AN EVALUATION

State Recycling Programs

Department of Natural Resources

01-2

January 2001

LEGISLATIVE AUDIT BUREAU

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January 12, 2001

Senator Gary R. George and
Representative Joseph K. Leibham, Co-chairpersons
Joint Legislative Audit Committee
State Capitol
Madison, Wisconsin 53702

Dear Senator George and Representative Leibham:

We have completed an evaluation of the State's recycling activities, as directed by the Joint Legislative Audit Committee. State expenditures from the segregated Recycling Fund for fiscal year (FY) 1999-2000 were $28.9 million, used primarily for grants to municipalities for the operation of recycling programs. The Department of Natural Resources (DNR) administers these grants and has primary responsibility for the State's recycling efforts.

The best data available indicate Wisconsin recycled 36 percent of its municipal solid waste in 1995, and the national average was 26 percent in that year. Wisconsin is one of few states nationally that provides substantial financial support to local programs; Wisconsin's grant payments in calendar year 2000 were $24.4 million. Minnesota is the only other midwestern state that provides substantial state support to local recycling programs. Minnesota budgeted $14.0 million for local grants in FY 2000-01 and achieved residential per capita recycling rates similar to Wisconsin's.

Wisconsin grants to municipalities support an average of 30.4 percent of local recycling costs and are used for a broad array of local costs, including salaries, equipment, and administration. However, our review found little relationship between the percentage of local costs covered by a municipality's grant and the municipality's recycling rate.

Although DNR is authorized 19.0 full-time equivalent (FTE) recycling positions, only 15.4 FTE reported working on recycling activities. In addition, DNR has not met a statutory requirement to audit at least 5.0 percent of grants provided to municipalities each year. We include a recommendation that DNR devote its 0.5 FTE recycling auditor position exclusively to audits of municipal recycling grants and suggest DNR report to the Legislature on the relationship of its authorized positions to local recycling efforts.

We appreciate the courtesy and cooperation extended to us by DNR, municipal recycling managers, and staff with recycling-related responsibilities in the Department of Commerce and the University of Wisconsin-Extension.

Respectfully submitted,

Janice Mueller
State Auditor

JM/DB/cm

Summary

During the 1990s, Wisconsin enacted legislation to encourage recycling, including establishing a series of prohibitions on landfilling certain types of solid waste and establishing financial assistance payments to local governments to operate recycling programs. The segregated Recycling Fund provided $24.4 million to local governments in 2000, which was used to support an average of 30.4 percent of municipalities' recycling costs. A special surcharge on many Wisconsin businesses funds the State's recycling efforts. The surcharge was scheduled to sunset on April 1, 1999, but it was modified and continued in 1999 Wisconsin Act 9, which also implemented a tipping fee surcharge for each landfilled ton of most types of waste.

While recycling has generally been supported in Wisconsin, the surcharge on businesses has been controversial and has contributed to questions about the cost of recycling efforts and their overall effectiveness. To respond to those questions, and at the direction of the Joint Legislative Audit Committee, we reviewed:

- the overall effectiveness of recycling efforts in the state;
- costs of recycling efforts, and how costs vary among communities;
- relationships between local expenditures, state grants, and recycling rates; and
- the number and function of state staff supported by the segregated Recycling Fund.

Residential recycling services are provided by municipalities designated as "responsible units," which range in size from towns to entire counties. In 2000, there were 1,069 responsible units, of which 999 received municipal and county recycling program grants from the State.

Materials currently banned from disposal include tires; lead acid batteries; waste oil; major appliances; yard waste such as grass clippings and brush; containers made of aluminum, steel, glass, or plastic; and newsprint, magazines, office paper, or corrugated cardboard. Landfill bans on these materials were phased in between 1991 and 1995; no additional materials have been banned since that time. The Department of Natural Resources (DNR) has established minimum collection

standards for rural and urban municipalities. The standard for municipalities with 70 or fewer persons per square mile is collection of 82.4 pounds per person per year. For all other municipalities, it is 106.6 pounds per person per year. Although there are standards in administrative code for specific materials such as newspaper, corrugated cardboard, magazines, aluminum, steel/bimetal cans, #1 and #2 plastic, and glass, DNR focuses its review of communities' compliance on the total amount collected per capita.

Although compliance with the applicable standard is a requirement of obtaining state grants, DNR has never denied a responsible unit's request for an exemption to the standard and imposes no penalty if the standard is not met. We found that in 1999, 281 responsible units, or 27.8 percent of those receiving grants, failed to meet the standard but received $5.1 million in recycling grants.

Comparisons of Wisconsin's recycling efforts to other states' are complicated by two factors. While most states require some degree of recycling, there is significant variation among states in the types of materials recycled. In addition, few states provide ongoing funding for local recycling efforts and, therefore, they do not collect data comparable to Wisconsin's on amounts recycled. Nevertheless, some national data are available based on studies commissioned by the U.S. Environmental Protection Agency. These suggest that Wisconsin's recycling efforts compare favorably with national averages. Nationally, the municipal solid waste recycling rate was estimated to be 26.0 percent in 1995, while Wisconsin achieved an estimated rate of 36.1 percent.

Another measure of a recycling program's effectiveness is the degree to which recyclable material is landfilled or burned rather than recycled. In Wisconsin, an estimated 27.2 percent of recyclable material was landfilled or burned in 1995. Nationally, the rate was estimated at 54.9 percent in that year. In some cases, landfilling of recyclable material occurs because materials are not separated for recycling. In other cases, materials collected for recycling are illegally landfilled by haulers. Between 1997 and 2000, 14 citations were issued by DNR under s. 287.07, Wis. Stats., which prohibits the landfilling of separated recyclables.

It is more expensive to recycle material than it is to landfill. Based on data reported by municipalities to DNR and the Department of Revenue, we estimate that the average cost of solid waste collection and disposal is approximately $85 per ton, whereas the net cost to collect and process recyclables is approximately $95 per ton, or 12 percent more. The difference results primarily from the higher cost of processing recyclables compared to landfill tipping fees. In addition, some solid waste haulers indicate that, with some types of equipment, keeping

recyclable materials separate from other solid waste makes solid waste collection less efficient and more expensive.

Data are not available to compare Wisconsin's local recycling expenditures with those in other states. Nevertheless, some comparisons can be made to Minnesota's program, which is similar to Wisconsin's in the comprehensiveness of its provisions. Both states target their recycling efforts to a broad range of recyclable materials, and both collected a similar amount of marketable recyclables in 1998.

However, while Wisconsin's program is based on landfill bans for specific recyclable materials, such as newsprint, metals, and plastics, Minnesota has adopted goals for recycling a percentage of overall municipal solid waste and allows local governments considerable flexibility in choosing among several material types to meet those goals. In addition, while Wisconsin makes approximately 1,000 local grants, Minnesota makes grants only to its 87 counties, allowing greater efficiency in grant administration.

Our review of costs among responsible units in Wisconsin found wide variations in per capita recycling expenditures. Similarly, we found wide variations in per capita amounts recycled. In 1999, per capita expenditures averaged $16.03, while per capita amounts recycled ranged from 9 pounds to 9,543 pounds and averaged 292 pounds. While there is a strong relationship between per capita spending and per capita amounts recycled, there is little relationship between the size of communities' recycling grants, which ranged from $0.20 to $51.03 per capita, and amounts recycled. For example, ten responsible units that were clustered around the average per capita grant of $4.64 recycled amounts ranging from 43.8 to 695.0 pounds per capita in 1999. Conversely, communities with similar recycling rates received grants of different sizes: ten communities that were clustered around the statewide average of 292 pounds per capita received 1999 grants ranging from $1.75 to $7.25 per capita. In Wisconsin's two largest cities—Milwaukee and Madison—1999 costs were $15.63 and $31.11 per capita, respectively. Milwaukee collected a total of 190 pounds of recyclables per capita in that year, while Madison collected 486 pounds per capita.

Costs vary among municipalities primarily because of differences in services offered, and particularly in whether curbside collection service is provided. Curbside collection on at least a monthly basis is required only in the 144 municipalities with more than 5,000 residents, unless those communities can demonstrate that drop-off sites are used by 80 percent or more of their residences. However, 487 municipalities with fewer than 5,000 residents also chose to provide curbside collection in 1999. DNR does not collect information on the frequency of collection, but it is estimated that most municipalities provide service more frequently than monthly, with weekly collection being relatively

common. The frequency of collection also affects the cost of providing recycling services.

We estimate responsible units with fewer than 5,000 residents that provided curbside collection incurred an additional $5.1 million in recycling costs in 1999. While curbside collection is more expensive overall, it also typically produces higher recycling rates, which in turn result in lower costs per ton. Communities with fewer than 5,000 residents that provided curbside service had an average recycling rate of 293 pounds per capita and a cost of $111 per ton, whereas communities that offered solely drop-off sites had an average recycling rate of 123 pounds per capita and a cost of $154 per ton.

Local decisions about yard waste management can also affect costs. While yard waste has been banned from landfills since 1993, responsible units are not required to collect it from residents. Instead, residents can be required to take it to drop-off sites or manage it at home. Yard waste expenditures represented 36.1 percent of total program costs for the 194 responsible units that reported costs in this category in 1999. However, reporting differences among responsible units may affect the accuracy of these estimates.

Recycling grant procedures established in statute and administrative code allow communities to claim most of their costs as grant eligible. Among the ten largest responsible units, as well as a random sample of 144 responsible units for which detailed activity cost breakdowns were available, we found that the majority of costs incurred in 2000—91.9 percent in municipalities with curbside collection, and 88.6 percent for those with drop-off sites—were for the collection, transportation, and processing of recyclables. Administrative costs averaged 5.7 percent of total estimated expenditures of $36.7 million in our sample. We noted, however, that DNR does not comply with the requirement under s. 287.23(2), Wis. Stats., to audit at least 5.0 percent of grant recipients each year to determine the eligibility of their claimed costs. The percentage of audits conducted by DNR from 1995 through 1999 ranged from a high of 1.6 percent for 1995 and 1996 to 0.2 percent in 1999. We include a recommendation that DNR devote its 0.5 full-time equivalent (FTE) auditor position, which is paid from the Recycling Fund, exclusively to audits of municipal recycling grants.

We also examined the number and function of staff funded by the Recycling Fund. Currently, 31.0 FTE staff in five different agencies are paid from the Fund:

- 19.0 FTE DNR staff, including staff who administer the municipal recycling grant program and provide technical assistance to municipalities and businesses;

- 4.0 FTE staff in the University of Wisconsin-Extension's Solid and Hazardous Waste Education Center and 0.5 FTE staff in the University of Wisconsin System, who provide technical assistance to local governments and businesses;

- 4.0 FTE staff in the Department of Corrections, who are responsible for coordinating computer recycling programs at two correctional facilities;

- 2.0 FTE staff in the Department of Commerce, who work with the Recycling Markets Development Board; and

- 1.5 FTE staff in the Department of Revenue, who are responsible for processing tax returns involving recycling surcharges or tipping fee surcharges.

We examined time-reporting records for staff in the Bureau of Waste Management, as that is where 12.0 of the 19.0 DNR recycling staff are located. Time records indicate that bureau-wide work hours reported by staff for work directly related to recycling, as well as a portion of "integrated" hours during which multiple waste-related activities may have been performed, total 8.4 FTE, compared to the 12.0 authorized positions.

DNR managers believe that waste management staff may have under-reported their recycling work hours and that as much as 10 percent of solid waste activity hours may actually represent recycling work effort. If that estimate is accurate, additional work effort equivalent to approximately 4.7 FTE positions may be attributed to recycling. However, DNR provided no examples of actual miscoding or documentation of how the estimate was developed. Recycling activity was not recorded for the equivalent of 3.6 FTE recycling positions in the Bureau of Waste Management.

While the Recycling Fund is charged only for direct hours of work and an allocated portion of other hours in the waste management program, the number of FTE staff working on recycling issues suggests that a smaller number of authorized staff could administer DNR's recycling responsibilities. We suggest that DNR provide the Legislature with a report to be available during the biennial budget process to justify its need for the current number of authorized recycling-funded staff.

The Legislature will face a number of recycling-related issues in the 2001-03 biennium, including addressing a possible deficit in the Recycling Fund, developing alternative means of funding the State's

recycling efforts, modifying state recycling laws, establishing a new municipal grant formula, and changing the focus of state recycling staff efforts. We suggest a number of options for the Legislature to consider.

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In response to increasing public interest in recycling and concerns regarding landfill capacity, the Legislature enacted 1989 Wisconsin Act 335. This law, which took effect in 1990, included a series of prohibitions on landfill disposal of several types of materials. Since 1990, the State has also provided grants and loans to encourage businesses to use recyclable materials, and grants to local governments to develop and operate recycling programs for these materials. Local governments report that in calendar year 1999, they recycled 759,600 tons of material and saved $9.6 million in avoided solid waste disposal costs.

The Department of Natural Resources has primary responsibility for the State's recycling efforts.

Four agencies administer the State's recycling activities:

- The Department of Natural Resources (DNR) has primary responsibility for the State's recycling efforts. It administers a local government recycling grant program and a demonstration grant program for public and private entities, and provides education and technical assistance to municipalities, businesses, and the public.

- The Department of Commerce is responsible for the Recycling Markets Development Board, which makes grants to businesses that provide markets for recyclable materials.

- The University of Wisconsin (UW)-Extension's Solid and Hazardous Waste Education Center provides technical assistance to local governments and businesses.

- The Department of Corrections operates computer recycling programs at two correctional facilities.

Ten years after the passage of the State's recycling legislation, all residents of Wisconsin are served by municipal recycling programs. An estimated 36.1 percent of municipal solid waste—defined as durable and non-durable goods, containers and packaging, food scraps, yard trimmings, and miscellaneous inorganic waste generated from residential and non-residential sources—is being recycled. A 1998 survey commissioned by DNR indicated that 75 percent of Wisconsin residents are strongly committed to recycling, up from 65 percent in 1995 and 57 percent in 1992. Ninety-eight percent of

residents report recycling at least some of their waste, and 96 percent believe their recycling efforts are worthwhile.

While DNR surveys indicate strong public support for recycling, state funding for municipal programs has been controversial since a business surcharge to fund recycling efforts was instituted as part of the initial recycling legislation. The surcharge was set to end on April 1, 1999, but it was continued indefinitely with some modifications in 1999 Wisconsin Act 9. A landfill tipping fee surcharge was also implemented in Act 9. In fiscal year (FY) 2000-01, these two surcharges will generate $18.7 million to be deposited in the segregated Recycling Fund.

In addition to the continued controversy from the business community regarding funding for recycling, other concerns have been raised, including:

- the cost to state and local governments to provide municipal recycling services in light of the benefits resulting from residential recycling;

- the efficiency and effectiveness of requirements to recycle specific materials; and

- the number of state staff authorized to be paid from the Recycling Fund.

As a result of these concerns, the Joint Legislative Audit Committee directed the Legislative Audit Bureau to evaluate the State's recycling efforts to determine:

- the relationship between municipalities' state recycling grants and the amounts they recycle, as well as the relationship between their total state and local expenditures and the amounts they recycle;

- the types of costs municipalities claim as eligible for grant funding, and how costs vary among municipalities;

- the number and types of state staff supported by the segregated Recycling Fund, and whether overlap exists in those functions; and

- how Wisconsin's recycling expenditures compare with those of other states.

In conducting this evaluation, we analyzed recycling expenditures in several program areas for calendar years 1995 through 1999, and particularly in the municipal and county recycling grant program, which represents the majority of state and local spending for recycling. We also analyzed the number and function of positions supported by the Recycling Fund. We interviewed staff of DNR and UW-Extension, managers of municipal recycling programs and material recovery facilities, and representatives of recycling trade associations and interest groups.

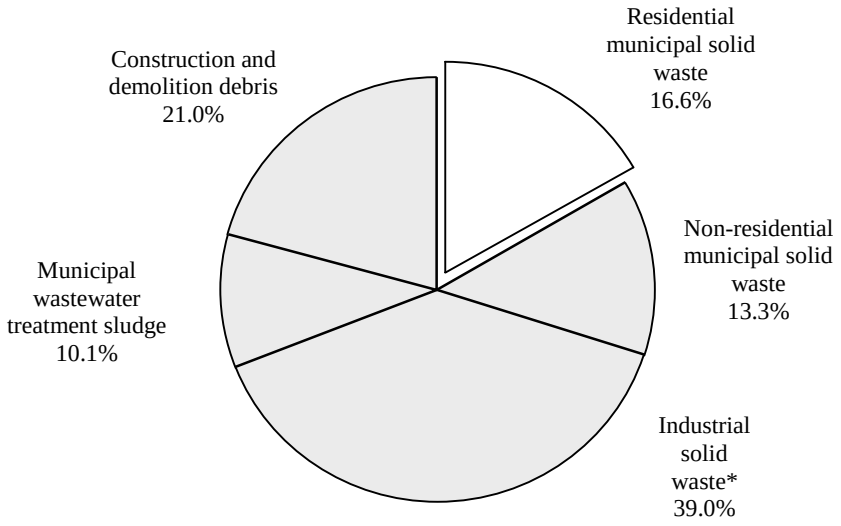
Components of the Waste Stream

Approximately 84.4 percent of state recycling funding is directed at 16.6 percent of the solid waste stream.

The municipal recycling program supported by the State is intended to recapture recyclable material from one portion of the solid waste stream: residential municipal solid waste. As shown in Figure 1, residential municipal solid waste represents 16.6 percent of the total waste stream in Wisconsin. DNR does promote education to encourage recycling of industrial and commercial waste. For example, it assisted in the founding of WasteCap Wisconsin, a nonprofit organization that provides waste reduction and recycling information to businesses. However, DNR's primary focus has been residential recycling, as evidenced by the establishment of standards for residential recycling collection and the provision of ongoing funding to support municipal residential recycling programs. Approximately 84.4 percent of total state recycling funding is directed at 16.6 percent of the total solid waste stream, while other portions of the waste stream, such as industrial solid waste and construction and demolition debris, represent substantially larger percentages of the total amount of waste generated.

Figure 1

Tonnage of Solid Waste Generated in Wisconsin
1995



* Includes paper pulp, coal ash, foundry waste, scrap vehicles, used oil, pottery cull, and aluminum sludge

Source: *Wisconsin Waste Characterization & Management Study Update*, Franklin Associates

Program Funding

Tipping fee surcharges and a surcharge on Wisconsin businesses fund the State's recycling efforts.

As noted, state funding for recycling is provided by a recycling surcharge paid by many Wisconsin businesses and a tipping fee surcharge paid by landfill operators. Revenues from these surcharges are deposited in the segregated Recycling Fund, which supports the State's recycling efforts through:

- grants to assist municipalities in operating residential recycling programs;
- demonstration grants to private and public entities implementing innovative waste reduction and recycling programs;
- grants and loans provided by the Recycling Markets Development Board to businesses and research efforts, for the development of markets for recycled materials; and

- technical and administrative assistance to municipalities, businesses, and others interested in recycling.

The surcharge on businesses was instituted in 1991 and has undergone several modifications since that time. Table 1 summarizes payment requirements before and after the passage of 1999 Wisconsin Act 9, which continued the business recycling surcharge indefinitely and raised the thresholds of gross receipts before businesses are required to pay the fee. The higher thresholds resulted in significantly fewer businesses being subject to the fee. Before 1999 Wisconsin Act 9, approximately 100,000 corporations and 200,000 sole proprietorships were subject to the surcharge. Currently, approximately 17,000 corporations and only a few sole proprietorships are required to pay the surcharge.

Table 1

Business Recycling Surcharges

Type of Business	Prior to 1999 Wisconsin Act 9	Under 1999 Wisconsin Act 9
Corporation	Threshold for payment: $4,000 in total receipts Surcharge rate: 2.75 percent of gross tax liability Payment amount: $25 minimum, $9,800 maximum	Threshold for payment: $4.0 million in gross receipts Surcharge rate: 3.0 percent of gross tax liability Payment amount: $25 minimum, $9,800 maximum
Non-farm sole proprietorship	Threshold for payment: $4,000 in total receipts Surcharge rate: 0.2173 percent of net business income Payment amount: $25 minimum, $9,800 maximum	Threshold for payment: $4.0 million in gross receipts Surcharge rate: 0.2 percent of net business income Payment amount: $25 minimum, $9,800 maximum
Farm	Threshold for payment: $1,000 in total receipts Payment amount: $25 for all farms meeting threshold	Threshold for payment: $1.0 million in total receipts Payment amount: $25 for all farms meeting threshold

The tipping fee surcharge was also instituted by 1999 Wisconsin Act 9 and took effect on January 1, 2000. This surcharge is $0.30 per ton for all solid waste landfilled in Wisconsin except high-volume industrial waste. It is paid by operators of solid waste disposal facilities, who are

responsible for collecting fees from waste generators and submitting the fees to the State. While landfill tipping fees vary considerably across the state, DNR estimates they averaged approximately $38 per ton in 1998. Table 2 summarizes revenues and expenditures for the Recycling Fund in the current biennium.

Landfill Bans and Service Requirements

Landfill bans in 1991, 1993, and 1995 prohibit the disposal of many recyclable materials.

Since recycling was instituted in Wisconsin in 1991, the Legislature has enacted a series of bans prohibiting certain materials from incineration or disposal in Wisconsin landfills:

- As of January 1, 1991, lead acid batteries, waste oil, and major appliances were banned from landfills.

- As of January 1, 1993, yard waste was banned from traditional landfills, although it can be disposed of at approved "land spreading facilities" in accordance with solid waste laws.

- As of January 1, 1995, the landfilling or incineration of containers made of aluminum, steel, glass, or plastic; foam polystyrene packaging; and newsprint, magazines, office paper, and corrugated cardboard was prohibited. Tires were also banned from Wisconsin landfills. Waste oil, yard waste, and waste tires all may be burned, but only in an energy recovery process, after the effective dates of their landfill bans.

There are some exceptions to the bans, such as the grandfathering of some incineration facilities that were in operation before passage of state recycling legislation. In 1996, DNR waived the ban on #3 through #7 plastics, allowing these to be landfilled because market conditions made their collection and sale impractical.

State law requires that all residents of Wisconsin be provided the opportunity to recycle, either through access to a drop-off site or through curbside recycling. Recycling services are contracted for or provided by municipalities designated by statute as "responsible units," which range in size from towns to entire counties. Tribes may also act as responsible units, and some municipalities have formed multi-party responsible units to provide recycling services. The idea of designating each municipality a recycling entity was developed by the Legislature when the recycling law was passed. It represents an attempt to allow local control of this activity and to better ensure local governments' support of state recycling efforts.

Table 2

Segregated Recycling Fund Revenues and Expenditures
FYs 1999-00 and 2000-01

	FY 1999-00	FY 2000-01[1]
Opening Balance	$62,421,000	$15,851,000
Revenues		
Business recycling surcharge[2]	$ 9,614,000	$16,900,000
Tipping fee surcharge[3]	458,000	1,800,000
Interest income	2,742,000	1,200,000
Loan repayments	285,000	0
Other	183,000	0
Total Revenues	$13,282,000	$19,900,000
Expenditures		
Municipal and county recycling grants	$24,391,000	24,500,000
Calendar year 1998 municipal grants[4]	5,959,000	0
Demonstration grants	585,000	500,000
DNR program administration	1,597,000	1,927,000
Department of Corrections computer recycling program	375,000	500,000
Department of Revenue surcharge administration[5]	94,000	246,000
UW research and education	508,000	527,000
Recycling Markets Development Board[6]	1,248,000	142,000
Lapsed appropriation authority	0	(276,000)
Other	131,000	0
Total Expenditures	$34,888,000	$28,066,000
Less transfer to General Fund, as required by 1999 Wis. Act 9	15,000,000	7,000,000
Less encumbrances and continuing appropriation balances	9,964,000	0
Subtotal	24,964,000	7,000,000
Closing Balance	$15,851,000	$ 685,000

[1] Budgeted

[2] Large difference results because the business surcharge did not exist between April 1999 and January 2000.

[3] Large difference in tipping fee surcharge results from timing of collections between fiscal years and because the surcharge was instituted in mid-FY 1999-2000.

[4] Payments for grants prior to calendar year 2000 were made in several portions, with the final payment for a grant year occurring two fiscal years later.

[5] Appropriation in FY 2000-01 includes expenditure for computer upgrades.

[6] Expenditures in FY 1999-2000 include new loans made with repayments of former loans; budgeted amount for FY 2000-01 includes administrative expenses but not anticipated loan amounts.

State recycling grants were made to 999 responsible units in 2000.

In 2000, there were 1,069 responsible units serving the entire state, and all of these were required to comply with state recycling law. Of the total, 999 received state grants to subsidize the operation of their recycling programs in 2000. The large majority of the remaining 70 chose not to apply for grants, typically because the size of their grant would have been minimal. A few responsible units did not receive grants because they missed the application deadline or did not receive grants in 1999, making them ineligible for grants in 2000.

Responsible units are required to provide services to residents of single-family dwellings and apartment buildings with four or fewer rental units. In larger apartment buildings, the owner must provide recycling services. The level of service to be provided by a responsible unit depends on its population. Responsible units with fewer than 5,000 residents are required to provide drop-off sites for recyclables unless they voluntarily provide curbside collection service. Responsible units with more than 5,000 residents are required to provide curbside collection services on at least a monthly basis for most materials unless drop-off boxes are used by 80 percent or more of the residences.

Per capita collection standards were implemented by DNR in 1997 in s. NR 544.05, Wis. Admin. Code. They require responsible units to meet annual standards for newsprint; corrugated cardboard; magazines; and containers made of aluminum, steel and bimetals, glass, and #1 and #2 plastic. Municipalities classified as "rural," meaning they have a population density of 70 or fewer persons per square mile, are required to meet a lower standard than other municipalities. Municipalities must also pass local ordinances requiring residents in buildings with four or fewer rental units to separate recyclables or send their waste to a separation facility, as well as ordinances prohibiting landfilling or incineration of separated recyclables. Municipalities are not required to provide recycling services to businesses, although businesses are required to recycle. Municipalities are also required to provide public education and information materials with the purpose of informing residents, businesses, and institutions of why and how to participate in recycling and to reduce overall waste.

Municipalities must meet several recycling requirements to dispose of waste in Wisconsin.

Municipalities must meet the standards specified in statute and administrative code if they are to be classified as "effective recycling programs" and permitted to dispose of residual amounts of recyclable materials, along with other solid waste, in Wisconsin landfills. A municipality without effective recycling program status would not, in effect, have access to Wisconsin landfills for any of its waste.

State Support for Municipal Recycling

In 2000, DNR distributed an estimated $24.4 million in recycling grants to responsible units. As shown in Table 3, grant amounts have decreased, with the largest decrease occurring between 1997 and 1998, when the Legislature reduced appropriations by 18.4 percent in anticipation of the then-expected April 1999 sunset of the recycling surcharge.

Table 3

Total Recycling Grants to Responsible Units
1995-2000

Year	Responsible Units Receiving Grants	Total Grants	Percentage Change
1995	1,014	$29,061,000	
1996	1,018	29,178,000	0.4%
1997	1,016	29,192,000	< 0.1
1998	1,018	23,831,000	-18.4
1999	1,010	24,129,000	1.3
2000*	999	24,391,000	1.1

* Estimated

Responsible units may use grants to fund any eligible expenditures for their recycling programs, including salaries for administrative staff and recycling collection crews, training, construction costs, supplies, capital purchases, public education, and equipment use. Expenditures are ineligible for grant assistance if they are not necessary for the planning, construction, or operation of recycling programs. Revenue from sales of recyclables or equipment used in recycling, or for operating another responsible unit's recycling program, are deducted from total costs eligible for reimbursement.

State support for recycling does not cover all costs incurred by responsible units for providing recycling services, and municipalities typically use local property tax revenues to fund the difference. Before 2000, a complex grant formula considered both total eligible costs and minimum per capita funding levels. In addition, responsible units implementing volume-based fees—user fees charged to residents for at least some portion of their waste and based on its volume—were eligible to receive supplemental grants. Variations in the formula

resulted in significant differences in the percentage of municipalities' costs covered by the grants. This formula is illustrated in Appendix 1. Its use was ended with the 2000 grant year because of the then-slated end of the recycling surcharge and the municipal grant program.

In the 1999-2001 biennial budget bill, the Legislature proposed distributing recycling grants on a per capita basis, with an additional per capita amount given to those municipalities that provide curbside collection services. However, the Governor vetoed that distribution formula, stating that he did not want to create a per capita distribution formula without a full discussion of its effect on local governments. Instead, responsible units received the same percentage of the total statewide funding available in 2000 that they had received in 1999. As shown in Table 4, 72.1 percent of responsible units received grants that covered between 20 percent and 39 percent of their net eligible costs. Approximately 2.1 percent of responsible units—typically counties acting as responsible units and incurring expenditures of less than $100,000 or those municipalities receiving supplemental volume-based fee grants—were reimbursed for all of their recycling expenditures.

Table 4

Net Eligible Costs Reimbursed by Grants
1999

Percentage of Eligible Costs Covered by Grant	Percentage of Responsible Units with Portion of Costs Covered
100%	2.1%
90-99	1.2
80-89	1.8
70-79	3.0
60-69	6.1
50-59	5.6
40-49	7.2
30-39	36.8
20-29	35.3
10-19	0.9
0-9	0.0
Total	100.0%

Local governments are funding an increasing share of total recycling costs.

Statewide, the percentage of net eligible costs covered by recycling grants has decreased steadily, as shown in Table 5. As a result, local governments have contributed an increasing share of total costs associated with the provision of municipal recycling services.

Table 5

Total Net Eligible Costs Reimbursed by Recycling Grants
1995-2000

Year	State Share of Total Costs	Local Share of Total Costs
1995	47.9%	52.1%
1996	44.2	55.8
1997	42.4	57.6
1998	33.4	66.6
1999	32.9	67.1
2000*	30.4	69.6

* Estimated

As noted, the State also supports recycling through the Recycling Markets Development Board and a demonstration grant program. The Board, created by 1993 Wisconsin Act 75, makes grants and loans to businesses that can provide markets for recyclable materials collected from both residential and commercial sources, and it provides loans and demonstration grants to fund feasibility studies and business plans for new or expanding recycling businesses. The Board is attached to the Department of Commerce for administrative purposes and received an appropriation of $2.5 million for grants and loans, and $142,000 per year for administration, in the 1999-2001 biennium. The demonstration grant program is administered by DNR and provides cost-share grants to municipalities, public entities, businesses, and nonprofit organizations for projects implementing innovative waste reduction strategies. The program received annual appropriations of $585,000 and $500,000 in the 1999-2001 biennium. In addition, the Council on Recycling, a seven-member council appointed by the Governor, was created by 1989 Wisconsin Act 335. It promotes implementation of the State's solid waste reduction, recovery, and recycling programs and advises the Governor and the Legislature regarding those issues. Staff support for the Council is provided by DNR.

Because state support for municipal recycling programs represented 84.4 percent of total state recycling spending in FY 1999-2000, and in light of the increasing amount local governments must contribute to provide residential recycling services, our evaluation is focused on the municipal recycling grant program and legislative concerns regarding its effectiveness, efficiency, and administration.

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To determine the effectiveness of municipal residential recycling programs in Wisconsin, we examined available national and regional data on the amount of solid waste recycled. In addition, we reviewed local governments' compliance with program effectiveness standards established by DNR. Nationally and regionally, state and local governments have instituted recycling programs to promote several goals, including diverting materials from landfills so that less additional landfill space is needed; reducing the need for virgin materials, the energy required to manufacture new materials, and the emissions associated with the manufacture of goods; and reducing the amount of tipping fees local governments must pay to landfill material.

Diversion of Materials from Landfills

Wisconsin recovers 36.1 percent of its municipal solid waste, while the nation recovers 26.0 percent.

Recycling reduces demand on landfills and therefore extends their life spans, resulting in a need for fewer new landfills. According to the most recent data available, Wisconsin outperforms the nation as a whole in terms of its rate of diversion of municipal solid waste from landfills. The United States was estimated to have a municipal solid waste recovery rate of 26.0 percent in 1995. In comparison, a 1998 waste characterization study commissioned by DNR and conducted by Franklin Associates estimated that in 1995, 1.34 million tons of Wisconsin's 3.71 million tons of municipal solid waste were recovered, for a rate of 36.1 percent.

As shown in Table 6, Wisconsin's municipal solid waste recovery rate is greater than all other midwestern states' except Minnesota's. Wisconsin's recycling "goal" is not comparable to the other midwestern states' because Wisconsin has established recycling standards only for residential solid waste, which is a subset of municipal solid waste. A recycling goal for Wisconsin is therefore not included in Table 6.

Table 6

Municipal Solid Waste Recycling Goals in Selected Midwestern States
1999

State	Recycling Goal	Recycling Rate	Deadline
Illinois[1]	25%	27%	2001
Indiana[2]	50	32	2000
Iowa[3]	50	34	2000
Michigan[4]	50	29	2005
Minnesota[5]	50/35	40	1996
Ohio	25	20	2000
Wisconsin[6]	**-**	**36**	**-**

[1] Rate listed is for 1997 (most recent year available).

[2] Goal and rate are based on all solid waste except hazardous waste, and in addition to recycling include source reduction, composting, and reuse efforts.

[3] Goal and rate are based on all solid waste except hazardous waste and include source reduction, recycling, combustion for energy recovery, and reuse efforts.

[4] Goal is for all solid waste except hazardous waste and is composed of individual goals for waste reduction, reuse, composting, and recycling. Rate is for recycling only; rates for other efforts are not available.

[5] Goal is 50 percent for metropolitan-area counties and 35 percent for the remainder of the state. Rate listed is for 1998 (most recent year available). The state includes an additional 6 percent for home management of yard waste and source reduction in its overall diversion rate.

[6] Rate listed is for 1995 (most recent year available). Yard waste managed at home is estimated to divert an additional 4 percent.

Not all recyclable material is actually recycled.

Despite the implementation of statewide recycling programs, not all recyclable material is actually recycled. Some concerns have been raised about the amount of recyclable material that is landfilled or burned, either because it is inadvertently disposed of by residents or because haulers of solid waste and recyclables deliberately landfill recyclable materials rather than incur the often higher cost of non-landfill disposal.

Overall, an estimated 27.2 percent of recyclable materials in Wisconsin were landfilled or burned in 1995, according to the 1998 Franklin Associates study. Wisconsin's rate of 27.2 percent compares favorably with the estimated national rate of 54.9 percent in 1995, as shown in Table 7. More recent data are not available.

Table 7

Municipal Solid Waste Landfilled or Burned
1995

Material	Percentage Landfilled in Wisconsin	Percentage Burned in Wisconsin	Wisconsin Total	National Total
Plastic containers	51.4%	2.3%	53.7%	73.9%
Glass containers	48.7	0.7	49.4	72.8
Steel and bimetal cans	46.8	0.7	47.5	43.9
Magazines	45.8	2.1	47.9	74.3
Office paper	43.0	2.0	45.0	54.2
Newspaper	22.8	1.0	23.8	46.7
Cardboard	20.6	1.0	21.6	35.8
Aluminum cans	19.7	0.3	20.0	43.4
Vehicle batteries	3.1	0.1	3.2	10.5
Major appliances	0.0	0.0	0.0	39.5
Tires	0.0	97.0*	97.0	82.2
Yard waste	0.0	0.0	0.0	69.7
Overall Percentage	23.5	3.7	27.2	54.9

* Tires were burned for energy recovery.

Sources: *Wisconsin Waste Characterization & Management Study Update*, Franklin Associates, and *Characterization of Municipal Solid Waste in the United States: 1998 Update*, Franklin Associates

As noted, some recyclable materials are landfilled because haulers collect materials for recycling but landfill them instead. DNR licenses 907 haulers of solid waste, 37 haulers of recyclables, and 474 haulers of both types of material and, along with local governments, has the authority to sanction those who landfill separated recyclable materials. Because it does not believe landfilling of recyclables occurs frequently, DNR does not monitor haulers on a regular basis. Staff indicate they instead respond to complaints from citizens and municipal officials. Citations include fines of $50 plus costs for the first offense, $200 plus costs for the second offense, and $2,000 plus costs for a third or subsequent violation. Between 1997 and 2000, a total of 14 citations were issued under s. 287.07, Wis. Stats., which prohibits the landfilling of separated recyclables. Responsible units may set their own fines for violations of local recycling ordinances.

Reduced Energy Needs and Emissions

One means of evaluating the effectiveness of recycling is to compare the energy, natural resource needs, and pollution emissions associated with producing goods from virgin and recycled materials. In conjunction with the U.S. Environmental Protection Agency and the Research Triangle Institute, DNR has developed a modeling system that estimates the environmental benefits of using recycled materials. According to initial model results produced in 2000, the use of recycled goods in Wisconsin includes the following annual environmental benefits:

- energy savings are the equivalent of those needed to provide 302,000 households with all electrical, heating, and cooling needs;
- a total of 146,000 fewer tons of industrial waste is created; and
- production of pollutants associated with acid rain is reduced by 25,000 tons.

Avoided Disposal Costs and Landfill Space

By recycling, municipalities avoided tipping fees of $9.6 million in 1999.

By diverting materials from the waste stream, municipalities avoid paying disposal costs and landfills do not reach capacity as quickly as they otherwise would. Avoided disposal costs represent the landfill tipping fees responsible units do not have to pay for material that is diverted from the waste stream. Wisconsin has 45 municipal landfills, which accept municipal solid waste and other types of waste, and 42 industrial landfills, which are typically operated by a manufacturing firm or a utility and accept only industrial waste. Each landfill establishes its own tipping fees. According to DNR, 1998 tipping fees averaged $38 per ton and ranged from $17 to $80. As shown in Table 8, total avoided disposal costs reported by municipalities increased from $7.6 million in 1995 to $9.6 million in 1999, or by 26.3 percent. This increase is largely the result of increased diversion of materials from landfills, rather than increased tipping fee amounts, because the tonnage of recyclables collected by responsible units grew by 19.3 percent during that period.

In addition to avoiding tipping fees associated with landfill disposal of material, recycling reduces the amount of landfill space needed. DNR estimates that total municipal solid waste recycling in Wisconsin represents a space savings of approximately one average-sized municipal landfill every 1.1 to 1.7 years. It is important to note, however, that waste diverted because of recycling is largely offset by waste imported to Wisconsin landfills from other states, which are

Table 8

Avoided Disposal Costs
1995-1999

Year	Avoided Disposal Costs	Number of Responsible Units Reporting*
1995	$7,625,000	812
1996	8,794,000	822
1997	8,749,000	828
1998	9,057,000	829
1999	9,600,000	841

* Only those responsible units with responsibility for solid waste collection (those in which residents do not contract directly with a hauler for collection) reported avoided disposal costs.

attracted by Wisconsin's relatively low tipping fees. DNR surveyed ten landfills in Illinois and five in the Upper Peninsula of Michigan near Wisconsin's borders in 1999 and found that the average tipping fee in the Illinois landfills was approximately $44 per ton. In Michigan, it was approximately $63 per ton. Wisconsin's tipping fees averaged $38 per ton in that year. The Congressional Research Service reported in 1998 that Wisconsin was the sixth-largest importer of waste in the United States, and DNR reported that 1.3 million tons of out-of-state waste were imported in that year, compared to the 790,700 tons recycled by Wisconsin municipalities.

Departmental Measures of Effectiveness

In addition to comparing Wisconsin's recycling efforts with those of other states and the nation as a whole, DNR has developed per capita collection standards for municipal residential recycling programs. Meeting these standards is one component of achieving what DNR has defined as effective recycling program status, which is required of municipalities in order to gain access to Wisconsin landfills. The standards for rural and other municipalities, which were established in s. NR 544.05(1)(4), Wis. Adm. Code, are shown in Table 9. Rural municipalities are defined as those with population densities of 70 or fewer persons per square mile. Although standards for individual types of materials are listed in administrative code, DNR bases its determination of compliance on whether a responsible unit has collected the total amount per capita for all specified items, regardless of amounts of individual materials collected.

Table 9

Effective Recycling Program Collection Standards
(Pounds of material per capita per year)

Material	Rural Municipalities	Other Municipalities
Newspaper	36.00	47.00
Corrugated cardboard	6.00	7.00
Magazines	7.00	9.00
Aluminum containers	1.40	1.80
Steel and bimetal containers	7.00	9.00
Plastic containers	3.00	3.75*
Glass containers	22.00	29.00
Total	82.40	106.55**

* The standards listed in administrative code have not yet been updated to reflect the change in plastics collection requirements. The amount shown is the current requirement.

** DNR uses a standard of 106.6 pounds per capita for determining compliance.

Although administrative code requires responsible units to meet the collection standards listed in Table 9 in order to be designated as having effective recycling programs, and thus to be eligible for recycling grants, DNR takes no action against municipalities that fail to meet collection standards.

In 1999, over one-fourth of responsible units failed to meet per capita collection standards.

As shown in Table 10, 281 responsible units, or more than one-fourth of the 1,010 responsible units receiving grants in 1999, did not meet the total per capita collection standard. Those 281 units received $5.1 million in grants, or 21.2 percent of total grants awarded in 1999. Ninety-two of the 281 responsible units failed to meet 50 percent of the applicable per capita collection standard. Others, however, missed compliance by smaller percentages. For example, the City of Milwaukee recycled 102.0 pounds per capita, compared to the applicable standard of 106.6 pounds per capita. If all responsible units had met at least the per capita collection standard in 1999, an additional 12,400 tons of material, representing an additional 3.4 percent of those recyclables collected that year, would have been diverted from landfills. Appendix 2 presents information related to collection amounts, grant sizes, and total expenditures for the 50 largest responsible units in Wisconsin.

Table 10

Responsible Units Not Meeting Collection Level Standards
1999

Percentage of Standard	Units Not Meeting Percentage of Standard	Grants Disbursed to These Units	Percentage of Total Grants
76% to 99%	104	$4,216,000	17.5%
51% to 75%	85	352,000	1.5
26% to 50%	59	315,000	1.3
0% to 25%	33	220,000	0.9
Total	281	$5,103,000	21.2%

Until 2000, responsible units that did not meet the applicable collection standard were required to request exemptions as part of the process of filing annual recycling accomplishments reports and were then notified of DNR's determination. Beginning in 2000, municipalities requesting exemptions were instructed by DNR that they would receive them unless informed otherwise.

DNR has never denied a municipality's request for exemption from the collection standard. If DNR were to deny an exemption, the responsible unit would lose its effective recycling program status and, as a result, permission to dispose of residual amounts of recyclables in solid waste. DNR staff indicated that they believe it would be detrimental to the environment and to public health to deny a responsible unit permission to dispose of waste within Wisconsin.

DNR currently has no practical means of enforcing collection standards.

Because DNR has no other means of sanctioning responsible units for failure to meet collection standards, such as reducing grant amounts in future years, staff indicated that they must grant exemptions. Therefore, the collection standards currently in place are not enforced.

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Wisconsin provides a larger share of state assistance to local governments than surrounding midwestern states do, and municipalities in Wisconsin spend significant amounts of their own funds on the provision of recycling services. Consequently, questions about cost-effectiveness have been raised. We examined factors influencing the cost of recycling services, including requirements of state law and local preferences for service provision. We also determined whether relationships exist between the size of a municipality's recycling grant and its level of recycling, and between total program expenditures and the level of recycling in individual municipalities.

The Costs of Recycling and Landfilling

One means of determining the cost-effectiveness of recycling is to compare the cost of collecting and processing recyclables with that of collecting and landfilling solid waste. Based on the best available data reported by municipalities, DNR, and the Department of Revenue, the net per ton cost of providing recycling services is, on average, higher than the per ton cost of providing solid waste services.

Costs of municipal residential recycling average $95 per ton, whereas disposal costs average $85 per ton.

Local governments in Wisconsin reported to the Department of Revenue that they incurred collection and disposal costs of $123.6 million in 1998 for an estimated 1.45 million total tons of municipal solid waste, or average costs of $85 per ton. In contrast, after revenue from sales of recyclables was deducted from total program costs, municipal governments' net cost to recycle 790,700 tons in 1998 was $75.5 million, or approximately $95 per ton. In addition, some solid waste haulers indicate that, with some types of equipment, keeping recyclable materials separate from other solid waste makes solid waste collection less efficient and more expensive, suggesting an even larger cost difference. It is important to note that these figures are averages based on costs reported by all local governments, and individual municipalities could experience higher or lower costs for recycling or for solid waste services.

There are three reasons for the differences in cost between recycling and solid waste disposal. First, the cost of landfilling solid waste is generally less than the cost of processing recyclable material. As stated earlier, in 1999 Wisconsin landfills charged approximately $38 per ton, on average, to accept solid waste, while material recovery facilities charged a similar or higher amount per ton to process recyclables:

- the City of Milwaukee paid a fixed fee of $527,600 annually, as well as $26.29 per ton for processing;

- the City of Superior paid $77.25 per ton for processing;

- Dane County, which contracts for processing services on behalf of several responsible units including the City of Madison, paid a fixed fee of $250,000 annually, as well as $17.14 per ton for paper and $52.23 per ton for other recyclables. The contract returned 80 percent of all revenues to the responsible units.

Even though all of the City of Madison's processing costs were covered by revenue from the sale of recyclables, its processing costs were higher than its landfill tipping fee in 1998. Therefore, Madison's net cost for recycling, which was $126.66 per ton, was close to its solid waste disposal cost, which was $123.17 per ton.

Recycling can also be more expensive than solid waste disposal because recyclable material cannot be compacted to the degree that solid waste can without breaking collected glass. Therefore, the collection of recyclables fills trucks more quickly and requires more trips or more routes than solid waste collection does. Finally, recycling programs require local governments to pay for educational materials for residents, as well as administrative costs associated with grant reporting requirements. These two costs are likely to be higher, on average, than similar costs associated with solid waste services.

Regional Comparisons

Among midwestern states, only Wisconsin and Minnesota provide state operating assistance for recycling.

We examined state recycling laws and state expenditures for recycling in the midwestern states of Illinois, Indiana, Iowa, Michigan, Minnesota, and Ohio to determine how Wisconsin compares. With the exception of Minnesota, other states in the Midwest do not provide ongoing support for municipal recycling programs. Instead, they provide only start-up funding for local programs or funds for market development and pilot or demonstration projects.

Comparisons of Wisconsin's and Minnesota's total costs of providing recycling services are not possible, as Minnesota does not track all local expenditures for recycling. However, it is possible to compare state assistance levels. Minnesota provided less state financial assistance than Wisconsin in 1998: $14.0 million compared to Wisconsin's $23.8 million in that year, or approximately $2.98 per capita compared

to Wisconsin's $4.61. Comparisons of residential recycling rates indicate that Minnesota's rate for marketable recyclables is similar to Wisconsin's, as shown in Table 11.

Table 11

Residential Recycling Tonnage for Selected Marketable Recyclables*
1998

	Wisconsin		Minnesota	
	Tonnage	Pounds per Capita**	Tonnage	Pounds per Capita**
Paper	267,600	102.9	250,400	106.6
Glass	71,900	27.7	54,800	23.3
Plastics	24,000	9.2	12,700	5.4
Total	363,500	139.8	317,900	135.3

* Steel and aluminum are not included because Minnesota includes an estimate of these materials sold to buy-back centers, while Wisconsin does not.
** Based on Wisconsin's 1998 population of 5.2 million and Minnesota's population of 4.7 million.

A comparison of recycling requirements and program structures indicates Minnesota's program allows for considerably greater local flexibility than Wisconsin's while achieving similarly high recycling rates. There are several differences between the two programs:

- **Service requirements**—Minnesota has less-stringent population requirements for curbside service provision. As a result, and perhaps also because of local decisions regarding level of service delivery, approximately 77 percent of Minnesota residents received curbside service in 1998, compared to 89 percent of Wisconsin residents.

- **Material requirements**—Minnesota allows counties some flexibility in determining which types of material will be collected, while Wisconsin requires that materials banned from landfills be recycled by all responsible units. The flexibility allowed by Minnesota law may be evidenced, in part, by the lower plastics tonnage collected in Minnesota. Plastics have been mentioned by some recycling managers as a material they might not collect if given the option.

- **Grant provision**—While Wisconsin makes approximately 1,000 local grants each year, Minnesota makes grants only to its 87 counties, allowing greater efficiency in grant administration.

Table 12 summarizes recycling requirements in the two states.

Table 12

Wisconsin and Minnesota Recycling Requirements
1998

	Wisconsin	Minnesota
Materials required to be recycled	Glass; bimetal, steel, and aluminum cans; #1 and #2 plastics; cardboard or magazines; yard waste; and other materials banned from landfills, such as waste oil and tires. Per capita collection standards are set for some individual material types.	No specific requirements except a ban on yard waste and materials such as tires and waste oil. Instead, a recycling rate of 35 percent of municipal solid waste in greater Minnesota, and 50 percent in the seven-county Minneapolis metropolitan area, is required. Counties are permitted some flexibility in determining which materials they will recycle in order to meet their goals.
Collection requirements	Monthly curbside collection required in cities with 5,000 or more residents, unless drop-off sites are shown to be used by at least 80 percent of residences.	Monthly curbside collection required in cities with 5,000 or more residents in the Minneapolis metropolitan area only. Cities in greater Minnesota with 20,000 or more residents are required to have curbside collection.

Relationship Between Expenditures and Recycling Rates

One means of determining the cost-effectiveness of recycling efforts is to evaluate the relationship between state grant funding levels, total state and local expenditures, and the amount of recycling occurring in a responsible unit. On average, one would expect that as additional funds are spent by communities, additional amounts of material are collected.

Recycling Rates and Total Expenditures

As total statewide expenditures for recycling have increased, the amount of material collected has also increased, although total tonnage of collected recyclables declined in 1999. Table 13 shows the change in net recycling cost, which includes all state and local costs for recycling, less any revenue received from the sale of recyclables, as well as the change in tonnage of recyclables collected. Between 1995 and 1999, the last year for which both cost and tonnage information is available, net costs increased by 22.0 percent, while tonnage of material collected increased by 19.3 percent.

Table 13

Total Net Expenditures and Tonnage of Recyclables
1995-2000

Year	Net Recycling Cost	Percentage Change	Total Recycled Tonnage	Percentage Change	Net Cost per Ton
1995	$63,700,000	-	636,800	-	$100.03
1996	72,900,000	14.4%	694,500	9.1%	104.97
1997	74,300,000	1.9	763,700	10.0	97.29
1998	75,500,000	1.6	790,700	3.5	95.49
1999	77,700,000	2.9	759,600	-3.9	102.29
2000*	81,600,000	5.0	N/A		

* Estimates are based on totals submitted for responsible unit grant applications.

The rate of increase in tonnage collected has declined over time, and actual tonnage declined in 1999. However, annual expenditures have continued to increase. Significant future increases in the amount of recyclables collected are unlikely for three reasons. First, Wisconsin is already performing better than most other midwestern states and the

nation as a whole in diverting material from landfills. Second, the last of the landfill bans was implemented in 1995, and no additional categories of material have been added to the State's recycling requirements since that time. Third, per capita collection standards are not currently enforced, providing little incentive for local governments to increase the tonnage of materials they collect.

In addition to examining total statewide expenditures and tonnage collected statewide for recycling, we analyzed per capita expenditures for individual responsible units. We found that, in most cases, as municipalities spend more per capita they collect more material per capita, as shown in Table 14.

Table 14

Per Capita Expenditures and per Capita Collection of Recyclables
1999

Per Capita Total Expenditures	Number of Responsible Units	Average Pounds Collected per Capita
$ 0.00 to $ 4.99	141	141.3
$ 5.00 to $ 9.99	303	193.0
$10.00 to $14.99	260	301.7
$15.00 to $19.99	151	264.4
$20.00 to $24.99	58	323.4
$25.00 to $29.99	34	454.2
$30.00 or more	63	569.8

Recycling Rates and Size of State Grants

In contrast to the generally positive relationship between per capita expenditures and per capita pounds collected for recycling, the relationship between the size of a responsible unit's recycling grant and the amount of recycling occurring in that municipality is relatively weak, as shown in Table 15. This weak relationship is not unexpected because the grant formula is not based solely on local expenditures but includes other factors, such as total eligible costs, avoided disposal costs, revenue from sales of recyclables, and population size.

Table 15

Per Capita Grant Size and per Capita Collection of Recyclables
1999

Per Capita Grant Size	Number of Responsible Units	Average Pounds Collected per Capita
$ 0.00 to $1.99	211	231.7
$ 2.00 to $3.99	296	246.4
$ 4.00 to $5.99	343	316.0
$ 6.00 to $7.99	90	273.5
$ 8.00 to $9.99	52	330.0
$10.00 and above	18	191.9

Municipalities with grants near the statewide average recycled between 43.8 and 695.0 pounds per capita.

There is wide variability in the amount of recycling that occurred in responsible units with average grant sizes in 1999. For example, as shown in Table 16, ten responsible units that received grants close to the statewide average of $4.64 per capita recycled amounts ranging from 43.8 pounds to 695.0 pounds per capita.

Table 16

Differences in Recycling Rates Among Responsible Units with Average per Capita Grants
1999

Responsible Unit	Population	Grant per Capita	Pounds Recycled per Capita	Expenditures per Capita
South Milwaukee (City)	21,340	$4.58	311.3	$13.74
Theresa (Village)	934	4.59	232.8	16.77
Mazomanie (Village)	1,508	4.61	213.5	15.11
Draper (Town)	215	4.61	163.4	13.27
Pleasant Springs (Town)	2,929	4.64	331.3	14.40
Racine (City)	85,552	4.66	273.2	14.88
Fountain (Town)	667	4.66	43.8	11.79
Omro (City)	3,158	4.71	376.3	14.51
Worcester (Town)	1,653	4.73	107.2	6.93
Dodgeville (City)	4,272	4.77	695.0	14.74

Conversely, responsible units with similar recycling rates often received dissimilar per capita grant amounts. For example, as shown in Table 17, ten responsible units clustered around the statewide average recycling amount of approximately 292 pounds per capita received grants ranging from $1.75 to $7.25 per capita in 1999.

Table 17

Differences in per Capita Grants Among Responsible Units with Average Recycling Rates
1999

Responsible Unit	Population	Pounds Recycled per Capita	Grant per Capita	Expenditures per Capita
Saint Cloud (Village)	496	288.7	$2.21	$10.31
Brownsville (Village)	488	289.6	4.79	22.66
Slinger (Village)	3,543	291.4	3.92	12.24
Antigo (City)	10,141	291.5	7.25	20.39
Richmond (Town)	1,562	291.7	3.59	17.83
Fort Atkinson (City)	11,139	292.9	4.26	14.80
Whitewater (City)	13,330	293.2	3.11	9.18
Cecil (Village)	375	295.1	1.75	9.29
Molitor (Town)	210	296.5	4.79	21.28
Footville (Village)	762	298.6	5.79	30.24

The wide variability among communities' per capita recycling costs suggests that local decisions, such as whether to provide curbside collection service voluntarily and how often to provide that service, have the greatest effect on local recycling costs.

Factors Influencing Recycling Costs

We reviewed the effect of state recycling laws and local decisions regarding service delivery on the total cost of recycling. These include collection method requirements, material collection requirements, universal service requirements, and local expenditure decisions.

Collection Method Requirements

The type of recycling service required of responsible units depends on the population of the municipality and has a significant effect on the overall cost of a program. We analyzed per capita expenditures for responsible units in two categories: those that provide curbside service as their primary means of collection, and those that provide only drop-off collection sites. As shown in Table 18, the average cost per capita to provide curbside collection service in 1999 was $16.57, while the average cost for drop-off collection was $9.45 per capita, or 43.0 percent less.

Table 18

Collection Method Costs
1999

Primary Collection Method	Number of Responsible Units	Cost per Capita	Cost per Ton	Pounds per Capita
Curbside collection:				
Less than 5,000 residents	487	$16.27	$110.89	293
5,000 or more residents	144	16.63	106.95	311
Total/average for curbside collection	631	16.57	107.55	308
Drop-off sites	364	9.45	154.06	123
Overall average		16.03	109.02	294*

* Does not equal statewide average of 292 pounds per capita because only the 995 responsible units that provided collection method information are included in this calculation.

Curbside collection costs are higher per capita, but lower per ton of material collected.

However, the cost per ton of material collected is higher for drop-off sites than for curbside collection because significantly less material is collected through drop-off sites. The cost per ton for drop-off sites was $154.06, while the cost for curbside collection was $107.55. In 1999, curbside collection resulted in recycling rates of 308 pounds per capita. In contrast, drop-off sites resulted in rates of 123 pounds per capita.

A significant number of responsible units that are not required to provide curbside service do so for their residents. In 1999, 487 responsible units, or 48.2 percent of responsible units receiving grants, provided curbside collection services although they were not

required to do so by state law. These 487 municipalities incurred a total cost of $12.3 million to collect 110,600 tons of material. We estimate that if they had instead provided only drop-off sites, their costs would have been $7.1 million, or 42.3 percent less. However, we estimate these responsible units would have collected 46,200 tons of material, or 58.2 percent fewer tons than they did, if they had recycled at the average per capita rate for municipalities with drop-off service. In addition, we estimate they received $1.1 million in grant funding, or 4.6 percent of total grant funding in 1999, to provide curbside service.

While per capita costs are higher in small communities that voluntarily provide curbside service, these communities' costs per ton of material collected are 27.9 percent lower than for drop-off sites ($111 compared to $154) because of higher recycling rates achieved with curbside collection. Curbside collection resulted in an average per capita collection rate of 293 pounds per capita in those communities, while drop-off sites collected 123 pounds per capita. Local governments that choose to provide curbside collection will likely see increased collection rates, but increased costs as well.

Material Collection Requirements

By requiring all communities to recycle the same materials, regardless of the percentage of the local waste stream these individual materials may represent, state recycling law may result in inefficiencies that increase costs at both the state and local levels. The cost of recycling individual types of materials in Wisconsin is not readily available; as a result, we can provide only anecdotal information based on the comments of managers in responsible units and material recovery facilities. For example:

- The recycling manager for the City of Madison has estimated that the cost of sorting plastics is four to five cents per pound, while plastics are currently selling for about six cents per pound. He has stated that Madison could realize collection and processing savings, as well as generate more revenue, by collecting office paper instead of plastics. Current capacity at the material recovery facility does not permit both office paper and plastics to be recycled.

- Managers in several responsible units have mentioned that plastic collection is expensive because the material's high volume and low density cause collection trucks to fill quickly and require additional routes or extra trips for a relatively low-weight load. In addition, various types of plastics must be sorted by hand. In contrast, materials such as aluminum and bimetals can be sorted mechanically.

- Several managers in responsible units have expressed concerns about increasing costs resulting from the emergence of specialty plastics such as recyclable beer bottles, which require additional sorting, and the increasing amount of colored plastics in the marketplace, which result in lower prices for mixed plastic.

- A responsible unit manager in Outagamie County has stated that processing glass results in high maintenance costs because of the damage broken glass causes to conveyor belts.

- The City of Milwaukee's recycling manager commented that aluminum cans cost more to collect than they have in past years because they are lighter, so that a greater number of cans is required to equal a ton of aluminum.

Some materials are much more costly to collect than others.

While managers of responsible units have provided anecdotal evidence of the costs to collect various materials, little information on the actual variation in cost is available. The most recent information cited by industry sources is from a 1993 study conducted by the National Solid Wastes Management Association. Although dated, it indicates that the cost of collecting a ton of heavier types of materials, such as newspaper and glass, is far lower than the cost of collecting materials that weigh less, such as aluminum and plastic. For example, on average, plastics cost approximately 15 times more per ton to collect than newspaper, and twice as much as aluminum.

State law requires all materials banned from landfills to be recycled, but the percentage of total recycling tonnage represented by these materials differs significantly, as shown in Table 19. For example, paper accounted for 34.8 percent of total recycling tonnage in 1999, while aluminum accounted for 0.9 percent. In addition to those materials required to be recycled, some responsible units also collect other materials, such as scrap metal and textiles, and these tonnages are included in Table 19 as well.

Table 19

Tonnage of Specific Materials Recycled
1995 and 1999

Type of Recyclable	1995 Tonnage	Percentage of Total	1999 Tonnage	Percentage of Total	Percentage Change 1995-1999
Marketable recyclables:					
Paper	235,600	37.0%	264,700	34.8%	12.4%
Glass	70,400	11.1	76,600	10.1	8.8
Bimetals	20,100	3.2	21,800	2.9	8.5
Plastic	19,300	3.0	21,800	2.9	13.0
Aluminum	5,800	0.9	6,700	0.9	15.5
Mixed recyclables*	14,800	2.3	5,600	0.7	- 62.2
Subtotal	366,000	57.5	397,200	52.3	8.5%
Yard waste	210,200	33.0	278,100	36.6	32.3
Other materials**	22,500	3.5	26,500	3.5	17.8
Non-required materials***	38,200	6.0	57,800	7.6	51.3
Subtotal	270,900	42.5	362,400	47.7	33.8
Total	636,900	100.0%	759,600	100.0%	19.3%

* Commingled recyclables for which breakdowns by type were not provided by responsible units
** Lead acid batteries, appliances, tires, and waste oil
*** Materials such as wood pallets, copper, scrap metal, textiles, and other items collected by some responsible units, but not required by state law to be recycled

Yard Waste Management Decisions

Since 1993, disposal of yard waste in a landfill or burning without energy recovery has been prohibited. Unlike other materials subject to the landfill bans, such as paper, plastic and aluminum, yard waste is not required to be collected by responsible units. Instead, they are permitted to require residents to manage yard waste at home or deliver it themselves to a drop-off site. Some responsible units do collect yard waste at curbside, however.

Local decisions about yard waste management can significantly affect recycling costs.

The level of service provided by a responsible unit to manage yard waste varies and is a local decision. The 194 responsible units that reported cost and tonnage information estimated that yard waste management costs accounted for 36.1 percent of total recycling costs in 1999. However, variations among responsible units in how tonnage and cost estimates are made may affect the accuracy of these estimates.

Universal Service Requirements

State recycling law requires that all residents be provided with recycling services. While requiring equal levels of services in all communities of a particular size ensures equity among all Wisconsin residents, it can result in wide cost differences, particularly in those areas that are geographically remote or have very low population densities. Responsible units are not permitted to request exemptions from providing services.

Revenue from the Sale of Recyclables

Revenue gained from the sale of recyclables can offset a portion of a municipality's total recycling costs. Typically, glass, steel and aluminum, plastic, and various types of paper are sold to private recycling firms by responsible units or their material recycling facilities, which may return a portion of the revenue to the responsible unit, depending on the terms of its contract.

19.8 percent of responsible units reported revenue from recyclables in 1999.

We found that the majority of responsible units do not sell their recyclables for revenue. In 1999, 19.8 percent of responsible units reported revenue from the sale of recyclables. Although levels of revenue have remained relatively stable, they have yet to return to the levels achieved in 1995, when nearly 17 percent of total program costs were covered by revenue. Table 20 shows total revenue and the percentage of total program costs covered by revenue for the responsible units that reported earning revenue.

Table 20

Total Revenue and Percentage of Total Program Costs Covered by Revenue
1994-1999

Year	Revenue from Sale of Recyclables	Revenue as a Percentage of Total Program Costs	Number of Responsible Units Reporting Revenue	Percentage of Total Responsible Units
1994	$4,090,000	9.3%	214	19.8%
1995	8,440,000	16.9	225	20.8
1996	3,950,000	8.1	213	19.8
1997	4,820,000	10.4	206	19.1
1998	4,450,000	9.6	197	18.3
1999	4,740,000	9.0	212	19.8

Many municipalities believe risks outweigh the potential benefits of selling recyclables.

In our interviews with managers in responsible units, several reported that they contract with a third party, such as a hauler or their material recovery facility, to take recyclables in exchange for decreased collection or processing costs. However, few could estimate their actual reduction in costs from such contracting. In several responsible units, managers stated that although revenue from the sale of recyclables could be greater than the value of their reduced collection costs, the risk associated with market volatility and the time and effort required to establish and maintain markets for recyclables make it preferable to exchange recyclables for discounted rates.

In 1999, the 212 responsible units that reported revenue from the sale of recyclables earned an average of $22,400: 115 earned less than 5.0 percent of their total program costs, while another 76 earned between 5.0 and 20.0 percent of their total program costs. Some large responsible units earned significant amounts from their sales of recyclables. For example, in 1999:

- the City of Madison earned $698,500, or 11.0 percent of its total program costs. That amount covered all processing costs for its materials and provided an additional $65,400.

- Outagamie County earned $730,600, or 33.0 percent of its total program costs of $2,217,000.

- Waukesha County earned $654,200, or 15.8 percent of its total program costs of $4,142,000.

In addition, some small responsible units' earnings from the sale of recyclables represent a substantial portion of their total program costs. For example, the Town of Trenton in Dodge County earned $800 for its recyclables in 1999, which covered 44.4 percent of its costs of $1,800.

Managers in both responsible units and material recovery facilities indicate that prices have been strong for some materials in 2000. However, prices for recyclables fluctuate, and recent prices have varied considerably, as shown in Table 21. Reasons for variations include negotiated contract prices, distance to markets, and the amount of material a seller can provide.

Table 21

Market Prices for Selected Recycled Materials
August 2000

Material	Lowest Price Received per Ton	Highest Price Received per Ton
Mixed paper	$ (10.00)*	$ 50.00
Aluminum	532.00	1,160.00
Steel	19.60	48.64
Mixed glass	(17.00)*	3.00
Mixed #1 and #2 plastics	125.00	210.00

* Negative amounts reflect situations in which sellers of material must pay buyers to take it.

Source: *Wisconsin Regional Sellers' Price Database*—August 2000. Information compiled by the UW-Extension Solid and Hazardous Waste Education Center (SHWEC).

Local Government Expenditures

Although state grants covered only 30.4 percent of total expenditures for responsible units in 2000, some have raised concerns about the incentive local governments have to maximize the amount of grant funding they receive and how that incentive might affect expenditure decisions and the types of costs claimed. In addition, some have raised concerns about particular types of costs incurred by local governments, including equipment, travel, and administrative expenses.

We examined reported expenditures for the 10 responsible units with the highest estimated expenditures during 2000, as well as a random sample of an additional 150 responsible units. These 160 units estimated their total expenditures in 2000 at $38.2 million, or 44.9 percent of the estimated total program costs of $85.1 million in that year. As shown in Table 22, the majority of expenditures were for personnel or services involved in the collection, transportation, or processing of recyclables. Travel expenditures represented 0.1 percent of the total.

Table 22

Estimated Expenditures by Category for Responsible Units in Sample
2000

Category	Percentage of Total Estimated Expenses
Salaries	42.8%
Contracted services	28.9
Equipment charges*	19.0
Cost allocations and other	3.2
Consulting services	2.1
In-house and purchased repair services	1.3
Purchased printing services	0.9
Operating supplies	0.6
Utilities	0.5
Insurance premiums	0.2
Office supplies	0.2
Rents	0.2
Travel	0.1
Subscriptions	< 0.1
Total	100.0%

* Includes both depreciation and hourly use charges for equipment

We also examined expenditures by activity category for the 144 municipalities in our sample for which we had collection method information. As shown in Table 23, the large majority of expenditures for this group were for the collection and processing of recyclables. Administrative expenditures were 5.7 percent of the $36.7 million in the sample.

Auditing Eligible Costs

DNR has not met statutory audit requirements for municipal recycling grants.

According to s. 287.23(2), Wis. Stats., DNR is required each year to audit at least 5.0 percent of the recipients of grants in the previous year, to ensure that costs claimed by grant applicants are eligible for reimbursement. Auditing is important to ensure all reported costs were actually incurred and to ensure that communities do not include some of their solid waste disposal costs with grant-eligible recycling costs. DNR, however, does not comply with the statutory audit requirement. As shown in Table 24, the percentage of grant recipients audited ranged from a high of 1.6 percent for 1995 and 1996 to 0.2 percent for 1998 and 1999 (the most recent year for which there is final cost information).

Table 23

Estimated Expenditures by Activity for Responsible Units in Sample*
2000

	Primary Collection Method	
	Curbside	Drop-Off
Number of Responsible Units Reporting	82	62
Function		
Curbside collection	68.4%	0.0%
Drop-off collection	7.6	63.1
Transportation and processing	15.9	25.5
Program administration	5.6	9.3
Education	2.4	1.4
Unspecified	0.1	0.7
Total	100.0%	100.0%

* Does not include 16 responsible units that did not specify estimated breakdowns by activity. Their estimated expenditures were $1.55 million, or 4.0% of the total estimated expenditures in the sample.

Table 24

Audits of Responsible Units
1995-1999

Year	Responsible Units Receiving Grants	Number of Grantees Audited	Percentage
1995	1,014	16	1.6%
1996	1,018	16	1.6
1997	1,016	8	0.8
1998	1,018	2	0.2
1999	1,010	2	0.2

DNR identified ineligible costs in each year that it conducted audits of responsible units. As shown in Table 25, DNR disallowed a total of almost $1.5 million in claimed recycling costs from 1995 through 1999. Disallowed costs led to a decrease in $114,000 in grants to audited responsible units from 1995 through 1999, or 1.6 percent of grants to those responsible units. DNR staff indicate that the agency does not have sufficient recycling-funded audit staff to complete the required number of audits, and the 0.5 full-time equivalent (FTE) auditor position designated to complete municipal grant audits is also responsible for audits of the demonstration grant program. DNR devotes a portion of the auditor's time to the demonstration grant program; however, that program's total funding in FY 1999-2000 was $585,000—significantly less than the $24.4 million in municipal recycling grants awarded in that year—and the demonstration grant program has no statutory audit requirement.

Table 25

Disallowed Costs and Change in Grants
1995-1999

Year	Claimed Costs	Disallowed Costs	Change in Grant Amount	Percentage of Grants to Audited Responsible Units
1995	$ 7,070,000	$ 515,000	($ 73,000)	2.5%
1996	8,260,000	288,000	(9,000)	0.3
1997	3,409,000	212,000	0	0.0
1998	959,000	226,000	(11,000)	6.4
1999	1,103,000	224,000	(21,000)	10.8
Total	$20,801,000	$1,465,000	($114,000)	1.6

To ensure that recycling grant funds are used in accordance with state law, *we recommend the Department of Natural Resources apply the 0.5 FTE auditor position supported by the Recycling Fund entirely to audits of municipal recycling grants*.

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A total of 31.0 FTE staff positions are paid from the Recycling Fund.

Currently, 31.0 FTE state staff in five different agencies are supported by the segregated Recycling Fund and provide a variety of grant administration, technical support, and educational services. In FY 1999-2000, salary and fringe costs for these staff totaled $1.6 million. Questions have been raised about the number of staff necessary to administer various portions of the State's recycling efforts, and whether duplication exists among staff in different agencies. Consequently, we reviewed the services provided by staff paid from the Recycling Fund.

Staff Supported by the Recycling Fund

The 1999-2001 biennial budget authorized a total of 31.0 positions to support the State's recycling efforts, which is 13.2 fewer positions than in the previous biennium. Total salaries and fringe benefits paid from the Recycling Fund were approximately $1.6 million in FY 1999-2000. Currently 19.0 FTE staff are in DNR, with salaries and fringe benefit costs totaling $1.0 million in FY 1999-2000. Other agencies with recycling-funded positions include the University of Wisconsin and the departments of Commerce, Corrections, and Revenue:

- The University of Wisconsin has 4.5 FTE positions paid from the Recycling Fund, with 4.0 located in UW-Extension's Solid and Hazardous Waste Education Center and 0.5 in UW-System. These staff provide local governments and businesses with technical assistance on meeting state recycling requirements in a cost-effective manner. Personnel costs for these positions totaled $383,000 in FY 1999-2000.

- The Department of Corrections has 4.0 FTE positions paid from the Recycling Fund. These staff are responsible for coordinating computer recycling projects at two correctional facilities, which accept surplus government and private-sector computer equipment and either recondition it for sale to schools and persons with disabilities or recondition the disassembled components. Personnel costs for these positions totaled $76,000 in FY 1999-2000.

- The Department of Commerce has 2.0 FTE positions paid from the Recycling Fund. These staff work with the Recycling Markets Development Board to encourage economic growth through the promotion of markets for recycled materials. Personnel costs for these positions totaled $90,000 in FY 1999-2000.

- The Department of Revenue has 1.5 FTE positions supported by the Recycling Fund, which are responsible for processing recycling surcharge and tipping fee surcharge payments. Personnel costs for these positions totaled $21,000 in FY 1999-2000.

Table 26 shows the number of positions paid from the Recycling Fund in the 1997-99 and 1999-2001 biennia.

Table 26

Positions Funded by Recycling
1997-99 and 1999-2001 biennia

Agency	1997-99	1999-01
DNR	28.5	19.0
UW-System and Extension	4.5	4.5
Department of Corrections	0.0	4.0
Department of Commerce	4.0	2.0
Department of Revenue	2.5	1.5
Department of Administration	2.5	0.0
Department of Agriculture, Trade and Consumer Protection	2.2	0.0
Total	44.2	31.0

Functions of DNR Staff Funded by Recycling

Because the majority of staff funded by recycling are located in DNR, we focused our analysis on these positions, which encompass the functions shown in Table 27. Nine of the total 19.0 FTE positions are waste management specialists, whose responsibilities include assisting municipalities with recycling questions and ensuring municipal compliance with DNR standards. Other positions in DNR include grant specialists, program assistants, and program and planning analysts. Of

the 19.0 positions, 9.0 are located in the central office and 10.0 are in the regional offices.

Table 27

DNR Positions Funded by Recycling
1999-2001 biennium

Bureau	Position	FTE
Waste Management	Waste Management Specialist	9.0
Waste Management	Program Assistant	2.0
Waste Management	Program and Planning Analyst	1.0
Communication and Education	Program and Planning Analyst	1.0
Communication and Education	Educator or Communicator	1.0
Community Financial Assistance	Grant Specialist	2.0
Cooperative Environmental Assistance	Business Sector Specialist	1.0
Law Enforcement	Environmental Warden	1.0
Finance	Accountant	0.5
Finance	Auditor	0.5
Total		19.0

Some have raised concerns related to the function of staff supported by the Recycling Fund, because not all of these staff were believed to be working in positions directly benefiting the State's recycling efforts.

The majority of DNR positions authorized to be supported by the Recycling Fund (12.0 of 19.0 FTE positions) are located in the Bureau of Waste Management. Because many DNR staff work on several different activities, these positions reflect work reported by many different staff. Time reporting information indicates that bureau-wide work hours coded directly to recycling activities in FY 1999-2000 represented a total of approximately 7.5 FTE positions. Work hours totaling an additional 0.9 FTE position were apportioned from "integrated" work effort—activities involving solid waste, hazardous waste, mining, and recycling issues—for a total of 8.4 FTE positions in the Bureau, compared to the 12.0 FTE positions authorized. Of the 8.4 FTE positions, 4.8 positions consisted of hours reported by the Bureau's waste management specialists, who are most directly responsible for providing assistance to local units of government, and 3.6 positions consisted of hours reported by other staff in the Bureau.

DNR staff, however, believe as much as 10 percent of work hours recorded for solid waste activities has been miscoded by staff in the Bureau, and these hours instead represent recycling work effort. If this estimate is accurate, additional work effort equivalent to approximately 4.7 FTE positions may be attributed to recycling; however, DNR provided no examples of actual miscoding or documentation of how the estimate was developed. Because of DNR's belief that staff under-report recycling work, a fully accurate and documented determination of the amount of recycling work performed by Bureau of Waste Management staff may not be possible.

Based on Bureau of Waste Management staff time records, recycling activity was not recorded for the equivalent of 3.6 FTE positions, representing 18.9 percent of DNR's authorized total of 19.0 FTE recycling positions.

DNR Administrative Appropriations

Administrative appropriations for DNR's recycling responsibilities declined by 45.3 percent between the 1995-97 and 1999-2001 biennia.

As the number of DNR recycling staff have declined over time, there has been a corresponding decrease in DNR's administrative appropriations associated with the State's recycling efforts. As shown in Table 28, administrative appropriations decreased by 45.3 percent between the 1995-97 and 1999-2001 biennia. One reason for the decrease is the elimination of administrative appropriations from sources other than the Recycling Fund. In the 1995-97 biennium, DNR recycling administration appropriations included $1.3 million from sources other than the Recycling Fund. Since that time, no appropriations have come from other sources. Appropriations from the Fund declined as well between the 1995-97 and 1999-2001 biennia.

Table 28

Department of Natural Resources Administrative Appropriations
1995-97 to 1999-2001 biennia

Biennium	Appropriations from the Recycling Fund	Percentage Change	Other Appropriations	Total	Percentage Change
1995-97	$6,095,000		$1,334,000	$7,429,000	
1997-99	6,638,000	8.9%	0	6,638,000	-10.6%
1999-2001	4,063,000	-38.8	0	4,063,000	-38.8
Percentage Change, 1995-97 to 1999-2001					-45.3

There has not been a clear, direct relationship between the number of DNR staff and municipal recycling levels. When the program began, DNR field staff assisted new municipal recycling managers in implementing recycling programs and completing grant applications. However, as communities have gained experience in operating recycling programs, the relationship of waste management specialists to program effectiveness is less certain. Similarly, while grant specialists and accountants are necessary to process grant applications, the effects of other DNR recycling staff on state recycling efforts—such as planning analysts, program assistants, and educators—are less clear.

Because municipal recycling programs are mature and the number of DNR staff actually working on recycling is lower than DNR's authorized position level, the Legislature may wish to require DNR to justify its need for the current number of authorized recycling-funded positions. From information provided, the Legislature will be able to determine whether to continue existing staffing levels or further reduce the number of DNR staff authorized to be paid from the Recycling Fund.

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1997 Wisconsin Act 60 included non-statutory language directing DNR, in conjunction with UW-Extension, to study the future needs of solid waste management in Wisconsin. The report was to be submitted to the Governor and the Legislature on or before June 30, 1999; however, as of January 1, 2001, the report had not yet been submitted. DNR estimates the report will be submitted in early 2001. It is expected to explore current waste management issues facing Wisconsin and to recommend changes to increase efficiency and effectiveness in solid waste management and recycling.

Legislative action on solid waste and recycling issues may be necessary during deliberations for the 2001-03 biennial budget, as several issues may be raised concerning the State's recycling efforts. These include:

- addressing a possible deficit in the Recycling Fund;
- developing possible new funding mechanisms for state support of recycling;
- determining if state recycling laws should remain in their current form or be modified;
- creating a new grant formula to distribute funds to municipal recycling programs; and
- shifting the focus of state recycling staff efforts.

Addressing the Recycling Fund Deficit

Based on current expenditure and revenue rates, the Recycling Fund could face a deficit of approximately $7.9 million per year beginning in FY 2001-02. The deficit would result if expenditures remain at approximately $28.0 million per year, while expected revenues remain at an estimated $20.1 million. The Fund had an opening balance of $62.4 million in FY 1999-2000, but budgeted expenditures and transfers to the General Fund of $15.0 million in FY 1999-2000 and $7.0 million in FY 2000-01 will reduce the balance to approximately $685,000 by the end of FY 2000-01.

In its 2001-03 biennial budget request, DNR has proposed addressing this deficit by increasing the tipping fee surcharge by $1.55 per ton, to a total of $1.85 per ton. DNR estimates this would generate approximately

$9.5 million annually, which would cover the anticipated shortfall. Without legislative action to increase revenues, the amount of funding available for state assistance to municipalities will decrease from $24.4 million in FY 1999-2000 to approximately $16.5 million in FY 2001-02, or by 32.4 percent. Based on net eligible expenditures for 2000, this would result in recycling grants covering 20.5 percent of responsible units' net eligible recycling expenditures, rather than the 30.4 percent covered in 2000.

Funding the State's Recycling Efforts

The use of a surcharge on Wisconsin businesses to fund state recycling efforts has been the subject of considerable debate since it was initiated in 1991. Representatives of Wisconsin business associations believe that taxing businesses to pay a portion of the cost of residential recycling, when businesses already support municipal recycling through local property tax payments, is an unfair means of supporting the program. The current recycling surcharge was initially intended to be temporary and was set to expire in April 1999. However, legislative action in the 1999-2001 biennial budget removed the sunset provision, although fewer businesses are now affected by the surcharge. In addition, the tipping fee surcharge was instituted.

Few funding models from other states are available for comparative purposes because few states provide extensive local funding support. Most states provide limited demonstration grants, which are typically funded from general fund taxes. The only midwestern state that provides local funding similar to Wisconsin's is Minnesota, which uses a special tax levied on purchased waste services. The tax rates are 17.0 percent for commercial garbage services; 9.75 percent for residential garbage services; and 60 cents per cubic yard of container capacity for medical, industrial, and demolition debris.

Another possible funding source for recycling is increased reliance on tipping fees, a tax structure ranked as most preferable by members of a Legislative Council Special Study Committee on the Future of Recycling in January 1997. The committee noted that the use of tipping fees encourages waste generators to reduce the amount of material they generate. Financing methods used in other states include fees charged to solid waste service providers, deposits on beverage containers, and advance disposal fees charged at the time of a product's purchase.

Modifying State Recycling Laws

If the Legislature wishes to reduce the cost of residential recycling services, one means of doing so would be to modify state recycling laws to permit local governments more flexibility in determining

which materials to recycle or the means by which recycling services are provided. Increased flexibility in the law, or the removal of landfill bans on certain items, could result in lower costs for local governments.

For example, the State could choose to set percentage goals for residential solid waste diversion and allow responsible units to determine which materials they will recycle in order to meet the goals. That would permit municipalities to take local conditions—such as amounts of specific recyclables in the waste stream, the distance to and availability of markets for individual materials, and market prices for materials—into account in determining which recyclables to collect. However, the Legislature would need to balance the increased flexibility and lowered costs with the prospect that some materials may be landfilled or burned rather than recycled.

Developing a New Municipal Grant Formula

Under recent changes to the grant formula, responsible units received the same ratio of total available grant dollars in 2000 that they received in 1999. As time passes, municipalities' costs will bear less relationship to the expenditure patterns they exhibited in 1999. For example, a municipality that currently provides drop-off collection services and crosses the threshold of 5,000 residents in 2001—and is thus required to provide curbside service—will experience higher costs than it had during 1999. However, its grant amount will not reflect these increased costs. Conversely, responsible units that have reduced costs will not have their grant amounts reduced accordingly.

DNR did not propose any changes to the current grant allocation system in its 2001-03 biennial budget request. However, if the Legislature chooses to develop a new grant formula, it could consider including provisions that would:

- provide incentives to responsible units that meet per capita recycling standards;

- remove any incentive responsible units may have to shift costs such as equipment or administrative expenses from general solid waste services to the recycling grant program, by moving from a cost-based model to one based on a standard per capita amount adjusted for whether or not curbside service is mandated by law for the community; and

- provide additional, meaningful incentives for responsible units to join together to provide services, market recyclables, and reduce administrative costs.

Shifting the Focus of Recycling Staff Efforts

As noted, 18.9 percent of the DNR staff authorized to be paid from the Recycling Fund do not do work directly and substantially benefiting the State's recycling efforts. Some believe that mature residential recycling programs are likely to be stable in the amount of recyclables they collect, and therefore less likely be in need of technical assistance from DNR.

If DNR maintains current staffing levels, it could consider shifting staff efforts from technical recycling assistance for responsible unit managers to improving the cost-effectiveness of residential recycling programs. Although DNR conducts periodic program audits of responsible units, these evaluations determine whether or not the unit is meeting state requirements, such as having a municipal recycling ordinance in place, providing educational materials to residents regarding their recycling responsibilities, and determining whether or not all banned materials are collected by the responsible unit. The focus of these evaluations has not included identifying ways to increase efficiency or reduce operating costs.

By providing municipal recycling programs with assistance in improving cost-effectiveness, DNR could help local government program operations become more efficient. DNR could study those communities that operate cost-effective recycling programs and develop best practices from those communities to share with others. Alternatively, the Legislature could consider reducing the number of recycling-funded positions in DNR to the number that will directly and substantially benefit the State's municipal recycling efforts.

DNR could also shift its efforts to improving the recycling rate for business and industry. With an estimated 45 percent of the municipal solid waste stream resulting from business rather than residential sources, improvement in the overall recycling rate could be achieved by targeting additional efforts to the business sector. In addition, the non-municipal solid waste stream, which consists of industrial solid waste, municipal wastewater treatment sludge, and construction and demolition debris, represents 70.1 percent of the total waste stream from all sources in Wisconsin. DNR could choose to address means of reducing portions of the non-municipal waste stream. For example, construction and demolition debris, which accounts for approximately 21.0 percent of the total solid waste stream, compared to the 16.6 percent represented by residential municipal solid waste, has been a focus of the statewide Council on Recycling's work in recent years.

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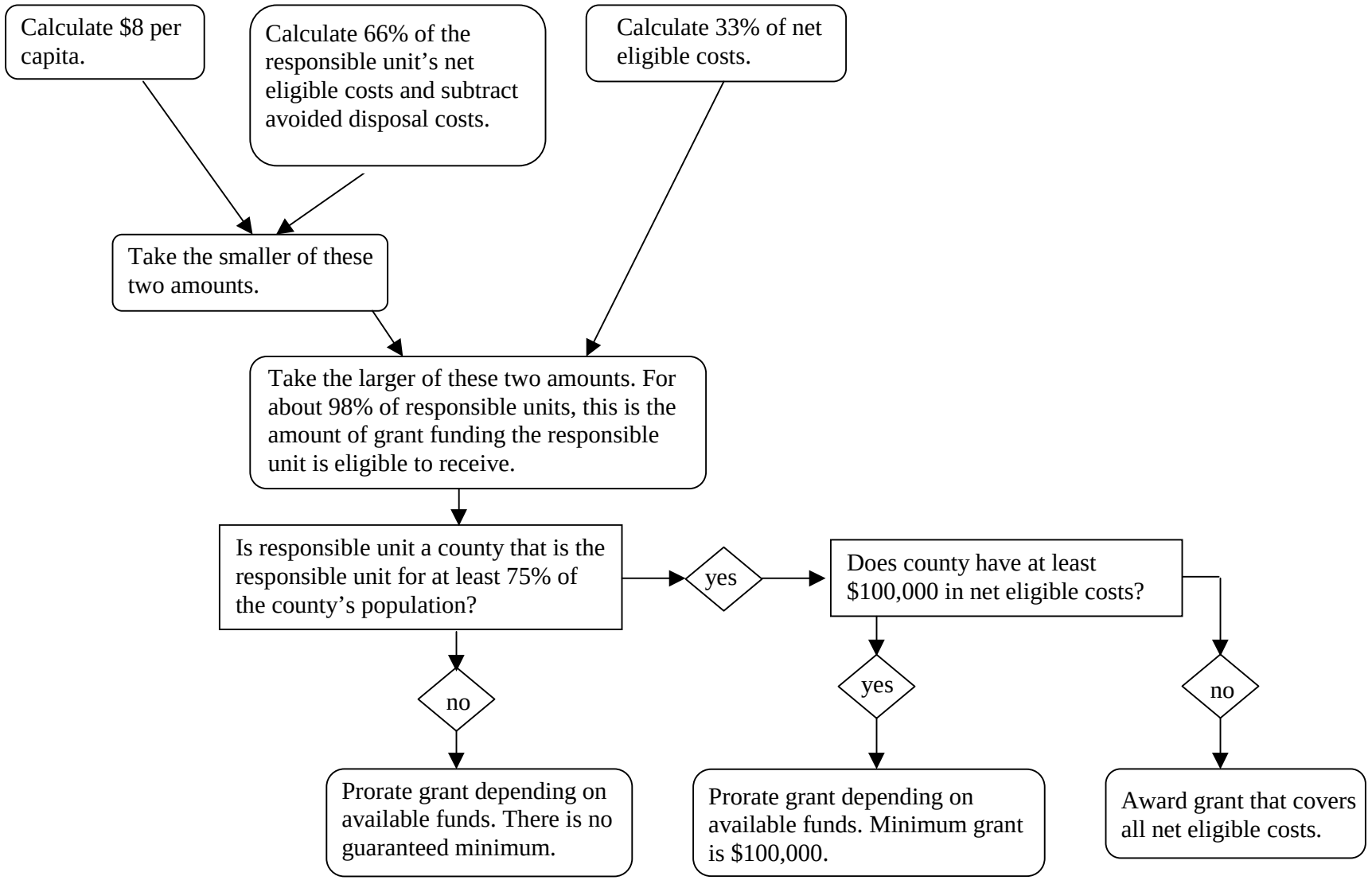
Appendix 1

Recycling Grant Award Formulas in Effect Before Calendar Year 2000*



* In addition to the standard grant formula, 10% of total municipal grant funds were distributed through a supplemental grant. Municipalities were eligible if they imposed volume-based disposal fees for at least some materials.

Appendix 2

1999 Recycling Information for the 50 Largest Responsible Units

Municipal Responsible Unit	Population	Total Program Costs	Total Grant	Grant as Percentage of Costs	Grant per Capita	Pounds per Capita	Cost per Capita	Cost per Ton	Meeting Collection Standard for Selected Recyclables?
Milwaukee, City of	610,654	$9,544,693	$2,924,769	30.6%	$4.79	190	$15.63	$164.20	No
Madison, City of	203,211	6,321,444	1,004,985	15.9	4.95	486	31.11	128.07	Yes
Green Bay, City of	102,726	3,008,528	549,369	18.3	5.35	554	29.29	105.80	Yes
Kenosha, City of	87,314	1,383,031	469,132	33.9	5.37	278	15.84	114.11	Yes
Racine, City of	85,552	1,272,990	398,853	31.3	4.66	273	14.88	108.94	No
West Allis, City of	63,712	991,009	318,624	32.2	5.00	355	15.55	87.65	Yes
Oshkosh, City of	62,185	986,887	297,657	30.2	4.79	535	15.87	59.34	Yes
Janesville, City of	59,223	803,738	269,031	33.5	4.54	371	13.57	73.15	Yes
La Crosse, City of	52,368	642,090	217,901	33.9	4.16	775	12.26	31.62	*
Sheboygan, City of	51,050	922,333	244,358	26.5	4.79	385	18.07	93.93	Yes
Wauwatosa, City of	49,064	1,096,977	234,851	21.4	4.79	441	22.36	101.32	Yes
Fond Du Lac, City of	41,105	800,486	196,755	24.6	4.79	398	19.47	97.91	Yes
Wausau, City of	38,777	611,165	185,611	30.4	4.79	421	15.76	74.94	Yes
Beloit, City of	36,204	623,854	173,295	27.8	4.79	325	17.23	106.17	Yes
Greenfield, City of	35,632	427,191	133,464	31.2	3.75	183	11.99	130.95	Yes
Manitowoc, City of	34,334	421,856	250,838	59.5	7.31	515	12.29	47.70	Yes
Menomonee Falls, Village of	29,762	312,117	76,277	24.4	2.56	879	10.49	23.87	Yes
West Bend, City of	28,326	569,218	135,586	23.8	4.79	366	20.10	109.68	Yes
Superior, City of	27,296	301,427	91,003	30.2	3.33	107	11.04	205.91	Yes
Franklin, City of	27,186	207,917	80,812	38.9	2.97	183	7.65	83.78	Yes
Oak Creek, City of	25,842	418,963	115,142	27.5	4.46	280	16.21	115.94	Yes
Neenah, City of	24,606	1,015,281	200,317	19.7	8.14	322	41.26	256.64	Yes
Caledonia, Town of	22,654	243,493	76,017	31.2	3.36	244	10.75	87.97	Yes
Mount Pleasant, Town of	22,248	175,907	26,645	15.1	1.20	1,061	7.91	14.90	Yes
South Milwaukee, City of	21,340	293,233	97,642	33.3	4.58	311	13.74	88.29	Yes
Mequon, City of	21,199	38,654	15,185	39.3	0.72	492	1.82	7.41	Yes
Watertown, City of	21,024	734,869	128,619	17.5	6.12	975	34.95	71.70	Yes
Muskego, City of	20,619	303,205	98,696	32.6	4.79	256	14.71	114.95	Yes
Marshfield, City of	19,984	265,650	80,855	30.4	4.05	151	13.29	176.39	Yes
De Pere, City of	19,511	604,063	118,325	19.6	6.06	231	30.96	268.37	Yes
Wisconsin Rapids, City of	19,018	354,354	91,032	25.7	4.79	912	18.63	40.85	Yes

County Responsible Unit	Population	Total Program Costs	Total Grant	Grant as Percentage of Costs	Grant per Capita	Pounds per Capita	Cost per Capita	Cost per Ton	Meeting Collection Standard for Selected Recyclables?
Waukesha County	248,899	$4,142,033	$1,066,075	25.7%	$4.28	276	$16.64	$120.42	Yes
Outagamie County	173,040	2,216,868	586,935	26.5	3.39	303	12.81	84.61	Yes
Eau Claire County	92,425	858,410	615,418	71.7	6.66	195	9.29	95.17	**
Portage County	63,547	1,441,753	307,666	21.3	4.84	134	22.69	338.44	Yes
Chippewa County	49,986	414,232	258,199	62.3	5.17	100	8.29	165.15	No
St. Croix County	49,500	300,583	230,397	76.7	4.65	134	6.07	90.90	**
Waupaca County	39,865	621,333	203,771	32.8	5.11	241	15.59	129.54	Yes
Monroe County	37,857	422,231	173,053	41.0	4.57	641	11.15	34.78	**
Polk County	37,035	371,396	218,304	58.8	5.89	186	10.03	107.96	Yes
Columbia County	35,987	654,239	172,257	26.3	4.79	271	18.18	134.14	**
Dunn County	35,061	436,187	146,500	33.6	4.18	177	12.44	140.57	**
Pierce County	34,562	666,361	245,681	36.9	7.11	152	19.28	253.08	**
Oneida County	34,137	228,848	100,000	43.7	2.93	169	6.70	79.10	Yes
Oconto County	33,089	529,370	219,286	41.4	6.63	309	16.00	103.47	Yes
Barron County	31,879	230,496	77,345	33.6	2.43	85	7.23	170.08	*
Vernon County	26,821	528,576	178,748	33.8	6.66	174	19.71	226.76	**
Door County	26,537	195,328	100,000	51.2	3.77	865	7.36	17.01	Yes
Waushara County	20,075	107,005	102,148	95.5	5.09	165	5.33	64.57	Yes
Vilas County	19,435	359,340	139,342	38.8	7.17	199	18.49	185.94	Yes

* County has a grandfathered incinerator and a prorated standard

** Standard was prorated because member municipalities are required to meet differing standards

Notes: Comparisons among county responsible units are difficult to make, as counties differ widely in the types of services they provide to member municipalities. Some provide only processing services, while others also provide collection services.

The population figures for county responsible units may not correspond to county populations.

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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January 4, 2001

Ms. Janice Mueller, State Auditor
Legislative Audit Bureau
22 East Mifflin Street, Suite 500
Madison, WI 53703

Dear Ms. Mueller:

The Department appreciates the opportunity to comment on the Legislative Audit Bureau's report on the Recycling Program. The report describes the state recycling program's many accomplishments in the last decade. These have been possible because of strong gubernatorial and legislative support and the great contributions made by our local government and private sector partners and individual citizens. Some of the accomplishments noted in your report:

- Wisconsin outperforms the rest of the nation in terms of levels of solid waste materials that are diverted from landfills.

- Wisconsin's recycling program results in savings of one average-sized municipal landfill every 1.1 to 1.7 years.

- Wisconsin's recycling rate in 1999 was 36% compared to the national average of 26%. Including on-site yard waste management results in an overall diversion rate of 40%.

These and many other accomplishments were possible because of the up-front investment that state government made in education and information programs. Due to these programs, households and businesses are better equipped to make choices that will actually reduce the amounts of solid waste generated by recycling. The education, technical and market assistance provided by DNR staff to responsible units and businesses has contributed significantly to the 40% diversion rate. This contribution is also evident in the one million tons (1999) of industrial byproducts (ash, foundry sand, pulp and paper sludge) reused and recycled beneficially in the State.

Our response will briefly address the following: staff allocations for recycling activities in the DNR Waste Management Program; the audit recommendation related to auditing of grants to responsible units; recent actions by the DNR to shift the focus of staff activities in the recycling program; and comparisons of Wisconsin and other state recycling programs.

Recycling Staff Allocations in the Waste Management Program

A central focus of the audit was an analysis of the 12.0 FTE funded by from Recycling Fund and allocated to the Waste Management program. Based on a review of program staff time reports, the audit concludes that the Waste Management Program under utilized its recycling funded positions by 3.6 FTE. I believe the conclusion to be drawn from this analysis is that a problem exists with the precision of staff time reporting, not in under-utilization of recycling-funded positions. As indicated in the audit report,

DNR waste management managers estimate that as much as 10% of time reported to solid waste activities is actually recycling work. Including this amount in the analysis results in 13.2 FTE performing recycling work in the waste management program.

Late in the fiscal year ending on June 30, 2000, the waste management managers clarified time codes relating to waste recycling and reduction work and provided better instructions to staff for use in the current fiscal year. As a result, we have observed expanded staff time reporting for recycling and reduction work in the waste management program so far this fiscal year. As the audit report indicates, the Department does not now have specific data to refute the audit conclusion, and we agree that it is important to demonstrate full utilization of recycling-funded staff resources in the waste management program.

To that end, the Department will submit to the co-chairs of the Joint Committee on Finance by April 1, 2001, a report that supports and documents continued allocation of 12.0 FTE in the waste management program from the Recycling Fund. We anticipate that a full year of time-reporting data for FY 2000-01 will show at least 12.0 FTE devoted to recycling activities.

Recommendation on Grant Audit Staffing

The report recommends that the Department apply the 0.5 FTE auditor position funded by the Recycling Fund entirely to audits of municipal recycling grants. This position represents the only audit staff allocated for municipal grant audits funded by the Recycling Fund to meet the statutory requirement to audit at least 5% of recycling grant recipients each year. The current 0.5 FTE staff allocation is insufficient to meet this statutory requirement, but I do not recommend increased staff allocation to remedy the situation—which would likely require 1.0 FTE or more additional staff. Rather, my intended plan of action is twofold. First, we will continue the department's current practice of conducting audits using generally accepted auditing guidelines, which include risk assessment and statistical sampling practices. This strategy has yielded audits of $6.6 million of the $135.6 million--or 4.9%--of state funding appropriated for the grant program between 1995 and 1999. Second, I will request that the Legislature delete the 5% audit requirement during the upcoming legislative session because it is not necessary to maintain the recycling program's financial integrity. The program is mature, and grantees cost and reporting requirements have remained relatively stable. With the exception of the snowmobile supplemental grants, the recycling program is the only DNR grant program for which the statutes mandate the percentage of grant recipients to be audited. The program's financial integrity will continue to be maintained using our existing practices and the recycling-funded staff allocations.

Shifting Focus of Recycling Efforts

The audit suggests that we shift the focus of our program to improve the cost-effectiveness of local government recycling activities and to promote business and industry recycling. Exploring alternatives to improve cost-effectiveness is a goal that we share with our state and local government recycling partners. For example, in the mid-1990's, we collaborated with the UW Extension Solid and Hazardous Waste Education Center and selected small local governments to pilot a cost-effectiveness assistance program. The UW Extension has also worked with several large municipalities to improve the cost-effectiveness of their recycling programs. We will continue to search out and enlist local partners to try new ideas and tools they can use to improve the cost-effectiveness of their recycling program. We welcome and appreciate the Legislature's continued involvement in this ongoing challenge.

On the issue of recycling success in business and industry, we currently have a successful beneficial reuse and recycling program for industrial waste, which will continue as a program priority for the upcoming biennium. In addition, we are also working with businesses over the past two years to promote computer

and carpet reuse and recycling on a voluntary basis, rather than using bans. We have also worked with businesses to reduce and recycle construction and demolition debris, textiles (clothing) and organic (food) wastes. These efforts will continue to be priorities for the program.

Comparisons with Other State Programs

The audit compares Wisconsin's recycling rate to the rates of six other mid-west states. I am pleased to see that Wisconsin's recycling rate exceeds all but Minnesota's. It is important to note that Wisconsin's 36% rate is from 1995 and Minnesota's 40% rate is from 1998. As noted later in the audit, the tonnage of recyclables collected in Wisconsin grew by 19.3% from 1995 to 1999, which would likely increase Wisconsin's recycling rate.

Wisconsin has also been very successful in the management of yard waste. Property owners diverted an estimated 290,000 tons of yard waste annually from landfills from 1990 through 1995. Landowners accomplished this through backyard composting and other on-site management techniques. Adding the 4% diversion rate for on-site yard waste management to the 36% recycling rate results in a total diversion rate of 40%.

The audit report points out that Minnesota allows counties some flexibility in determining which types of materials will be collected, while Wisconsin requires that materials banned from landfills be recycled. If a policy change is contemplated on this issue, it should be noted that the recycling markets in Wisconsin have been developed around these banned materials. Continuous, consistent supply of these raw materials is important to industries that use recycled materials.

Closing Comments

While the audit makes no specific recommendations regarding how to fund the program and resolve the projected Recycling Fund deficit, it does point out that the DNR's 2001-03 budget request recommends increasing the recycling tipping fee from the current $0.30 per ton to $1.85 per ton. I anticipate that there will be considerable discussion of this proposal if it is included in the Executive Budget. Regardless of the final proposal, I am concerned that, until Wisconsin's tipping fees are comparable to neighboring states, the inflow of out-of-state waste will continue to fill up Wisconsin's landfills.

Finally, a word of caution on possible changes to the grant program and formula. In the last budget, the Legislature opted to simplify the program, making it easier for both the state and municipalities to administer. DNR has a very modest 2.0 FTE that perform all recycling grant administration activities and are fully utilized administering the current program. If the grant formula is changed, it is important to consider that any added complexities would require additional staff to implement.

Thank you again for the opportunity to comment on the audit report. We appreciate the courtesy and professionalism of your staff throughout this process. We remain committed to maintaining an effective program that keeps Wisconsin in the lead nationally in recycling efforts. The information and suggestions in this report will help us achieve that goal.

Sincerely,

George E. Meyer
Secretary