

VII. Measurement of Progress Toward Waste Reduction Goals [ORC Section 3734.53(A)]

Three measures are used to determine progress that SWMDs are making towards reducing the waste generated, recycling more waste, and reducing the amount landfilled. As required by the State Format, districts must calculate both their reference year waste reduction rate and the rate of landfill utilization. These reference year rates are then compared to projected annual rates for each year of the planning period. The goals for each SWMD include strategies and activities which demonstrate:

- a 25 percent waste reduction rate;
- an annual increase in the waste reduction rate, recommended to be at least one percent per year; and
- an annual decrease in the landfill utilization rate, recommended to be at least one percent per year.

Please note that in the State Format, the term waste reduction means source reduction, recycling, MSW composting, resource recovery, and incineration. In order to be consistent with an Ohio Environmental Protection Agency-wide effort to standardize the definitions of terms, "waste minimization" has been replaced with "source reduction."

In the previous *Format*, the first two goals were calculated using the amount of waste **generated**. The revised version of the *Format* changes the calculation so that all three goals use the amount of waste **disposed** instead of generated. This change was made because the amount of disposal is much easier to measure than generation. When disposal is added to the waste reduction amount, the sum approximates waste generation.

A. Calculating the Waste Reduction Rate (WRR)

The formula below should be used to calculate the tons of waste reduction (TWR) for the district:

$$\text{TWR}_i = \text{R}_i + (\text{C}_i - \text{NC}_i) + (\text{I}_i - \text{A}_i) + \text{RA}_i \quad (1)$$

where:

TWR_i	=	the Tons of Waste Reduction for year <i>I</i>
R_i	=	tons of waste source reduced and Recycled in year <i>I</i>
C_i	=	tons of waste Composted (excluding yard waste) in year <i>I</i>
NC_i	=	tons of Non-Compostables delivered for composting, but ultimately separated for landfill disposal in year <i>I</i>
I_i	=	tons of waste Incinerated in year <i>I</i>
A_i	=	tons of incinerator Ash plus bypass waste in year <i>I</i>
RA_i	=	tons of Recycled incinerator Ash in year <i>I</i>

The following formula should be used to estimate generation based upon disposal and waste reduction amounts:

$$\mathbf{EGDWR}_i = \mathbf{TWR}_i + \mathbf{DL}_i , \quad (2)$$

where:

$$\begin{aligned} \mathbf{EGDWR}_i &= \text{Estimated Generation based upon Disposal plus Waste Reduction in year } I \\ \mathbf{DL}_i &= \text{tons of waste Disposed in sanitary Landfills in year } I \end{aligned}$$

The waste reduction rate can be calculated by dividing the sum from equation 1 by sum of equation 2:

$$\mathbf{WRR}_i = \frac{\mathbf{TWR}_i}{\mathbf{EGDWR}_i} \times 100 , \quad (3)$$

where:

$$\mathbf{WRR}_i = \text{the Waste Reduction Rate in year } I \text{ as a percent}$$

The amount of waste reduction per capita per day is calculated as follows:

$$\mathbf{PCWR}_i = \frac{\mathbf{TWR}_i \times 2000 \text{ lbs.}}{\mathbf{P}_i \times 365 \text{ days}} \quad (4)$$

where:

$$\begin{aligned} \mathbf{PCWR}_i &= \text{the Per Capita Waste Reduction rate in pounds per person per day in year } I \\ \mathbf{P}_i &= \text{the Population of the district in year } I \end{aligned}$$

The landfill utilization per capita is calculated as shown in the following formula.

$$\mathbf{PCLU}_i = \frac{\mathbf{DL}_i \times 2000 \text{ lbs.}}{\mathbf{P}_i \times 365 \text{ days}} \quad (5)$$

where:

$$\mathbf{PCLU}_i = \text{the Per Capita Landfill Utilization rate in pounds per person per day in year } I.$$

Each of these categories is further explained in the sections below.

1. Tons of Source Reduction and Recycling - R

The tons of waste source reduced and recycled, as shown in sections V.B., V.C., and V.E. for reference year and projected amounts, respectively, should be used for **R** in equation 1.

For purposes of calculating this amount for industrial waste, **R** must be adjusted based upon the initiation date of waste reduction strategies. Any waste reduction quantities resulting from a program which was initiated by an industry prior to January 1, 1985 cannot be included in the value of **R**. However, increases since January 1, 1985 in the amount source reduced and recycled by these programs may be included. For example, suppose XYZ Company initiated a recycling program which recovered 5,000 tons annually from 1980 through 1984. During 1985, XYZ Company expanded this program and recycled 7,500 tons. The increase in recycling which occurred after January 1, 1985, or 2,500 tons, may be added to **R**. Please note also that source reduction and/or recycling of yard waste **cannot** be included in the value of **R**, but waste tires and batteries can be included.

Enter the value for **R** as adjusted by the amount of industrial waste reduction prior to January 1, 1985, if applicable. Show all calculations and explain any assumptions.

2. Tons of Waste Composted - C

The tons of waste composted should be found in the inventory section of the plan, and Section V.D, if applicable. The waste **received** at all composting facilities used by the district should be summed to determine this value. Please note that yard waste **cannot** be included in this estimate. Facilities receiving **only** yard waste can be ignored for purposes of this calculation. However, all facilities receiving yard waste plus other solid wastes, or other solid wastes only, should be used to determine **C**. For example, suppose ABC composting facility received 10,000 tons of yard wastes, 3,000 tons of shredded wood pallets, and 1,000 tons of sawdust from lumbermills. In this case, 4,000 tons of waste (3,000 tons of shredded wood pallets and 1,000 tons of sawdust) should be added to **C**. Enter the value for **C**, show all calculations and appropriate adjustments.

3. Tons of Non-compostable Waste - NC

The tons of non-compostable waste recovered from de-bagging and screening activities should comprise **NC**. Please note that non-compostables from yard waste only facilities should not contribute to the value of **NC** since there is no waste from these facilities increasing the value of **C**. Enter the value of **NC**, show all calculations, and explain all adjustments, if necessary.

4. Tons of Waste Incinerated - I

The tons of solid waste received at all incinerators used by the district - both publicly-available and captive incinerators - should be summed to determine **I**.

5. Tons of Incinerator Ash Produced - A

The tons of incinerator ash produced from facilities burning solid waste should be summed to estimate **A**. Any bypass waste received at incinerators should be added to the value for ash produced. Please note that ash produced from facilities such as coal-burning power plants should not be included in this estimate. Enter the value of **A**, show all calculations, and explain all assumptions, if necessary.

6. Tons of Incinerator Ash Recycled - RA

The tons of incinerator ash recycled from district waste should be summed to determine **RA**, only if this amount has not already been included in **R**. Enter the value of **RA**, show all calculations, and explain all assumptions, if necessary.

7. Tons Waste Disposed in Landfills - DL

The tons of district waste disposed in solid waste landfills used by the districts should be summed to estimate **DL**. This value may need to be adjusted with the amount of "exempt waste." The total amount of district waste disposed in landfills should exclude any exempt waste such as construction and demolition materials received from the district. Please note that all solid waste disposed in licensed solid waste facilities, including waste received at captive landfills should be incorporated into the value of **DL**. Enter the value of **DL** as shown in Table VI-1, VI-2, or VI-3, show all calculations, and explain all assumptions, if necessary.

8. Reference Year WRR and PCWR

Using the equations and information above, calculate the **WRR** and the **PCWR** for the reference year as follows.

a) *Residential/Commercial Waste*

$$\begin{aligned} \text{TWR}_i &= \mathbf{R}_i + (\mathbf{C}_i - \mathbf{NC}_i) + (\mathbf{I}_i - \mathbf{A}_i) + \mathbf{RA}_i \\ &= 4,473 \text{ tons} + (0 - 0) + (0 - 0) + 0 \\ &= \mathbf{4,473 \text{ tons}} \end{aligned}$$

$$\begin{aligned} \text{EGDWR}_i &= \text{TWR}_i + \text{DL}_i \\ &= 4,473 + 15,528 \\ &= \mathbf{20,001 \text{ tons}} \end{aligned}$$

where $\text{EGDWR}_i =$ Estimated Generation based upon Disposal plus Waste Reduction in year I

$$\text{DL}_i = \text{tons of waste Disposed in sanitary Landfills in year } I$$

$$\begin{aligned} \mathbf{WRR}_i &= \frac{\mathbf{TWR}_i}{\mathbf{EGDWR}_i} \times 100.00 \\ &= \frac{4,473}{20,001} \times 100.00 \end{aligned}$$

$$\mathbf{WRR}_i = \mathbf{22.36\%}$$

where \mathbf{WRR}_i = the **Waste Reduction Rate** in year *I* as a percent
The amount of waste reduction per capita per day is calculated as follows:

$$\begin{aligned} \mathbf{PCWR}_i &= \frac{\mathbf{TWR}_i}{\mathbf{P}_i} \times \frac{2000 \text{ tons}}{365 \text{ days}} \\ &= \frac{4,473}{39,889} \times \frac{2000 \text{ tons}}{365 \text{ days}} \end{aligned}$$

$$\mathbf{PCWR}_i = \mathbf{0.61 \text{ lbs/person/day}}$$

where \mathbf{PCWR}_i = the **Per Capita Waste Reduction** rate in pounds per person per day in year *I*

$$\mathbf{P}_i = \text{the Population of the District in year } I$$

Please note: Explanations for Residential/Commercial Waste**1. Tons of Source Reduction and Recycling - R**

R = The tons of waste source reduced and recycled, as shown in sections V.B. (Existing Year), V.C. (Source Reduction and Recycling Strategies), and V.E. (Restricted Waste Streams) for reference year and projected amounts, respectively. Values are as in Table VI-2. Source reduction and/or recycling of yard waste **is not** included in the value of **R**.

2. Tons of Waste Composted - C

No composting of solid waste is reported for the Athens-Hocking District. Therefore, no values have been entered for C, Tons of Waste Composted.

3. Tons of Non-compostable Waste - NC

There were no tons of non-compostable waste recovered from de-bagging and screening activities for the value of **NC**, therefore the value of **NC** is 0 for each year of the planning period.

4. Tons of Waste Incinerated - I

There are no reports of solid waste from Athens or Hocking Counties being incinerated. Therefore the value of **I** is 0.

5. Tons of Incinerator Ash Produced - A

There is no incinerator ash produced for Athens or Hocking Counties. Therefore, the value of **A** is entered as 0.

6. Tons of Incinerator Ash Recycled - RA

Again, the value of **RA** is 0.

7. Tons Waste Disposed in Landfills - DL

As directed by the *State Format*, the values of **DL**, tons of District waste disposed in solid waste landfills used by the District, are derived by taking the values from Table VI-2.

Table VII-1.

**Annual Rate of Waste Reduction:
Residential/Commercial Waste**

Year	R ¹	C ²	NC ³	I ⁴	A ⁵	RA ⁶	DL ⁷	TWR ⁸	P ⁹	WR-R ¹⁰	PCWR ¹¹
1995	4,473	0	0	0	0	0	15,528	4,473	39,889	22.36%	0.61
1996	6,991	0	0	0	0	0	16,375	6,991	39,909	29.92%	0.96
1997	8,532	0	0	0	0	0	12,854	8,532	39,929	39.89%	1.17
1998	10,078	0	0	0	0	0	11,339	10,078	39,949	47.06%	1.38
1999	11,611	0	0	0	0	0	9,836	11,611	39,969	54.14%	1.59
2000	11,795	0	0	0	0	0	9,683	11,795	39,989	54.92%	1.62
2001	12,056	0	0	0	0	0	9,979	12,056	40,988	54.71%	1.61
2002	12,321	0	0	0	0	0	9,720	12,321	40,963	55.90%	1.65
2003	12,597	0	0	0	0	0	9,451	12,597	40,938	57.13%	1.69
2004	12,863	0	0	0	0	0	9,192	12,863	40,913	58.32%	1.72
2005	13,044	0	0	0	0	0	9,018	13,044	40,888	59.13%	1.75
2006	13,359	0	0	0	0	0	8,709	13,359	40,863	60.53%	1.79
2007	13,493	0	0	0	0	0	8,583	13,493	40,839	61.12%	1.81
2008	13,628	0	0	0	0	0	8,454	13,628	40,814	61.71%	1.83
2009	13,764	0	0	0	0	0	8,325	13,764	40,789	62.31%	1.85
2010	13,901	0	0	0	0	0	8,194	13,901	40,764	62.92%	1.87
2011	14,040	0	0	0	0	0	8,061	14,040	40,739	63.53%	1.89
2012	14,181	0	0	0	0	0	7,928	14,181	40,714	64.14%	1.91
2013	14,323	0	0	0	0	0	7,792	14,323	40,690	64.76%	1.93
2014	14,466	0	0	0	0	0	7,656	14,466	40,665	65.39%	1.95
2015	14,611	0	0	0	0	0	7,518	14,611	40,640	66.03%	1.97
2016	14,757	0	0	0	0	0	7,378	14,757	40,615	66.67%	1.99
2017	14,904	0	0	0	0	0	7,237	14,904	40,591	67.31%	2.01
2018	15,053	0	0	0	0	0	7,095	15,053	40,566	67.97%	2.03
2019	15,204	0	0	0	0	0	6,951	15,204	40,541	68.63%	2.05
2020	15,356	0	0	0	0	0	6,805	15,356	40,517	69.29%	2.08

1 Tons of residential/commercial waste source reduced and recycled as shown in Table VI-2.

2 Tons of residential/commercial waste composted as shown in Table VI-2.

3 Tons of non-compostable residential/commercial waste.

4 Tons of residential/commercial waste incinerated as shown in Table VI-2.

5 Tons of residential/commercial incinerator ash and bypass waste produced.

- 6 Tons of residential/commercial incinerator ash recycled.
- 7 Tons of residential/commercial waste disposed in landfills as shown in Table VI-2 minus exempt construction and demolition materials in Table IV-5.
- 8 Tons of residential/commercial waste reduction.
- 9 District population as shown in Table IV-1.
- 10 Residential/commercial waste reduction rate as a percentage.
- 11 Residential/commercial waste reduction per capita in pounds per person per day.

$$TWR_1 = R_1 + (C_1 - NC_1) + (I_1 - A_1) + RA_1$$

Assumptions:

b) *Industrial Waste for 1995*

$$\mathbf{TWR}_i = \text{tons of Waste Reduction in year } I$$

$$\begin{aligned}\mathbf{TWR}_i &= \mathbf{R}_i + (\mathbf{C}_i - \mathbf{NC}_i) + (\mathbf{I}_i - \mathbf{A}_i) + \mathbf{RA}_i \\ &= 17,919 \text{ tons} + (0 + 0) + (0 - 0) + 0 \text{ tons} \\ \mathbf{TWR}_{1995} &= \mathbf{17,919 \text{ tons}}\end{aligned}$$

$$\begin{aligned}\mathbf{EGDWR}_i &= \mathbf{TWR}_i + \mathbf{DL}_i \\ &= 17,919 \text{ tons} + 2832 \text{ tons} \\ \mathbf{EGDWR}_{1995} &= \mathbf{20,751 \text{ tons}}\end{aligned}$$

where, $\mathbf{EGDWR}_i =$ Estimated Generation based upon Disposal plus Waste Reduction in year I

$\mathbf{DL}_i =$ tons of waste Disposed in sanitary Landfills in year

$$\begin{aligned}\mathbf{WRR}_i &= \frac{\mathbf{TWR}_i}{\mathbf{EGDWR}_i} \times 100 \\ &= \frac{17,919}{20,751} \times 100\end{aligned}$$

$$\mathbf{WRR}_{1995} = \mathbf{86.35 \% \text{ Industrial Waste Reduction Rate}}$$

where $\mathbf{WRR}_i =$ the Waste Reduction Rate in year I as a percent

The amount of waste reduction per capita per day is calculated as follows:

$$\begin{aligned}\mathbf{PEWR}_i &= \frac{\mathbf{TWR}_i \times 2000 \text{ lbs.}}{\mathbf{E}_i \times 365 \text{ days}} \\ &= \frac{17,919 \times 2000}{4,590 \times 365}\end{aligned}$$

$$\mathbf{PEWR}_{1995} = \mathbf{21.39 \text{ lb/employee/day}}$$

where, $\mathbf{PEWR}_i =$ the Per Capita Waste Reduction rate in pounds per Employee per day in year I .

$\mathbf{E}_i =$ the number of employees of the District in year I

Please Note: Explanation for Industrial Waste**1. Tons of Source Reduction and Recycling - R**

Calculation:

$$\begin{aligned} \mathbf{R} &= (\text{reported industrial recycling for 1995}) - (\text{reported pre-85 recycling}) \\ &= 23,247 \text{ tons recycled} - 5,328 \text{ tons pre-85} \\ \mathbf{R} &= 17,919 \text{ tons} \end{aligned}$$

2. Tons of Waste Composted - C

No industrial waste composting is known to exist in the District. The total for C = 0.

3. Tons of Non-compostable Waste - NC

Since C = 0, no non-compostable waste remains. The total for NC = 0.

4. Tons of Waste Incinerated - I

No industrial waste is known to be incinerated.

5. Tons of Incinerator Ash Produced - A

No information has been obtained concerning by-pass waste or ash produced.

6. Tons of Incinerator Ash Recycled - RA

No information has been obtained for ash recycled, therefore RA = 0.

7. Tons Waste Disposed in Landfills - DL

The tons of District waste disposed in solid waste landfills are as in Table VI-3.

Table VII-2. Annual Rate of Waste Reduction: Industrial Waste

Year	R ¹	C ²	NC ³	I ⁴	A ⁵	RA ⁶	DL ⁷	TWR ⁸	E ⁹	WR-R ¹⁰	PEWR ¹¹
	Table VI-3	Table VI-3		Table VI-3		Table VI-3	Table VI-3		Table IV-4a		
1995	17,919	0	0	0	0	0	2,832	17,919	4,590	86.35%	21.39
1996	18,911	0	0	0	0	0	2,832	18,911	4,689	86.98%	22.10
1997	19,830	0	0	0	0	0	13,522	19,830	4,695	59.46%	23.14
1998	20,750	0	0	0	0	0	12,593	20,750	4,703	62.23%	24.18
1999	21,670	0	0	0	0	0	11,666	21,670	4,710	65.00%	25.21
2000	21,664	0	0	0	0	0	11,664	21,664	4,717	65.00%	25.17
2001	21,659	0	0	0	0	0	11,662	21,659	4,722	65.00%	25.13
2002	21,656	0	0	0	0	0	11,659	21,656	4,733	65.00%	25.07
2003	21,683	0	0	0	0	0	11,672	21,683	4,740	65.01%	25.07
2004	21,647	0	0	0	0	0	11,656	21,647	4,748	65.00%	24.98
2005	21,645	0	0	0	0	0	11,656	21,645	4,756	65.00%	24.94
2006	21,641	0	0	0	0	0	11,654	21,641	4,764	65.00%	24.89
2007	21,860	0	0	0	0	0	11,449	21,860	4,772	65.63%	25.10
2008	22,082	0	0	0	0	0	11,224	22,082	4,780	66.30%	25.31
2009	22,306	0	0	0	0	0	10,997	22,306	4,789	66.98%	25.52
2010	22,532	0	0	0	0	0	10,768	22,532	4,797	67.66%	25.74
2011	22,761	0	0	0	0	0	10,538	22,761	4,805	68.35%	25.95
2012	22,992	0	0	0	0	0	10,306	22,992	4,814	69.05%	26.17
2013	23,224	0	0	0	0	0	10,073	23,224	4,823	69.75%	26.39
2014	23,460	0	0	0	0	0	9,837	23,460	4,832	70.46%	26.60
2015	23,697	0	0	0	0	0	9,601	23,697	4,841	71.17%	26.82
2016	23,937	0	0	0	0	0	9,362	23,937	4,850	71.89%	27.05
2017	24,179	0	0	0	0	0	9,121	24,179	4,859	72.61%	27.27
2018	24,423	0	0	0	0	0	8,879	24,423	4,868	73.34%	27.49
2019	24,669	0	0	0	0	0	8,635	24,669	4,877	74.07%	27.71
2020	24,918	0	0	0	0	0	8,389	24,918	4,887	74.81%	27.94

1 Tons of industrial waste source reduced and recycled as shown in Table VI-3 minus per-85 recycling totals.

2 Tons of industrial waste composted as shown in Table VI-3.

3 Tons of non-compostable industrial waste.

4 Tons of industrial waste incinerated as shown in Table VI-3.

- 5 Tons of industrial incinerator ash and bypass waste produced.
- 6 Tons of industrial incinerator ash recycled.
- 7 Tons of industrial waste disposed in landfills as shown in Table VI-3.
- 8 Tons of industrial waste reduction.
- 9 Projected Industrial Employment as shown in Table IV-4a.
- 10 Industrial waste reduction rate as a percentage.
- 11 Industrial waste reduction per capita in pounds per employee per day.

Sample Calculation:

Assumptions:

c) *Total Waste for 1995*

$$\begin{aligned} \mathbf{TWR}_i &= \mathbf{R}_i + (\mathbf{C}_i - \mathbf{NC}_i) + (\mathbf{I}_i - \mathbf{A}_i) + \mathbf{RA}_i \\ &= 22,392 \text{ tons} + (0 - 0) + (0 - 0) \text{ tons} + 0 \\ \mathbf{TWR}_{1995} &= \mathbf{22,392 \text{ tons}} \end{aligned}$$

$$\begin{aligned} \mathbf{EGDWR}_i &= \mathbf{TWR}_i + \mathbf{DL}_i \\ &= 22,392 \text{ tons} + 18,360 \text{ tons} \\ \mathbf{EGDWR}_{1995} &= \mathbf{40,752 \text{ tons}} \end{aligned}$$

where, \mathbf{EGDWR}_i = Estimated Generation based upon Disposal plus Waste Reduction in year I
 \mathbf{DL}_i = tons of waste Disposed in sanitary Landfills in year I

$$\begin{aligned} \mathbf{WRR}_i &= \frac{\mathbf{TWR}_i}{\mathbf{EGDWR}_i} \times 100 \\ &= \frac{22,392}{40,752} \times 100 \end{aligned}$$

$$\mathbf{WRR}_{1995} = \mathbf{54.95 \%}$$

where \mathbf{WRR}_i = the Waste Reduction Rate in year I as a percent

The amount of waste reduction per capita per day is calculated as follows:

$$\begin{aligned} \mathbf{PCWR}_i &= \frac{(\mathbf{TWR}_i \times 2000 \text{ lbs.})}{\mathbf{P}_i \times 365 \text{ days}} \\ &= \frac{22,392}{39,889} \times \frac{2000}{365} \end{aligned}$$

$$\mathbf{PCWR}_{1995} = \mathbf{3.08 \text{ lbs/person/day}}$$

where: \mathbf{PCWR}_i = the Per Capita Waste Reduction rate in pounds per person per day in year I .
 \mathbf{P}_i = the Population of the District in year I

Please Note: Explanations for Total Waste**1. Tons of Source Reduction and Recycling - R**

R = The tons of waste source reduced and recycled, as shown in sections V.B. (Existing Year), V.C. (Source Reduction and Recycling Strategies), and V.E. (Restricted Waste Streams) for reference year and projected amounts. To calculate the value of R showing total source reduction and recycling it is necessary to eliminate double-counting and to subtract the pre-85 industrial recycling totals. Source reduction and/or recycling of yard waste **is not** included in the value of **R**.

Calculation for 1995:

$$\begin{aligned} \mathbf{R} &= (\text{Value in Table VI-3}) - (\text{pre-85 industrial recycling tons}) + (\text{Value in Table VI-2}) \\ &= 23,247 \text{ tons} - 5,328 \text{ tons} + 4,473 \text{ tons} \\ &= \mathbf{22,392 \text{ tons}} \end{aligned}$$

2. Tons of Waste Composted - C

No solid waste is composted in the District. Therefore, the value of C is 0.

3. Tons of Non-compostable Waste - NC

There were no tons of non-compostable waste recovered from composting, therefore the value of NC is 0 for each year of the planning period.

4. Tons of Waste Incinerated - I

The value of I is 0.

5. Tons of Incinerator Ash Produced - A

No information has been obtained concerning by-pass waste or ash produced.

6. Tons of Incinerator Ash Recycled - RA

No information has been obtained for ash recycled, therefore RA = 0.

7. Tons Waste Disposed in Landfills - DL

As directed by the *State Format*, the values of DL, tons of District waste disposed in solid waste landfills used by the District, are derived by taking the values from Table VI-1 and subtracting the

exempt waste as shown in Table IV-5.

B. Annual Increase in Waste Reduction

Using the equations above, the **WRR** and **PCWR** for each year of the planning horizon were calculated. The appropriate information was entered into Tables VII-1, VII-2, and VII-3 for the residential/commercial waste, industrial waste, and total waste, respectively. A one percent annual increase is recommended by the *State Format*, but not mandated. The annual one percent increase is determined by calculating **WRR** for year I , and then for year $I+1$. The difference between **WRR_i** and **WRR_{i+1}** (**WRR_{i+1} - WRR_i**) should be equal to 1.0 or greater. According to the *State Format*, if annual increases of at least one percent are not demonstrated in both the residential/commercial and industrial sectors, the district should consider new or more aggressive strategies for inclusion in the implementation schedule. (The one percent increase per year is more critical for districts with a low waste reduction rate.) As directed by the *State Format*, quantities of yard waste were removed from these calculations.

**Table VII-3. Annual Rate of Waste Reduction:
Total District Solid Waste**

Year	R ¹	C ²	NC ³	I ⁴	A ⁵	RA ⁶	DL ⁷	TWR ⁸	P ⁹	WR-R ¹⁰	PCWR ¹¹
	Table VI-2	Table VI-1		Table VI-1			Table VI-4		Table IV-1		
	Table VI-3										
1995	22,392	0	0	0	0	0	18,360	22,392	39,889	54.95%	3.08
1996	25,902	0	0	0	0	0	19,207	25,902	39,909	57.42%	3.56
1997	28,362	0	0	0	0	0	26,376	28,362	39,929	51.81%	3.89
1998	30,828	0	0	0	0	0	23,932	30,828	39,949	56.30%	4.23
1999	33,281	0	0	0	0	0	21,502	33,281	39,969	60.75%	4.56
2000	33,459	0	0	0	0	0	21,347	33,459	39,989	61.05%	4.58
2001	33,715	0	0	0	0	0	21,641	33,715	40,988	60.91%	4.51
2002	33,977	0	0	0	0	0	21,379	33,977	40,963	61.38%	4.54
2003	34,280	0	0	0	0	0	21,123	34,280	40,938	61.87%	4.59
2004	34,510	0	0	0	0	0	20,848	34,510	40,913	62.34%	4.62
2005	34,689	0	0	0	0	0	20,674	34,689	40,888	62.66%	4.65
2006	35,000	0	0	0	0	0	20,363	35,000	40,863	63.22%	4.69
2007	35,353	0	0	0	0	0	20,031	35,353	40,839	63.83%	4.74
2008	35,709	0	0	0	0	0	19,678	35,709	40,814	64.47%	4.79
2009	36,070	0	0	0	0	0	19,322	36,070	40,789	65.12%	4.85
2010	36,434	0	0	0	0	0	18,962	36,434	40,764	65.77%	4.90
2011	36,801	0	0	0	0	0	18,599	36,801	40,739	66.43%	4.95
2012	37,172	0	0	0	0	0	18,234	37,172	40,714	67.09%	5.00
2013	37,547	0	0	0	0	0	17,865	37,547	40,690	67.76%	5.06
2014	37,925	0	0	0	0	0	17,493	37,925	40,665	68.43%	5.11
2015	38,307	0	0	0	0	0	17,118	38,307	40,640	69.11%	5.16
2016	38,693	0	0	0	0	0	16,740	38,693	40,615	69.80%	5.22
2017	39,083	0	0	0	0	0	16,359	39,083	40,591	70.49%	5.28
2018	39,476	0	0	0	0	0	15,974	39,476	40,566	71.19%	5.33
2019	39,873	0	0	0	0	0	15,586	39,873	40,541	71.90%	5.39
2020	40,274	0	0	0	0	0	15,194	40,274	40,517	72.61%	5.45

1 Total tons of waste source reduced and recycled as shown in Table VI-2 and VI-3. This column eliminates double-counting and pr-85 industrial recycling totals.

- 2 Total tons of waste composted as shown in Table VI-1.
- 3 Total tons of non-compostable waste.
- 4 Total tons of waste incinerated as shown in Table VI-1.
- 5 Total tons of incinerator ash and bypass waste produced.
- 6 Total tons of incinerator ash recycled.
- 7 Total tons of waste disposed in landfills is the sum of landfilling as shown in Tables VII-1 and VII-2.
- 8 Total tons of waste reduction.
- 9 District population as shown in Table IV-1.
- 10 Total waste reduction rate as a percentage.
- 11 Per capita waste reduction in pounds per person per day.

Sample Calculation:

Assumptions:

C. Annual Decrease in Landfill Utilization

Using equation (5), the PCLU was calculated for the reference year and for each year of the planning period. This data was entered into Table VII-4. Please note that this table was prepared, as directed, for total waste disposed only. The totals used for Tons of District Waste Disposed in Landfills was taken from Table VI-4, which projects the tons landfilled based upon historical trends.

Table VII-4. Annual Rate of Landfill Utilization

Year	Tons of Dis-trib Waste Disposed in Landfills	District Population	Landfill Utilization Per Capita
1989	0		
1990	0	39,488	
1991	0	39,568	
1992	17,197	39,648	2.38
1993	20,596	39,729	2.84
1994	6,174	39,809	0.85
1995	18,360	39,889	2.52
1996	19,207	39,909	2.64
1997	26,376	39,929	3.62
1998	23,932	39,949	3.28
1999	21,502	39,969	2.95
2000	21,347	39,989	2.92
2001	21,641	40,988	2.89
2002	21,379	40,963	2.86
2003	21,123	40,938	2.83
2004	20,848	40,913	2.79
2005	20,674	40,888	2.77
2006	20,363	40,863	2.73
2007	20,031	40,839	2.69
2008	19,678	40,814	2.64
2009	19,322	40,789	2.60
2010	18,962	40,764	2.55
2011	18,599	40,739	2.50
2012	18,234	40,714	2.45
2013	17,865	40,690	2.41
2014	17,493	40,665	2.36
2015	17,118	40,640	2.31
2016	16,740	40,615	2.26
2017	16,359	40,591	2.21
2018	15,974	40,566	2.16
2019	15,586	40,541	2.11
2020	15,194	40,517	2.05

- 1 For years prior to the reference year, use the initial district plan and annual district reports. Include additional years between "1991" and the "Reference" if necessary.
- 2 Use the values as shown in Table VI-1.

3 Use the values as shown in Table IV-1.

Sample Calculation:

Assumption: