ABSTRACT


The cost of treating and disposing of municipal solid waste is expected to climb as local governments implement federal EPA and state regulations. This report considers the economic and legal implications of regionalization for local governments. The Coastal Regional Solid Waste Management Authority is presented as a model for regionalization in North Carolina. Regionalization has successfully been used in other southern states including Georgia and Missouri. These state loan and grant programs are offered as examples as to how the North Carolina government could promote the implementation of regionalization.
Table of Contents

Chapter One  Introduction and Purpose  

Chapter Two  The Coastal Authority As A Model For The  
Regional Management Of Municipal Solid Wastes  
  Intercounty and Interlocal Solid Waste Agreements  
  Organization and Financing of the Coastal Authority  
  Infrastructure  
  Financing  
  Tipping Fees  
  Availability Fee  
  Political Driving Forces  
  Current Status of the Coastal Regional Solid Waste  
  Management Authority  

Chapter Three  The Incentives For Creating Regional Solid Waste  
Management Systems  
  Economies of Scale  
  Political Jurisdictions and Regionalization  
  Critical Mass for Regionalization  
  Recycling Operations  

Chapter Four  The Generalized Application of Government  
Incentives For Regionalization  
  Financial Incentive from Government  

Chapter Five  Disincentives for Regional Solid Waste Management  
Systems  
  Public Opposition  
  Flow Control  

Chapter Six  Discussion and Conclusions  
  Public vs. Private Ownership of Regional Facilities  
  Imported Waste  
  Changes In Policy and Regulations Which Would Promote  
  Regional Systems  
  Future Trends at the County Level Towards Regionalization  
  of Solid Waste Management Systems  
  Conclusions  
  References
Chapter One: Introduction Purpose

Purpose of Analysis

The purpose of this analysis is to compare the economic, legal requirements, and decision maker's acceptance of traditional versus regional solid waste management systems.

Background

The federal Environmental Protection Agency estimates that 160 million tons of municipal solid waste (MSW) was generated in the United States in 1966. In 1990, this volume had increased to 195.7 million tons (U.S. EPA) or 293 million tons (Biocycle survey). The difference in reporting is largely due to differences in accounting. The Biocycle survey included non-hazardous industrial construction and demolition waste and sewage sludge which were not included in the EPA estimate.

When analyzing the treatment of solid waste, 130.4 million tons of municipal solid waste were landfilled, according to a 1990 EPA estimate; 33.4 million tons were composted, and 31.9 million tons were combusted. Of the combusted waste, 29.7 tons were combusted with energy recovery. The remaining material was combusted solely for volume reduction.

In 1970, 18,000 active municipal landfills were in use in the United States, by 1986 this number had diminished to 6,000 (Federal Register, October 9, 1991). A Biocycle survey identified just under 8,000 active landfills in 1988, 6,326 in 1990 and 5,812 in 1991. Since a national tracking system for the generation and
disposal of municipal solid waste does not exist, the discrepancy in these estimates is to be expected.

The two hundred largest landfills with capacities greater than 1,000 tons per day receive more than forty percent (40%) of all the municipal solid waste generated in the U.S. (National Renewable Energy Laboratory, Aug. 1992). In 1991, a national Biocycle survey indicated that an average of 12.5 years of landfill capacity remains (Biocycle, April 1992). Often the Northeast is identified as the region with the most severe disposal problem, with just ten years of anticipated capacity. Contrary to this popular belief, projections for the South suggest only five years of landfill capacity remain.

North Carolina generated 7.5 million tons of municipal solid waste in 1991. Municipal landfills received 7.07 million tons (94%), 0.35 million tons (4.5%) were sent to non-hazardous industrial landfills, and 0.11 million tons (1.5%) were combusted. As to the number of solid waste landfills, one hundred and fifty three existed throughout the state. One hundred and twenty of the landfills were used for MSW, thirty two for industrial solid waste and two monofills were dedicated to the burial of rubber tires (Ahlberg, Sept. 1992). In a report to the state legislature it was estimated that 30% of the landfills would reach capacity in five years.

Since 1987 all newly constructed landfills in North Carolina require the inclusion of a double-lined plastic bottom and leachate collection system. This significantly increases the capital and operating costs of landfills. Currently six lined landfills are in operation in the State: six others have received permits to begin
operation this year; and twelve are in the permitting process (Ahlberg, Sept. 1992).

Traditionally, solid waste management in North Carolina has been the responsibility of individual municipalities or individual counties. However, at present a regional approach to managing municipal solid waste is being considered in many states including North Carolina. During the 1989 North Carolina general legislative session, legislation was passed which allowed for the creation of a Regional Solid Waste Authority. This legislation - Article 22 of Chapter 153A-421-432, states that the purpose of an authority is “to provide environmentally sound, cost effective management of solid waste, including storage, collection, transportation, separation, processing, recycling, and disposal of solid waste in order to protect the public health, safety, and welfare; enhance the environment for the people of the state; and recover resources and energy which have the potential for further use and to encourage, implement and promote the purposes set forth in Part 2A of Article 9 of Chapter 130A of the General Statutes.” The intent of this legislation is to improve solid waste management throughout the state.

Regionalization is expected to reduce construction and operating costs, and improve recycling efficiencies and opportunities. Five of the twelve landfills currently in the North Carolina permitting process are planned as regional facilities. Three of these landfills are publicly owned and two are private (Ahlberg, Sept. 1992).

In the future, it is expected that there will be fewer but larger landfills. The ownership of these facilities will tend towards private
ownership over publicly owned landfills. Long-term monitoring, liability and compliance with new subtitle-D regulations will make it expensive to continue operating even mid-size - 100 to 500 tons per day - landfills. County governments are unlikely to have the capital or expertise to develop and operate large regional landfills. These large landfills will require sophisticated design and construction procedures, quality assurance, elaborate documentation and rigid monitoring (Ham 1993).
Chapter Two: The Coastal Authority As A Model For The Regional Management Of Municipal Solid Wastes.

Regional planning has been successfully used in a number of large projects, some of which date to the early part of this century. Regional airports, water distribution systems and air pollution control districts are frequently used both in the United States and in other countries. The New York-New Jersey Port Authority has been in operation since 1947. In North Carolina, several well developed regional facilities exist. For example the Raleigh-Durham Airport Authority has been in operation since 1943.

The North Carolina Solid Waste Management Act of 1989 mandated that each county with its municipalities or in cooperation with other counties, develop a comprehensive solid waste management plan. These plans were to include provisions which address the State’s recycling goals.

During the middle 1980's, eight coastal counties in North Carolina discussed the formation of a regional solid waste landfill, however by 1989, five of the eight counties decided to develop their own landfills. Only Craven, Carteret and Pamlico counties, decided to continue working toward the concept of a regional landfill, for geographic, regulatory, and financial reasons. These three counties formed the Coastal Regional Solid Waste Management Authority (CRSWMA) during the Summer of 1990 under NC Senate Bill 58. This Bill has been extended to apply to all of North Carolina and has been codified as North Carolina General Statute 153A-421. This statute
permits “any two or more units of local government to create a regional solid waste management authority”. The Authority’s purpose is to assist in the development of programs involving overall planning, public education, source reduction, recycling, composting, marketing of recyclables; and to landfill the remaining solid waste.

This regional solid waste system is located in the central coastal area of the state, roughly bisected by the Neuse river and adjacent to the Pamlico Sound. The Authority will oversee the solid waste activities of the three rural counties, Craven, Carteret, and Pamlico. The Subtitle-D landfill and the offices of the Authority are located in Craven County. The landfill is located in the city limits of Tuscarora near Highway 70 just north-west of New Bern, the county seat. Both Carteret and Pamlico counties operate a solid waste transfer station. These three counties are rural with a combined population of 146,000, an average population density of eighty three people per square mile, an annual economic activity of $1.5 billion.

Intercounty and Interlocal Solid Waste Agreements

The state statute provides for the creation of regional solid waste management authorities, and grants specific powers to such authorities (Guinan, Asheville 1992). The Authority’s responsibilities and powers are primarily described in two documents: an Intercounty, and an Interlocal Agreement. In order for the multi-county governmental agency to function in an orderly manner, both
documents must be approved and remain in effect during the lifetime of the Authority.

The Intercounty Solid Waste Agreement

The Intercounty Agreement, a 27-page document, is the primary charter which describes the assignment of powers, duties, and responsibilities of each county and of the Authority. This document delineates the responsibilities of the new Authority, and describes the transfer of power from each county governmental unit to the new intercounty agency.

Article VIII of the intercounty agreement describes the assignment of powers, duties and responsibilities of the Authority. The Authority will apply for and disburse funds and grants made available from both the federal government, and the state of North Carolina. The Authority will assume responsibility for the disposal and management of solid waste imposed by law on any of the counties. The Authority will be responsible for the development and implementation of the Solid Waste Management Plan for the State of North Carolina. Other responsibilities include establishing, managing and operating solid waste disposal and resource recovery systems and their component processing facilities and equipment. This includes the planning, design, construction, financing, management, and ownership of the facilities. The Authority will require the counties to separate and deliver both solid waste and recyclable material to specific locations and facilities. The Authority will have the right to establish flow control, and to direct solid waste in the
geographic service area to designated facilities to provide sufficient revenues for the support of the Authority and its operations. The Authority will develop, implement and supervise a program requiring all persons who haul waste to obtain a license from the Authority.

Article VII, called the Method of Financing, describes how the Authority will finance the construction and operation of the facility. The activities shall be financed through tipping fees, availability fees, and the proceeds of certain revenue bonds issued by the Authority pursuant to the Revenue Bond Act. Financing for the preparation of the Authority's Solid Waste Management Plan, and the preparation and issuance of bonds for construction of the solid waste management facilities (SWMF) shall be the responsibility of the Authority. In addition, the Authority will be responsible for all the costs of permitting, acquisition, construction and operation of the SWMF. The SWMF and the implementation of the solid waste management plan shall be reimbursed from rates, fees and charges established by the Authority and by revenues of the solid waste disposal facilities.

Included in the agreement is the statement "Unless otherwise agreed, the Authority shall not have any responsibility with respect to financing of or cost associated with the collection of solid waste within the Unincorporated Areas." Article X describes the direct responsibilities of the Authority, including responsibilities to the state. The authority shall assume and undertake all reporting, planning and study requirements imposed by law on the counties.
with regard to municipal solid waste. This includes a region-wide Municipal Solid Waste Management Plan required by the state. In addition, article X outlines the Authority's plan to adopt, by agreement with the counties, a flow control ordinance. The ordinance will require that all municipal solid waste generated within the designated geographic area of the three counties, be delivered to a facility designated by the Authority.

Article XI describes the responsibilities of the counties. Each county is responsible for closing its present landfill and to bear the full cost of the closing. The counties must approve the Authority's Solid Waste Management Plan which will then be submitted to the state. Article XI emphasizes the flow control ordinance and how the counties should enforce it. It states that “The Counties shall adopt the Authority’s flow control ordinance and permit it to be applicable within the Unincorporated Areas of the Counties and shall enforce the provisions of the flow control ordinance”. If the flow control ordinance is determined to violate the provisions of the Commerce Clause of the United States Constitution, each individual county shall require that the waste of that county be delivered to a facility designated by the Authority. Further, if the waste is to be disposed of in a landfill out-of-state, the waste must be handled in full accordance with Title 40 of the Code of Federal Regulations part 258.40 (Subpart D) of the regulation enacted pursuant to the Resource Conservation and Recovery Act.
The Interlocal Solid Waste Agreement

Both the Intercounty and Interlocal agreements largely parallel each other in structure and content. However, since the Intercounty Agreement is between county governments, and does not cover the incorporated towns within the counties, a separate Interlocal Agreement was proposed. This 22-page Interlocal Agreement details the power of the Authority over individual towns within each county. Article V of the agreement establishes a time period for continuance for as long as the Authority has outstanding bonded indebtedness or thirty years from the date of the Agreement, whichever is earlier. However it may be terminated earlier as provided in other articles of the Agreement. Article VI defines the responsibility of each municipality for the collection of its solid waste, and establishes that the Authority shall not have an obligation for the collection of municipal solid waste within incorporated areas.

Organization and Financing of the Coastal Authority

Infrastructure

The Board of Directors of the Authority consists of a total of seven members. The members and alternates are appointed by the Board of County Commissioners of their respective counties. The term for each member is four years, and members may be reappointed. Craven county has the largest population, and is the
landfill host, therefore Craven has three members on the Board while Carteret and Pamlico each have two members.

Financing

Article VII of the resolution establishing the authority, describes the start-up funding for the authority. Initially, administrative and general operational expenses are to be provided for by members of the Authority. Each member's proportionate share is to be determined by a per capita assessment based on the most recent population projection provided by the North Carolina State Office of Budget and Management. Thereafter, the Authority will develop and adopt, by a simple majority vote, an annual budget for each upcoming fiscal year by the end of December of the preceding fiscal year. The budget shall be funded primarily by revenues generated by operations of the Authority (tipping fees), and then by revenues generated by assessment of member governments, in the same manner as the initial funding on a per capita basis.

Article VII of both agreements establishes that the: "Authority shall pay the costs and fees associated with preparing for the issuance of bonds to finance construction of the solid waste management facilities. These bonds will be redeemed from rates, fees and charges established by the Authority. The Authority's undertakings shall be financed from Tipping Fees, and if necessary from Availability Fees. The Authority may also raise revenue from
the proceeds of certain revenue bonds issued by the Authority pursuant to the Revenue Bond Act."

To provide for planning and construction financing of the solid waste disposal facilities, the Authority issued twenty seven million dollars of Solid Waste System Revenue Bonds, Series 1992. The revenues of the solid waste disposal facilities, rates, fees and charges for solid waste management will go towards servicing the debt of these bonds. Two types of fees, tipping fees and availability fees are expected to pay for the operation of the Authority.

Tipping Fees

Tipping fees are expected to pay the majority of the costs of operating the facility. When the Interim Regional Landfill opened on October 9, 1993 in Tuscarora - Craven County the tipping fee was set at $37.00/ton for municipal solid waste, and $7.50/ton for tree limbs and yard waste. At both the transfer stations in Newport - Carteret County, and at Grantsboro - Pamlico county the tipping fees were set at $49.50/ton for municipal solid waste, and $20.00/ton for limbs and yard waste.

Three miles from the regional landfill is a separate Construction and Demolition (C&D) recycling site. At this waste site the rates are: $30.00/ton for mixed C&D, $14.00/ton for inert segregated C&D, and $20.00/ton for woody segregated C&D.

For commercial accounts the hauler is charged a license fee of $25.00, and $5.00 for a permit on each truck. Vehicles are weighed and charged as they cross scales. The account is billed monthly and
payment is due within 30 days after billing. For individuals (non-commercial) the vehicle is weighed and charged for the net weight of the waste materials before leaving the site.

Availability Fee

Pursuant to Chapter 153, Article 15, of the General Statutes of North Carolina, the members of an Authority are authorized to impose a fee for the availability of a disposal facility provided by them (an “Availability Fee”). Such an availability fee may be imposed on all improved property in the county that benefits from the availability of the facility. The Authority is authorized to adopt an ordinance providing that any availability fee may be billed and collected in the same manner as property taxes, and in the case of nonpayment, may be collected in any manner by which delinquent personal or real property taxes can be collected.

Political Driving Forces

John Guinan, executive director of the Authority stresses the need for a strong public information program, “For with it, public misunderstanding and rejection can be minimized, but without it, misunderstanding and confusion often become epidemic and may lead to public rejection even when the proposed system is clearly in the public’s best interest” (Guinan, Asheville, 1992).

Mr. Guinan points out that over a period of three months approximately 100 public presentations were made throughout the three counties using a combination of paid staff and volunteers. This
work has been supplemented by an information video, pamphlets, public service announcements and paid media advertising.

Over time, the level of approval by county commissioners for the three counties has been consistent. For example, on April 16, 1990 in special session, the Carteret County Board of Commissioners voted unanimously (5-0) to request the North Carolina General Assembly to enact legislation authorizing a solid waste management authority (Deese Feb. 21, 1994).

After the proposed bill was approved by the North Carolina legislature, the counties met again to vote on the formation of the Authority. On August 20, 1990, the Pamlico County Board of Commissioners met in regular session, and discussed with the County Attorney the formation of the CRSWMA. After the discussion, the Board voted unanimously to establish the Coastal Regional Solid Waste Management Authority (Rice Feb. 18, 1994). Similarly, on August 20, 1990, the Craven County Board of Commissioners met in regular session, made appointments for the three seats of the future Authority's Board of Director's, and adopted unanimously (4-0, one member absent) the resolution establishing the Coastal Regional Solid Waste Management Authority (Bryan March 9, 1994).

Current Status of the Coastal Regional Solid Waste Management Authority

Phase I and phase II financing is complete. The siting, design, permitting, and construction for the transfer stations and interim regional subtitle D sanitary landfill were completed in October 1993,
in time to meet the subtitle D regulation. This allowed the three older county landfills to be closed, thus saving substantial expenditures. As of February 1995, the interim landfill and recirculation of leachate is operating within expectations. Collected leachate, amounting to 30,000 gallons per day, is being recirculated back to the landfill. By recirculating, the leachate does not have to be treated as wastewater on site, nor transported and treated at a local publicly owned wastewater treatment plant. This is expected to save the Authority several million dollars over the life of the landfill. The completion of a composting facility is expected during April 1995. (Guinan, personal interview, Feb. 1995).

A feasibility study prepared by Weston Inc. was delivered to CRSWMA in January 1995. The study considered alternatives between a long-term regional landfill, a waste-to-energy cogeneration facility in conjunction with Weyerhaeuser paper, or export to a privately owned regional landfill outside the three county area. The study recommended the construction of a twenty-year capacity landfill to be planned for and developed in five year stages. Consideration of a waste-to-energy cogeneration facility was recommended before the development of each stage (Weston Jan. 1995). The merits and implementation of the study are being discussed by the boards of the three counties (John Rice, personal interview, Feb. 1995).
Chapter Three: The Incentives For Creating Regional Solid Waste Management Systems

John Dempsey has noted that “among the fundamental questions to answer in developing a regionalized or multi-jurisdictional solid waste management program are those of purpose and responsibility, including: savings in money, economies of scale, better use of land and manpower, cooperation in dealing with regional problems, simplified long-range planning and political expediency” (Dempsey, 1993).

Table 3-1   Regional Authority or Agency

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Operate Outside Local Governmental and Political Restraints in Financing, Contracting, and Administration</td>
<td>1. Difficult to Organize</td>
</tr>
<tr>
<td>3. Exempt from Local Debt Ceilings</td>
<td>3. Outside Public / Political Control at and Decision Making Process</td>
</tr>
<tr>
<td>5. Better Economies of Scale</td>
<td>5. Often Requires Flow Control</td>
</tr>
<tr>
<td>7. Good Decision Making Capabilities</td>
<td>7. Long Term Financial Obligations</td>
</tr>
<tr>
<td>From Municipal Solid Waste News 15(3):10,1994</td>
<td>8. Often have Initial Obligation to Bond Holders</td>
</tr>
</tbody>
</table>
As shown in table 3-1, Dempsey has also enumerated the advantages and disadvantages of regional solid waste authorities or agencies.

Economies of Scale

A general observation is that the larger the landfill, the greater the cost savings per ton of waste. One large regional landfill is cheaper to operate than several smaller local ones because many of the costs of landfilling are fixed. These costs include: the design, permitting, site investigation, basic rolling stock, mobilization, and post-closure care. These fixed costs lead to a scale economy curve where the costs start high and gently slope down to lower costs. This comparison does not take into account the collection and transport of the waste. Collection and transport is provided by some regional systems, however, CRSWMA does not provide or pay for collection and transport at this time. These costs are borne by the individual counties. As an example, in the piedmont region of the state of Georgia, to landfill a ton of waste at a fifty ton per day facility costs $74, while the cost is $30 per ton at a five hundred ton per day facility (Mestayer, Waste Age).

The total costs, are expected to be $158.8 million over the twenty year life span of the landfill for three stand-alone county landfills compared to $113.5 for a single regional landfill, a total saving of $45 million. Savings for Craven county would be $19.1 million ($74.7M vs. $55.6M), for Carteret $14.1 million (64.9M vs. 50.8M), and for Pamlico $7.1 million ($14.4 M vs. 7.1 M), see Figure 3-1. This costs estimated from information generated by Malcolm
Pirnie, Inc. (Newport News Va.) using a model which they constructed for the state of Georgia.
Tipping fees for the regional landfill are projected to be $50.08 per ton. This compares to stand-alone landfill tipping fees of $62.02 per ton for Craven county, $68.86 per ton for Carteret, and $109.51 per ton for Pamlico, see Figure 3-2 (Mestayer, Malcolm Pirnie).

Figure 3-2  Cost per ton Regional vs. Stand alo

The above tipping fees were calculated by spreading the total cost over all counties. However different allocations are commonly
made. For example, the host county frequently does not require a transfer station since the landfill is located within the county. The counties which have transfer facilities often are held responsible for paying the construction and operating costs of these facilities. This increases the saving to the host county, but lowers the saving to the counties which have transfer facilities. In fact, when the CRSWMA developed its pricing schedule, Carteret and Pamlico were held responsible for the cost of operation of the transfer facilities. These economies, along with new EPA rules which require liners and groundwater protection systems, are driving counties toward regionalization.

Political Jurisdictions and Regionalization

Is there a common thread for counties which are most likely to form authorities? According to James Thompson of the Georgia Environmental Facilities Authority, such counties usually have had common political goals in the past, they have worked on water projects together, and have had successful relationships. The counties are often alike in population, geographic makeup, and on the amount of waste they generate. When there are differences, the most urban county is usually the host facility, such as in Baldwin County, GA. (James Thompson, telephone interview, April 21, 1994)

Critical Mass for Regionalization

Each community will need to ask itself at what point should it consider regionalization. Various dimensions need to be
considered. The amount generated and distance to haul waste are the two largest factors influencing whether a regional landfill should be considered. Kenneth Gallagher suggests, that a population of 13,000 requiring a landfill accepting 10,000 tons per year, would be a good candidate for forming a regional facility. On a larger scale, the author appears to suggest that a population of 390,000, requiring a landfill of 300,000 tons per year is less likely to benefit by building a larger facility (Gallagher, 1994 Solid Waste Technologies).

In Mr. Gallagher’s paper, transportation distances of 100 miles from the point of generation to disposal are assumed in his analysis. Even with this distance to convey waste, a community generating 10,000 tons per year would still save $34 to $49 per ton by using a transfer station and shipping to a regional landfill. This saving can be compared to the community developing and operating its own landfill, at a cost of $119 per ton. Transportation costs are reduced if the community chooses to host the development of a regional landfill within its borders.

Recycling Operations

Recyclables in solid waste streams provide unique opportunities. By working together, counties can lower the high costs of the administration, processing, and debt service costs for construction of material recovery facilities and additionally obtain better prices for separated material. When Carroll County, Iowa with a population of 21,000 recycled on its own, the net
cost of recycling was $115 per ton; however, in combination with three other neighboring counties, with a total population of 73,000, the net cost dropped to $63 per ton. In this regional arrangement, two policies were used to encourage recycling: mandatory curbside collection of solid waste and recyclables in urban areas, and a reduction in costs for the hauler of recyclables, namely, no tipping fee. The fee was $34.75 per ton for waste delivered to the landfill.
Chapter Four: The Generalized Application of Government Incentives For Regionalization

Financial Incentive from Government

Federal regulations appear to highly encourage regional landfills. Governmental incentives for the development of regional landfills range from none, through technical assistance, to direct loans and grants. State government assistance to North Carolina counties is more passive than that in many other states. Upon request, the N. C. Solid Waste Management Branch will provide guidance and assist in coordinating meetings for parties interested in exploring a regional landfill, however, no financial incentives are presently being considered.

In comparison, the state of Missouri has taken a more formal approach. Their Department of Natural Resources has provided a model plan and strongly encourages the counties to work together in operational districts to prepare the required Solid Waste Management Plans, however each county may elect to prepare its own plan. Because the cost of writing the plan is so high, due largely to the use of consultants, state officials, suggest that counties work together. To assist in the planning process, grants were made available for fiscal years 1992 and 1993 for department-recognized districts. These grants, which amount to $45,000 per district per fiscal year are to supplement funds expended during the development of solid waste management plans which conform with this model plan, and for the organizational needs of the districts.
Grants amounting to $20,000 per district per year are provided for administrative costs once a district is formed. (Lora Mather, Missouri Dept. of Natural Resources, August 2, 1994)

Georgia has taken a direct financial approach to the regionalization of solid waste management. Through the State's Comprehensive Solid Waste Management Act, starting in 1993, the Georgia legislature approved a system of grants and loans. A total of $400,000 was allocated to the grants program for each fiscal year. The state will grant up to 75% of the cost of a project, with a state total financing of no more than $50,000, the remaining 25% must come from the counties. For 1993, sixteen grants were awarded, five to solid waste management authorities, and eleven to lead counties in a regional coalition. "The purpose of this program is to provide the incentive to local governments interested in forming coalitions to address their recycling and solid waste management needs on a regional basis. Coalitions of two or more counties including cities and/or regional solid waste management authorities, are eligible to apply for grants from the Regional Solid Waste Management Grant Program" (Georgia Environmental Facilities Authority).

In addition to the grants program, the state of Georgia makes loans available for regional and multijurisdictional solid waste management. A total of four to five million dollars is expected to be loaned in the next fiscal year. These low cost loans, with a maximum of one million dollars per project, can be used to finance the capital costs of recycling and solid waste management facilities. Land, buildings, material recovery facilities, transfer stations, solid waste
landfills and other government facilities qualify under this loan program. Georgia's Solid Waste Management Act also offers a political incentive for the formation of regional authorities by allowing counties to form an authority without going back to the state legislature. This is unlike North Carolina law which requires that counties seeking to form a regional authority go back to the state Legislature for final approval.
Chapter Five: Disincentives for Regional Solid Waste Management Systems

Public Opposition

The general public is likely to object to the construction of any landfill. Opposition increases when the waste being received by the landfill is imported, even if the waste is coming from neighboring counties. There is the concern that a regional landfill will accept waste from a distant section of the state or from another state. There is also the concern that large urban waste generators might use a rural area as a "dumping ground" for solid waste which might even include industrial hazardous waste.

Ms. Susan Perry-Cole, the Assistant Secretary of Community Development within the North Carolina Department of Commerce, has explored the problem of environmental equity. Ms. Perry-Cole explains that solid waste facilities have traditionally been sited in neighborhoods which have little political or economic clout. She believes that education is needed to help empower low income and minority populations so that they can require that new landfills be built to safer standards than have been used in the past. Ms. Perry-Cole believes that regionalization, if properly implemented, could improve conditions in poorer counties. Pooling area finances could allow for better use of resources, and would permit the hiring of more highly qualified staff who could develop and enforce better management techniques at the facilities (Susan Perry-Cole, Telephone interview, July 26, 1994).
Flow Control

Flow control is defined as the legal authority of a locality to designate where material placed in the solid waste stream is to be disposed. As a multi-county solid waste program is developed, the need to know and maintain the level of waste generated becomes crucial. To meet their financial obligations, regional facilities rely on their ability to control both the import and export of waste within a geographic service area.

Problems with the importation of waste into a geographic area occur when a municipality has taken the time and political effort to develop a solid waste management plan but a neighboring municipality has not. The municipality, with a well-developed solid waste management plan, must also be able to control the flow of waste in order to implement its plan.

Another reason for flow control is to prevent the exportation of waste from a geographic area. Local governments, such as Mecklenburg county have gone to court on this issue. For example, an area may have a complex and expensive solid waste plan that can involve the use of recycling and incineration to minimize the need for landfiling waste. The management area must be able to control the movement of its waste within the area in order to generate sufficient revenue to repay the cost of bonds or other forms of up-front loans for the construction of the treatment facility.

Flow control ordinances are generally favored by governmental agencies, but are strongly objected to by private industry. The private industry stance is that for them to be profitable, solid waste must be allowed to move unimpeded across governmental boundaries. Industry's explanation is that the construction and operation of a modern EPA subtitle
D landfill is extremely expensive and, without the ability to draw from multiple areas around the landfill, the cost of operating the landfill can not be defrayed.

Flow control was heavily disputed throughout the early and mid-1980's by private haulers on anti-trust grounds. By requiring the private hauler to dispose of waste at a municipally-designated location, they argued, local government violated federal anti-trust statutes. Haulers asserted that government was acting in a monopolistic fashion in waste disposal matters, conduct that would be unlawful if engaged in by a private business. The only anti-flow control argument, lodged by haulers, which has received judicial recognition is the argument that when a hauler collects waste, the Commerce Clause of the United States Constitution gives the hauler the right to ship the waste in interstate commerce, irrespective of state-authorized local export restrictions. Up through the early 1990's Federal district and appellate courts have consistently upheld municipal flow control enactments against anti-trust challenges. The Sherman Anti-trust Act exempts states from anti-trust liability. Case law has acknowledged that municipalities, as creations of state government, will be exempt from anti-trust laws if their anti-competitive activities are authorized by the state.

This situation was changed by a May 1994 United States Supreme Court decision. The town of Clarkstown, N.Y. had contracted with a private company, Clarkstown Recycling Inc., to build a transfer station at which all trash collected in the town would be sorted and shipped to an appropriate destination, either a recycling plant, incinerator or landfill. Under the contract, the town guaranteed to the contractor that the station would
handle at least 120,000 tons of a waste a year at a fee of $81 a ton. Carbone Inc., a private hauler, however was shipping waste to an Indiana landfill at the reduced cost of $71 a ton. The town sued Carbone Inc. to attempt to enforce its flow control law. In C & A Carbone, Inc. vs. The Town of Clarkstown and Clarkstown Recycling Center, Inc., the United States Supreme Court ruled that local governments cannot require all trash within their borders to be sent to a designated plant for sorting, recycling or treatment (New York Times, May 17, 1994). The significance of the Clarkstown vs Carbone decision on regional facilities is that they are often funded by municipal bonds where repayment is guaranteed by flow control regulation. Without this bond repayment guarantee, the cost of the facilities would fall directly upon the individual counties. Thus one county might be held responsible for paying the full cost of the facility, without revenues from the facility, if waste is being shipped out of the service area (Moore & Van Allen, Summer 1994).
Discussion

Current federal and state policies and regulations encourage regionalization of municipal solid waste management systems. Federal regulations do not explicitly encourage regionalization of solid waste management facilities, however, because of the complex nature of the regulations, and the cost of meeting them, regionalization is implicitly promoted. Few individual counties are prepared to handle the complex requirements of siting, construction, operation, closure and post-closure costs; especially rural counties where the total volume of waste is relatively low and to implement an increase in taxes for these projects is difficult.

North Carolina regulations also have no explicit statement encouraging the regionalization of SWMF. However, since the state plans to accept primacy, the state will continue to follow the federal regulations, which encourages the consolidation of facilities. Overall it appears that the federal and state policies and regulations do encourage regionalization.

In 1992, one hundred and twenty landfills were handling municipal solid waste in North Carolina. Since the enforcement of the new RCRA regulations began, many landfills have closed. Sixty-five municipal solid waste landfills were in operation as of October 1994, a fifty-four percent decrease in just two years. This is a dramatic drop in the number of operating facilities. Brad
Rutledge, an analyst at the North Carolina Division of Solid Waste Management, expects that only 45-50 landfills will remain by the year 1998. Of these remaining landfills in North Carolina, perhaps five to eight may be private landfills with the others being large public landfills. Many of these public facilities are expected to be regional landfills such as those being discussed for Winston-Salem and Raleigh. Since North Carolina has 100 counties, regionalization in one form or another is already taking place (Rutledge, telephone interview Sept. 30, 1994).

Public vs. Private Ownership of Regional Facilities

Is the future of regional facilities likely to be in the public or private sector? This question can be explored more thoroughly by considering some additional questions. What would be the impact of privately owned-for-profit solid waste facilities, particularly landfills, on a regional system? Assuming that a publicly owned regional facility was operating near a privately owned facility, several scenarios might occur.

If both operated at about the same tipping fee, the public facility, sized properly for its waste stream, could operate with little conflict with the private facility. The private facility would collect its waste from geographic regions other than those served by the public facility. The private landfill might act in cooperation with the public landfill by accepting waste from the public landfill’s geographic area during high generation periods, particularly if the public landfill is receiving more waste than it
was designed to handle. For example, a private landfill might accept excess waste from a coastal community during the summer months.

If a private landfill charges significantly less than the public landfill, there would be a constant incentive for the local private hauler to take waste to the landfill that has the lower tipping fee. Because of economic considerations, over the long-term, the public landfill might have to close and ship waste to the private landfill, assuming the private landfill had sufficient capacity to accept this additional waste.

Can a regional solid waste management system (SWMS) prohibit the construction of private facilities in the area served by the regional? The immediate answer to this question is that a regional SWMS would not be able to prevent the construction of a private landfill. However, if the regional landfill has effective flow-control measures, the private landfill might have a difficult time finding enough waste to make such a project economically viable. Also the regional facility might effectively petition state regulators against issuing a permit for the private landfill. The regional facility might be able to use the argument that two facilities close together might not be in the best interest of the public.

What prevents the formation of more partnerships between counties and private industry? There appears to be basic lack of trust between public managers and private companies. In conversations with Orange County, North Carolina solid waste
officials, there is a concern that once the county closes down its landfill operation and sends its waste to a private landfill, prices will sharply increase. The thinking behind this is that after the county closes down its landfill and sells off its equipment, the private system will be a monopoly. Environmentalists within Orange County believe that the county should be responsible for its own waste, and not ship it out to another county. This philosophy of environmental self-sufficiency has also influenced the thinking of many solid waste officials.

Imported Waste

Is there a trend to import waste in order to insure that a regional facility can be economically viable? Besides the Coastal Regional Solid Waste Management Authority, two other cities in North Carolina, Winston-Salem and Raleigh, have considered importing waste into the county to help defray the costs for a larger project. Raleigh views the waste as a way to obtain additional income and achieve a sufficient volume of waste to make a waste-to-energy facility feasible. Winston-Salem plans to place the additional funds into an escrow for future volume reduction projects.

Would a regional solid waste facility attract more waste from out-of-state and from counties who are not members of the regional system than an individual county system? Overall, waste from outside the immediate area could more easily be handled at a regional landfill. There are two reasons why a regional facility
would in fact attract more waste into an area when compared to a smaller county landfill. One, since a regional landfill is more economical to operate, it is reasonable to expect that its tipping fee would be lower than a smaller county system. Two, the operational system at a regional landfill is designed to handle large amounts of incoming waste. A regional facility might have multiple scale-houses, longer hours of operation, better roads to the working face and in general be designed to operate in rain and other non-optimal weather conditions.

Could a regional system prohibit or charge higher tipping fees for out-of state wastes or from counties outside the system? According to an April 4, 1994 Supreme Court decision, a regional landfill cannot charge more for out-of-state waste. The 7-2 decision said that an Oregon state landfill could not discriminate by adding a $2.25 per ton surcharge for out-of state waste to its regular $0.85 surcharge. The state of Oregon used economics as a justification for the surcharge, calling it a compensatory tax intended to force shippers of out-of-state waste to accept their "fair share" of costs that instate shipper pay through state income and other taxes. The Court rejected this explanation (New York Times Tuesday, April 5, 1994 pg. A7).

Changes In Policy and Regulation Which Would Promote Regional Systems
At the federal level, the most substantial change would be for congress to pass a regulation to strengthen flow control. The House of Representatives passed (368-55) a bill in September 1994 that would allow states and local governments to sharply limit imports of trash from other states. However a comparable bill did not pass in the Senate (New York Times Thursday Sept. 29, 1994 pg. A11). Without these regulations, the issue of flow control is likely to remain in the courts for several more years, the Clarkstown case notwithstanding, as boundaries of ownership of waste are more clearly defined (New York Times, May 17, 1994). With flow regulations in place, municipalities would be able to plan for the size and location of their next solid waste treatment facility. Without flow control, governmental entities are likely to have an increasingly difficult time guaranteeing repayment to the financial institutions which fund such projects.

The state of North Carolina's Division of Solid Waste Management is responsible for enforcing federal solid waste management regulations. State regulators would benefit by regionalization in that they would have fewer permits to review, fewer landfills to inspect and fewer facilities to oversee for post-closure activities. As regulators fulfill their duties, several approaches would be helpful to promote regionalization throughout the state. The state could act as a clearinghouse to disseminate information about regionalization. They might supply data to solid waste officials throughout the state and follow-up with telephone calls to influence officials to consider
regionalization. The state should host or co-host meetings between neighboring counties to discuss the formation of regional facilities and to explore ways to overcome barriers to regionalization on a region-by-region basis.

Georgia's grant distribution model would likely be effective in North Carolina. With the overall lack of staff at the Division of Solid Waste Management, a centralized approach such as Missouri's may not be as easily implemented. It is recommended that state officials work closely with professional and trade groups, such as the North Carolina Recycling Association and Solid Waste Association of North America, in designing workshops for its members and acting as co-host at such meetings. Working closely with these groups could help to overcome the aversion that local officials have for state oversight, and also help to overcome a lack of trust which appears to have formed between them.

Future Trends at the County Level Towards Regionalization of Solid Waste Management Systems.

Creative solutions toward regionalization are developing within North Carolina. For example, a Triangle J Council of Government draft report notes that, of the regions six counties, Chatham, Durham and Lee are exporting waste to private landfills, while Johnston, Orange and Wake plan to continue landfiling within their own bounties. Wake county is considering other options. For instance, "A preliminary report prepared as part of
Wake County's analysis of waste-to energy options concluded that a regional facility processing 2,700 tons per day would cost Wake County 52% per ton less than a facility sized at 1,500 tons per day to handle only Wake County waste. It also concluded that a smaller regional facility processing 2,000 tons per day would cost Wake County 39% less per ton less than a 1,500 tons per day facility. These economies of scale could be realized by all of the local governments using a regional facility." (Solid Waste Management in the Triangle July 1994)

Conclusions

As present regulations are better enforced and new regulations are promulgated, appropriate locations for landfills will be harder to identify, and these rarer locations might have to serve a larger area. Over the next three years, as additional RCRA regulations go into effect, more landfills are expected to close because the counties will not be able to, or want to, provide the financial insurance for the post-closure costs of these landfills, or be willing to pay the additional cost of constructing a lined landfill. Traditionally solid waste management has been the responsibility of counties and municipalities. As solid waste management becomes more complex and expensive, regionalization will play a greater role within North Carolina. The opportunities afforded by improved economics, environmental protection, and compliance with federal regulations, will guide the decisions of local government officials towards regionalization.
The improved efficiencies of regional efforts will be demonstrated as a greater portion of the waste managed is recycled and treated rather than landfilled as is required by North Carolina regulations. Counties and municipalities are likely to consider regional cooperation for special projects such as the processing of tires, white goods, and construction and demolition wastes. Cooperation between counties is also likely when the local media can be involved, as in information awareness campaigns to encourage source reduction, recycling, and the collection of household hazardous wastes. The questions of environmental equity and environmental self-sufficiency remain to be addressed.
References

Ahlberg, Sept. 1992
Biocycle Survey, April 1992
Bryan March 9, 1994
Coastal regional Solid Waste Management Authority, Malcom Pirnie
Deese Feb. 21, 1994
Dempsey 1993
Federal Register, Oct 9, 1991
Gallagher, Solid Waste Technologies, 1994
Georgia Comprehensive Solid Waste Management Act 1993, Georgia,
Environmental Facilities Authority
Guinan, John, Asheville 1992
Guinan, John, Telephone Interview Feb. 18, 1994
Ham 1993
Intercounty Agreement
Interlocal Agreement
References

Mather, Lora, Missouri Dept. of natural Resources, August 2, 1994
Mestayer, Malcom Pirnie
Mestayer, Waste Age
Moore and Van Allen, Summer 1994
National Renewable Energy Lab, Aug 1992
New York Times, Apr. 5, 1994 pg A7
North Carolina General Statutes, Chapter 153, Article 15
Perry-Cole Susan, Telephone Interview July 26, 1994
Rice, John, Telephone Interview Feb. 18, 1994
Rice, John, Personal Interview Feb 1995
Rutledge, Brad, Telephone Interview Sept. 30, 1994
Solid Waste Management in the Triangle July 1994
Thompson, James, Telephone Interview April 21, 1994
Title 40 CFR part 258.40 (subtitle D)

US EPA
References

Weston Jan 1995