Municipal Waste Management Study for the Town of Alta

ZIONS BANK®
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CONTENTS

EXECUTIVE SUMMARY

Zions Bank Public Finance (ZBPF) was retained by the Town of Alta ("Alta" or the "Town") to complete a Municipal Waste Management Study. This study quantifies the Town's waste and recycling generation and evaluates the following alternatives for providing waste removal and recycling collection services:

Solid Waste:

- No change from current waste removal services.
- An in-town compactor/dumpster for residences without year-round access. No change in service for businesses and residences with year-round access. Small businesses may choose to use the in-town compactor/dumpster.
- All residents not in HOA's use an in-town compactor/dumpster. Small businesses and residents in HOA's may choose to use the in-town compactor/dumpster.
- All residents use an in-town compactor/dumpster. Small businesses may choose to use the in-town compactor/dumpster.

Recycling:

- No change from current waste removal services.
- All businesses and residents use an in-town recycling compactor provided by the Town of Alta.

WASTE VOLUME

RESIDENTIAL

The average weekly solid waste generated per household for homes/condominiums located both in and outside of HOA's is approximately 30.7 gallons[1] per household during the ski season. The total weekly garbage generated by residential units is calculated by multiplying the average weekly waste generation during ski-season and the off-season by the total number of residences in the Town of Alta. As shown in table E1, the total weekly garbage generated is approximately 6,723 gallons or 33.3 cubic yards during the ski season and 2,781 gallons or 13.8 cubic yards during the off-season.

Table E1: Total Weekly Residential Solid Waste Generation

Total Weekly Residential Solid Waste Generation				
	Average per Week	# of Residences	Total Weekly Garbage Gallons	Total Weekly Garbage Cubic Yards
Ski Season	30.7 gallons	219	6,723 gallons	33.3 cubic yards
Off-Season	12.7 gallons	219	2,781 gallons	13.8 cubic yards

BUSINESSES

Solid waste for businesses in Alta is collected in either a dumpster or bags. The average weekly solid waste generated by businesses during the ski season is approximately 45,066 gallons or 223 cubic yards. The solid waste generated by businesses during the off-season of 1,045 gallons (35 cubic yards) is 2.3 percent compared to solid waste generated during the ski-season.

[1] Ski season - (672 gal. + 3,803 gal.)/(26 units +120 units) = 30.7 gallons; Off-season – (315 gal. + 1,433 gal.)/(26 units+112 units) = 12.7 gallons

Table E2: Total Weekly Business Solid Waste Generation

Total Weekly Business Solid Waste Generation				
	Weekly Gallons with Dumpsters	Weekly Gallons without Dumpsters	Total Weekly Gallons	Total Weekly Cubic Yards
Ski Season	40,925 gallons	4,141 gallons	45,066 gallons	223.1 cubic yards
Off-Season	6,020 gallons	1,045 gallons	7,065 gallons	35.0 cubic yards

TOTAL WASTE VOLUME – RESIDENTIAL AND BUSINESS

The total weekly solid waste for both businesses and residential units in the Town of Alta is approximately 256 cubic yards during the ski season and approximately 49 cubic yards during the off-season. Total waste generated during the off-season is approximately 19 percent compared to the ski-season.

Table E3: Total Weekly Solid Waste Generation for Residential and Businesses

Total Weekly Solid Waste Generation Residential and Business			
	Weekly Residential	Weekly Business	Total Weekly Garbage
Ski Season	33.3 cubic yards	223.1 cubic yards	256.4 cubic yards
Off-Season	13.8 cubic yards	35.0 cubic yards	48.8 cubic yards

The exact dates for the "ski season" vary from year to year depending on the weather, but generally the ski season begins in mid-November, with peak visitation beginning mid-December and extending through March. The resort is often open through the end of April, although daily visitors to the resort are less in April compared to the peak season.[2] As shown in table E4, the total annual cubic yards of solid waste generated in the Town of Alta is approximately 6,415 cubic yards.

Table E4: Total Annual Solid Waste Generation

Total Annual Solid Waste Generation				
	Total Weekly Solid Waste	# of Weeks Peak Visitation	# of Weeks Non-Peak Visitation[3]	Total
Ski Season	256.4 Cubic Yards	16	7	5,000 Cubic Yards
Off-Season	48.8 Cubic Yards	29	NA	1,415 Cubic Yards
Total Cubic Yards				6,415 Cubic Yards
Pounds Per Cubic Yard				225 Pounds
Total Pounds				1,443,375 Pounds
Total Tons				722 Tons

Depending on the composition of the solid waste, municipal garbage ranges in weight from 150 to 300 pounds per cubic yard. Assuming an average weight of 225 pounds, the town of Alta generates approximately 722 tons of solid waste per year.

WASTE REMOVAL SCENARIOS

Based on input from the Town of Alta, residential and business survey responses[4] and interviews with HOA management and large businesses, the following waste removal scenarios were evaluated as part of this study:

[2] To account for the "ramping" up and down of the ski season, 50% of the garbage generated during the peak ski season was used for mid-November through mid-December and April.
[3] 50% of peak season waste generation volume
[4] A copy of the residential and business surveys and the responses are included in Appendix A.

NO CHANGE FROM CURRENT WASTE REMOVAL SERVICES

Residents and businesses in the Town of Alta would continue to either contract for waste management services or "carry-out" their garbage for disposal elsewhere.

IN-TOWN COMPACTOR/DUMPSTER FOR RESIDENCES WITHOUT YEAR-ROUND ACCESS

With approximately 5.6 cubic yards per week of solid waste generated during the ski season for residences without year-round access, two waste removal options were analyzed:

DUMPSTER

Given the approximately 5.6 cubic yards per week of solid waste is generated during the ski season for residences without year-round access, an 8 yard dumpster would be sufficient for weekly garbage collection. Weekly pick-up costs, including land-fill fees, range between $175 and $200 per pick-up. Inclusive of all costs associated with providing weekly dumpster service for residences without year-round access, the monthly cost per residence for residences without year-round access is approximately $27 per month.

TableE5: Total Monthly Cost for Residents without Year-Round Access - Dumpster

Dumpster	Approximate Cost
Weekly Pick-Up Charges	$200
Number of Households	37
Monthly Pick-Up Cost Per Household	$23.42
Monthly Administrative and Structure Charges[5]	$3.33
Total Monthly Cost	$26.75

VERTICAL COMPACTOR

A second option for solid waste removal for residences without year-round access is an 8-yard self-contained vertical compactor placed in a location easily accessible to those residents without year-round access. Total costs per household for residences without year-round access for a vertical compactor are approximately $40 per month. The dumpster would have excess capacity, and therefore small businesses without a dumpster or curbside service could also choose to pay for the option of using the compactor.[6] Vertical compactors are dumped on-site with a front-loading truck. However, it would be difficult for front-loading trucks to drive up the canyon to Alta when the roads are slick due to snow fall. The vertical compactor could be equipped with a key pad to ensure that only residents/businesses paying for in-town waste services would have access to the compactor.

Table E6: Total Monthly Cost for Residents without Year-Round Access – Vertical Compactor

Vertical Compactor	Approximate Cost
Annual Equipment Lease Payment – 15 year lease[7]	$1,607
Annual Maintenance and Power Costs[8]	$2,000
Annual Administrative and Billing Costs	$1,220
Annual Pick-Up Cost[9]	$13,000
Total Annual Costs	$17,827
Number of Households	37
Monthly Cost Per Household	$40.15

[5] Includes billing supply costs of $0.52 per household per quarter, annual administrative costs of $1,977 to cover billing and other administrative waste management issues and the total cost for the concrete pad and "dog-house" roof of $3,900.
[6] If small businesses chose to also use the dumpster, the monthly cost per homeowner would be reduced.
[7] Source: ZBPF – Includes $17,000 for compactor, $5,300 for concrete pad, power installation and dog-house roof and $500 lease set up charge
[8] Source: Action Compaction, Waste management, Pro Baler Services
[9] $250 per pick-up; 52 weeks year – therefore, this analysis assumes 52 pick-ups per year

SCENARIO 3 – TOWN PROVIDES WASTER REMOVAL SERVICES FOR ALL RESIDENTS NOT AFFILIATED WITH AN HOA

Given the approximately 10 cubic yards of solid waste generated during the ski season and 4 cubic yards during the off-season by residents not affiliated with an HOA, three waste removal options were analyzed.

DUMPSTER

With an estimated 10 cubic yards per week during the ski season for residences without year-round access, a 15 or 20-yard dumpster would be sufficient for weekly garbage collection. Inclusive of all costs associated with providing weekly dumpster service for residences without year-round access, the monthly cost per residence for residences without year-round access is approximately $21 per month. The dumpster would have excess capacity, and therefore small businesses without a dumpster or curbside service could also choose to pay for the option of using the dumpster.[10]

Table E7: Total Monthly Costs for Residents Not Affiliated with an HOA - Dumpster

Dumpster	Approximate Cost
Weekly Pick-Up Charges	$260
Number of Households	64
Monthly Pick-Up Cost Per Household	$17.60
Monthly Administrative and Structure Charges[11]	$3.12
Per Household Monthly Cost	$20.73

VERTICAL COMPACTOR

A second option for solid waste removal for residences not affiliated with an HOA is an 8-yard vertical compactor placed in a location central to those residents not affiliated with an HOA. Inclusive of all costs associated with servicing a vertical compactor, total costs per household for are approximately $23 per month. The compactor would have excess capacity, and therefore small businesses without a dumpster or curbside service could also choose to pay for the option of using the compactor.[12] The vertical compactor could be equipped with a key pad to ensure that only residents/businesses paying for in-town waste services would have access to the compactor.

Table E8: Total Monthly Cost for Residents Not Affiliated with an HOA – Vertical Compactor

Vertical Compactor	Approximate Cost
Annual Equipment Lease Payment – 15 year lease[13]	$1,607
Annual Maintenance and Power Costs[14]	$2,000
Annual Administrative and Billing Costs[15]	$1,220
Annual Pick-Up Costs[16]	$13,000
Total Annual Costs	$17,827
Number of Households	64
Monthly Cost Per Household	$23.21

[10] If small businesses chose to also use the dumpster, the monthly cost per homeowner would be reduced.
[11] Includes billing supply costs of $0.52 per household per quarter, annual administrative costs of $1,977 to cover billing and other administrative waste management issues and the total cost for the concrete pad and "dog-house" roof of $3,900.
[12] If small businesses chose to also use the dumpster, the monthly cost per homeowner would be reduced.
[13] Source: ZBPF – Includes $17,000 for compactor, $5,300 for concrete pad, power installation and dog-house roof and $500 lease set up charge
[14] Estimated, Source: Action Compaction, Waste Management, Pro Baler Services
[15] Includes billing supply costs of $0.52 per household per quarter and annual administrative costs of $1,977 to cover billing and other administrative waste management issues .
[16] $250 per pick-up, 52 weeks in the year, therefore this analysis assumes 52 pick-ups

STATIONARY COMPACTOR

A third option for solid waste removal for residences not affiliated with an HOA is a 2-yard stationary compactor attached to a 30-yard container placed in a location central to those residents not affiliated with an HOA. Inclusive of all costs associated with a stationary compactor, the per household for homes not affiliated with an HOA is approximately $26 per month. The compactor would have excess capacity, and therefore small businesses without a dumpster or curbside service could also choose to pay for the option of using the compactor/container.[17] The stationary compactor could be equipped with a key pad to ensure that only residents/businesses paying for in-town waste services would have access to the compactor.

Table E9: Total Monthly Cost for Residences Not Affiliated with an HOA - Stationary Compactor

Stationary Compactor	Approximate Cost
Annual cost – 15 year lease[18]	$2,216
Annual Maintenance/Power	$1,500
Annual Administrative and Billing Costs[19]	$2,110
Annual Pick-Up Costs[20]	$14,030
Total Annual Cost	$19,856
Number of Households	64
Monthly Cost per Household	$25.85

SCENARIO 4 – TOWN PROVIDES WASTE REMOVAL SERVICES FOR ALL RESIDENTS

A 2-yard stationary compactor attached to a 30-yard container has sufficient capacity to accommodate the estimated 33.3 cubic yards of non-compacted solid waste generated per week by households during the ski season.

STATIONARY COMPACTOR

Inclusive of all costs associated with a stationary compactor of the total cost per household for all residential units is approximately $9 per month. The compactor would have excess capacity, and therefore small businesses without a dumpster or curbside service could also choose to pay for the option of using the compactor/container.[21] The stationary compactor could be equipped with a key pad to ensure that only residents/businesses paying for in-town waste services would have access to the compactor.

Table E10: Total Monthly Cost for All Residents – Stationary Compactor

Stationary Compactor	Approximate Cost
Annual cost – 15 year lease[22]	$2,216
Annual Maintenance/Power	$1,500
Annual Administrative and Billing Costs[23]	$2,433
Annual Pick-Up Costs[24]	$16,542
Total Annual Cost	$22,691
Number of Households	219
Monthly Cost per Household	$8.63

[17] If small businesses chose to also use the dumpster, the monthly cost per homeowner would be reduced.
[18] Source: ZBPF – – Includes $24,500 for compactor, $6,250 for concrete pad, power installation and dog-house roof and $500 lease set up charge
[19] Includes billing supply costs of $0.52 per household per quarter and annual administrative costs of $1,977 to cover billing and other administrative waste management issues .
[20] $325 per pick-up; 52 week and therefore 52 pick-ups are assumed for this analysis
[21] If small businesses chose to also use the dumpster, the monthly cost per homeowner would be reduced.
[22] Source: ZBPF – – Includes $24,500 for compactor, $6,250 for concrete pad, power installation and dog-house roof and $500 lease set up charge
[23] Includes billing supply costs of $0.52 per household per quarter and annual administrative costs of $1,977 to cover billing and other administrative waste management issues .
[24] $325 per pick-up; 52 week and therefore 52 pick-ups are assumed for this analysis

RECYCLING VOLUME

Average monthly recycling during the ski season is approximately 125 cubic yards compared to the average monthly recycling volume during the off-season of approximately 31 cubic yards.[25]

Table E11: Total Recycling Generation - Residential and Business

Recycling Volume Residential and Business			
Ski Season		Off-Season	
Month	Cubic Yards	Month	Cubic Yards
November	88	May	33
December	92	June	33
January	160	July	33
February	160	August	28
March	144	September	24
April	108	October	36
Total	752	Total	187
Average Monthly	125	Average Monthly	31

One cubic yard or mixed waste recycling equals approximately 95 pounds. Therefore, total annual tons of recycling generated in the Town of Alta is approximately 45 tons.

RECYCLING SCENARIOS

Based on input from the Town of Alta, residential and business survey responses[26] and interviews with HOA management and large businesses, the following two recycling scenarios were evaluated as part of this study:

OPTION 1 - NO CHANGE FROM CURRENT WASTE REMOVAL SERVICES

The Town of Alta would continue contracting with Salt Lake County for recycling services. Local businesses and residents transport their recycling to the recycling bins and the County picks up the bins on an as needed basis.

OPTION 2 – RESIDENTS AND BUSINESSES USE AN IN-TOWN RECYCLING COMPACTOR

A 2-yard stationary compactor with a 30-yard container is ideally suited for recyclable materials such as cardboard, plastics and paper. Inclusive of all costs associated with providing a 30-yard compactor for recycling, the annual costs to the city would be approximately $5,641 compared to $8,190 paid to the County for recycling services in 2010. [27]

Table E12: Total Annual Recycling Cost

Stationary Compactor	Approximate Cost
Compactor/Container	$24,500
Concrete base, Power installation and “Dog-house” roof	$6,250
Total	$30,750
Annual cost – 15 year lease[28]	$2,216
Annual Maintenance/Power	$1,500
Annual Pick-Up Costs (14 estimated pickups at $250 per pick-up)	$3,500
Total Annual Cost	$7,216
Less: Estimated Payment from Recycling Center[29]	$1,575

[25] Recycling amounts were calculated based on the size of the bins, number of pick-ups and percent full at pick-up.
[26] A copy of the residential and business surveys and the responses are included in Appendix A.
[27] Assumes 15 year lease with $500 lease set up charge
[28] Source: ZBPF – 15 year lease with $500 set-up charge
[29] Based on current estimated annual recycling volume of 45 tons

Stationary Compactor	Approximate Cost
Net Annual Cost	$5,641

If the Town chose to pass on the cost of providing recycling services to residents and businesses, the monthly costs would be approximately $31 for large businesses, $15 for small businesses and $1.54 for homeowners.[30]

SUMMARY OF SCENARIO OPTIONS AND COSTS

Survey results from single family homes not affiliated with an HOA indicate that approximately 50 percent of residents are happy with their waste removal services compared to approximately 42 percent who would like an in-town compactor or dumpster and 8 percent who would like curb-side service. Interviews with HOA managers indicate that the majority HOA managers are satisfied with their current waste management services. Approximately 56 percent of businesses are satisfied with their current waste removal services and 33 percent would like street pick-up. None of the businesses who responded to the survey prefer to take their garbage to an in-town compactor/dumpster compared to current services.

As shown by the significantly lower per household cost of $8.63 per household when the Town provides waste management services for all residents compared to providing waste management services for a subset of all residences where monthly costs range from $23 to $40 per household, costs are cheaper when larger groups share in the cost (economies of scale). Survey results show that approximately 60% of residential respondents not affiliated with an HOA pay more than $40 per month for waste management services. Therefore, all waste management scenarios for residents not associated with an HOA are less expensive for at least 60% of residents not affiliated with an HOA compared to their current fees. Monthly fees for residences affiliated with an HOA range from approximately $19 per unit per month to approximately $45 per unit per month.[31] While the majority of HOA's are happy with their current waste removal services, there is excess capacity in each type of waste collection container for individual HOA's to opt in to participating in waste management scenarios two and three.[32] Additionally, while none of the small businesses that responded to the survey indicated they preferred to take their garbage to an in-town compactor or dumpster, there is excess capacity in each of the waste collection containers for each scenario. Therefore, small businesses may opt in to participating in any of the waste management service options presented in this analysis.[33]

Table E13: Summary of Waste Management Scenarios and Costs

Summary of Waste Management Scenarios and Costs		
Scenario	# of Households	Per Household Monthly Cost
1.No Change from Current Waste Removal Services	219	NA
2.Residents w/o Year-Round Access	37	
Dumpster		$26.75
Vertical Compactor		$40.15
3.Residents Not Affiliated with an HOA	64	
Dumpster		$20.73
Vertical Compactor		$23.21
Stationary Compactor		$25.85
4.All Residents	219	
Stationary Compactor		$8.63

[30] Based on a volume ratio of 10:1 for small businesses compared to residential units and 20:1 for large businesses compared to residential units.
[31] Based on HOA's who provided cost information. Four HOA's did not provide cost information.
[32] Per household costs will be reduced if additional households use the waste management services for scenarios two and three.
[33] The per household cost will be reduced if businesses participate in any of the waste management scenarios.

The net annual cost for the Town to provide recycling services is approximately $5,641 compared to 2010 recycling costs of $8,190 resulting in an annual saving of $2,549 for self-providing recycling services.

Table E14: Total Annual Recycling Cost

Stationary Compactor	Approximate Annual Cost
2010 Recycling Costs	$8,190
Town Provides Recycling Compactor	$5,641
Cost Difference	$2,549

INTRODUCTION

The Town of Alta is a picturesque mountain community located approximately 25 miles southeast of Salt Lake City at the top of Little Cottonwood Canyon. Alta Town began as a mining community, but is now home to Alta Ski Area – one of the largest and most popular ski resorts in Utah. While the Town's year round population is approximately 383, the population can expand to several thousand people during the ski season. Local businesses are mainly centered on the tourism related to the ski resort and include several lodges and restaurants.

Currently, the Town of Alta does not provide waste management services for home-owners or businesses. Owners of residences not located in an HOA either contract privately for waste removal services or "carry-out" their garbage for disposal elsewhere. Some residences do not have year-round access and therefore do not have access to privately contracted waste removal services. HOA's and local businesses contract with private service providers for waste removal services.

The Town of Alta currently contracts with the County for recycling services. The County has placed recycling bins for paper, cardboard and plastics at a central in-town collection site. While the Town pays the County for recycling services, there is currently no charge to the residents for recycling services.

Zions Bank Public Finance (ZBPF) was retained by the Town of Alta ("Alta" or the "Town") to complete a Municipal Waste Management Study. This study quantifies the Town's waste and recycling generation and evaluates the following alternatives for providing waste removal and recycling collection services:

Solid Waste:

- No change from current waste removal services.
- An in-town compactor/dumpster for residences without year-round access. No change in service for businesses and residences with year-round access. Small businesses may choose to use the in-town compactor/dumpster.
- All residents not in HOA's use an in-town compactor/dumpster. Small businesses and residents in HOA's may choose to use the in-town compactor/dumpster.
- All residents use an in-town compactor/dumpster. Small businesses may choose to use the in-town compactor/dumpster.

Recycling:

- No change from current waste removal services.
- All businesses and residents use an in-town recycling compactor provided by the Town of Alta.

The Town is very interested in feedback from its residents and businesses concerning preferred waste management services. Surveys, which included questions on the quantity of household solid waste generated as well as preferences for the Town's solid waste and recycling services were mailed to the Town's single family homes not located in an HOA. Surveys were also mailed to the Town's businesses. Larger businesses and HOA management were contacted by Town staff for information to determine the quantity of waste generated, and preferred waste management services. Survey responses and information from businesses and HOA's gathered through interviews was used to determine which alternative waste removal scenarios to evaluate in this study and the quantity of solid waste generated in the Town of Alta. A copy of the survey and survey responses are included in the Appendices.

WASTE VOLUME

Waste generation in the Town of Alta fluctuates greatly depending on the season. During the ski-season, many tourists visit the Town of Alta, increasing the day-time population from approximately 383 year-round residents to thousands of persons. During the summer, visitors to the area can also increase the day-time population. In order to accurately account for the amount of waste that would be generated during the ski season compared to spring and summer months, the waste volume calculations were divided into two seasons: (1) ski-season and (2) off-season. The exact dates for the "ski season" vary from year to year depending on the weather, but generally the ski season begins in mid-November, with peak visitation beginning mid-December and extending through March. The resort is often open through the end of April, although daily visitors to the resort are less in April compared to the peak season.[34]

Waste generation amounts were calculated using information provided by residents, home owner's association (HOA) management, businesses and waste/recycling service providers.

RESIDENTIAL

The Town of Alta has 83 single family homes and 136 condominium units for a total of 219 housing units.[35] All of the condominiums are managed through HOA's. Most residences are second homes and are not occupied year round. However, a dozen homes and many condominiums are commercially rented throughout the ski season and may be occupied most of the winter. All of the HOA's are located in the Bypass Road area and have year-round access. Approximately 37 homes do not have year-round access.[36]

SINGLE FAMILY HOMES NOT LOCATED IN AN HOA

Homeowners not associated with an HOA generally either contract privately for waste removal services or carry-out their garbage to an out-of-town disposal site.[37] For single family homes not associated with an HOA, the quantity of solid waste was calculated based on the following information gathered from the surveys:

- Size of garbage bag in gallons
- Number of garbage bags filled each week during the ski season and the off-season.

The number of garbage bags filled per week for each residence during the ski season was multiplied by the size of the garbage bag to determine the average gallons of solid waste generated per week for each residence. The weekly garbage generated for each residence was then totaled and divided by the total number of residential survey respondents.[38] As shown in table 1, the average weekly garbage generated for residences not located in an HOA is approximately 26 gallons during the ski season and 12 gallons during the off-season.

Table 1: Residential Solid Waste Generation - Single Family Homes Not Associated with an HOA

Residential Solid Waste Generation Single Family Homes Associated with An HOA			
	Total Gallons	# of Respondents To Surveys	Average Weekly Gallons per Residence
Ski Season	672	26	25.8
Off-Season	315	26	12.1

[34] To account for the "ramping" up and down of the ski season, 50% of the garbage generated during the peak ski season was used for mid-November through the end of December and the month of April.
[35] Source: Town of Alta
[36] Source: town of Alta
[37] Some residents are suspected of disposing their waste in businesses dumpsters without permission.
[38] The Town of Alta mailed surveys to 46 single family residences not located in HOA's. The Town received back 26 surveys.

SINGLE FAMILY HOMES/CONDOMINIUMS ASSOCIATED WITH AN HOA

Solid waste for residences of HOA's is generally collected one of three ways: (1) dumpsters, (2) trash rooms or garbage shed, and (3) curb side pick-up. The weekly quantity of solid waste for HOA's with dumpsters was calculated using the number and size of the dumpster(s), frequency of pick-up and the total amount of garbage in the dumpster compared to dumpster capacity (percent full) at pick-up for both the ski season and the off-season. For HOA's with trash rooms/garbage sheds or curbside pick-up, the weekly quantity of garbage was calculated using the number of bags at pick-up, average size of garbage bag and frequency of garbage pick-up during the ski season and the off-season. The total gallons of solid waste generated were divided by the total number of units located in HOA's who provided solid waste generation information.[39] As shown in table 2, the average weekly solid waste generated by HOA's during the ski season is approximately 32 gallons compared to approximately 13 gallons in the off-season.

Table 2: Residential Solid Waste Generation - Single Family Homes/Condominiums Associated with an HOA

Residential Solid Waste Generation Single Family Homes/Condominiums Located In An HOA			
	Total Gallons	# of Units	Average Weekly Gallons per Residence
Ski Season	3,803	120	31.7
Off-Season	1,433	112	12.8

TOTAL AVERAGE RESIDENTIAL SOLID WASTE

Averaging weekly solid waste generated per household for homes/condominiums located both in and outside of HOA's, approximately 30.7 gallons[40] of solid waste is generated per household in Alta during the ski season. Assuming an average sized kitchen garbage bag of 13 gallons, each household generates slightly over two bags of garbage per week during the ski season. The amount of residential weekly garbage generated during the off-season is approximately 12.7 gallons per household, or 41 percent of garbage generated during the ski season.

Table 3: Average per Week Solid Waste Generation for Residential Units

Average Per Week Residential Solid Waste Generation					
	Homes Not Associated with HOA	Homes/Condos Associated with HOA	Total Weekly Garbage	Total Number of Units[41]	Weekly Average
Ski Season	672 gallons	3,803 gallons	4,475 gallons	146	30.7 gallons
Off-Season	315 gallons	1,433 gallons	1,748 gallons	138	12.7 gallons

The total weekly garbage generated by residential units is calculated by multiplying the average weekly waste generation during ski-season and the off-season by the total number of residences in the Town of Alta. As shown in table 4, the total weekly garbage generated is approximately 6,723 gallons during the ski season and 2,781 during the off-season.

Table 4: Total Weekly Residential Solid Waste Generation - Gallons

Total Weekly Residential Solid Waste Generation Gallons			
	Average Per Week	# of Residences	Total Weekly Garbage
Ski Season	30.7 gallons	219	6,723 gallons
Off-Season	12.7 gallons	219	2,781 gallons

[39] The Town of Alta contacted all HOA's located in the Town. Two HOA's did not respond to the Town's call and two HOA's did not provide estimates on the quantity of solid waste generated at the HOA. One HOA that provided solid waste information during the ski season did not provide solid waste information for off-season months.

[40] Ski season - (672 gal. + 3,803 gal.)/(26 units +120 units) = 30.7 gallons; Off-season – (315 gal. + 1,433 gal.)/(26 units+112 units) = 12.7 gallons

[41] This is the total number of residential units that provided waste generation information.

There are approximately 202 gallons per cubic yard of solid waste. Therefore, the total residential waste generation for residential units is approximately 33 cubic yards during the ski season and 14 cubic yards during the off-season for residential units.

Table 5: Total Weekly Residential Solid Waste Generation - Cubic Yards

Total Weekly Residential Solid Waste Generation Cubic Yards			
	Weekly Gallons	Gallons per Cubic Yard	Total Cubic Yards
Ski-Season	6,723 gallons	202 gallons	33.3 cubic yards
Off-Season	2,781 gallons	202 gallons	13.8 cubic yards

BUSINESSES

There are five large businesses in the Town of Alta and 15 smaller businesses. The largest business in the Town is the Alta Ski Area. The Ski Area operates three restaurants, three ski shops, and maintains living and dining facilities for over 50 employees. Other large businesses in Alta Town include four lodges ranging in size from 60 to 100 rooms. Additional businesses in the Town include one smaller lodge with a dozen rooms, eating places, a gift store, a guiding company and other seasonal businesses incidental to the Ski Area.

Solid waste for the majority of larger businesses in Alta is collected in a dumpster. The weekly quantity of solid waste for these businesses was calculated using the number and size of the dumpster(s), frequency of pick-up and the total amount of garbage in the dumpster compared to dumpster capacity (percent full) at pick-up for both the ski season and the off-season.[42] For businesses without dumpsters, the weekly quantity of garbage was calculated using the number of bags at pick-up, average size of garbage bag and frequency of garbage pick-up during the ski season and the off-season.[43] While local businesses are mainly centered on the tourism related to the ski resort, a few businesses remain open during the summer to accommodate summer visitors and residents. As shown in table 6, the average weekly solid waste generated by businesses during the ski season is approximately 45,066 gallons. The solid waste generated by businesses during the off-season of 7,065 gallons is approximately 16 percent compared to solid waste generated during the ski-season.

Table 6: Total Weekly Business Solid Waste Generation - Gallons

Total Weekly Business Solid Waste Generation Gallons			
	Total Per Week Businesses with Dumpsters	Total Per Week Businesses without Dumpsters	Total Weekly Garbage
Ski Season	40,925 gallons	4,141 gallons	45,066 gallons
Off-Season	6,020 gallons	1,045 gallons	7,065 gallons

There are approximately 202 gallons per cubic yard of solid waste. Therefore, the total waste generation for businesses is approximately 223 cubic yards during the ski season and 35 cubic yards during the off-season for residential units.

[42] Four of the large businesses and the Town of Alta have dumpsters and provided waste collection information (i.e. size of dumpsters, number of dumpsters, frequency of pick-up and percent full at pick-up.)

[43] Six of the remaining 16 businesses without dumpsters provided waste collection information (i.e. size of garbage bags, frequency of pick-up and number of bags at pick-up.) Three of the businesses that did not respond to the Waste Collection Survey are businesses which are similar in size to the five smaller businesses that responded with waste collection information. Therefore, for purposes of this analysis, the amount of waste generated by the three businesses that did not respond to the survey is assumed to be the average waste generated by the five businesses that responded to the survey. The remaining seven businesses generate approximately 50 percent of the small business average. Source: Town of Alta.

Table 7: Total Weekly Business Solid Waste Generation - Cubic Yards

Total Weekly Business Solid Waste Generation Cubic Yards			
	Weekly Gallons	Gallons Per Cubic Yard	Total Cubic Yards
Ski-Season	45,066 gallons	202 gallons	223.1 cubic yards
Off-Season	7,070 gallons	202 gallons	35.0 cubic yards

TOTAL WASTE VOLUME – RESIDENTIAL AND BUSINESS

The total weekly solid waste for both businesses and residential units in the Town of Alta is approximately 256 cubic yards during the ski season and approximately 49 cubic yards during the off-season. Total waste generated during the off-season is approximately 19 percent compared to the ski-season.

Table 8: Total Weekly Solid Waste Generation for Residential and Businesses

Total Weekly Solid Waste Generation Residential and Business			
	Weekly Residential	Weekly Business	Total Weekly Garbage
Ski Season	33.3 cubic yards	223.1 cubic yards	256.4 cubic yards
Off-Season	13.8 cubic yards	35.0 cubic yards	48.8 cubic yards

The exact dates for the "ski season" vary from year to year depending on the weather, but generally the ski season begins in mid-November, with peak visitation beginning mid-December and extending through March. The resort is often open through the end of April, although daily visitors to the resort are less in April compared to the peak season.[44] As shown in table 9, the total annual cubic yards of solid waste generated in the Town of Alta is approximately 6,415 cubic yards.

Table 9: Total Annual Solid Waste Generation

Total Annual Solid Waste Generation				
	Total Weekly Solid Waste	# of Weeks Peak Visitation	# of Weeks Non-Peak Visitation[45]	Total
Ski Season	256.4 cubic yards	16	7	5,000 cubic yards
Off-Season	48.8 cubic yards	29	NA	1,415 cubic yards
Total Cubic Yards				6,415 cubic yards
Pounds per Cubic Yard				225 pounds
Total Pounds				1,443,375 pounds
Total Tons				722 tons

Depending on the composition of the solid waste, municipal garbage ranges in weight from 150 to 300 pounds per cubic yard. Assuming an average weight of 225 pounds, the Town of Alta generates approximately 722 tons of solid waste per year.

[44] To account for the "ramping" up and down of the ski season, 50 percent of the garbage generated during the peak ski season was used for mid-November through mid-December and April.
[45] 50 percent of peak season waste generation volume

WASTE REMOVAL SCENARIOS

Based on input from the Town of Alta, residential and business survey responses[46] and interviews with HOA management and large businesses, the following waste removal scenarios were evaluated as part of this study:

- No change from current waste removal services.
- An in-town compactor/dumpster for residences without year-round access. No change in service for businesses and residences with year-round access. Small businesses may choose to use the in-town compactor/dumpster.
- All residents not in HOA's use an in-town compactor/dumpster. Small businesses and residents in HOA's may choose to use the in-town compactor/dumpster.
- All residents use an in-town compactor/dumpster.

The alternative scenarios for waste management services, with the exception of "no change from current waste removal services" incorporate the use of a dumpster or compactor. A brief description of each of these waste collection devices is included below.

DUMPSTER

A dumpster is a container designed to receive, transport and dump waste. Dumpsters come in a variety of sizes. The most common dumpster sizes are 10, 15, 20, 30 and 40-yard dumpsters where "yard" refers to a cubic yard. The size of the dumpster indicates how much garbage the dumpster can hold. A 10-yard dumpster will hold 10 cubic yards of waste; a 15-yard dumpster will hold 15 cubic yards of waste, etc. One cubic yard of dumpster space holds approximately 202 gallons of waste. For best results, a dumpster should be placed on a concrete slab. Due to the heavy snowfalls in Alta, a "dog house" over the dumpster is recommended to keep the top and sides of the dumpster free from snow.

COMPACTOR

Compactors require a concrete base to sit on that is at least 6" thick with steel runners. The size of the base depends on the size of the compactor. A 6 or 8-yard vertical compactor/dumpster would require a base approximately 10'x10', while a 30-yard compactor/dumpster would need a base approximately 10'x30' in size. Given the seasonal climate in Utah, compactors in the Town of Alta would require oil tank heaters. Power requirements for the tank heaters can be 208, 230 or 460 volts three phased power. Compactors can also be installed with a key pad/lock to ensure that only those residents/businesses paying for the waste services have access to the compactor. A "dog-house" style roof is recommended to keep snow from piling up on top of and around the compactor/dumpster. There are two types of compactors – a self-contained unit and a stationary unit.

[46] A copy of the residential and business surveys and the responses are included in Appendix A.

SELF-CONTAINED COMPACTOR

Self-contained units are designed to prevent leaking and are ideal for restaurants and other users that have need for regular disposal of wet waste. The compactor is attached to the container for self-contained compactor units other uses where wet waste is regularly disposed of. The compactor is attached to the container for self-contained compactor units. Larger self-contained compactors are hauled to the disposal site, while 6 or 8-yard vertical self-contained units can be dumped on-site with a specialized front-loading truck. Compaction ratios for a self-contained unit are generally 3:1. Therefore, a 10-yard self-contained compactor could hold 10 yards of compacted garbage, which is 30 yards of non-compacted garbage. Self-contained units are slightly more expensive than stationary units. Self-contained compactors come in a variety of sizes generally ranging from 4 yards to 39 yards.

STATIONARY COMPACTOR

Stationary compactors are typically used for dry waste. Unlike self-contained compactors, stationary compactors compact trash into a detachable container. Therefore, the compactor remains at the site, while the detachable container is taken to the landfill. Often, a waste service provider will replace the full container with an empty container at the time of pick-up so there is always a container on-site. Detachable containers for a stationary compactor usually range in size from 30 to 40 yards, but smaller containers can be specially ordered.[47] The compaction ratio for a stationary compactor is generally 3:1. Therefore, a 30-yard container would hold 30 yards of compacted garbage which is 90 yards of non-compacted garbage. Stationary compactors are versatile and durable. Stationary compactors are also ideal for compacting recyclable materials. Stationary compactors come in a variety of sizes ranging from 2 – 12 yards.

SCENARIO 1 - NO CHANGE FROM CURRENT WASTE REMOVAL SERVICES

Currently, the Town of Alta does not provide waste management services for home-owners or businesses. Owners of residences not located in an HOA either contract privately for waste removal services or "carry-out" their garbage for disposal elsewhere. Some residences do not have year-round access and therefore do not have access to privately contracted waste removal services. HOA's and local businesses contract with private service providers for waste removal services.

SCENARIO 2 – TOWN PROVIDES WASTE REMOVAL SERVICES FOR RESIDENCES WITHOUT YEAR-ROUND ACCESS

There are approximately 37 homes in the Town of Alta without year-round access. Per household, these residences generate an average of approximately 30.7 gallons of solid waste per week during the ski season and 12.7 gallons of solid waste per week during the off-season. As shown in table 10, this equates to a total of approximately 5.6 cubic yards per week during the ski season and 2.3 cubic yards per week during the off-season.

[47] Because smaller containers are special ordered, they are often approximately the same price as a 30 yard container.

Table 10: Total Weekly Solid Waste - Residences without Year-Round Access

Total Solid Waste Residences without Year-Round Access				
	Weekly per Household	# of Households	Total Gallons	Total Cubic Yards
Ski-Season	30.7 gallons	37	1,136 gallons	5.6 cubic yards
Off-Season	12.7 gallons	37	470 gallons	2.3 cubic yards

Given the amount of waste generated for residences without year-round access, two waste removal options were analyzed.

DUMPSTER

With an estimated 5.6 cubic yards generated per week during the ski season for residences without year-round access, an 8 yard dumpster would be sufficient for weekly garbage collection. Weekly pick-up costs, including land-fill fees, range between $175 and $200 per pick-up. Inclusive of all costs associated with providing weekly dumpster service for residences without year-round access, the monthly cost per residence for residences without year-round access is approximately $26.75 per month.

Table 11: Total Monthly Cost for Residents without Year-Round Access - Dumpster

Dumpster	Approximate Cost
Weekly Pick-Up Charges	$200
Number of Households	37
Monthly Pick-Up Cost per Household	$23.42
Monthly Administrative and Structure Charges[48]	$3.33
Total Monthly Cost	$26.75

Because there is generally no locking mechanism on a dumpster, it would be difficult for the Town to limit the use of the dumpster to only residences without year-round access.

VERTICAL COMPACTOR

A second option for solid waste removal for residences without year-round access is an 8-yard self-contained vertical compactor placed in a location easily accessible to those residents without year-round access. The vertical compactor would be equipped with a locking feature (key pad, key lock, etc.) to ensure only those residents paying for the service would have access to the vertical compactor. The purchasing cost for an 8-yard vertical compactor with oil tank heaters, light and door locks, ranges from $16,000 to $18,000. Annual maintenance/ power costs range from approximately $1,500 to $2,000.[49] Pick-up charges are approximately $250 per pick-up. Total costs per household for residences without year-round access for a vertical compactor are approximately $40 per month. The dumpster would have excess capacity, and therefore small businesses without a dumpster or curbside service could also choose to pay for the option of using the dumpster.[50] The locking feature (key pad, key lock, etc.) on the vertical compactor would ensure only those residents/businesses paying for the service would have access to the vertical compactor.

[48] Includes billing supply costs of $0.52 per household per quarter, annual administrative costs of $1,977 to cover billing and other administrative waste management issues and the total cost for the concrete pad and "dog-house" roof of $3,900.
[49] Includes power charge for oil tank heaters and light
[50] If small businesses choose to also use the dumpster, the monthly cost per homeowner will be reduced.

Vertical compactors are dumped on-site with a front-loading truck. However, it would be difficult for front-loading trucks to drive up the canyon to Alta when the roads are slick due to recent snow fall.

Table 12: Total Monthly Cost for Residents without Year-Round Access – Vertical Compactor

Vertical Compactor	Approximate Cost
Annual Equipment Lease Payment – 15-year lease[51]	$1,607
Annual Maintenance and Power Costs[52]	$2,000
Annual Administrative and Billing Costs	$1,220
Annual Pick-Up Cost[53]	$13,000
Total Annual Costs	$17,827
Number of Households	37
Monthly Cost per Household	$40.15

SCENARIO 3 – TOWN PROVIDES WASTER REMOVAL SERVICES FOR ALL RESIDENTS NOT AFFILIATED WITH AN HOA

There are approximately 64 homes in the Town of Alta not affiliated with an HOA which generate approximately 30.7 gallons of solid waste per household per week during the ski season and 12.7 gallons of solid waste per household per week during the off-season. As shown in table13, this equates to a total of approximately 10 cubic yards per week during the ski season and 4 cubic yards per week during the off-season.

Table 13: Total Weekly Waste Generation for Residents Not Affiliated with an HOA

Total Solid Waste Residences Not Affiliated With An HOA				
	Weekly per Household	# of Households	Total Gallons	Total Cubic Yards
Ski-Season	30.7 gallons	64	1,964.8	9.7 cubic yards
Off-Season	12.7 gallons	64	812.8	4.0 cubic yards

Given the amount of waste generated for residences not affiliated with an HOA, three waste removal options were analyzed.

DUMPSTER

With an estimated 10 cubic yards per week during the ski season for residences without year-round access, a 15 or 20-yard dumpster would be sufficient for weekly garbage collection. Weekly pick-up costs, including land-fill fees, range between $260 and $280 per pick-up. Inclusive of all costs associated with providing weekly dumpster service for residences without year-round access, the monthly cost per residence for residences without year-round access is approximately $21 per month. The dumpster would have excess capacity, and therefore small businesses without a dumpster or curbside service could also choose to pay for the option of using the dumpster.[54]

Table 14: Total Monthly Costs for Residents Not Affiliated with an HOA - Dumpster

Dumpster	Approximate Cost
Weekly Pick-Up Charges	$260
Number of Households	64
Monthly Pick-Up Cost Per Household	$17.60

[51] Source: ZBPF – Includes $17,000 for compactor, $5,300 for concrete pad, power installation and dog-house roof and $500 lease set up charge
[52] Source: Action Compaction, Waste management, Pro Baler Services
[53] $250 per pick-up; 52 weeks per year – therefore, this analysis assumes 52 pick-ups per year
[54] If small businesses chose to also use the dumpster, the monthly cost per homeowner will be reduced.

Dumpster	Approximate Cost
Monthly Administrative and Structure Charges[55]	$3.12
Per Household Monthly Cost	$20.73

While it would be difficult for the Town to limit the use of the dumpster to only residences not affiliated with an HOA, most residences affiliated with an HOA have either a dumpster or curbside collection services and would not generally need to use the "Town" dumpster.

VERTICAL COMPACTOR

A second option for solid waste removal for residences not affiliated with an HOA is an 8-yard vertical compactor placed in a location central to those residents not affiliated with an HOA. The cost for an 8-yard vertical compactor with oil tank heaters, light and door locks, ranges from $16,000 to $18,000. Annual maintenance/power costs range from approximately $1,500 to $2,000.[56] Pick-up charges are approximately $250 per pick-up. Inclusive of all costs associated with servicing a vertical compactor, total costs per household are approximately $23 per month. The compactor would have excess capacity, and therefore small businesses without a dumpster or curbside service could also choose to pay for the option of using the dumpster.[57]

The vertical compactor would be equipped with a locking feature (key pad, key lock, etc.) to ensure only those residents/businesses paying for the service would have access to the vertical compactor.

Table 2: Total Monthly Cost for Residents Not Affiliated with an HOA – Vertical Compactor

Vertical Compactor	Approximate Cost
Annual Equipment Lease Payment – 15-year lease[58]	$1,607
Annual Maintenance and Power Costs[59]	$2,000
Annual Administrative and Billing Costs[60]	$1,220
Annual Pick-Up Costs[61]	$13,000
Total Annual Costs	$17,827
Number of Households	64
Monthly Cost per Household	$23.21

[55] Includes billing supply costs of $0.52 per household per quarter, annual administrative costs of $1,977 to cover billing and other administrative waste management issues and the total cost for the concrete pad and "dog-house" roof of $3,900.
[56] Includes power charge for oil tank heaters and light
[57] If small businesses chose to also use the dumpster, the monthly cost per homeowner will be reduced.
[58] Source: ZBPF – Includes $17,000 for compactor, $5,300 for concrete pad, power installation and dog-house roof and $500 lease set up charge
[59] Source: Action Compaction, Waste Management, Pro Baler Services
[60] Includes billing supply costs of $0.52 per household per quarter and annual administrative costs of $1,977 to cover billing and other administrative waste management issues.
[61] $250 per pick-up, 52 weeks per year, therefore this analysis assumes 52 pick-ups

STATIONARY COMPACTOR

A third option for solid waste removal for residences not affiliated with an HOA is a 2-yard stationary compactor attached to a 30-yard container placed in a location central to those residents not affiliated with an HOA. Stationary compactors generally have lower maintenance costs compared to vertical compactors and a longer life-span. The cost for a 30-yard stationary compactor with oil tank heaters, light and door locks, ranges from $24,000 to $25,000. Annual maintenance/power costs range from approximately $1,000 to $1,500.[62] Pick-up charges are approximately $275 per pick-up including land fill charges. Inclusive of all costs associated with a stationary compactor, the per household cost for homes not affiliated with an HOA is approximately $26 per month. The compactor would have excess capacity, and therefore small businesses without a dumpster or curbside service could also choose to pay for the option of using the compactor/container.[63]

The stationary compactor would be equipped with a locking feature (key pad, key lock, etc.) to ensure only those residents paying for the service would have access to the stationary compactor/container.

Table 36: Total Monthly Cost for Residences Not Affiliated with an HOA - Stationary Compactor

Stationary Compactor	Approximate Cost
Annual cost – 15-year lease[64]	$2,216
Annual Maintenance/Power	$1,500
Annual Administrative and Billing Costs[65]	$2,110
Annual Pick-Up Costs[66]	$14,030
Total Annual Cost	$19,856
Number of Households	64
Monthly Cost per Household	$25.85

SCENARIO 4 – TOWN PROVIDES WASTE REMOVAL SERVICES FOR ALL RESIDENTS

There are approximately 219 residential units[67] in the Town of Alta which generate approximately 30.7 gallons of solid waste per household per week during the ski season and 12.7 gallons of solid waste per household per week during the off-season. As shown in table 17, this equates to a total of approximately 33.3 cubic yards per week during the ski season and 13.8 cubic yards per week during the off-season.

Table 17: Total Weekly Waste Generation for All Residents

	Total Solid Waste All Residences			
	Weekly per Household	# of Households	Total Weekly Gallons	Total Weekly Cubic Yards
Ski-Season	30.7 gallons	219	6,723	33.3
Off-Season	12.7 gallons	219	2,781	13.8

[62] Includes power charge for oil tank heaters and light
[63] If small businesses chose to also use the dumpster, the monthly cost per homeowner would be reduced.
[64] Source: ZBPF – – Includes $24,500 for compactor, $6,250 for concrete pad, power installation and dog-house roof and $500 lease set up charge
[65] Includes billing supply costs of $0.52 per household per quarter and annual administrative costs of $1,977 to cover billing and other administrative waste management issues.
[66] $325 per pick-up; 52 week and therefore 52 pick-ups are assumed for this analysis
[67] Source: Town of Alta

STATIONARY COMPACTOR

A 2-yard stationary compactor attached to a 30-yard container has sufficient capacity to accommodate the estimated 33.3 cubic yards of non-compacted solid waste generated per week by households during the ski season. The cost for a 30-yd. stationary compactor with oil tank heaters, light and door locks, ranges from $24,000 to $25,000. Annual maintenance/power costs range from approximately $1,000 to $1,500.[68] Pick-up charges are approximately $325 per pick-up including landfill charges. Inclusive of all costs associated with a stationary compactor, the total cost per household for all residential units is approximately $9 per month. The compactor would have excess capacity, and therefore small businesses without a dumpster or curbside service could also choose to pay for the option of using the compactor/container.[69]

The stationary compactor would be equipped with a locking feature (key pad, key lock, etc.) to ensure only those residents paying for the service would have access to the vertical compactor.

Table 18: Total Monthly Cost for All Residents – Stationary Compactor

Stationary Compactor	Approximate Cost
Annual cost – 15-year lease[70]	$2,216
Annual Maintenance/Power	$1,500
Annual Administrative and Billing Costs[71]	$2,433
Annual Pick-Up Costs[72]	$16,542
Total Annual Cost	$22,691
Number of Households	219
Monthly Cost per Household	$8.63

SUMMARY OF SCENARIO OPTIONS AND COSTS

Survey results from single family homes not affiliated with an HOA indicate that approximately 50 percent of residents are happy with their waste removal services compared to approximately 42 percent who would like an in-town compactor or dumpster and 8 percent who would like curb-side service. Interviews with HOA managers indicate that the majority HOA managers are satisfied with their current waste management services. Approximately 56 percent of businesses are satisfied with their current waste removal services and 33 percent would like street pick-up. None of the businesses who responded to the survey prefer to take their garbage to an in-town compactor/dumpster compared to current services.

As shown by the significantly lower per household cost of $8.63 per household when the Town provides waste management services for all residents compared to providing waste management services for a subset of all residences where monthly costs range from $23 to $40 per household, costs are cheaper when larger groups share in the cost (economies of scale). Survey results show that approximately 60% of residential respondents not affiliated with an HOA pay more than $40 per month for waste management services. Therefore, all waste management scenarios for residents not associated with an HOA are less expensive for at least 60% of residents not affiliated with an HOA compared to their current fees. Monthly fees for residences affiliated with an HOA range from approximately $19 per unit per month to approximately $45 per unit per month.[73] While the majority of HOA's are happy with their current waste removal services, there is excess capacity in each type of waste collection container for individual

[68] Includes power charge for oil tank heaters and light
[69] If small businesses chose to also use the dumpster, the monthly cost per homeowner will be reduced.
[70] Source: ZBPF – – Includes $24,500 for compactor, $6,250 for concrete pad, power installation and dog-house roof and $500 lease set up charge
[71] Includes billing supply costs of $0.52 per household per quarter and annual administrative costs of $1,977 to cover billing and other administrative waste management issues .
[72] $325 per pick-up; 52 week and therefore 52 pick-ups are assumed for this analysis
[73] Based on HOA's who provided cost information. Four HOA's did not provide cost information.

HOA's to opt in to participating in waste management scenarios two and three.[74] Additionally, while none of the small businesses that responded to the survey indicated they preferred to take their garbage to an in-town compactor or dumpster, there is excess capacity in each of the waste collection containers for each scenario. Therefore, small businesses may opt in to participating in any of the waste management service options presented in this analysis.[75]

Table 19: Summary of Waste Management Scenarios and Costs

Summary of Waste Management Scenarios and Costs		
Scenario	# of Households	Per Household Monthly Cost
1.No Change from Current Waste Removal Services	219	NA
2.Residents w/o Year-Round Access	37	
Dumpster		$26.75
Vertical Compactor		$40.15
3.Residents Not Affiliated with an HOA	64	
Dumpster		$20.73
Vertical Compactor		$23.21
Stationary Compactor		$25.85
4.All Residents	219	
Stationary Compactor		$8.63

RECYCLING VOLUME

The Town of Alta currently contracts with Salt Lake County for recycling services for paper, cardboard and plastics. The County places recycling bins at a central location in Town for residential and business use. The Town pays the County for recycling pick-up, but does not currently charge residents for recycling services. The average monthly amount of recycling was calculated using the size of the recycling dumpsters, frequency of pick-up and the percent the dumpster was full at pick-up. As shown in table 20 there is a significant difference between the average monthly recycling during the ski season of approximately 125 cubic yards compared to the average monthly recycling volume during the off-season of approximately 31 cubic yards.[76]

Table 20: Total Recycling Generation - Residential and Business

Recycling Volume Residential and Business			
Ski Season		Off-Season	
Month	Cubic Yards	Month	Cubic Yards
November	88	May	33
December	92	June	33
January	160	July	33
February	160	August	28
March	144	September	24
April	108	October	36
Total	752	Total	187
Average Monthly	125	Average Monthly	31

[74] Per household costs will be reduced if additional households use the waste management services for scenarios two and three.
[75] The per household cost will be reduced if businesses participate in any of the waste management scenarios.
[76] Recycling amounts were calculated based on the size of the bins, number of pick-ups and percent full at pick-up.

One cubic yard or mixed waste recycling equals approximately 95 pounds. Therefore, total annual tons of recycling generated in the Town of Alta is approximately 45 tons.

RECYCLING SCENARIOS

The Town of Alta currently contracts with Salt Lake County for recycling services for paper, cardboard and plastics. The County places recycling bins at a central location and residents and businesses transport their recyclables to the recycling bins. Based on input from the Town of Alta, residential and business survey responses[77] and interviews with HOA management and large businesses, the following two recycling scenarios were evaluated as part of this study:

- No change from current services.
- An in-town recycling compactor for use by all residents and businesses provided by the Town of Alta.

OPTION 1 - NO CHANGE FROM CURRENT WASTE REMOVAL SERVICES

The Town of Alta would continue contracting with Salt Lake County for recycling services. Local businesses and residents transport their recycling to the recycling bins and the County picks up the bins on an as needed basis.

OPTION 2 – RESIDENTS AND BUSINESSES USE AN IN-TOWN RECYCLING COMPACTOR

A 2-yard stationary compactor with a 30-yard container is ideally suited for recyclable materials such as cardboard, plastics and paper. The cost for a 30 yd. compactor/container is approximately $24,000 - $25,000. Annual maintenance costs are approximately $1,000 - $1,500 and the pick-up costs are approximately $250 per pick-up. Pick-ups would be scheduled on an as needed basis when the compactor was full. Based on current recycling volumes, there would be approximately 14 pick-ups annually. Inclusive of all costs associated with providing a 30-yard compactor for recycling, the annual costs to the city would be approximately $5,641 compared to $8,190 paid to the County for recycling services in 2010. [78]

Table 21: Total Annual Recycling Cost

Stationary Compactor	Approximate Cost
Compactor/Container	$24,500
Concrete Base, Power Installation and "Dog-house" Roof	$6,250
Total	$30,750
Annual cost – 15-year lease[79]	$2,216
Annual Maintenance/Power	$1,500
Annual Pick-Up Costs (14 estimated pickups at $250 per pick-up)	$3,500
Total Annual Cost	$7,216
Less: Estimated Payment from Recycling Center[80]	$1,575
Net Annual Cost	$5,641

If the Town chose to pass on the cost of providing recycling services to residents and businesses, the monthly costs would be approximately $31 for large businesses, $15 for small businesses and $1.54 for homeowners.[81]

[77] A copy of the residential and business surveys and the responses are included in Appendix A.
[78] Assumes 15 year lease with $500 lease set up charge
[79] Source: ZBPF – 15 year lease with $500 set-up charge
[80] Based on current estimated annual recycling volume of 45 tons
[81] Based on a volume ratio of 10:1 for small businesses compared to residential units and 20:1 for large businesses compared to residential units.

APPENDIX A – RESIDENTIAL SURVEY

1. **How is the solid waste currently disposed of or removed from your residence/property?**
   1) _____ You personally remove it.
   2) _____ Contract with Rob Shane
   3) _____ Contract with other company (name: _____)
   4) _____ Unknown
   5) _____ Other (please specify: _____)

2. **Approximately how often is the solid waste removed from your residence/property during:**

Ski Season	Off-Season
1) _____ Once a week	1) _____ Once a week
2) _____ 2 times a week	2) _____ 2 times a week
3) _____ 3 times a week	3) _____ 3 times a week
4) _____ Unknown	4) _____ Unknown
5) _____ Other (please specify: _____)	5) _____ Other (please specify: _____)

3. **Approximately how many bags of solid waste are removed each week from your residence/property during:**

Ski Season	Off-Season
1) _____ Unknown	1) _____ Unknown
2) _____ 1 bag	2) _____ 1 bag
3) _____ 2 bags	3) _____ 2 bags
4) _____ 3 bags	4) _____ 3 bags
5) _____ 4 bags	5) _____ 4 bags
6) _____ 5+ bags (_____ # of bags)	6) _____ 5+ bags (_____ # of bags)

4. **Average size of trash bag: _____ gallons**

5. **If you contract for waste removal services, how much do you pay monthly for solid waste removal services for your residence/property?**

Ski Season	Off-Season
1) _____ Less than $40	1) _____ Less than $40
2) _____ $40.00 - $49.99	2) _____ $40.00 - $49.99
3) _____ $50.00 - $64.99	3) _____ $50.00 - $64.99
4) _____ $65.00 - $79.99	4) _____ $65.00 - $79.00
5) _____ $ 80+	5) _____ $ 80+

6. **Is your residence/property accessible by road year-round for waste removal services?**
   1) _____ Yes
   2) _____ No

7. **Which option do you prefer with regard to solid waste removal services for residences in Alta?**
   1) _____ No change from current services
   2) _____ Residences (all) take solid waste to an in-town compactor/baler
   3) _____ Garbage cans and street pick-up for residences (w/ yr. round access)
      In-town compactor/baler for residences (w/o yr. round access)
   4) _____ Other (please specify: _____
      _____

8. **If the Town provided waste removal services or an in-town compactor/baler, how would you prefer to pay for these services?**
   1) _____ Service fee
   2) _____ Increase in property taxes
   3) _____ Other (please specify: _____

9. **Do you use the recycling bins provided by the Town of Alta?** ***(If yes, please answer questions 10 and 11.)***
   1) _____ Yes
   2) _____ No

10. **Which materials do you currently recycle using the recycling bins provided by the Town of Alta?**
    1) _____ Paper
    2) _____ Cardboard
    3) _____ Plastics
    4) _____ Aluminum
    5) _____ Tin Cans

11. **If applicable, approximately how often do you take recyclable materials to the recycling bins?**
    1) _____ A few times a year
    2) _____ A few times a month
    3) _____ Once a week
    4) _____ Two or more times a week
    5) _____ Other (please specify: _____

12. **The Town of Alta currently pays for Salt Lake County to provide and collect the in-town recycling bins. In the future, it may be necessary for the town to recoup these costs through a service fee or other means. If this becomes necessary, would you be willing to pay for recycling services?**
    1) _____ Yes
    2) _____ No

13. **If you would be willing to pay for recycling services, how would you prefer to pay for these services?**
    1) _____ Service fee
    2) _____ Increase in property taxes
    3) _____ Other (please specify: _____)

14. **What additional items does your residence recycle?**
    1) _____ Glass
    2) _____ Tires/rubber
    3) _____ Steel
    4) _____ Light bulbs
    5) _____ Electronics
    6) _____Other (please list: _____ _____)

15. **Based on the map included with this survey, please select the area where your residence/property is located:** _____

16. **Additional comments/suggestions related to solid waste and recycling removal services:**

_____

_____

_____

APPENDIX B – RESIDENTIAL SURVEY RESULTS

How is solid waste currently disposed of or removed from your residence?

- 88.5% - Personally remove it
- 11.5% - Contract with Rob Shane
- 3.8% - Contract with other

If you contract for waste removal services, how much to you pay monthly for waste removal services?

- 40% - Less than $40
- 40% - $40 - $49.99
- 20% - $50 - $64.99

Which option do you prefer with regard to solid waste removal services for residences in Alta?

- 50% - No change
- 42.3% - Take garbage to an in-town compactor/baler
- 7.7% - Garbage cans/street pick-up for residences with year-round access and in-town compactor/baler for residences without year round access.

If the town provided waste removal services or an in-town compactor/baler, how would you prefer to pay for these services? (22 total)

- 50% - Service fee (based on usage)
- 4.5% - Property tax
- 45.5% - Other (none required, probably wouldn't use it, usually take waste home, already pay loads for our property taxes…)

Do you use the recycling bins provided by the Town of Alta?

- 53.8% - Yes
- 46.2% - No

Which materials do you currently recycle?

- 73.3% - Paper
- 93.3% - Cardboard
- 86.7% - Plastics
- 83.7% - Aluminum
- 73.3% - Tin cans

Would you be willing to pay for recycling services?

- 37.5% – Yes
- 62.5% - No

Additional items your residence recycles?

- Glass (100%),
- Tires/rubber (26.7%),
- Steel (20%)
- Light bulbs (33.3%)
- Electronics (26.7%)

APPENDIX C – BUSINESS SURVEY

1. **How is the solid waste currently disposed of or removed from your business?**
   - 1) _____ You personally remove it.
   - 2) _____ Contract with Rob Shane
   - 3) _____ Contract with other company (name: _____)
   - 4) _____ Other (please specify: _____)

2. **Approximately how often is the solid waste removed from your business during:**

Ski Season	Off-Season
1) _____ Once a week	1) _____ Once a week
2) _____ 2 times a week	2) _____ 2 times a week
3) _____ 3 times a week	3) _____ 3 times a week
4) _____ Other	4) _____ Other
(please specify: _____)	(please specify: _____)

3. **Does your business dispose of solid waste using dumpsters?** ***If NO, please skip to question 7.***
   - 1) _____ Yes
   - 2) _____ No

4. **Number of Dumpsters:** _____

5. **Approximate Size of Dumpster(s):**
   - D1: Height _____ ft. Width _____ ft. Length _____ ft.
   - D2: Height _____ ft. Width _____ ft. Length _____ ft.
   - D3: Height _____ ft. Width _____ ft. Length _____ ft.
   - D4: Height _____ ft. Width _____ ft. Length _____ ft.
   - D5: Height _____ ft. Width _____ ft. Length _____ ft.

6. **Approximately how full is the dumpster at pick-up during:**

Ski Season	Off-Season
D1: _____ % Full	D1: _____ % Full
D2: _____ % Full	D2: _____ % Full
D3: _____ % Full	D3: _____ % Full
D4: _____ % Full	D4: _____ % Full
D5: _____ % Full	D5: _____ % Full

Please skip to question 9.

7. If your business does NOT dispose of solid waste using dumpsters, approximately how many bags of solid waste are typically removed each week from your business during:

Ski Season	Off-Season
1) _____ less than 4 bags	1) _____ less than 4 bags
2) _____ 5 - 7 bags	2) _____ 5 - 7 bags
3) _____ 8 - 10 bags	3) _____ 8 - 10 bags
4) _____ 11 – 15 bags	4) _____ 11 - 15 bags
5) _____ Other (_____ # of bags)	5) _____ Other (_____ # of bags)

8. Average size of trash bag: _____ gallons

9. How much do you pay monthly for solid waste removal services for your business?

Ski Season	Off-Season
1) _____ Less than $100	1) _____ Less than $100
2) _____ $100 - $199	2) _____ $100 - $199
3) _____ $200 - $499	3) _____ $200 - $499
4) _____ $500 - $999	4) _____ $500 - $999
5) _____ $1,000+	5) _____ $1,000+

10. Is your business accessible by road year-round for waste removal services?
    1) _____ Yes
    2) _____ No

11. Which option do you prefer with regard to solid waste removal services for businesses in Alta?
    1) _____ No change from current services
    2) _____ Street pick-up for businesses (provided by the Town of Alta)
    3) _____ Businesses (all) take solid waste to in-town compactor/baler
    4) _____ Other (please specify: _____)

12. If the Town provided waste removal services or an in-town compactor/baler, h would you prefer to pay for these services?
    1) _____ Service fee
    2) _____ Increase in property taxes
    3) _____ Other (please specify: _____)

13. **Does your business use the recycling bins? (*If yes, please answer questions 14 and 15.)***
    1) _____ Yes
    2) _____ No

14. **If your business uses the recycling bins, which materials do you currently recycle?**
    1) _____ Paper
    2) _____ Cardboard
    3) _____ Plastics
    4) _____ Aluminum
    5) _____ Tin Cans

15. **Approximately how often do you take recyclable materials to the recycling bins?**
    1) _____ A few times a year
    2) _____ A few times a month
    3) _____ Once a week
    4) _____ Two or more times a week
    5) _____ Other (please specify: _____)

16. **The Town of Alta currently pays for Salt Lake County to provide and collect the in-town recycling bins. In the future, it may be necessary for the town to recoup these costs through a service fee or other means. If this becomes necessary, would you be willing to pay for recycling services?**
    1) _____ Yes
    2) _____ No

17. **If so, how would you prefer to pay for these services?**
    1) _____ Service fee
    2) _____ Increase in property taxes
    3) _____ Other (please specify: _____)

18. **What additional items does your business recycle?**
    1) _____ Glass
    2) _____ Tires/rubber
    3) _____ Steel
    4) _____ Light bulbs
    5) _____ Electronics

19. **If applicable, how does your business dispose of electronics and hazardous waste?**

    _____

    _____

20. **Based on the map included with this survey, please select the area where your business is located: _____**

21. **Additional comments/suggestions related to solid waste and recycling removal services:**

    _____

    _____

APPENDIX D – BUSINESS SURVEY RESULTS

How is the solid waste currently disposed of or removed from your business?

- 9.1% - Personally remove it
- 72.3% - Contract with Rob Shane
- 9.1% - Contract with Ace
- 9.1% - Use GMD dumpster

If you contract for waste removal services, how much do you pay monthly for waste removal services?

- 40% - $100 - $199
- 20% - $200 - $499
- 40% - $500 - $999

Which option do you prefer with regard to solid waste removal services for residences in Alta?

- 55.6% - No change from current services
- 33.3% - Street pick-up for businesses provided by the Town of Alta
- 11.2% - On-site compactor for use at Alta ski resort
- 0% – Take garbage to in-town compactor

If the town provided waste removal services or an in-town compactor/baler, how would you prefer to pay for these services?

- 60% - Service fee
- 30% - Property tax
- 10% - Other

Do you use the recycling bins provided by the Town of Alta?

- 100% - Yes
- 0 – No

Which materials do you currently recycle?

- 90.1% - Paper
- 100% - Cardboard
- 90.1% - Plastics
- 90.1% - Aluminum
- 90.1% - Tin Cans

Would you be willing to pay for recycling services?

- 90.1% - Yes (if overall services were improved)
- 9.1% - No

Additional items your residence recycles?

- Glass (85.7%)
- Tires/rubber (14.3%)
- Steel (42.9%)
- Light bulbs (57.1%)
- Electronics (57.1%)

APPENDIX E – COMPACTOR DIMENSIONS

DUMPSTER

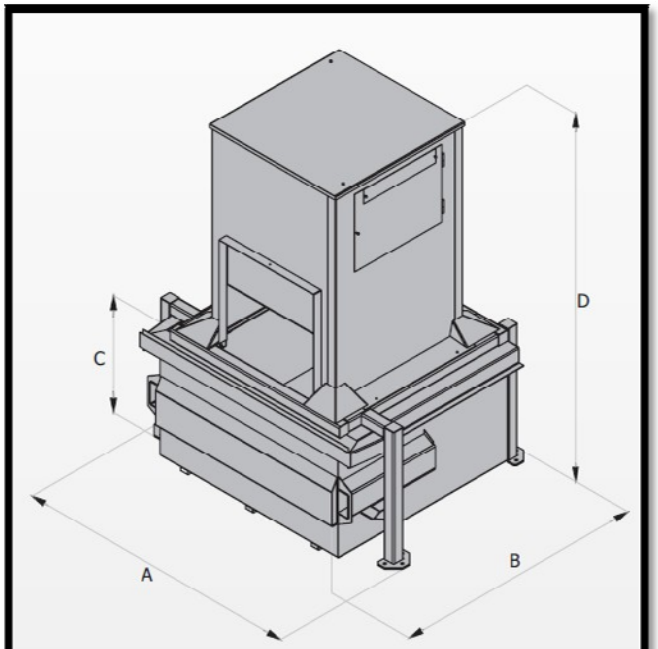
Dumpster sizes may vary slightly depending on the manufacturer. Common sizes for dumpsters are shown below in table A1.

Table A1: Dumpster Dimensions

Common Dumpster Sizes			
Dumpster	Length	Width	Height
10-yard	12 feet	8 feet	4 feet
20–yard	22 feet	8 feet	4.5 feet
30-yard	22 feet	8 feet	6 feet

VERTICAL COMPACTOR

The following diagram shows the approximate dimensions for vertical compactors. Dimensions for a vertical compactor may vary depending on the manufacturer. A 6 or 8-yard vertical compactor/dumpster would require a concrete base approximately 10'x10.'



CONTAINER SIZE / TYPE	A	B	C	D	COMPACTOR WEIGHT
3-YD-FL	100"	79"	40-1/4"	112-5/8"	3892 lbs.
4-YD-FL	100"	79"	46-1/4"	118-5/8"	3973 lbs.
4-YD-RL	82"	100"	46-1/4"	118-5/8"	4050 lbs.
5-YD-FL	100"	79"	56-1/4"	128-5/8"	4183 lbs.
6-YD-FL	100"	95-1/2"	56-1/4"	128-5/8"	4294 lbs.
8-YD-FL	100"	95-1/2"	74"	146-3/8"	4510 lbs.

STATIONARY COMPACTOR

The following two diagrams show the dimensions for a stationary compactor. Dimensions may vary depending on the manufacturer.

2 - 4 Yard STATIONARY COMPACTOR

Specifications		CO-02	CC-02	CX-02	CO-03	CH-03	CX-03	CO-04	CH-04	CX-04
Charge Box Capacity		2 cu. Yd.	2 cu. Yd.	2 cu. Yd.	3 cu. Yd.	3 cu. Yd.	3 cu. Yd.	4 cu. Yd.	4 cu. Yd.	4 cu. Yd.
WASTEC Rating		1.5	1.5	1.5	2.4	2.4	2.4	2.8	2.8	2.8
Clear Top Opening		40" x 58 1/2"	40" x 58 1/2"	40" x 58 1/2"	60" x 57"	60" x 57"	60" x 57"	60" x 57"	60" x 57"	60" x 57"
Theoretical Cycle Time		63 sec.	63 sec.	52 sec.	54 sec.	47 sec.	64 sec.	54 sec.	64 sec.	52 sec.
Total Force,	Normal	45,200 lbs.	56,500 lbs	77,000 lbs.	56,500 lbs.	56,500 lbs.	76,900 lbs.	56,500 lbs.	76,900 lbs.	104,600 lbs.
	Maximum	56,500 lbs.	67,900 lbs.	92,400 lbs.	67,900 lbs.	67,900 lbs.	92,300 lbs.	67,900 lbs.	92,300 lbs.	127,200 lbs.
Ram Face Pressure,	Normal	26.4 psi	33 psi	45 psi	32 psi	32 psi	43.4 psi	27.3 psi	37.1 psi	50.5 psi
	Maximum	33 psi	39.7 psi	54 psi	38.4 psi	38.4 psi	52.1 psi	32.8 psi	44.6 psi	61.4 psi
Ram Face dimensions,	W x H	60" x 28 1/2"	60" x 28 1/2"	60" x 28 1/2"	59 3/4" x 29 1/2"	59 3/4" x 29 1/2"	59 3/4" x 29 1/2"	59 3/4" x 34 1/2"	59 3/4" x 34 1/2"	59 3/4" x 34 1/2"
Ram Penetration		13"	13"	13"	13"	13"	13"	13"	13"	13"
Motor-3 Phase -	208/230460 Vac	10 hp	10 hp	10 hp	10 hp	15 hp	15 hp	10 hp	15 hp	20 hp
Pump Capacity		10.5 gpm	10.5 gpm	10.5 gpm	10.5 gpm	12 gpm	12 gpm	10.5 gpm	12 gpm	36 gpm
Hydraulic Reservoir	Capacity	22 gal.	22 gal.	33 gal.	33 gal.	33 gal.	33 gal.	33 gal.	33 gal.	105 gal.
Hydraulic Cylinder,	Bore Dia.	6"	6"	7"	6"	6"	7"	6"	7"	(two) 6"
	Stroke	54"	54"	54"	76"	76"	76"	76"	76"	76"
	Rod Dia.	3.5"	3.5"	4"	3.5"	3.5"	4"	3.5"	4"	3.5"
Operating Pressure,	Normal	1600 psi.	2000 psi.	2000 psi.	2000 psi.	2000 psi.	2000 psi.	2000 psi.	2000 psi.	1850 psi
	Maximum	2000 psi.	2400 psi.	2400 psi.	2400 psi.	2400 psi.	2400 psi.	2400 psi.	2400 psi.	2250 psi.
Base Unit Weight		3,900 lbs.	4,200 lbs.	4,500 lbs.	5,620 lbs.	5,700 lbs.	6,100 lbs.	7,240 lbs.	7,420 lbs.	7,800 lbs.
Complete unit UL listed		yes	yes	yes	yes	yes	yes	yes	yes	no

DIMENSIONS	(A) Over All Length	(B) Clear Top Length	(C) Overall Width	(D) Loading Sill Height	(E) Overall Height	(F) Clear Top Width	(G) Ground Height	(H) Discharge Opening Height
C0-02	116 5/8"	39 3/16"	74 5/8"	49"	59"	58 3/8"	14 13/16"	39"
CC-02	116 5/8"	40"	74 1/8"	49"	59"	58 3/8"	15"	39"
CX-02	116 5/8"	40"	74 1/8"	49"	59"	58 3/8"	15"	39"
C0-03	162 1/2"	60 3/16"	74 1/2"	49 1/2"	62"	57"	14 1/2"	42 1/2"
CH-03	162 1/2"	60 3/16"	74 1/2"	49 1/2"	62"	57"	14 1/2"	42 1/2"
CX-03	162 1/2"	60 3/16"	74 1/2"	49 1/2"	62"	57"	14 1/2"	42 1/2"
C0-04	162 1/2"	60 3/16"	74 1/2"	55"	64"	57"	14 1/2"	42 1/2"
CH-04	162 1/2"	60 3/16"	74 1/2"	55"	64"	57"	14 1/2"	42 1/2"
CX-04	162 1/2"	60 3/16"	74 1/2"	55"	64"	57"	14 1/2"	42 1/2"

2 YARD STATIONARY COMPACTOR SERIES - SIZE INFORMATION

Description	Item Code	ST-21	ST-22	ST-23
Charge Box Capacity - MFG Rating CU/YD	ST-2X-BOX	2	2	2
Wastec Rating CU/YD	ST-2X-WRT	1.5	1.5	1.5
Container Capacity	ST-2X-CCP	Optional	Optional	Optional
Clear Top Opening (L" x W")	ST-2X-CTO	40" x 58.5"	40" x 58.5"	40" x 58.5"
Ram Face Dimensions (W" x H")	ST-2X-RFD	60" x 28.5"	60" x 28.5"	60" x 28.5"
Overall Dimensions (L x W x H - Rounded)	ST-2X-DMN	9.7' x 6.2' x 4.9'	9.7' x 6.2' x 4.9'	9.7' x 6.2' x 4.9'
Approximate Weight (lbs)	ST-2X-WTG	3,900	4,200	4,500

Stationary compactors are attached to a container. A 30-yard container is approximately 8' wide, approximately 22' long and approximately 8' high. A 2 yard compactor attached to a 30-yard container would need a concrete base approximately 10'x 30' in size.