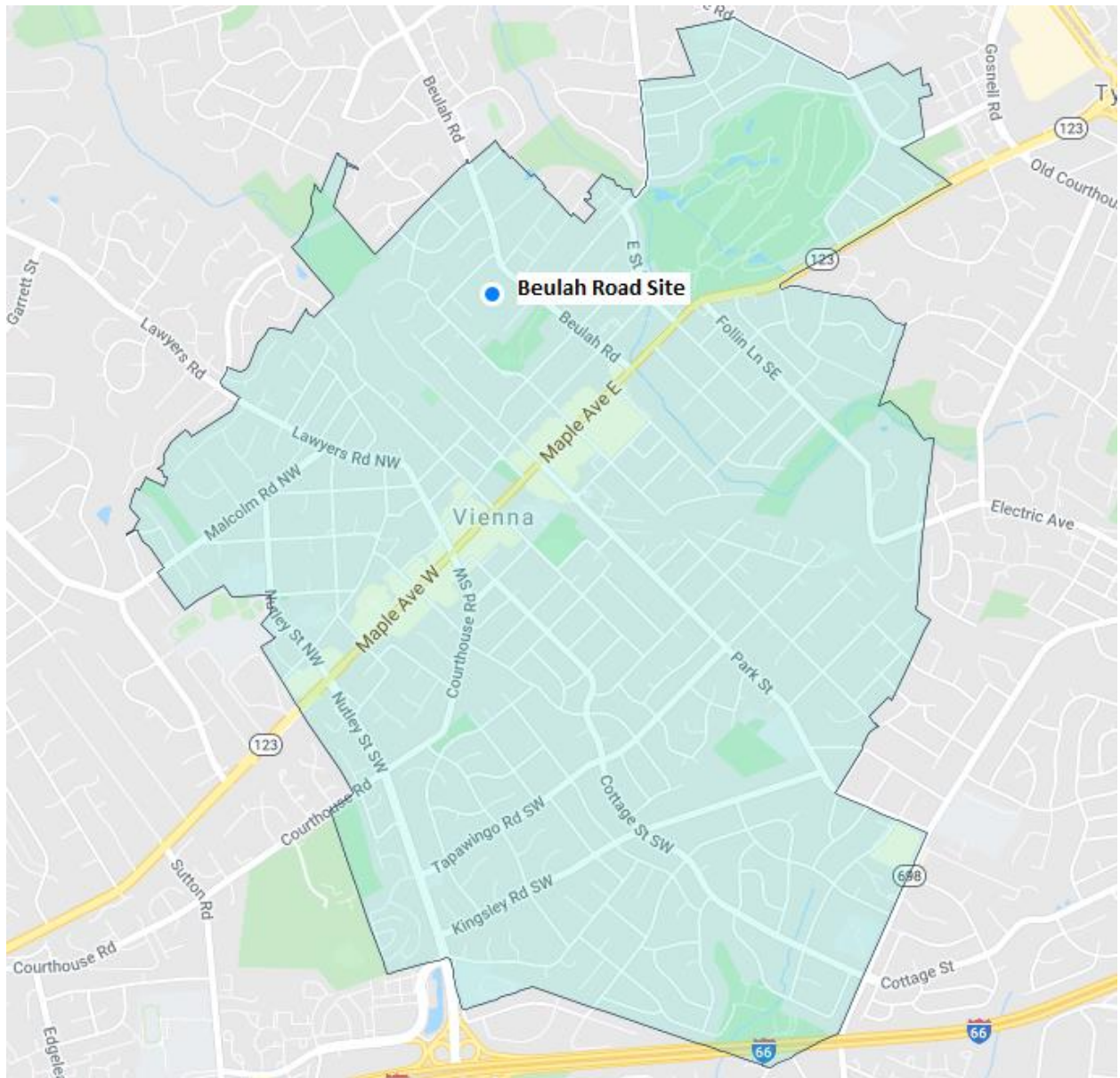


Exhibit A-3: Vehicle #38 - Tandem Truck



The Town has made at least four passes to collect leaves in the past three fiscal years. The Town's tandem trucks transport the leaves to the Town's leaf grinding site, located in Beulah Road site, the location of which within the Town is shown below.

Exhibit A-4: Beulah Road Location within the Town



The parcel at Beulah Road Park is about eight acres in size, and the Town's equipment and leaf storage piles take up about one acre of the parcel during the months of October through March. The leaf storage area, shown below, is a relatively flat gravel area surrounded by noise reducing walls.

Exhibit A-5: Beulah Road Site (Ground Level)



Historically, the Town uses a tub grinder that they own to grind the leaves, shown below. The Town now contracts out the leaf grinding operation.

Exhibit A-6: Vehicle #131 - Tub Grinder



The ground up leaves are then stored at the Beulah Road site until residents and businesses request delivery of the mulch, typically beginning in January and continuing February, and sometimes early March.