

MEMORANDUM

TO: Major and Town Council

FROM: W. Calvin Horton, Town Manager

SUBJECT: Refuse Collection Options

DATE: November 27, 1995

The Council's work plan formulated January 14, 1995, and approved in February, included an objective to consider a fee based refuse collection system, emphasizing unit pricing.

This is the first step in that general consideration. We anticipate a more detailed discussion after we receive the Council's guidance on some of the issues raised here. We suggest the following process for the Council to consider the question of implementing pay-as-you-throw (PAYT) refuse collection.

- 11/27/95 - receive staff report and pose questions for additional staff research
- 2/5/96 - Council work session to discuss PAYT and recommendations from the Landfill Owners Group concerning possible integrated waste management systems for Orange County
- April 1996 - additional staff report providing detailed responses to the Council's questions, cost estimates for proposed changes (if any), transitional steps and a schedule for implementation if required
- 6/96 - the Council could include in the budget for fiscal year 1996-97 funds for implementing any changes in refuse collection

The Council has delayed action on this objective pending completion of the Landfill Owners Group consultant report related to an integrated solid waste management plan. Weston's "Working Paper No. 3-Evaluation of Solid Waste Management Systems" was released in October. The following discussion of collection options for Chapel Hill relates specifically to services for Town residents.

Summary

- PAYT allows economic incentives for waste reduction.
- Such a system could work in Chapel Hill
- Establishment of goals and objectives specific to Chapel Hill is a key first step
- Informing the public as to elements of the program and realistic results is critical
- A broad range of complementary services already exists which could be modified to further enhance overall solid waste programs

- Implementation of a unit pricing system for collection of refuse would required at least one complete budget cycle

Background

Definition - What is unit pricing?

Unit pricing refuse collection systems involve customers paying for services based on the amount of waste they produce.

Such systems, also called variable rate pricing, or “pay-as-you-throw” (PAYT), are not new; however, their popularity has increased significantly since the early 1980’s. Currently, an estimated 2,000 to 3,000 localities use such a system, including large, medium-sized and small communities; also, these jurisdictions are in all regions of the United States.

Goals

While specific goals and objectives of PAYT usually are set based on local considerations, the following are common, according to the U.S. Environmental Protection Agency:

1. Encourage waste prevention and recycling.

Fees should be set sufficiently high to encourage waste reduction, recycling and composting.

2. Reduce landfill use.

As waste reduction goals are achieved, the use of areas of the landfill for disposal will decrease, lengthening the life of the site.

3. Raise sufficient revenues to cover costs.

Many cities charge their customers fees for refuse services. Among this group, a common principle is that revenues must be sufficient to cover fixed costs of refuse management. These basically included the cost for collection and must be available regardless of the amount of refuse individual users generate. Cost for disposal of refuse will vary depending on quantities of refuse and may be recovered through variable fees.

Once solid waste management costs are identified, decisions can be made concerning what costs should be covered by a fee based system. Options could cover a broad range of targets, including disposal costs only; collection costs only; or the goal could be recovery of all costs or some portion.

Elements of PAYT System

1. How to implement a system (weight vs. volume)

There are two basic methods for implementing PAYT - one based on volume and one based on weight.

Volume- based: residents or consumers are charged for waste collection according to volume generated. This can be determined either by number and variable sizes of cans placed for collection or by use of special trash bags (or tags or stickers for trash bags) that are purchased. This method has the relative advantage of being less costly to set up and operate. The major disadvantage involves less of a direct relationship between waste reduction and cost savings.

Weight - based: under such systems, refuse is weighed at the curbside and the resident or consumer is billed for service per pound of refuse he/she sets out for collection. The primary advantage of this system relates to savings that residents can achieve by reducing their waste stream. Because the amount of refuse placed for collection can be measured more precisely, every pound of waste reduction can be accompanied by a reduction in user costs. There are technical issues reported with weight-based systems. These included the sensitivity of scales to weather and debris associated with refuse collection, problems with weighing on uneven ground and problems with having weighing devices certified for billing purposes. The only weight-based systems in the U.S. are still experimental.

2. How to pay for the system selected

The pricing structure for the system selected is of primary importance. An essential first step is identification of costs, both up- front and on-going, operational expenses. Principles of full cost accounting are applicable and examples of costs less obvious than some operational expenses must be identified. Examples include employee benefits, central administrative overhead, departmental management costs, maintenance and repair costs, etc.

If fees are intended to recover costs, then revenues generated must be sufficient to cover system costs, both fixed and variable; they must be relatively easy to collect. Basic options for generating revenues are noted.

a. Proportional (linear) rate system.

This is the simplest of all rate structures. All households are charge a flat rate for each container placed for collection. The incentive to the consumer

is to reduce the number of containers, thereby lowering costs. Administration and billing also are relatively easy.

b. Variable container rate.

A different rate is charge for different sizes if containers. A challenge here is to establish fees sufficiently high to guarantee adequate and stable revenues. Also, administration becomes more complicated because different rates are involved and because households may want to change during a budget cycle.

c. Two-tiered rate systems.

These systems acknowledge that two types of costs are associated with solid waste management: fixed and variable. Fixed costs basically relate to collection, while variable costs relate to disposal. Given this distinction, residents are charge a flat fee to cover collection costs and a separate, per-container cost to cover disposal expenses.

A variation of this two-tiered approach is the use of a multi-tiered rate system, in which households pay a fixed flat fee (usually charged on a monthly basis) and different rates for different sizes of containers. These t tiered systems encourage waste reduction, but are relatively complex to administer and bill.

According to the U.S. Environmental Protection Agency, weight-based systems pay for services from revenues collected based on billing customers (residents) per pound. Unit costs have to be established sufficiently high to cover both collection and disposal costs. This method provides the most direct economic incentive for waste reduction.

3. How to administer the system?

Administration of unit pricing systems is similar in certain ways irrespective of the system selected, other aspects vary based on the system selected.

Regardless of whether the system is weight or volume-based, revenues must be collected to cover system costs. Most localities use local taxes to pay for municipal solid waste systems. This option could continue with ad valorem taxes continuing to be used to cover system costs.

If a weight-based system is used, then the administration requirements could be significant. Scheduled collection of residential waste would be established at the curb and equipment would be acquired. Each collection vehicle would be equipped with scales and an automated recording system (i.e., computer).

Billing would be regular and frequent. Employees would need to be trained extensively.

Volume-based systems could be administered under various systems. First, residents could use a direct payment system in which they purchase bags or tags from the solid waste agency; or, they could buy containers at various public and retail sites located throughout the community.

Subscription systems involve billing the customer regularly based on the number of containers they anticipated setting out for collection for each cycle (his/her subscription rate). Under this system, residents may reduce their subscription rate after sufficient experience indicates their waste generation was overestimated; conversely they could increase their rate.

Actual set-out systems bill customers based on the number of containers actually placed for collection.

Billing administration requires either staffing and equipping an existing operation to accommodate whatever system is selected, or using other established billing procedures, such as tax or utility bills. The basic questions “Who will bill?” and “How often?” will have to be answered regardless of the system selected.

4. How is the system implemented?

The implementation process for PAYT must include several steps, some of which are sequential, while others may occur simultaneously. For purposes of discussion, implementation activities are noted as separate and distinct; in reality, the process for designing and implementing PAYT is on-going and consists of interrelated components. The following steps for implementation emanate from survey results made by the U.S. Environmental Protection Agency as described in the attached publication “Pay-As-You-Throw: Lessons Learned About Unit Pricing” (April, 1994). Copies of this document are available for the public’s review at the Library and Clerk’s Office at Town Hall.

- a. Broad public participation is essential for a successful program. Public outreach is especially important during planning and design phases. Consumers need to identify their waste management needs and express their opinions once they learn of service options, with relative costs, advantages and disadvantages, so that policies are likely to work. Public support requires acceptance of unit pricing and sufficient detailed information to ensure participation.

- b. Set programs goals and objectives based on local conditions. A key element in planning and design for PAYT is formulation of ranked objectives for the community. For example, a community lacking disposal alternatives to landfill use may wish to adopt a different set of priorities compared to the community with extensive recycling services, but limited remaining landfill space.
- c. Determine elements of the program to be implemented. If weight-based services are preferable, then begin changes necessary for such a system. Scheduled curbside collection would have to be implemented; trucks would have to be equipped with scales and recording devices; collectors would have to be trained; a billing administration system would have to be developed; and the public would have to be educated.

If a volume-based system is selected, then a choice would have to be made between containers and bags, tags or stickers. Methods of distribution and payment would have to be determined and arrangements would have to be made with retailers.

- d. Legal provisions likely would be necessary in order to implement a new system. Ordinances either may have to be amended or new ones adopted.
- e. Information collection and analysis would be desirable. Reporting needs would have to be determined, identifying baseline data collection needs and routine data reporting specifications.
- f. Development of an implementation timeline that is realistic and comprehensive is essential. Many communities have found that a year or longer is required before a change to PAYT is possible.

Issues

Before the Council decides to change to PAYT, several issues may need to be considered. The following list compiled by the U.S. Environmental Protection Agency is based on experiences other localities have had over recent years.

1. Equity

A theme common to all successful programs is a general public perception that the fee based program is fair. Under the system in which local taxes are used, each resident pays the same tax rate regardless of the amount of waste he/she generates. Under some variable rate pricing systems, all users pay a common basic fixed fee for collection and variable rates for disposal depending on quantities of waste generated.

One issue of equity relates to the question “Is it fair for the resident who generates far less waste to subsidize those who generate more?” Proponents of PAYT argue that this should be a central focus of such programs, and that the answer should clearly be no.

Opponents of PAYT often cite other aspects related to equity as cause for concern. For example, family size could be considered. Single people and families with two or more wage earners either will produce less waste or will generate some waste away from home (e.g., traveling, eating out, etc.). Larger families, as well as poorer families, tend to have fewer choices in purchasing and life styles and, thus, produce relatively more waste at home. One question thus raised is whether or not a waste collection system should differentiate based on ability to pay or penalize those who because of their life situation will tend to produce more waste.

2. Accommodating special needs

Closely related to the issue of equity, there are those in a community who are relatively less able to participate in unit pricing, either because of economics, physical handicaps or age. Special provisions could be made for those who would have difficulty using curbside residential collection services. The program would need to include a list of qualification criteria to assist such individuals. This acknowledgment of “ability to pay” principles of public finance could afford low-income families a means of receiving this basic public service.

3. Relative ease of administration

While the easiest system to administer is continuation of the status quo, in which local taxes pay for solid waste management, other alternatives may better achieve program goals and objectives. The most complicated program to administer is weight-based, given the billing demands and the need to modify collection equipment and methods of preparing waste for collection. Volume-based systems vary in terms of ease of administration and consideration would have to be given to each option before an ultimate selection would be made.

4. Multi-family housing

The most common challenge for unit pricing programs nationwide has been incorporating multi-family (five units or more) residential structures into the system selected. Economic incentives are less direct when waste is collected from residents per building, rather than per unit, as is often the case with such structures. According to the U.S. Environmental Protection Agency, this area of PAYT continues to need close evaluation.

5. Enforcement

The experience in other communities suggest that, once policies are established for unit pricing services, enforcement becomes essential. Voluntary compliance is effective only to the extent that consumers are willing to abide by applicable rules and regulations. Even if violators are few and instances of non-compliance are relatively infrequent, the overall program may be undermined. The Environmental Protection Agency's report on PAYT recommends the use of sanctions ranging from letters requesting voluntary compliance to court action and fines or tax liens to ensure compliance and to require collectors to follow established procedures. Inspections are needed and penalties usually are assessed when violations occur.

6. Integration with other complementary programs

The most successful PAYT program exist in areas where other solid waste options exist, including recycling, composting and bulky waste collections. One of the goals of a comprehensive PAYT system might be coordination of such programs for handling solid waste.

7. Commercial

Another issue which is not addressed to any great extent in reference material related to PAYT is commercial solid waste. The exception to this is multi-family waste and is discussed above. A system could be designed for commercial customers that uses either weight or volume as the basis for establishment of rates. Under weight-based unit pricing businesses would be charged according to pounds of waste disposed in dumpsters. Key problems would be technological (how to measure, record weights) and enforcement (how to prevent abuse, illegal dumping, etc.). Volume-based systems could use variable sizes of dumpsters, or variable rates depending on an historical analysis of usage (e.g., low, medium or high), or a combination. Problems related to enforcement would exist. Regardless of the system selected, an administrative structure would have to be established to handle billing and collection of payments from businesses.

Discussion

We suggest that the development of a unit pricing system for Chapel Hill related to existing and projected solid waste needs here.

Integration with Solid Waste Management Goals

The Landfill Owners Group has been developing options for a county-wide solid waste management system. Their consultant (Roy F. Weston) has presented three options for

systems which would integrate waste prevention, collection, processing and disposal elements. The Owners Group is scheduled to decide upon a preferred system option and develop a solid waste management plan for the County which they would present to the governing boards for their consideration.

The Council may wish to consider how PAYT would integrate with the proposed solid waste management systems under consideration by the Landfill Owners Group. Among the issues which the Council may wish to consider are the following:

- Do any of the options being considered by the Owners Group potentially conflict with PAYT? For example, wet/dry collection systems would regulate collection in specific ways which would be their nature greatly reduce waste put out for collection. Can a PAYT system be implemented with this kind of collection system?
- If the systems being considered by the Owners Group assume a high level of regulation (such as mandatory recycling) designed to reduce the amount of waste to be placed in the landfill, would the Council wish to add additional regulation for users of waste collection services (in the form of PAYT)?
- Should Chapel Hill proceed with a PAYT system absent similar systems in the other local governments in the county?
- The Weston study assumed the use of a bag/tag system coupled with curbside collection for two of the three options now being considered by the Landfill Owners Group.

How PAYT Could Be Implemented In Chapel Hill

Goals - what might they be?

1. Waste prevention

Recent analysis of refuse data for Chapel Hill for fiscal year 1994-95 indicated that residential weight collected totaled 6,254 tons, from 8,400 households, or .75 ton per household per year. No data were available to indicate waste volumes. Based on these data, the average refuse generated by a household was twenty-eight pounds per week, or fourteen pounds per bi-weekly collection. These averages are less than the national average residential waste data of about one ton per household per year.

Chapel Hill's rate of individual waste generation is about 75% of the national average. Recent data have indicated that the average waste generated by a resident in Chapel Hill is 4.5 pounds per week; the national statistic is six pounds. Both comparisons of waste generation yield similar results and indicate that Chapel Hill already generates relatively less refuse for collection on the Town's residential garbage routes.

Accordingly, one question that might be asked for Chapel Hill is “what can realistically be expected in terms of further reductions in residential waste generated for collections?”

2. Reduce Landfill Use

The Town, through the waste diversion and recycling program already in place, is actively promoting reducing reliance on the landfill as the ultimate means of disposal for our waste. PAYT could supplement ongoing and potential new efforts to reduce the amount of waste to be landfilled. We do not know how much PAYT could contribute in terms of extending the life of the current or future landfill. Additional research plus input from the Weston study may yield some estimate.

3. Encourage recycling

Chapel Hill has been providing a broad range of recycling services for the past several years. Contract curbside recycling services include glass, newspaper, aluminum/steel and plastic bottles. The estimated participation rate by Chapel Hill single family residents is 58%, with an estimated 39% of materials being diverted from disposal in fill areas at the landfill. This compares to a national diversion rate of 30% of the residential waste stream. One question that the Council may wish to consider is what marginal impact PAYT can have on recycling experience here?

4. Efficiencies

During fiscal year 1994-95, residential refuse service cost about \$1.1 million. Of this total, almost \$1 million went for collection, while disposal cost about \$156,000. Given recent increases in tipping fees, the disposal costs currently are about \$200,000. Questions that the Council may wish to address related to financial goals include the following:

- what cost reductions are possible (note: collection costs about five times as much as disposal)?
- which is more important-recovering fixed costs (for collection), or variable costs (for disposal), or both?

Possible Systems

1. Weight-based

This system would require a change from the present residential refuse collection system of twice weekly rear yard to weekly curb side. In addition,

garbage trucks would have to be equipped with scales and computers for recording data. Employees would have to be trained in the use of system components and the public would require extensive information as to the changes that would be required. In addition, the Town would have to develop a system for administering and preparing bills, sending them out and collecting payments. This could involve contracting with existing billing systems (e.g., county tax bills or OWASA) or expanding the Town's Finance Department.

Advantages: most direct incentive for waste reduction

Disadvantage: most costly to set up and operate; most complex to administer; no long-term experience elsewhere

2. Volume-based

The Weston report discusses a volume-based unit pricing system for refuse collection. Elements of the system they discuss include weekly curbside residential collection, using variable rates for pre-paid bags.

The Town would have to decide between container options and select rate structures and billing systems compatible with that decision.

Variable sizes of cans: the standard, large single container provided each household could have a capacity of fifty or sixty gallons. The household would be billed according to the number of containers used. Smaller, graduated sizes of containers also could be used, ranging from twenty to sixty gallons. Residents would choose in advance the size and number of containers and subscribe accordingly.

The large, single container option has the primary advantage of revenue stability, with the number of containers placed for collection remaining relatively constant. The main disadvantage is the lack of economic incentive to reduce waste.

Volume based services for commercial establishments already exist to some extent. For example, in the downtown area users of compactors are billed on three categories of use: high, medium and low. Currently, businesses using dumpsters receive basic weekly services at no fee, but are charged a separate fee for optional extra weekly pickups. The Town could implement some type of unit pricing system to acknowledge variations in amount of waste disposed.

Based on data from fiscal year 1994-95, total commercial solid waste costs were about \$745,000 (note: single-family residential costs mentioned previously totaled \$1.1 million for the same period). The breakdown between collection and disposal expense was \$393,000 and \$352,000 respectively.

Program income totaled \$75,000. Given workload data of 14,100 tons collected and about 87,000 dumpster pickups, the following unit costs resulted:

- net collection cost per ton: \$22.54
- net collection cost per pickup: \$3.65
- total net cost per ton (with disposal): \$47.54
- total net cost per pickup (with disposal): \$7.71

The challenges to recover a portion or all of commercial costs would be similar to those experienced nationally with respect to multi-family residential applications. Additional research would be necessary to adapt services to meet local needs.

6. Once all elements of the system, both single family residential and commercial, were established, items necessary for program implementation would have to be procured. For residential, this could involve acquisition of scales/computers for trucks if a weight-based system were selected, or ordering either cans or bags if volume-based services were provided. Negotiations with retail outlets where citizens could purchase cans or pre-pay for bags or stickers/tag may be necessary. For commercial, this could include various sizes of dumpsters and/or specialized equipment for users to control waste placed for collection. Under the current system, commercial users would be responsible for acquiring and installing such equipment.
7. Administrative arrangement would have to be made for billing, if necessary. For example, the use of a flat fee for fixed costs could require an expenditure of \$50,000 to \$70,000 if the Finance Department had to add staff and equipment for regular billing and collection of service fees. Options that could be explored included contracting with OWASA or the County for billing to collect basic fees. No billing would be necessary for those options in which citizens pre-pay for bags or tags/stickers.

Issues

1. Equity

The Town has begun taking steps to recover costs for certain solid waste services. For example, commercial establishments presently pay for extra dumpster collections, while others in the downtown area are charged a variable fee for use of a compactor based on amount of waste disposed. The Council may wish to consider equity issues related to commercial and residential fee systems.

The Council also may wish to consider issues related to principles of “benefits received” and ability to pay” and related questions pertaining to issues such as family size and life situations and effects of PAYT on low income households.

2. Accommodating special needs

We suggest that the Council may wish to establish criteria indicating who, because of financial hardship, might have to relate to physically handicapped residents and senior citizens who might have trouble with collection system.

3. Relative ease of administration

The Town presently does not have a billing structure that could accommodate major program demands. As previously noted, some changes in the Finance Department could be made to handle certain program changes. Other possibilities could include contracting with other agencies for billing services.

4. Multi-family housing

The question of how multi-family housing units would be incorporated into any PAYT system will be a challenge here, as it has been nationwide. The Council may wish to consider options in programs elsewhere and determine which have applicability here. One factor common to all successful programs that have included multi-family structures has been strong enforcement. Examples of actions elsewhere include use of bar codes and scales for measuring refuse generated by tenants; requiring tenants to use trash tokens or other type identifying code permitting access to a device controlling access to dumpsters; and having building managers sell bags or tag to each tenant.

5. Enforcement

We suggest that the Council would need to consider rules and regulations tied to any PAYT program implemented. Ordinances may have to be amended or new ones adopted to allow sanctions that would enhance compliance. Presently, some solid waste programs in place present challenges that enforcement steps may resolve.

Enforcement options that may need to be considered include imposition of an “availability fee” allowed by State statute and use of court action to have liens placed on the land of people who do not pay the fee.

Regardless of the system selected, we believe enforcement would be a key to its success. Inspection would be necessary to assure compliance once the public has been informed relative to the new system. Collectors would need to enforce the new rules and regulations. Successful programs elsewhere have

found that violations must be sanctioned so that a common understanding is established that an aggressive approach will be taken to assure program success.

6. Integration with other complementary programs

The Town already has a broad range of service options available that complement PAYT. The Council may wish to consider these programs and decide which ones are effective, which ones are ineffective and which ones could be improved; a question the Council may wish to consider is what would be the best use of limited solid waste resources on a prioritized basis to achieve overall solid waste goals for Chapel Hill?

Other complementary programs in effect here include composting, collection of yard waste separate from household garbage, recycling drop off sites for various materials and collection of bulky items (e.g., white goods) for a fee. A corrugated cardboard ban was recently imposed on commercial establishments; expansion of this ban to include residences is anticipated at some future date.

CONCLUSION

We believe pay-as-you-throw refuse collection could be implemented in Chapel Hill. The process would have to be implemented over a time period sufficient to allow for proper planning and design, involvement of the public and coordination with other services to assure an integrated, rational approach to solid waste management.

We believe the environment exist for a successful program in that a broad range of solid waste services presently exists, with citizen participation in waste reduction and diversion exceeding national averages. The Council may find that a key challenge would be to properly establish goals and objectives appropriate for Chapel Hill and to establish services that best achieve those specific goals.

We seek guidance from the Council as to the process you wish to follow with respect to further considering these issues. Specific next steps that the Council may wish to consider include the following:

- The Council may wish to set up a planning group to work on identifying issues and posing possible solutions. The staff could bring to the Council recommendations on forming such a planning group, including suggestions for its composition and a draft charge.
- If the Council wishes to proceed with a PAYT system, the staff could prepare a report discussing implementation in greater detail, including identifying a target time schedule for proceeding.

- If the Council desires additional information, the staff could prepare a follow-up report, responding to specific issues which the Council may raise.

A possible time schedule identified in the beginning of this report is summarized below.

- 11/27/95 - the Council receives staff report and poses questions for additional staff research.
- 2/5/96 - the Council has work session to discuss PAYT and recommendations from Landfill Owners Group related to integrated waste management systems for Orange County.
- 4/15/96 or 4/29/96 - the Council receives staff report providing detailed information in response to questions raised previously, cost estimates for proposed changes (if any), transitional steps and an implementation time schedule.
- 6/96 - the Council could included provisions in the budget for fiscal year 1996-97 for implementing any changes in refuse collection.