Processing Fee Cost Survey

Processing Fee Cost Survey Workshop

CALIFORNIA CONSERVATION

Division of Recycling
Market Research Branch

NewPoint Group®
Management Consultants

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1.0 Introduction

1.1 DOR and Contractor Team

- Dana Stone, DOR Acting Assistant Director
- Chuck Seidler, Market Research Branch Manager
- Chris Goetzke, Market Statistics Section Supervisor
- Graham Johnson, Cost Survey Project and Contract Manager
- James Gibson, Ph.D., NewPoint Group Director
- Wendy Pratt, NewPoint Group Senior Consultant

1.2 NewPoint Group Contractor

- This processing fee cost survey was performed under contract by NewPoint Group Management Consultants for the DOR
- NewPoint Group has extensive experience with the processing fee cost survey, dating back to inception of the AB 2020 program, and including the 2003 processing fee cost survey
- Eighteen (18) different NewPoint Group employees and subcontractors worked on this large and complex processing fee cost survey project

1.3 Cost Survey Purpose

- Most recyclers are required to redeem all beverage container material types
- Scrap values of glass, plastics, and bi-metal are not sufficient to cover their cost of recycling
- Costs are subsidized by paying recyclers a processing payment (PP)

  PP = (Cost of recycling x Reasonable Financial Return) – (Scrap Value)

- Cost of recycling was determined by this cost survey

1.4 Cost Survey Scope and Timing

- This processing fee cost survey was used to estimate the weighted-average, certified recycling center costs per ton, for 10 beverage container material types
- Costs were measured for recycling centers not receiving handling fees
- Recycling center costs were surveyed in 2005 (April through September), using calendar year 2004 financial statements, labor information, and recycling volumes
- Recycling center costs in this survey are used for the processing payment and processing fee calculations, effective January 1, 2006

2.0 Cost Survey Sample

2.1 Sample Design Framework
2.2 Stratified Random Sample for Aluminum, Glass, PET #1 and HDPE #2
2.3 Census for Plastics #3 to #7
2.4 Simple Random Sample for Bi-Metal
2.5 Overall Survey Size
2.6 Sampled Sites by Stratum

2.1 Sample Design Framework

- With 674 recycling centers in the relevant population, a complete census was not possible
- Selected sample to obtain a 90 percent confidence level with a +/-10 percent error rate
- Determined the number of recycling centers to be selected in each of three sample categories
  - A stratified random sample for aluminum, glass, PET #1, and HPDE #2
  - A simple random sample for bi-metal
  - A complete census of all sites handling plastics #3 to #7

2.2 Stratified Random Sample for Aluminum, Glass, PET #1, and HDPE #2

- Stratified random sample improves accuracy and reduces the number of sites necessary to be surveyed
- 117 random sites, from three strata, for aluminum, glass, PET #1, and HDPE #2, based on glass volume
  - Strata 1 > 550 tons of glass (53 sites)
  - Strata 2 > 150 tons and ≤ 550 tons (46 sites)
  - Strata 3 ≤ 150 tons (18 sites)

2.3 Census for Plastics #3 to #7

- This cost survey was the second time that costs per ton for plastic resins #3 to #7 were determined, using a complete census of sites recycling those materials in 2004
- A total of 72 sites recycled one, or more, of plastic resins #3 to #7
- All 72 of these sites were surveyed
- Some plastics #3 to #7 sites were already in the stratified random, and/or, random bi-metal samples

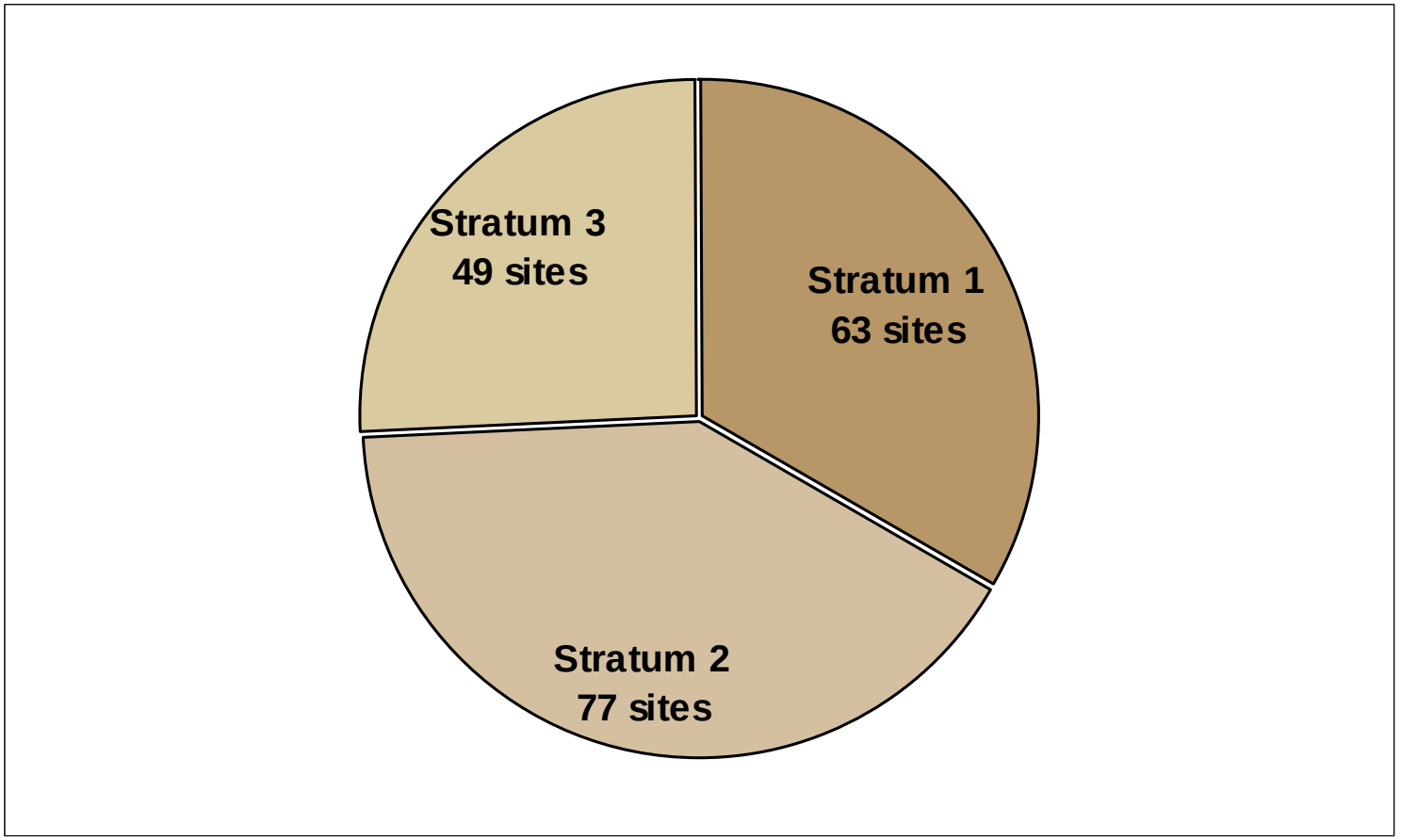
2.4 Simple Random Sample for Bi-Metal

- Only 165 sites in the population recycled bi-metal in 2004
- Determined a sample of 52 bi-metal sites would be necessary to obtain the same 90 percent confidence level with a +/- 10 percent error rate as the stratified random sample
- Some bi-metal sites were already in the stratified random, and/or census plastic samples

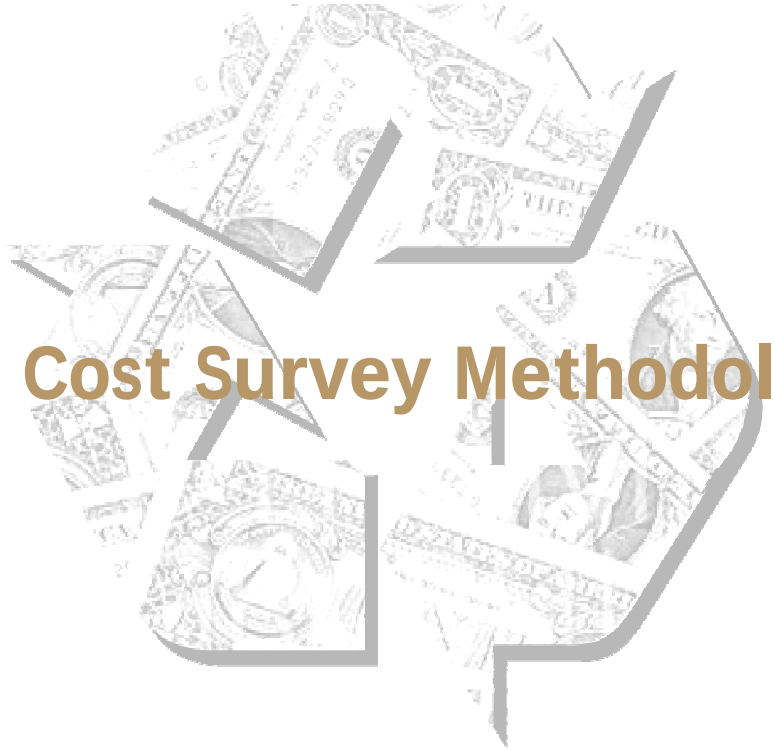
2.5 Overall Survey Size

- Largest total sample size ever undertaken by the DOR for the cost survey, (189 sites, versus 181 sites in 2003)
- Overlap within categories resulted in 189 unique total sites surveyed
  - 117 unique stratified random sites for aluminum, glass, PET #1, and HDPE #2
  - 51 unique census sites for plastics #3 to #7
  - 21 unique simple random sample sites for bi-metal

2.6 Sampled Sites by Stratum



- Total sample size: 189 unique sites



3.0 Cost Survey Methodology

3.1 Cost Survey Process

- Obtained financial statements and classified site costs into applicable categories
  - Non-allowable
  - Direct labor
  - Other labor
  - General business overhead
  - Transportation
  - Rent
  - Depreciation
  - Property taxes
  - Utilities
  - Supplies
  - Fuel
  - Insurance
  - Interest
  - Maintenance/repairs

3.2 Labor Allocation Model

- Identified and allocated costs directly attributable to specific materials, or groups of materials
- Reviewed personnel expenses for labor expense category
- Interviewed site management to determine allocation of total labor hours per employee
- Allocated each worker's time to
  - Recycler, processor, or other business
  - Direct yard labor, or all other labor
  - Non-CRV materials or specific CRV materials
    - Aluminum/bi-metal
    - Glass
    - All plastics

3.2 Labor Allocation Model *(continued)*

- Labor Allocation Model workbook includes two Indirect Cost Allocation Sub-Models, for Aluminum/Bi-metal and All Plastics
- Sub-models utilized four key operational/material-specific handling factors based on extensive field research and application in the 2003 cost survey
  - Weight factor (total tonnage handled)
  - Container factor (number of containers handled)
  - Volumetric factor (average container size for the material type)
  - Commingled factor (proportion of non-CRV containers)
- The weighting of the operational/material handling factors was established based on experience in the 2003 cost survey, sensitivity analyses, and median costs per ton from 2003 data

3.3 Site Cost Determinations

- Reconciled labor expenses in labor records to the financial statements
- Allocated indirect costs based on labor allocations and sub-models
- Summed all direct and indirect costs for each material type

3.4 Quality Control Reviews

- On-site (field) reviews
  - Audit team verified and reviewed all data at each site
- Five levels of office reviews performed after each site visit
  - Field audit team of two, generally one CPA and one Recycling Expert
  - Independent Manager Review
  - Independent CPA Partner Review
  - NewPoint Group Business Analyst Review
  - NewPoint Group Project Director Review

3.5 Measurement of Costs by Material Type

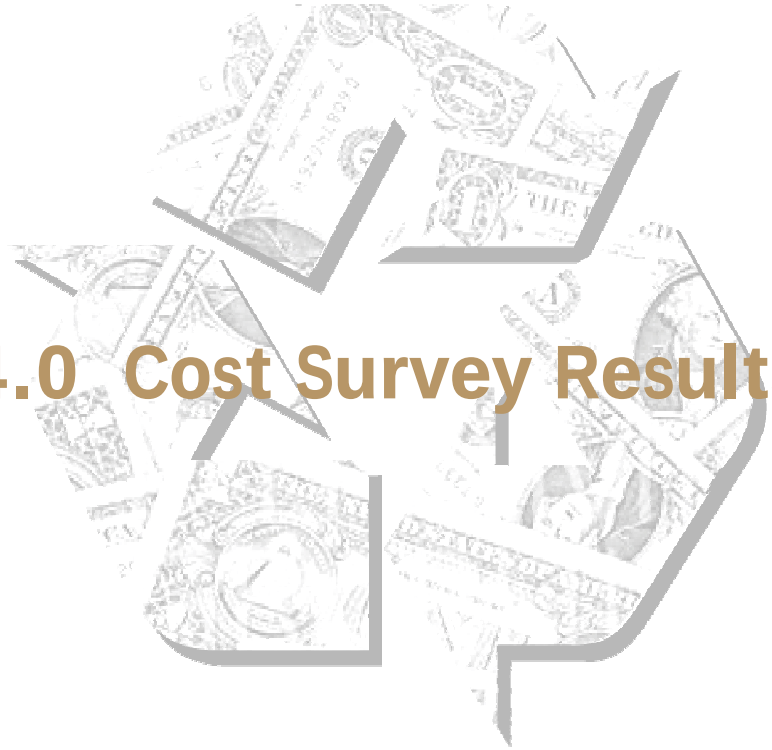
- Direct costs were identified and applied to each of the ten CRV material types where applicable
- Labor allocation method was used to allocate employee hours by other business activity, non-CRV materials, and the three CRV-material type categories
  - Aluminum/bi-metal
  - Glass
  - All plastics

3.5 Measurement of Costs by Material Type *(continued)*

- Indirect costs were allocated between these three material groups, non-CRV materials, and other business activities, based on employee labor hours
- Indirect costs for aluminum/bi-metal and all plastics were further allocated by the indirect cost allocation sub-models based on operational and material handling factors
  - Aluminum/bi-metal indirect costs were allocated between aluminum and bi-metal (if the site recycled bi-metal)
  - Plastics #1 to #7 indirect costs were allocated between all plastic resins recycled at that site

3.6 Statewide, Weighted-Average Costs

- Each material type cost per ton was based on a statewide, weighted-average calculation
  - Weighted average, by strata, for aluminum, glass, PET #1, and HDPE #2
  - Population weighted average for PVC #3, LDPE #4, PP #5, PS #6, and Other #7
  - Simple weighted average for bi-metal
- The weighted-average calculation is required by statute



4.0 Cost Survey Results

4.1 2004 Statewide, Weighted-Average Recycler Costs per Ton

	Statewide Cost per Ton[a]	Material Type
1	$82.45	Glass
2	465.90	Aluminum
3	493.31	PET #1
4	607.03	Bi-Metal
5	671.73	HDPE #2
6	809.42	PP #5
7	1,264.47	Other #7
8	1,583.72	PVC #3
9	1,889.50	LDPE #4
10	3,051.82	PS #6

a/ Without Reasonable financial return (RFR)

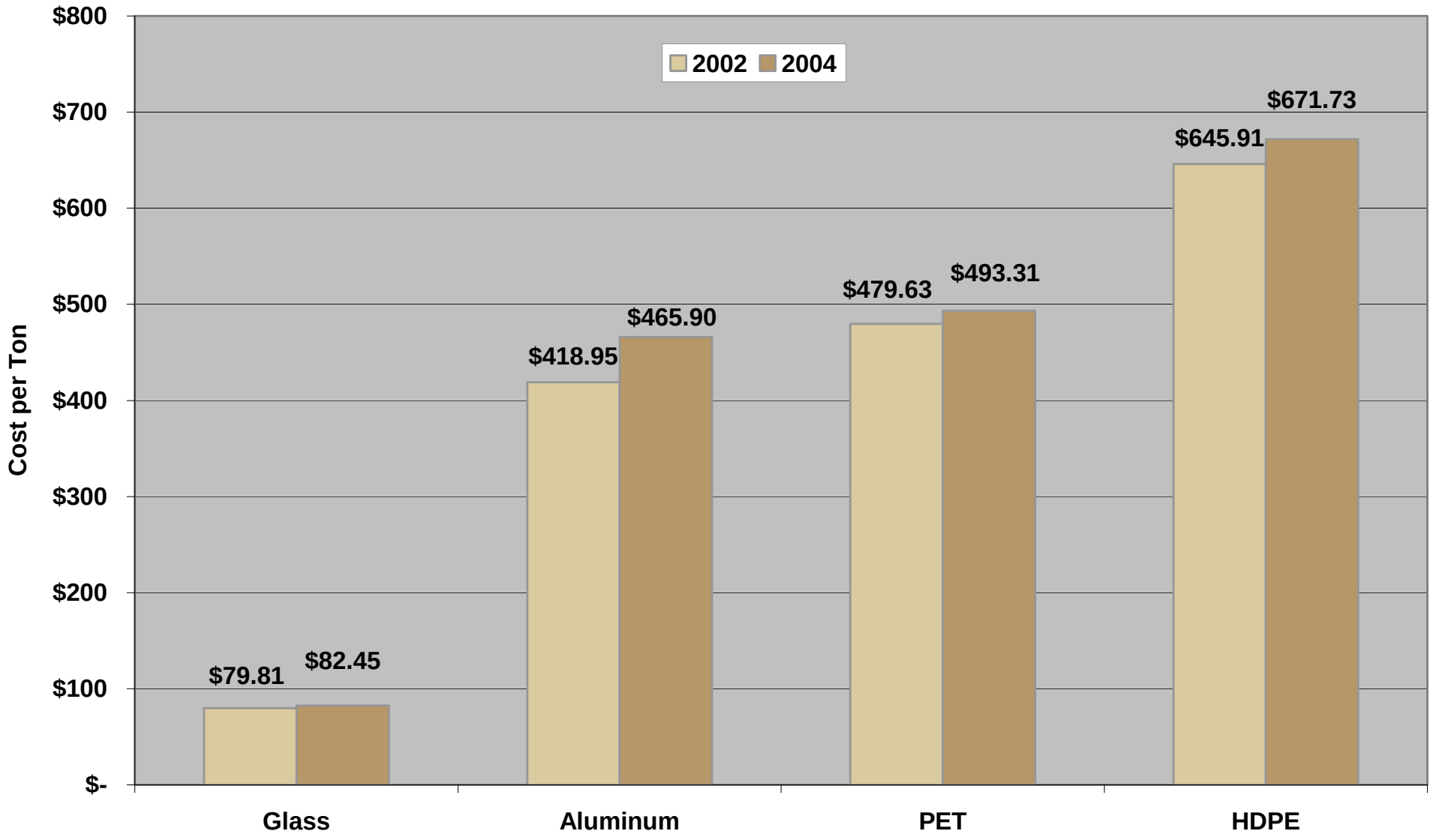
4.2 2004 Sample Error Rates and Sample Sizes

	Material Type	Error Rate (90% Confidence Level)	n = Sample Population Number of Sites[a]
1	Aluminum	5.55%	117
2	Bi-Metal	9.83%	52
3	Glass	7.35%	115
4	PET #1	7.33%	115
5	HDPE #2	7.47%	108
6	PVC #3	100% Sample	14
7	LDPE #4	100% Sample	10
8	PP #5	100% Sample	12
9	PS #6	100% Sample	11
10	Other #7	100% Sample	67

a/ Overall, 189 unique sites were completed to obtain these results.

5.0 2002 and 2004 Cost Survey Comparison

5.1 Comparison of 2002 and 2004 Statewide, Weighted-Average Recycler Costs per Ton



5.2 Comparison of 2002 and 2004 Error Rates and Sample Sizes

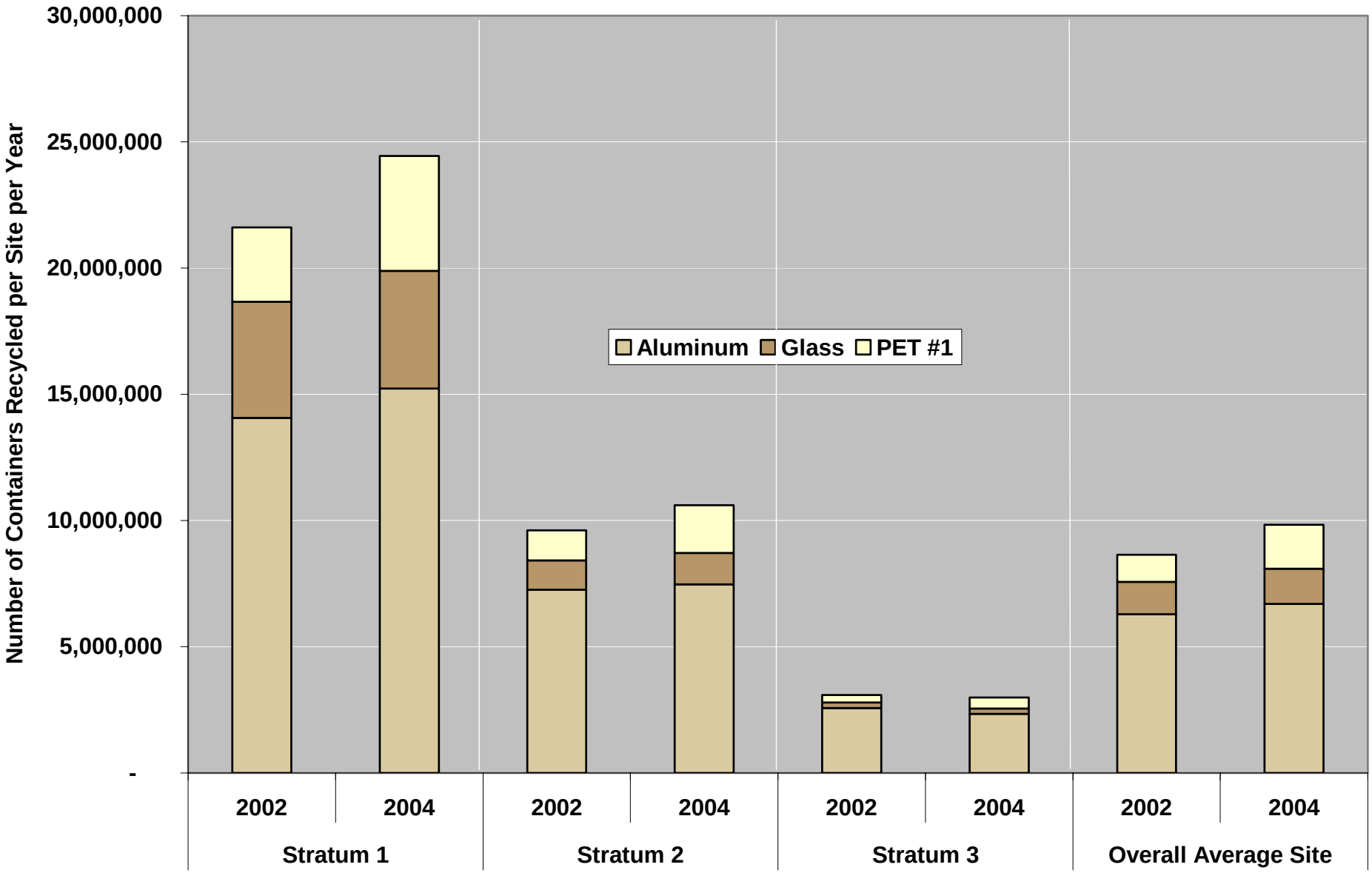
	Material Type	2002 Error Rate (90% Confidence Level)	2004 Error Rate (90% Confidence Level)	2002 Number of Sites	2004 Number of Sites
1	Aluminum	7.82%	5.55%	136	117
2	Bi-Metal	7.57%	9.83%	65	52
3	Glass	9.21%	7.35%	131	115
4	PET #1	9.77%	7.33%	132	115
5	HDPE #2	9.78%	7.47%	119	108
6	PVC #3	100% Sample	100% Sample	23	14
7	LDPE #4	100% Sample	100% Sample	11	10
8	PP #5	100% Sample	100% Sample	11	12
9	PS #6	100% Sample	100% Sample	12	11
10	Other #7	100% Sample	100% Sample	49	67

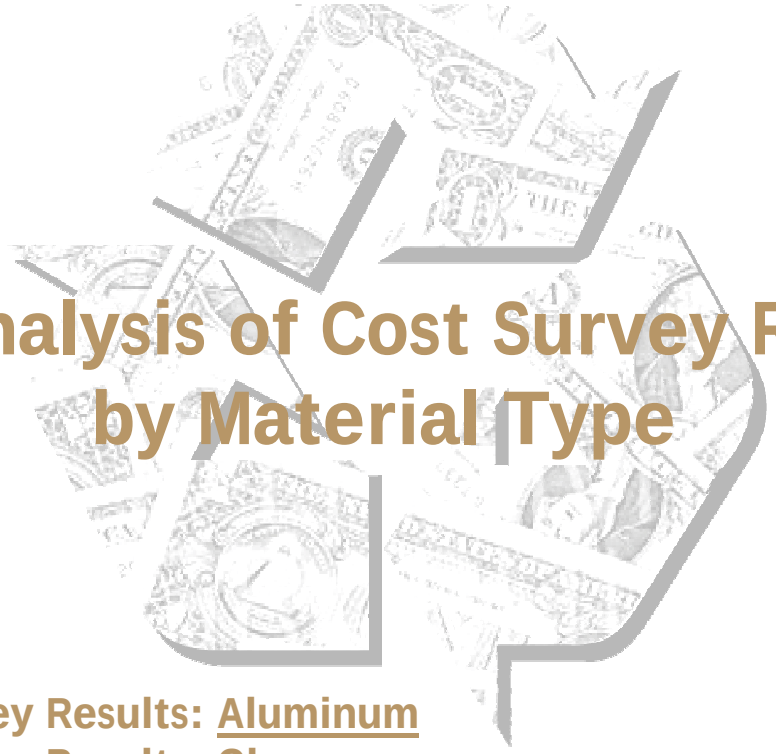
5.3 2002 and 2004 Cost Detail by Strata

Material Type and Year	Cost per Ton*			Statewide Cost per Ton*
	Stratum 1	Stratum 2	Stratum 3	
Aluminum 2002	$ 399.12	$ 385.42	$ 548.99	$ 418.95
Aluminum 2004	492.04	422.70	544.25	465.90
Glass 2002	65.83	88.26	142.06	81.85
Glass 2004	72.96	87.53	137.10	82.45
PET #1 2002	409.46	484.46	715.28	481.87
PET #1 2004	466.37	465.50	743.48	493.31
HDPE #2 2002	538.29	687.19	1,058.58	645.91
HDPE #2 2004	644.75	666.48	952.34	671.73

* Without RFR

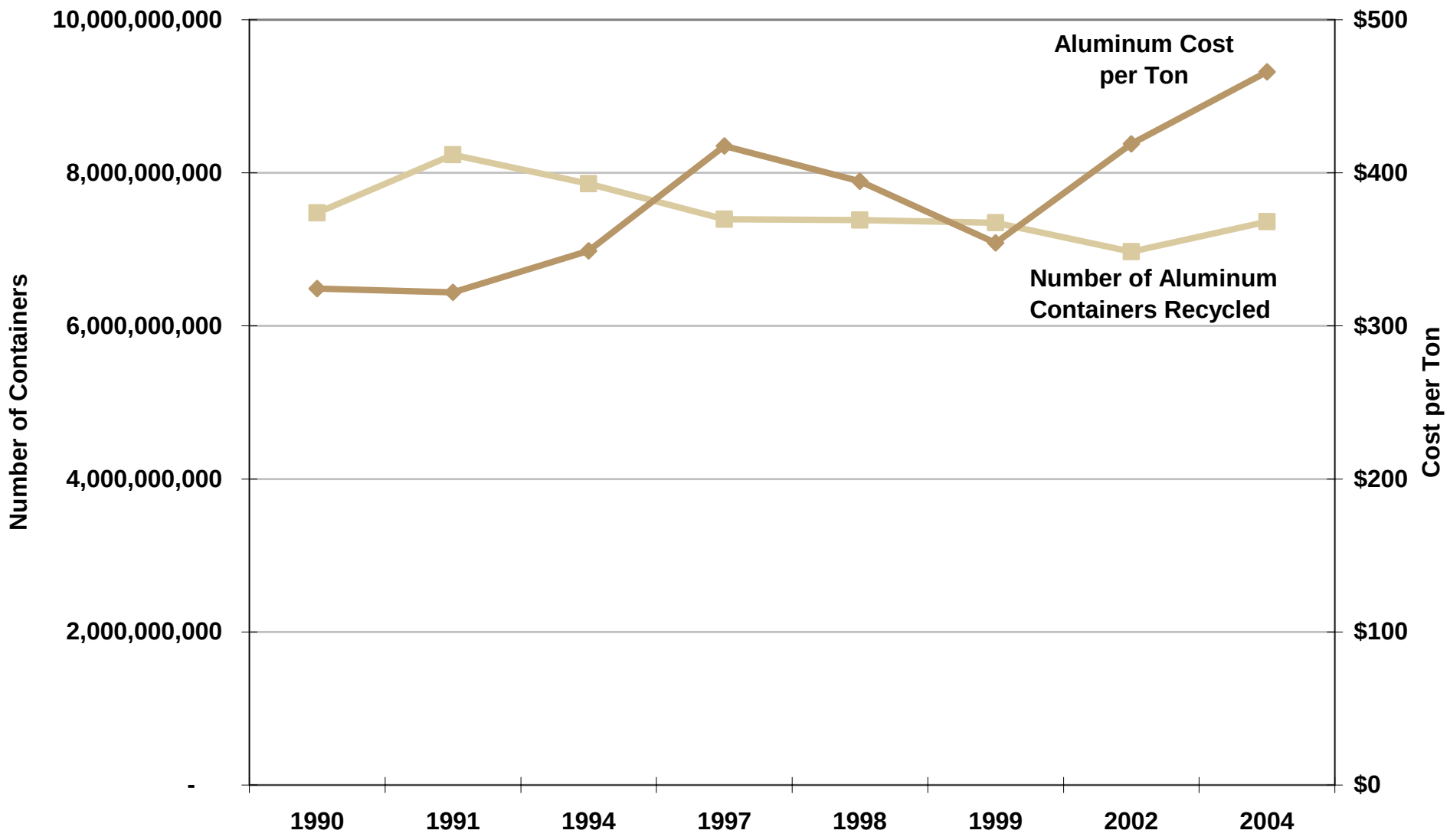
5.4 2002 and 2004 Container Returns per Average Site



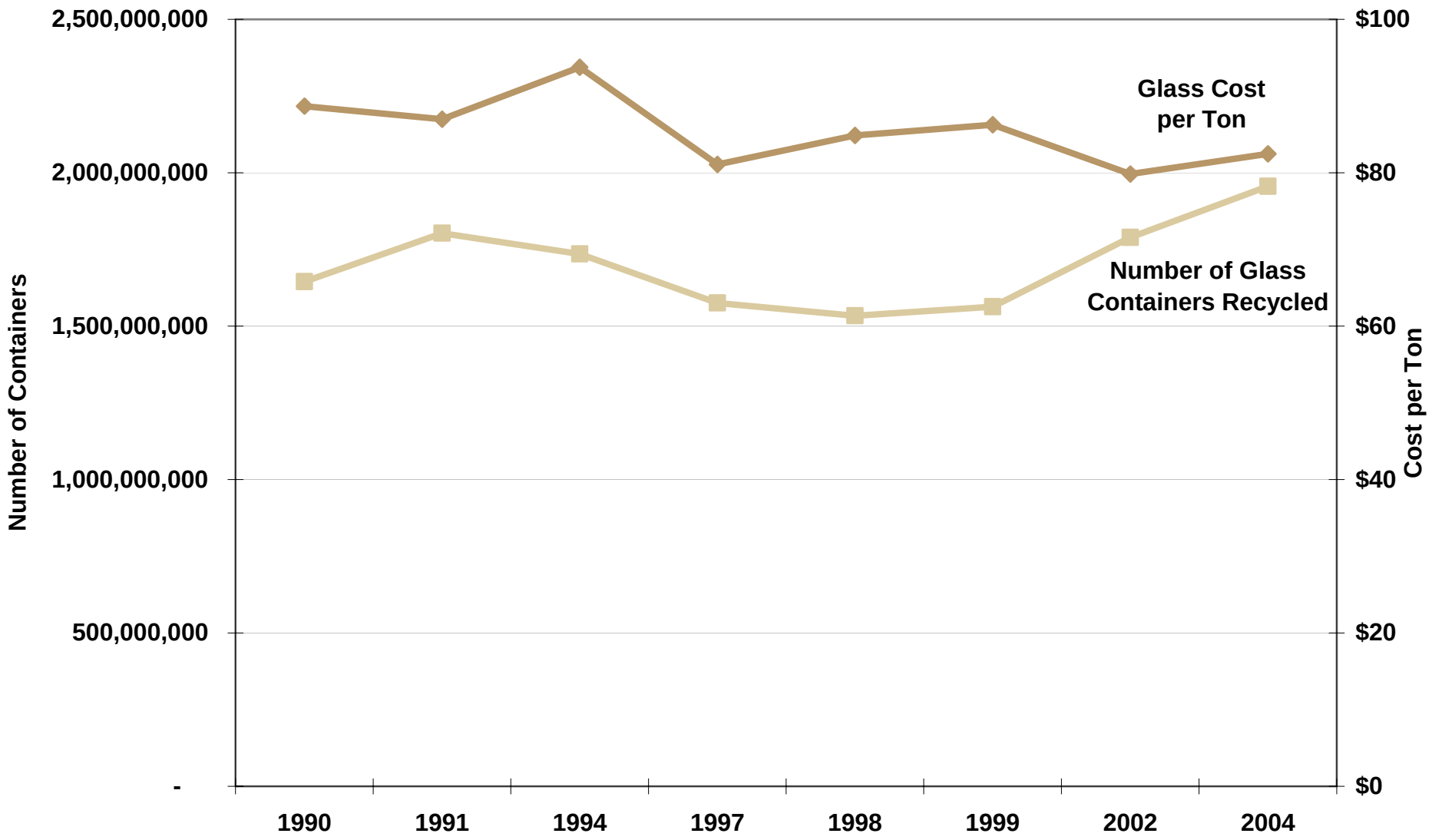


6.0 Analysis of Cost Survey Results by Material Type

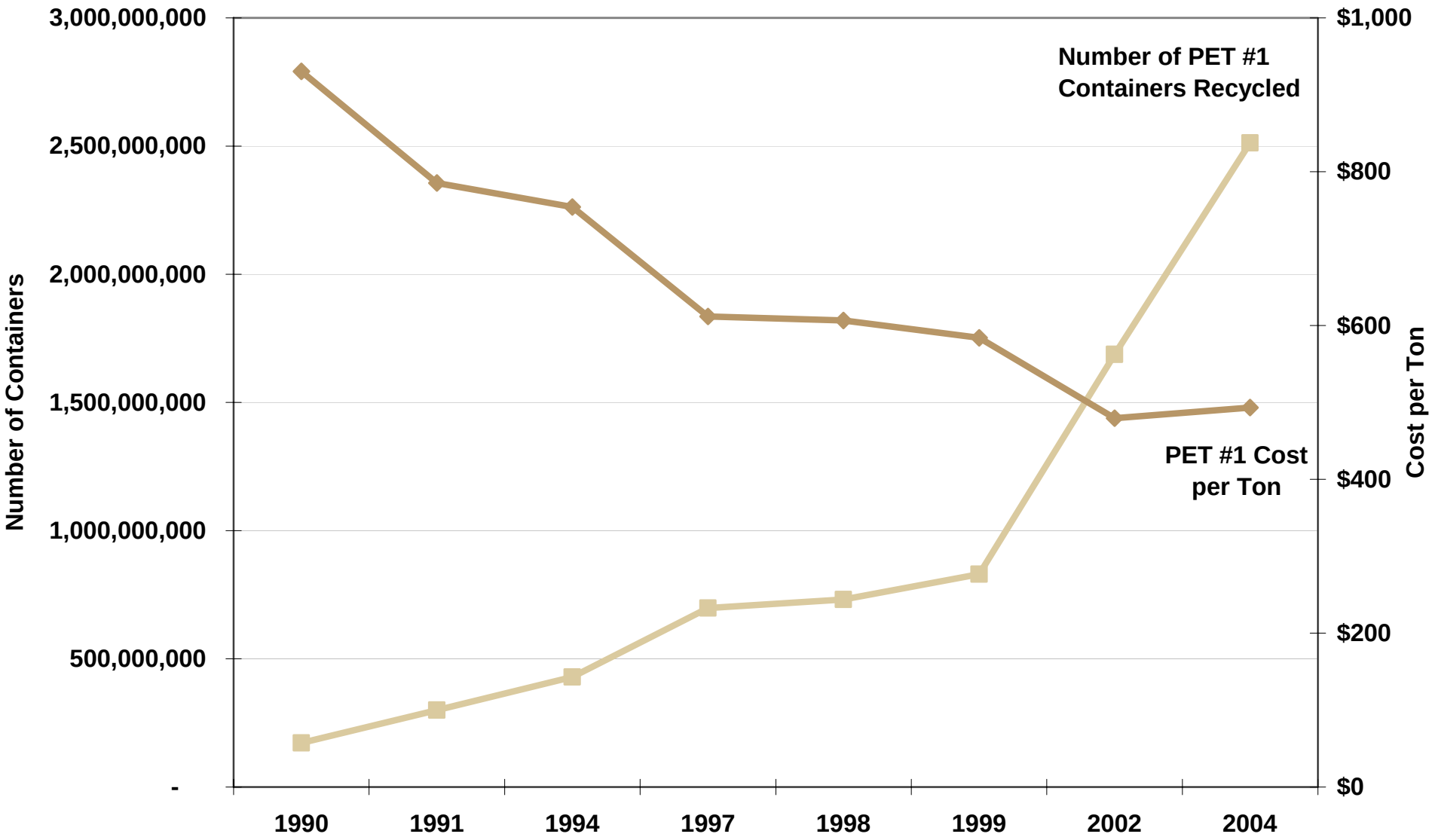
6.1 Analysis of Cost Survey Results: Aluminum



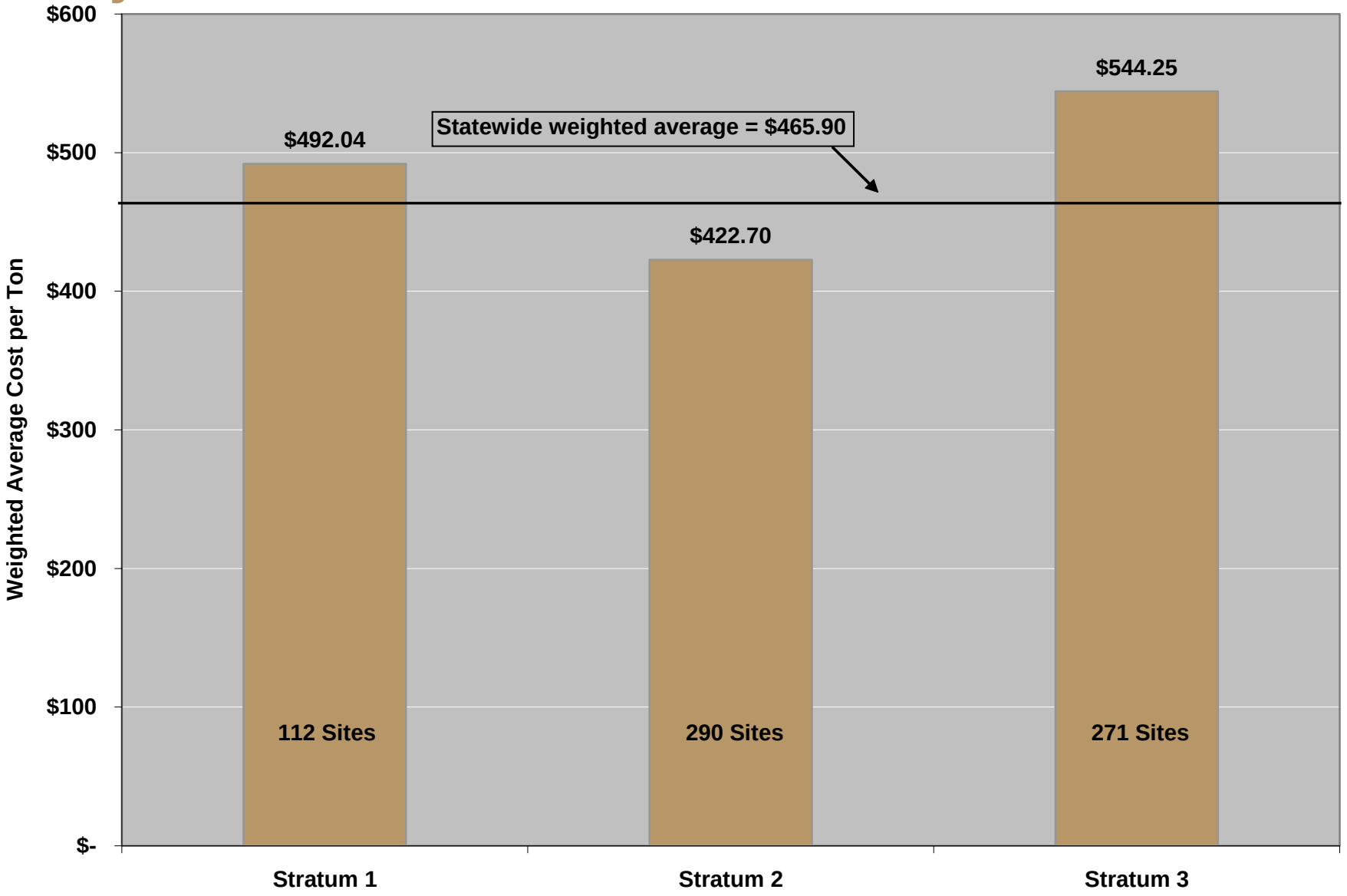
6.2 Analysis of Cost Survey Results: Glass



6.3 Analysis of Cost Survey Results: PET #1

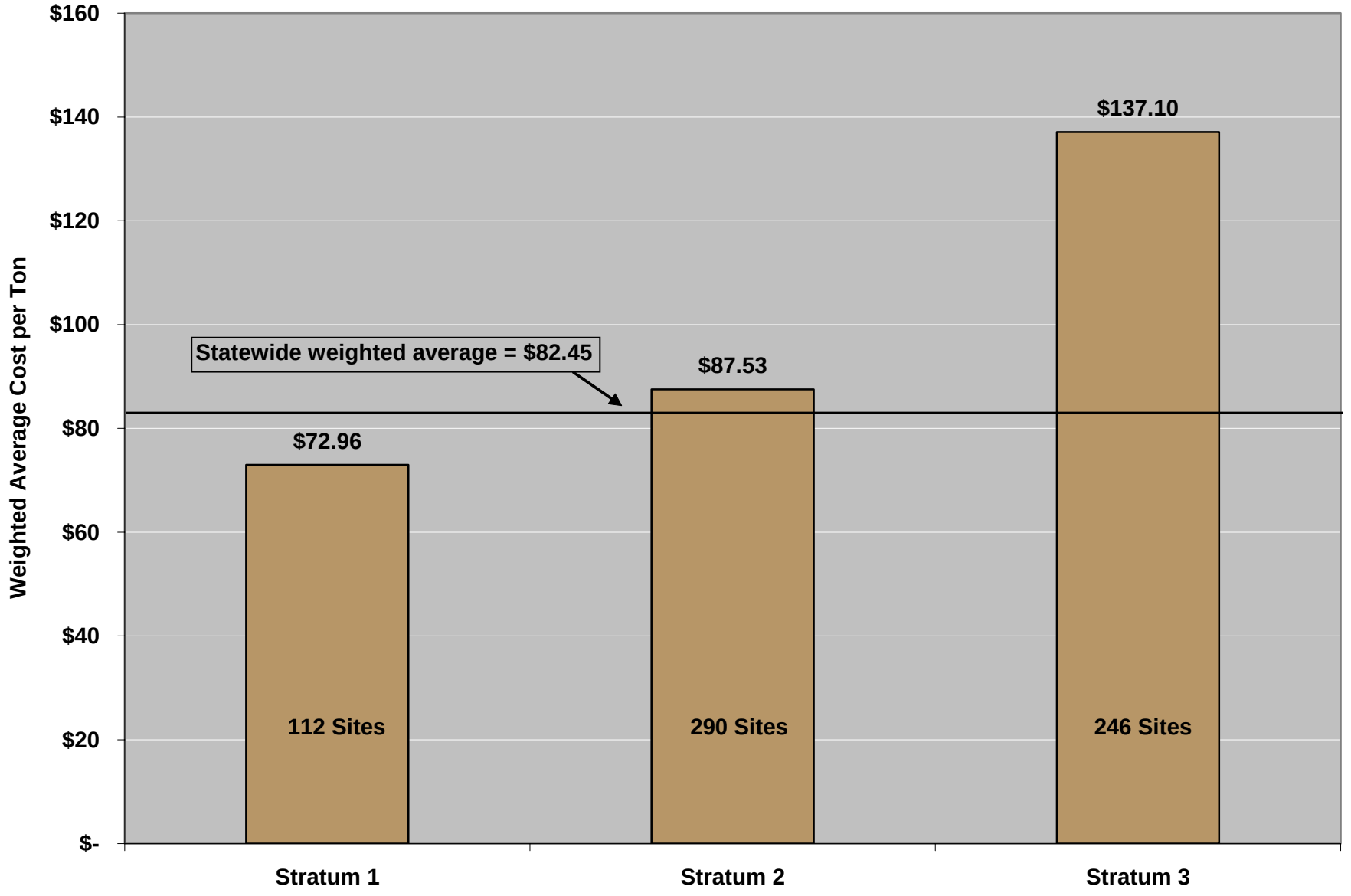


6.4 Aluminum Costs per Ton and Population Size by Strata



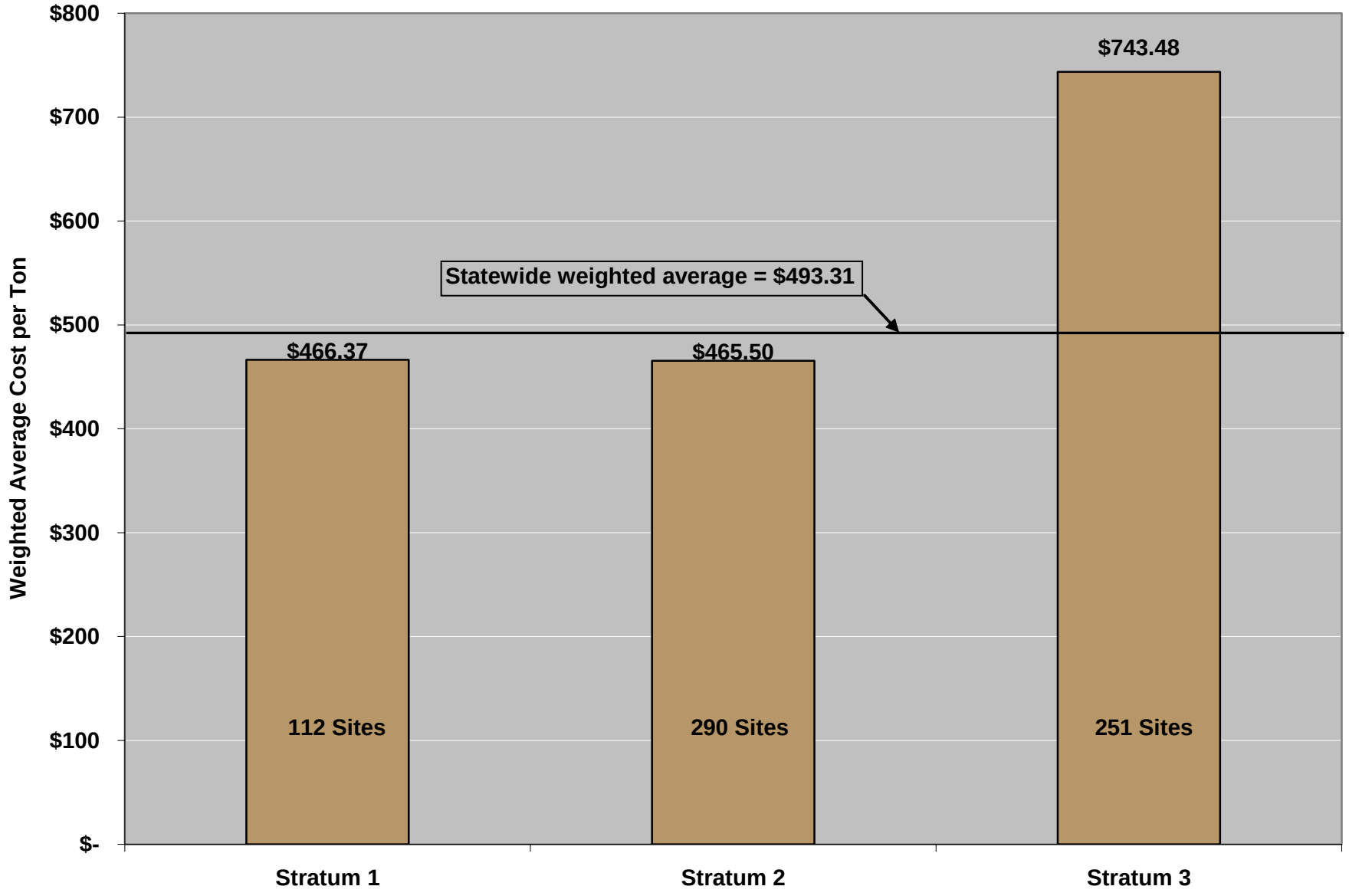
Results by strata do not meet the statistical rigor of the statewide weighted average

6.5 Glass Costs per Ton and Population Size by Strata



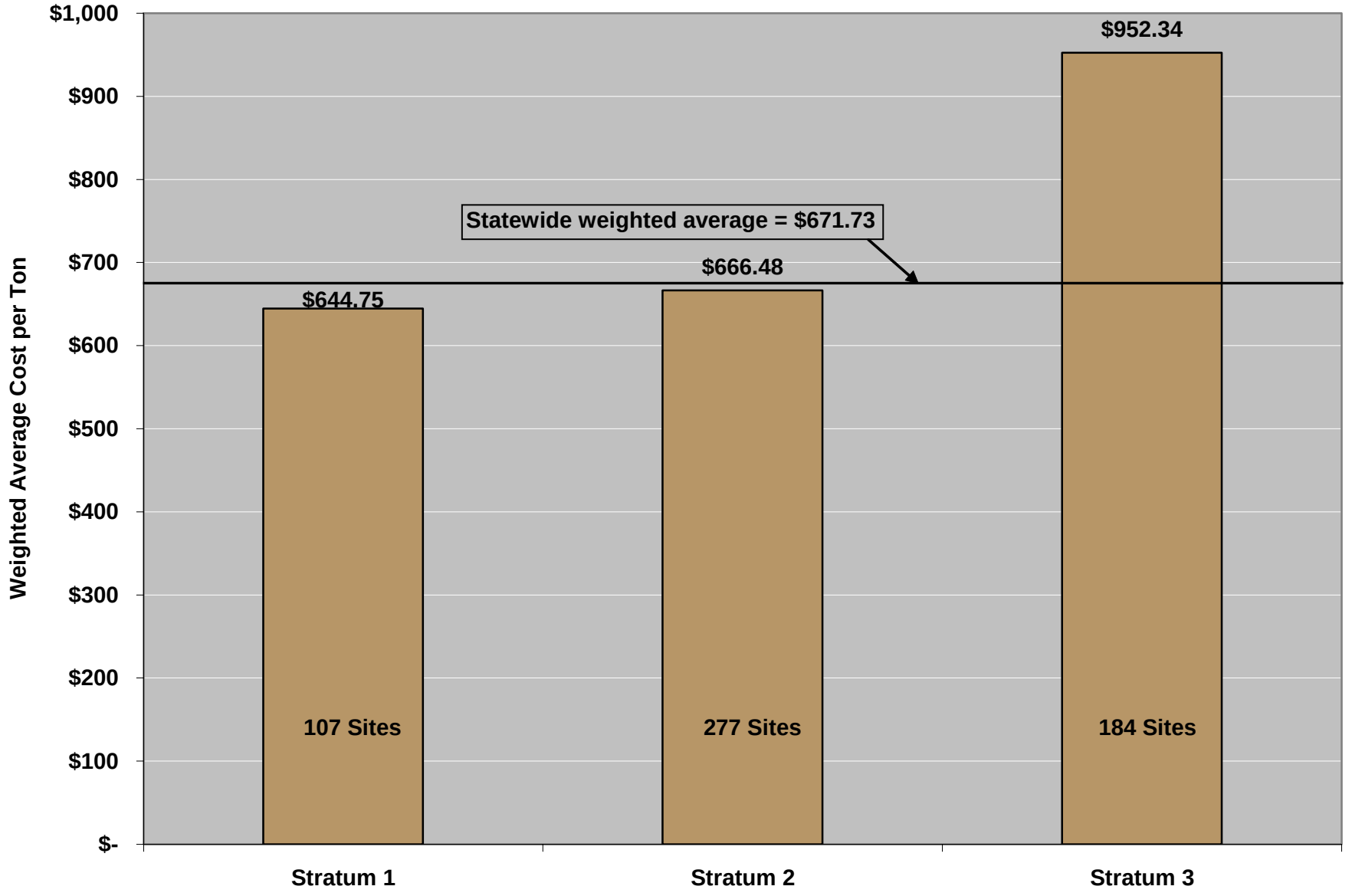
Results by strata do not meet the statistical rigor of the statewide weighted average

6.6 PET #1 Costs per Ton and Population Size by Strata

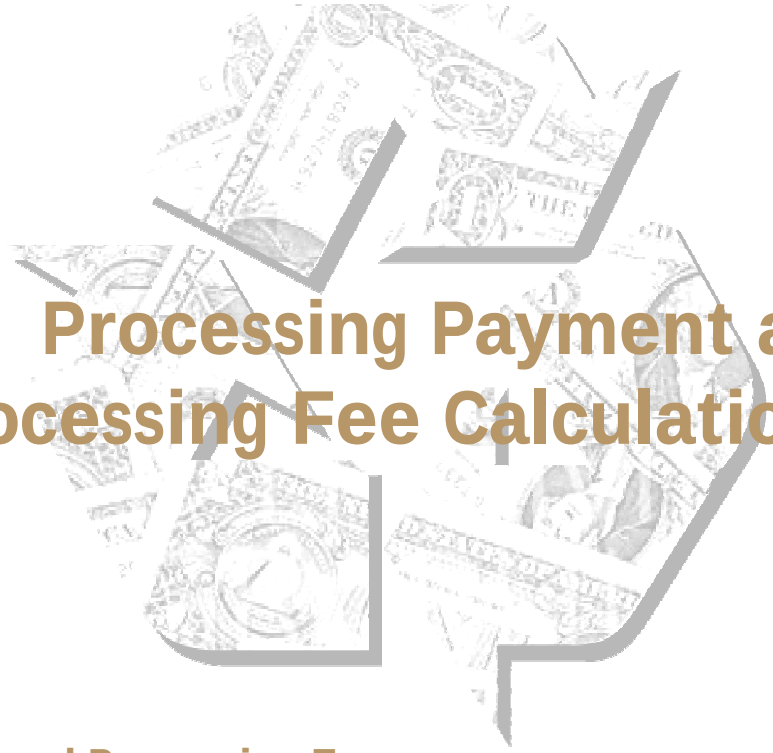


Results by strata do not meet the statistical rigor of the statewide weighted average

6.7 HDPE #2 Costs per Ton and Population Size by Strata



Results by strata do not meet the statistical rigor of the statewide weighted average



7.0 Processing Payment and Processing Fee Calculations

7.1 Processing Payments and Processing Fees

- Processing payment (PP) is equal to the difference between the cost of recycling, with a reasonable financial return (RFR), and the average scrap value:

  PP = (Cost of recycling x RFR) – (Scrap Value)

- Processing fee (PF) is equal to the processing payment, multiplied by a specific percentage reduction

7.2 Processing Fee Reduction Factors

	Material	Recycling Rate 2004/2005	Manufacturer's Percentage of Processing Payment Factor
1	Glass	58%	13%
2	PET #1	42%	18%
3	HDPE #2	51%	14%
4	PVC #3	1%	65%
5	LDPE #4	0.1%	65%
6	PP #5	2%	65%
7	PS #6	0.3%	65%
8	Other #7	9%	65%
9	Bi-Metal	6%	65%

There is an additional reduction in the glass processing fee, per Section 14575(k), of $0.00068 per container

7.3 Scrap Value Survey

- The scrap value survey was performed by a separate DOR monthly census of all certified processors
- Processing payment determinations were based on scrap values paid to recyclers between October 1, 2004, and September 30, 2005
- In the last year, scrap values for many material types have increased, although some scrap prices have dropped. In general, the last two years have had historically high scrap prices for all major materials except glass

7.4 Scrap Values per Ton

Material Type		Oct. 2004 to Sept. 2005	Oct. 2003 to Sept. 2004	Percent Change
1	Aluminum	$1,286.34	$1,164.77	10%
2	Glass	3.25	3.25	0%
3	PET #1	293.71	224.93	31%
4	HDPE #2	305.55	194.11	57%
5	PVC #3	10.83	13.78	-21%
6	LDPE #4	480.52	0.10	480420%
7	PP #5	166.60	3.19	5123%
8	PS #6	132.02	105.03	26%
9	Other #7	59.16	(36.98)	-260%
10	Bi-Metal	10.55	(2.56)	-512%

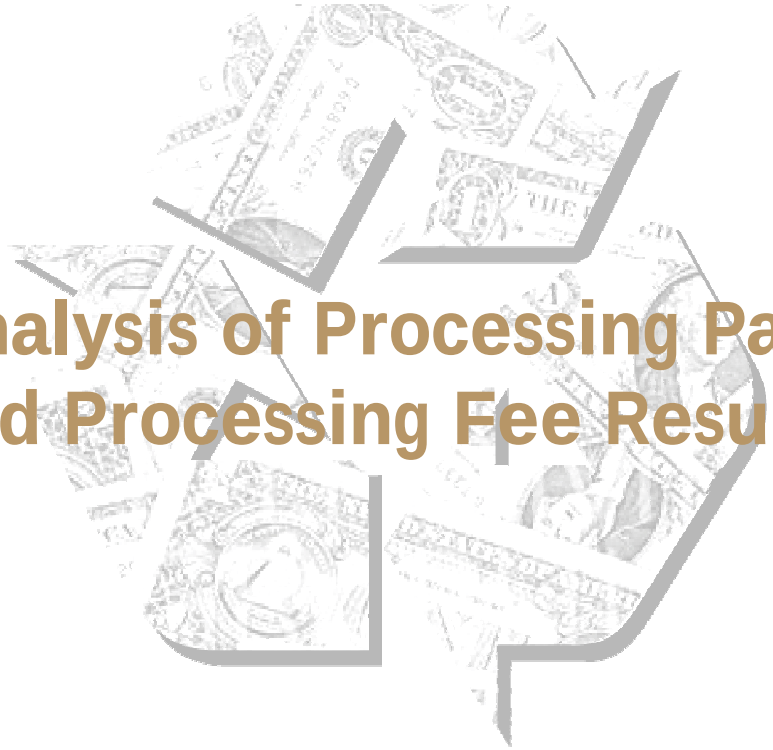
Scrap values for the minority material types are based on very low volumes and are highly variable, from month-to-month, and year-to-year

7.5 January 1, 2006 Processing Payments and Processing Fees, per Ton

	Material	Processing Payment (per Ton)	Processing Fee (per Ton)
1	Glass	$ 83.68	$ 8.38
2	PET #1	226.39	40.70
3	HDPE #2	402.65	56.34
4	PVC #3	1,658.89	1,078.20
5	LDPE #4	1,511.58	982.59
6	PP #5	686.77	446.40
7	PS #6	3,085.51	2,006.05
8	Other #7	1,273.97	828.06
9	Bi-Metal	629.44	409.12

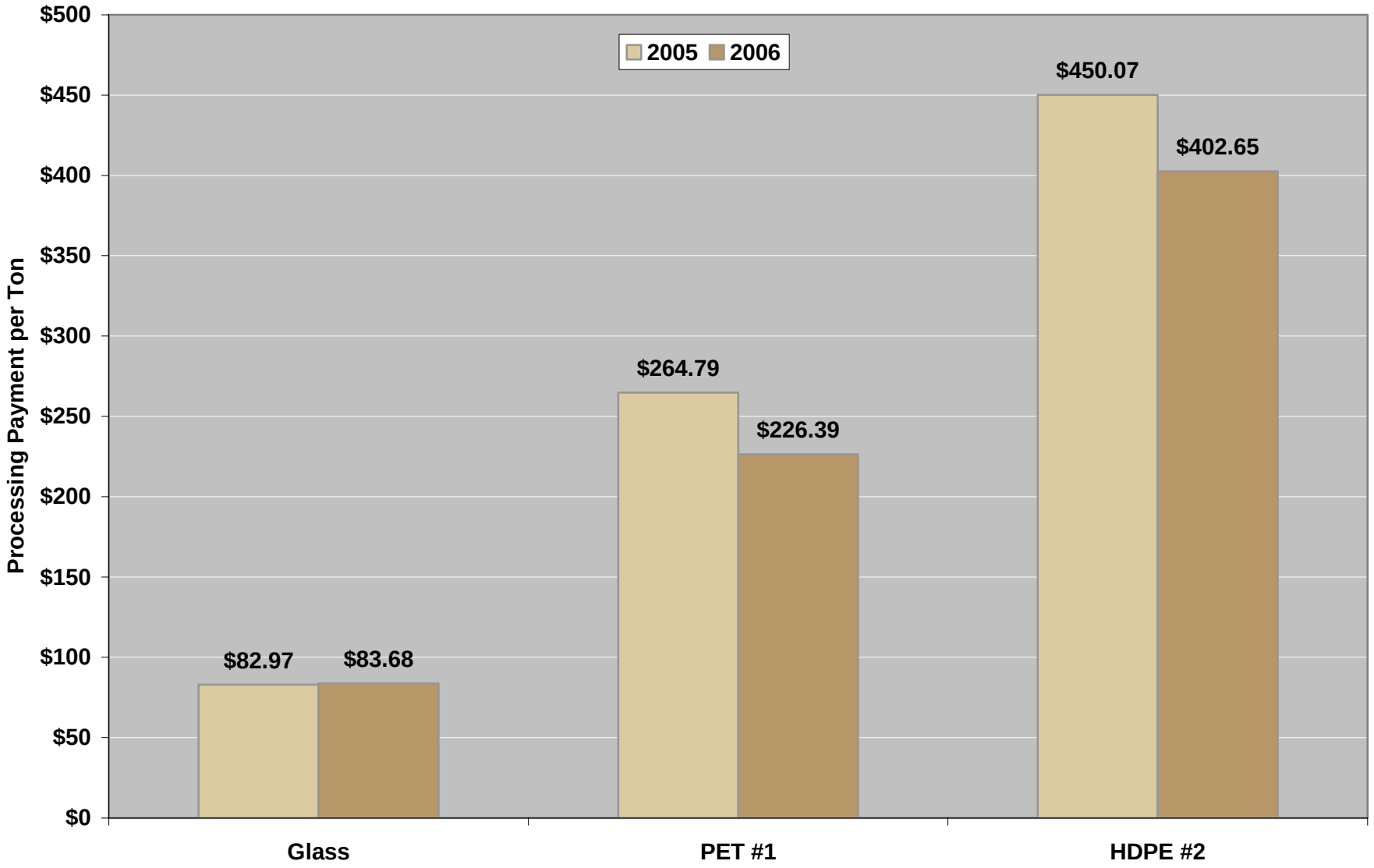
7.6 January 1, 2006 Processing Payments and Processing Fees, per Container

Material		Processing Payment (Cents per Container)	Processing Fee (Cents per Container)
1	Glass	2.286	0.229
2	PET #1	0.884	0.159
3	HDPE #2	3.595	0.503
4	PVC #3	8.464	5.501
5	LDPE #4	1.817	1.181
6	PP #5	3.815	2.480
7	PS #6	2.210	1.437
8	Other #7	5.637	3.664
9	Bi-Metal	3.934	2.557



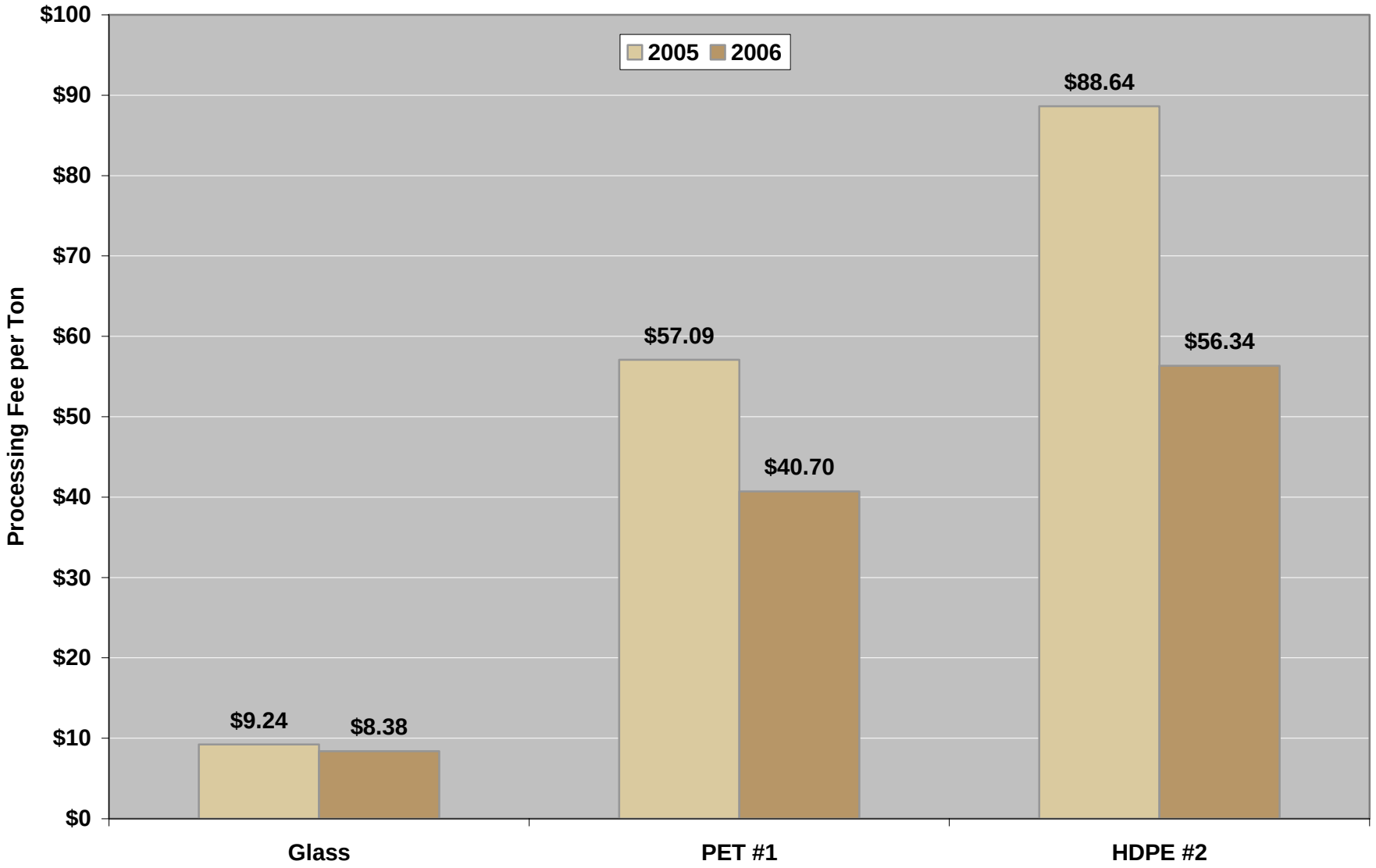
8.0 Analysis of Processing Payment and Processing Fee Results

8.1 Comparison of 2005 and 2006 Processing Payments

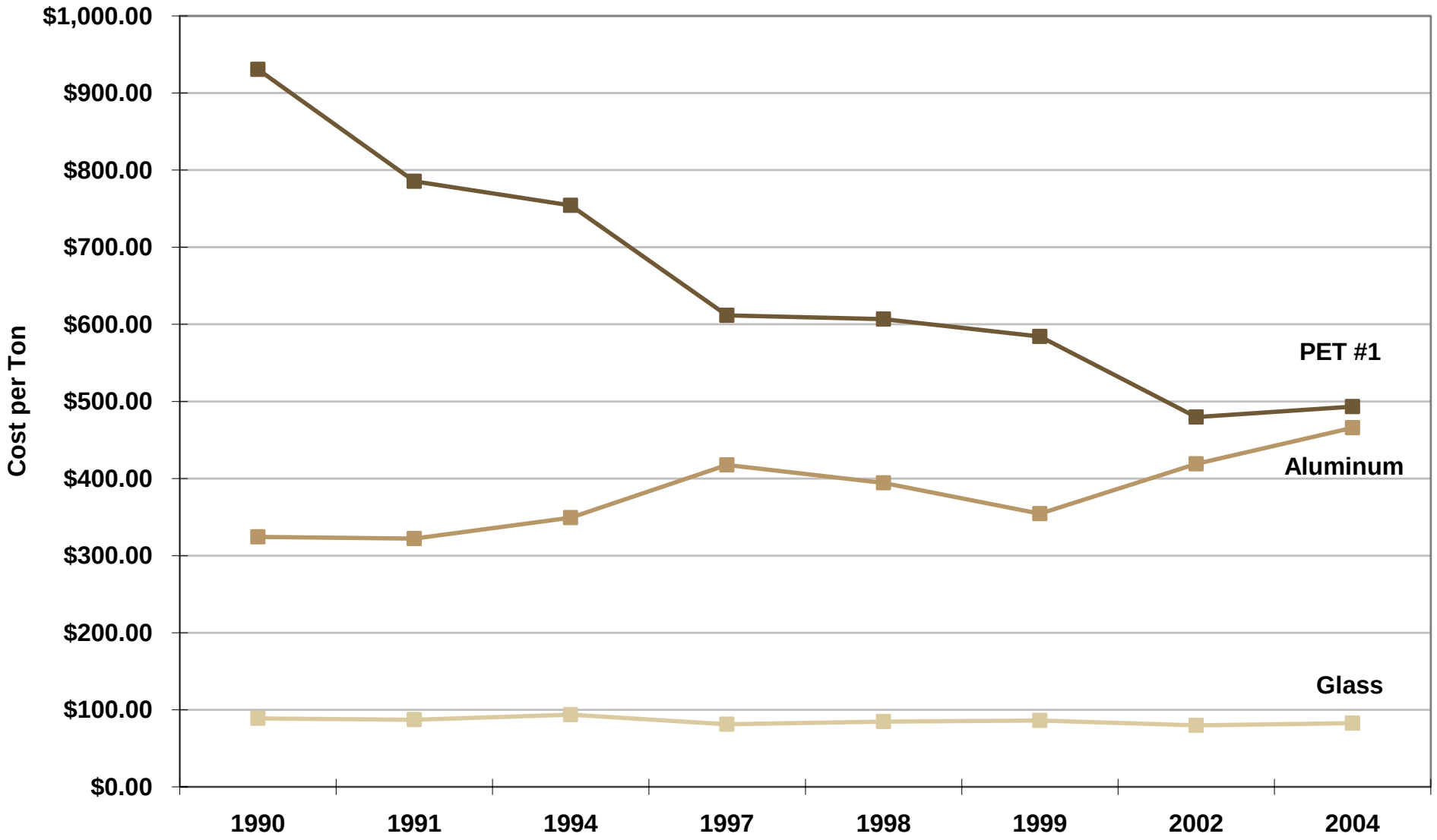


Note: 2005 processing payments reflect mid-year adjustment for glass, PET #1, HDPE #2

8.2 Comparison of 2005 and 2006 Processing Fees



8.3 Historic Costs per Ton



8.4 Final Comments on 2004 Costs per Ton

- While the cost per ton to recycle PET #1 is still under $500, for the first time since 1989, the cost per ton to recycle PET #1 increased in 2004. It appears that the PET #1 recycling cost may be stabilizing, with no new gains in recycling efficiency, as significantly higher recycling volumes were not enough to counter overall higher costs
- Recycling volumes of all four major material types increased between 2002 and 2004, in part due to the increase in CRV to 4-cents and 8-cents.
- The market shift from aluminum to PET #1 continues. Although overall aluminum recycling did increase in 2004, aluminum now makes up less than 50% of all CRV recycling, from a high of 75% of all recycling in the 1990s. PET #1 now makes up over 30% of all CRV recycling, from a low of 5% in the 1990s

9.0 Questions

- Comments
- Concerns
- Suggestions