



*REPORT TO SUBCOMMITTEE ON
DISTRICT OF COLUMBIA
COMMITTEE ON APPROPRIATIONS
UNITED STATES SENATE*

RELEASED

Review Of The Solid Waste
Collection Program B-118638

District of Columbia

*BY THE COMPTROLLER GENERAL
OF THE UNITED STATES*

913524 1089962 MAY 2, 1973



COMPTROLLER GENERAL OF THE UNITED STATES

WASHINGTON D C 20548

B-118638

The Honorable Birch Bayh, Chairman
Subcommittee on the District of Columbia
Committee on Appropriations
United States Senate

Dear Mr. Chairman:

In a letter dated July 27, 1972, your predecessor requested us to evaluate the District of Columbia Government's solid waste collection program and to compare the cost of collection services provided by the District with the cost of similar services provided by other cities comparable in size to the District. As agreed with your predecessor's office, we directed our review primarily toward evaluating the efficiency and economy of the system for collecting refuse from residential dwellings. The results of our review are summarized below and discussed further in the appendix.

INEFFICIENT AND COSTLY
RESIDENTIAL COLLECTIONS

During the 4-week period ended October 27, 1972, for which operational data was available, District collection employees worked only an average of 24.5 hours a week because the collection routes were not structured to require 40 hours of work. Because collection employees were paid for 40 hours a week, regardless of the number of hours worked, we estimate that the District paid its collection employees about \$1.1 million for hours not worked in fiscal year 1972.

Also the number of hours worked by the collection crews and their productivity differed greatly from day to day and differed among the crews on the same days.

Baltimore, Maryland, and St. Louis, Missouri, like the District operate under a task system, provide collection services to each residential dwelling twice a week, and experience lighter workloads on the second collection day. Unlike the District, however, Baltimore and St. Louis make operational adjustments for the second weekly collection to increase the efficiency and economy of their collections. Consequently, in

fiscal year 1972 the Baltimore and St. Louis collection crews worked an average of about 30 percent and 50 percent more hours daily, respectively, than the District crews.

We estimate that the District would save about \$700,000 annually in collection costs if it adopted Baltimore's plan of operation and \$880,000 annually if it adopted St. Louis' plan.

In our opinion, a basic cause of the deficiencies in the District's collections is the lack of detailed and accurate operational data for management use. The District has two designed information systems that would provide the data to identify the changes in collection routes and in the collection crews' daily work tasks that are needed to provide for a more productive and more balanced operation. On October 2, 1972, the Environmental Protection Agency awarded the District a demonstration grant for implementing the systems.

Making the major changes in the residential refuse collection operations which we believe are necessary will require approval of the employees' union. Therefore, the District should start negotiating with the union the needed changes in crews' daily work tasks as soon as practicable. Also, the District should negotiate a new agreement with the union to improve collection crew productivity when the current agreement expires on November 13, 1973.

OTHER CITIES' COSTS FOR COLLECTION SERVICES

The table on page 10 of the appendix shows the personnel costs for collection services incurred by the District and four other cities. Because the data for the five cities is not comparable, it should not be used to assess or measure the efficiency or economy of the District's collection operations.

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In a letter dated March 22, 1973, the Director of the District's Department of Environmental Services stated that the Department had taken actions which are increasing productivity but that more needs to be done and is being done.

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We do not plan to further distribute this report unless you agree or publicly announce its contents.

Sincerely yours,

A handwritten signature in cursive script, reading "Elmer B. Smith". The signature is written in black ink and is positioned below the typed name.

Comptroller General
of the United States

REVIEW OF THE SOLID WASTE COLLECTION PROGRAM

DISTRICT OF COLUMBIA GOVERNMENT

INTRODUCTION

The Bureau of Solid Waste Collection, Department of Environmental Services, District of Columbia Government, is responsible for the District's solid waste collection program. In fiscal year 1972 the Bureau incurred costs of about \$10.6 million for solid waste collection. This amount does not include the cost of operating and maintaining the collection vehicles or the cost of related administrative support services because the District's accounting system does not identify these costs. As of September 1972 the Bureau had 1,060 employees in the following areas.

Administration	38
Waste collection	480
Street cleaning	413
Special services	<u>129</u>

1,060

The District collects refuse twice a week from all residential dwellings of less than four family units. The employees assigned to collecting this refuse work under a task system which requires each collection crew to complete a specified task each workday.

The daily task is defined in the union agreement, covering the period March 1972 to November 1973, between the District and the American Federation of State, County and Municipal Employees, AFL-CIO. The agreement states that a collection crew--a driver and three collectors--shall either collect four full 16-cubic-yard truckloads of trash on Monday and Tuesday or complete the route after collecting less than four truckloads. On Thursday and Friday satisfactory completion of the route is the daily task for each crew. Wednesday is set aside for collecting bulky items and refuse not picked up on the scheduled collection day and for picking up spillage and other loose refuse in the streets and alleys of the assigned routes. In October 1972 the District had 172 collection routes. Each collection crew serviced two routes.

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When the task is completed, the workday ends and employees are paid for 8 hours, even though they may have worked less than 8 hours. The purpose of the task system is to offer an incentive for collection employees to accomplish their assigned tasks expeditiously.

IMPROVEMENT NEEDED IN EFFICIENCY AND ECONOMY OF RESIDENTIAL REFUSE COLLECTIONS

We believe that the District needs to improve the efficiency and economy of its residential refuse collections.

During the 4-week period ended October 27, 1972, for which information was available, District collection crews worked an average of 24.5 hours a week but got paid for 40 hours because the collection routes were not structured to require 40 hours of work. We estimate that the District paid about \$1.1 million for hours not worked in 1972.

The number of hours worked by collection crews and their productivity differed greatly from day to day and differed among the crews on the same days.

In our opinion, a basic cause of the operational deficiencies was the lack of operational data for management purposes. An information system which could provide management with such data has been designed but has not been implemented.

Inefficient and costly residential collection operations

At our request the District compiled operational data for the 4-week period ended October 27, 1972. The data showed that collection employees worked an average of 24.5 hours a week. This average was computed on the basis of the time worked by the truck drivers who are required to deliver the last loads to the disposal sites or transfer stations and park the trucks after the other members of the crews are finished for the day. A District official estimated that drivers work a minimum of 15 minutes longer each day than the other crew members.

The following table shows the average hours worked and average quantity of refuse picked up by collection crews for the 4-week period.

	<u>Average hours worked daily</u>	<u>Average quantity of refuse collected daily</u>	
		<u>Truckloads</u>	<u>Tons</u>
Monday	6.37	3.20	13.10
Tuesday	<u>6.21</u>	<u>3.00</u>	<u>12.01</u>
First collection days' average	<u>6.29</u>	<u>3.10</u>	<u>12.56</u>
Wednesday	<u>3.31</u>	<u>1.13</u>	<u>2.30</u>
Thursday	4.47	1.80	6.18
Friday	<u>4.13</u>	<u>1.59</u>	<u>5.35</u>
Second collection days' average	<u>4.30</u>	<u>1.70</u>	<u>5.77</u>
Weekly average	<u>24.49</u>	<u>10.72</u>	<u>38.94</u>
Daily average	<u>4.90</u>	<u>2.14</u>	<u>7.79</u>

NOTE. In setting up the task system in 1969, the District considered 7.5 hours as a reasonable workday. The current union contract allows the collection of four truckloads, or about 17 tons, of refuse on the first collection days.

The table shows large differences in the number of hours worked and the amount of refuse collected each day. On the first collection days (Monday and Tuesday), the collection crews worked an average of 6.3 hours and collected an average of 12.6 tons of refuse whereas on the second collection days (Thursday and Friday), the collection crews worked an average of only 4.3 hours and collected an average of 5.8 tons of refuse. Also, even though the union agreement allows crews to pick up four truckloads of trash each day, the crews picked up about three truckloads on the heaviest workdays--Monday and Tuesday.

Because the same number of men make up a collection crew each day, the total cost for collecting residential refuse is virtually the same each day. Thus, as shown below, the cost of collecting a ton of refuse on the second

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collection days was more than double the cost on the first collection days

	<u>Average tons collected by crews</u>	<u>Estimated total daily cost per crew (salaries and benefits only)</u>	<u>Average costs for each ton collected</u>
First collection days	12.56	\$160	\$12.74
Second collection days	5.77	160	27.73

On Wednesday--bulky item and special cleanup day--the employees worked an average of 3.3 hours and collected an average of 2.3 tons of refuse. Comparing the tons collected on Wednesday with the tons collected on other days may not be a good indicator of Wednesday's workload because of the differences in the collection operations on that day. (See p. 1.)

On the basis of the data for the 4-week period, we estimate that in fiscal year 1972 the District paid its collection employees about \$1.1 million for about 270,000 hours not worked. About \$850,000 of this cost can be largely attributed to the low workloads on Wednesdays, Thursdays, and Fridays. Some of the nonworked hours may be related to an incentive factor usually included in a task system operation.

Our analysis of the District's data also showed differences in the number of hours worked by different collection crews. For example, during the 4-week period, one crew worked an average of 6.7 hours a day to accomplish its assigned task while another crew worked an average of 3.9 hours a day. Another example of the workload imbalances among collection crews is demonstrated by the following table showing the hours worked by all the crews on Tuesday, October 17, 1972.

<u>Hours worked</u>	<u>Collection crews</u>	
	<u>Number</u>	<u>Percent</u>
2.9 and less	-	-
3 to 3.9	3	3.5
4 to 4.9	21	24.4
5 to 5.9	23	26.8
6 to 6.9	26	30.2
7 to 7.9	11	12.8
8 and over	<u>2</u>	<u>2.3</u>
Total	<u>86</u>	<u>100.0</u>

The table not only shows the imbalances in the hours worked but also shows that, on one of the heaviest workload days (Tuesday), 85 percent of the crews worked less than 7 hours and 55 percent worked less than 6 hours.

The collection crews were underutilized primarily because of the structure of the collection routes. The collection routes and the number of collection crew members were established on the basis of the anticipated workload on Monday and Tuesday when it was estimated that about 65 percent of the weekly refuse would be collected. Therefore, the structure provided for a much shorter workday on Wednesday through Friday.

In addition, requiring collection crews to do special work on their regular routes on Wednesday causes an inefficient operation, an uneven workload, and a short workday. The table on page 3 shows that during our test period collection crews worked an average of only 3.3 hours and had the lightest workload on Wednesday. Because residents only occasionally need to dispose of bulk items and their needs are difficult to predict, we believe that bulk items should be picked up by special crews and that such pickups should be scheduled in advance on the basis of requests from residents. (Three of the four other cities included in our review collect bulk items on specific request only.) We believe also that cleanup work should be included in the daily tasks of collection crews and that Wednesday should be a regular collection day.

Also, the collection routes should be restructured to provide for productive and balanced daily tasks. The methods

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used by Baltimore and St. Louis to schedule collection crews are examples of how to better utilize the crews. Baltimore and St. Louis, like the District, operate under a task system, provide collection services to each residential dwelling twice a week, and experience lighter workloads on the second collection day. Baltimore and St. Louis, however, make operational adjustments for the second collection.

Baltimore collects refuse 6 days a week--Monday through Saturday. Each employee works a 5-day week. The first collection is on Monday, Tuesday, or Wednesday, and the second collection is on Thursday, Friday, or Saturday. For the first collection a driver and three collectors are assigned to each route. For the second collection only a driver and two collectors are assigned.

In St. Louis one crew services three routes each week. The first collection is on Monday, Tuesday, or Wednesday--one route each day. The second collection is on Thursday or Friday--one and one-half routes each day.

These cities' plans provide for more efficient and economical collections than the District's. The Baltimore and St. Louis crews worked an average of about 30 percent and 50 percent more hours daily, respectively, than the District crews.

We estimate, as shown in the following table, that the District would save about \$700,000 annually if it adopted Baltimore's plan and \$880,000 if it adopted St. Louis' plan.

	Plan of operation			Difference	
	District	Baltimore	St. Louis	District and Baltimore	District and St. Louis
Number of routes serviced	172	172	172		
Number of collection employees needed (allows for backup personnel)	424	323	307	101	117
Annual personnel cost for each route (allows for backup personnel)	\$ 20,819.50	\$ 15,097.66	\$ 14,094.27	-\$5,721.84	-\$6,725.23
Add					
Annual personnel cost for each route for holiday worked (note a)		486.04	486.04	486.04	486.04
Annual personnel cost for each route for bulk collection (note b)		1,118.10	1,118.10	1,118.10	1,118.10
Total annual personnel cost for each route	\$ 20,819.50	\$ 16,701.80	\$ 15,698.41	-\$4,117.70	-\$5,121.09
Total annual personnel cost for all routes	\$3,580,954.00	\$2,872,709.60	\$2,700,126.52	\$708,244.40	\$880,827.48

^aUnder Baltimore's or St. Louis' plan providing service twice a week to each resident during a week including a holiday requires employee to work on that day

^bUnder Baltimore's or St. Louis' plans, bulk collection services need to be provided by employees other than those assigned to regular route collection. The cost estimate was based on a study made by Touche Ross and Co. for the Nelson Commission

The District Government's agreement with the employees' union requires that the union be notified 14 to 30 days before proposed changes in collection employees' work schedules can be made and that the changes be negotiated. The agreement also established a committee on productivity which is to meet periodically to discuss such matters as manpower utilization and route adjustments. Making the major changes in the District's residential refuse collections which we believe are necessary to improve the economy and efficiency of the collections will require approval of the employees' union.

We believe that the District should start negotiations with the union as soon as practicable to adjust the daily tasks of collection crews, within the terms of the union agreement, to better utilize the crews and to balance their workloads. The District also should be fully prepared to negotiate a new agreement containing more reasonable terms when the current agreement expires on November 13, 1973.

Need for more management information

In our opinion, the lack of operational data for management use is a basic cause of the operational deficiencies in the District's residential waste collection program.

The District agreed with the union in July 1970 on the daily tasks of collection crews without the benefit of operational data to assess the impact the agreement would have on employee productivity. In the current union agreement, the District negotiated changes in the daily tasks which improved productivity somewhat, but again without the benefit of adequate operational data.

The District has two systems--a management information system and a system for measuring the effectiveness of solid waste collections--designed which would provide management with the data needed to negotiate more favorable crews' daily work tasks with the union and to monitor collections. These systems, however, have not been fully implemented.

Management Systems, Inc., designed the management information system under a contract awarded on August 29, 1971. The design of the system, completed in October 1971,

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provides for accumulating and reporting, by day of the week, the number of hours worked and the quantity and number of truckloads of refuse collected on each route by each collection crew. This data would enable the District to monitor day-to-day refuse collections and to identify underutilization of its manpower resources. The District used the management information system to compile the operational data that it gave us for use in our review.

The system for measuring the effectiveness of solid waste collections was designed on the basis of a study made from June 1970 to July 1971 by a team of District and Urban Institute personnel. The system provides for measuring (1) cleanliness and the incidence of health hazards on streets and alleys through use of numerical litter-rating techniques and systematic sampling inspection procedures and the incidence of fire hazards by plotting fires starting in outdoor solid waste accumulations and (2) citizen satisfaction through annual telephone surveys and volunteered complaints.

In its report dated August 11, 1971, the team stated that the system could be used to

- help document the need for funds in the annual budget,
- identify streets, alleys and other areas which need corrective action,
- evaluate the effects of corrective action or new programs, and
- aid in establishing a productivity clause to be included in the contract with the employees' union.

The Environmental Protection Agency awarded the District a demonstration grant on October 2, 1972, for implementing these two systems. In applying for the grant, the District stated that the systems had not been fully implemented because funds were not available to adequately train existing staff and to hire additional needed employees. A District official informed us in late February 1973 that the District still had not resolved problems with the accuracy of the source data for the management information system and that it was uncertain when the system would be working properly.

A detailed and accurate management information system is an essential tool in managing the residential solid waste collection program. The District should give high priority to the establishment of such a system so that the operational data can be available to management well before the start of negotiations for the new agreement with the employees' union.

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DISTRICT AND OTHER CITIES' COSTS
FOR COLLECTION SERVICES

The following table shows the personnel costs (salary and fringe benefits) incurred for collection services by the District and four other cities in fiscal year 1972. We used only personnel costs because they represented almost all the collection costs and because we could not obtain complete and comparable data on all the costs for all the cities.

In addition to collecting residential refuse, the District collects refuse from District-operated buildings and provides such other services as collecting leaves and dead animals and cleaning up after parades and demonstrations. The other cities provide similar services, but we were unable to identify the costs for these services at all cities. We therefore grouped the costs of all these services under the heading "residential and other collections." All cities provide street and alley cleaning, since we could identify these costs, they are shown separately.

Cost for all collection services

	District	Other cities			
		A (note a)	B	C	D
Total personnel cost	\$10,423,195	\$8,705,688	\$9,707,926	\$9,157,559	\$2,780,122
Cost per capita (note b)	13 77	12 14	10 72	12 20	4 47
Cost per ton collected	44 74	30 03	20 00	20 36	12 52

Cost for residential and other collections

	District (note c)	Other cities			
		A (note a)	B	C	D
Total personnel cost	\$5,780,857	\$8,061,433	\$4,185,447	\$7,196,543	\$2,253,509
Cost per capita (note b)	7 64	11 24	4 62	9 60	3 62
Cost per residential unit served	35 68	36 47	13 95	33 87	11 98
Cost per capita served	15 42	12 53	5 58	11 11	4 58
Cost per ton collected	31 59	29 18	10 03	20 27	10 81

Cost for street and alley cleaning

	District (note c)	Other cities			
		A (note a)	B	C	D
Total personnel cost	\$4,642,338	\$ 644,255	\$5,522,479	\$1,961,016	\$ 526,613
Cost per capita (note b)	6 14	0 90	6 10	2 61	85
Cost per mile of street and alley cleaned	3,669 83	337 31	3,681 65	1,673 22	478 74
Cost per ton collected	92 93	47 56	80 72	20 70	38 54

^aCost for fringe benefits not available

^bBased on 1970 census of population

^cEstimated by GAO on the basis of employee roster dated September 11, 1972

The above data only indicates the cost for collection services provided by the cities and should not be used to assess or measure the efficiency or economy of the District's operations. Each of the cities provided collection services similar to those provided by the District, however, such factors as the wage rate of collection employees, the degree and frequency of services, the geographical location and layout of the city, the number and location of disposal sites, and the condition, type, and amount of equipment used affect the comparison of costs of solid waste collections. Studies made by public and private organizations show that the location of refuse containers alone significantly affects the cost of collections. We did not attempt to adjust the cities' costs for such factors because necessary data was not available.

AGENCY COMMENTS

The Director of the Department of Environmental Services in a letter dated March 22, 1973, stated that the Department had taken actions which are increasing productivity but that more needs to be done and is being done. Also, he emphasized his agreement with our position that the data in the table showing the costs incurred by the District and other cities are not comparable.

The Director questioned whether the month of October 1972 which we used to compute work time and costs was representative of the entire year's collections. However, the Department could not furnish us with reliable operating data for other periods of the year. Moreover at the time that arrangements were being made for a test period, Department officials did not indicate that October 1972 was not a representative month.

SCOPE OF REVIEW

We examined pertinent District records, policies, and procedures, records of congressional hearings, and the employees' union agreements. We analyzed and summarized the number of hours worked and the number of tons of refuse collected for the 4-week period October 2 to October 27, 1972. We interviewed District officials responsible for managing the refuse collection program. We observed the collection process in several areas of the city. We compared the personnel cost for District collection services with that for similar services in other cities comparable in size to the District.

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We did not audit or verify the accuracy of the operational and financial data obtained from the other cities. Also, we did not evaluate the effectiveness of the District's or the other cities' programs for refuse collection.

We made our review at the Bureau of Solid Waste Collection, Department of Environmental Services, District of Columbia Government. We also visited four other cities and obtained data on their refuse collection programs.