



**Commonwealth of Virginia
Locality Recycling Rate Report
For Calendar Year 2020**

Reporting Solid Waste Planning Unit: Virginia Tech

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Summary: Virginia Tech, the Town of Blacksburg, the Town of Christiansburg, and Montgomery County represent the four jurisdictional members of the Montgomery Regional Solid Waste Authority (MRSWA). Located in Christiansburg, MRSWA operates a transfer facility that collects the majority of our principal recyclable materials (PRMs), and all of our municipal solid waste (MSW). Our region uses a “single stream recycling system” with Recycling & Disposal Solutions (RDS) in nearby Salem, Virginia serving as the “hub.” Food waste is collected at all on campus dining facilities and stored, transported and processed into composting material by Royal Oak Farm (ROF) at their facility in Evington, Virginia. The New River Resource Authority (NRRA) located in Dublin, Virginia operates the local landfill. Virginia Tech owns and operates a Quarry that produces our famous “Hokie Stone,” the Limestone-Dolomite stone for the exterior of most campus buildings. Calendar Year 2020 was dominated by the COVID-19 pandemic which had a significant impact with recycling and trash collection operations at all levels. In mid-march 2020 the university pivoted to mostly on-line classes, and this continued through the 2020 Fall Semester. The result was a significant decrease in on campus student and employee population for most of the year, which led to a significant decrease in our recycling and trash tonnage. For example, our food waste collection was reduced from 566 tons in 2019 to 138 tons in 2020 (a 75% reduction).

Virginia Tech achieved a 38.1% Recycling Rate and a 85.2% Waste Diversion Rate (percentage of waste kept out of the local landfill) for Calendar Year 2020 (page 2).

Data in this report was collected from our recycling and solid waste facilities and other campus stakeholders. I certify that I have personally examined, and am familiar with, the information submitted in this form, and that based on my inquiry of the individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete.

Dennis C. Cochrane Director, Office of Sustainability March 26, 2021
Authorized Signature Title Date

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PART A: Recycling Rate Calculation - Using the formulae provided below and the information reported on Pages 3, 4 and 5 to calculate your recycling rates.

Step 1: [(PRMs) / (PRMs + MSW Disposed)] X 100 = Base Recycling Rate %

$$\begin{array}{ccccccc}
 \boxed{1,291} & / & \boxed{1,291} & + & \boxed{2,604} & \times 100 = & \boxed{33.1} \% \\
 \text{TONS} & & \text{TONS} & & \text{TONS} & & \text{Basic Recycle Rate}
 \end{array}$$

Step 2: CREDITS calculation

- a. Total Recycling Residue 0 tons
- b. Total Solid Waste Reused 30 tons
- c. Total Non-MSW Recycled 13,627 tons

CREDITS 13,657 tons

Step 3: [(PRMs + CREDITS) / (PRMs + CREDITS + MSW Disposed)] X 100 = ^{Adjusted} Recycling Rate #1*

$$\begin{array}{ccccccc}
 \boxed{1,291} & + & \boxed{13,657} & / & \boxed{1,291} & + & \boxed{13,657} & + & \boxed{2,604} & \times 100 = & \boxed{85.2} \% \\
 \text{TONS} & & \text{TONS} & & \text{TONS} & & \text{TONS} & & \text{TONS} & & \text{Waste Diversion Rate}
 \end{array}$$

Step 4: Source Reduction Credit does not apply; or

Adjusted Recycling Rate #1 + 2% SRP Credit = Adjusted Recycling Rate #2*

$$\boxed{85.2} \% + 2\% = \boxed{87.2} \%$$

Step 5: Final Recycling Rate* for Solid Waste Planning Unit = $\boxed{38.1} \%$

Final Recycle Rate

* Total credits resulting from Steps 3 and 4 may not exceed 5 percentage points above the Base Recycle Rate (step 1) achieved by the Solid Waste Planning Unit.

Locality Recycling Rate Report
PART B: DATA

For Calendar Year 2020

Part I: Principal Recyclable Materials (PRMs): Report only PRM material generated within the reporting SWPU and recycled, NOT imported PRMs for recycling.

<u>PRM TYPE</u>	<u>RECYCLED AMOUNT (TONS)</u>
Paper	<u>141</u>
Metal	<u>172</u>
Plastic	<u>3</u>
Glass	<u>0</u>
Commingled (also known as Single Stream)	<u>365</u>
Yard Waste (composted or mulched)	<u>250</u>
Waste wood (chipped or mulched)	<u>150</u>
White Goods	<u>6</u>
Tires	<u>6</u>
Used Oil	<u>9</u>
Used Oil Filters	<u>1</u>
Batteries	<u>6</u>
Electronics	<u>4</u>
Fluorescent Bulbs & Ballasts	<u>15</u>
Food Waste Organic – Composting	<u>138</u>
Waste Cooking Oil	<u>25</u>
TOTAL PRMs	<u>1,291</u> (PRMs)
	(Enter Total on Page 2, Step 1)

Listing of sources for PRM data

1. Solid waste facilities from Virginia Tech which MSW disposed/recycled data was collected:
 - a. Office of Sustainability – Campus Planning, Infrastructure & Facilities (CPIF) Division
 - b. Facilities Operations (Buildings & Grounds) – CPIF Division
 - c. Capital Construction & Renovation – CPIF Division
 - d. Dining Services – Division of Student Affairs
 - e. Housing & Residence Live – Division of Student Affairs
 - f. Environmental Health & Safety Department
 - g. Fleet Services – Parking & Transportation Department
 - h. Athletic Department
 - i. Human Resources Department

2. Other facilities/operations (not included in #1 above) from which MSW disposed/recycled data was collected:
 - a. Montgomery Regional Solid Waste Authority (MRSWA) – Christiansburg, VA
 - b. YMCA at Virginia Tech – Blacksburg, VA
 - c. Campus Kitchens Food Donation Program – VT Engage – Blacksburg, VA
 - d. _____
 - e. _____
 - f. _____
 - g. _____
 - h. _____
 - i. _____

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Part II: Credits by Category (see Credits Worksheet, Page 5)

A. Recycling Residue – “Recycling residue” means the (i) nonmetallic substances, including but not limited to plastic, rubber, and insulation, which remain after a shredder has separated for purposes of recycling the ferrous and nonferrous metal from a motor vehicle, appliance, or other discarded metallic item and (ii) organic waste remaining after removal of metals, glass, plastics and paper which are to be recycled as part of a resource recovery process for municipal solid waste resulting in the production of a refuse derived fuel. (§ 10.1-1400 of the *Code of Virginia*) (use only SWPU generation)

<u>MATERIAL DESCRIPTION</u>	<u>FACILITY/OPERATION</u>	<u>TONS OF MATERIAL</u>
_____ from _____	_____	_____
_____ from _____	_____	_____
_____ from _____	_____	_____

TOTAL RECYCLING RESIDUE _____ **0**
 (Enter Total on Page 2, Step 2 a)

B. Solid Waste Re-Used

<u>MATERIAL DESCRIPTION</u>	<u>REUSE METHOD</u>	<u>TONS OF MATERIAL</u>
<u>Furniture/Appliances</u>	<u>YToss? Program (Collected – Student Move-Out)</u>	_____ <u>3</u>
<u>Food Donation Prgm</u>	<u>Partnership w/Dining Services & VT Engage Grp</u>	_____ <u>27</u>
_____	_____	_____
_____	_____	_____

TOTAL SOLID WASTE REUSED _____ **30**
 (Enter Total on Page 2, Step 2 b)

C. Non-Municipal Solid Waste (MSW) Recycled

<u>MATERIAL DESCRIPTION</u>	<u>RECYCLING METHOD</u>	<u>TONS OF MATERIAL</u>
<u>“Hokie Stone” Gravel</u>	<u>Overburden (Cuttings) from VT Quarry Ops</u>	_____ <u>11,804</u>
<u>Asphalt Milling</u>	<u>Asphalt Milled from VDOT Campus Roadwork</u>	_____ <u>850</u>
<u>Masonry, Concrete</u>	<u>Construction Projects (CID-LLC, Holden Hall)</u>	_____ <u>932</u>
<u>Masonry, Concrete</u>	<u>Construction Project (Student Athletic Perf Ctr).</u>	_____ <u>36</u>
<u>Roofing Membrane</u>	<u>EPDM from various Roofing Renovation Projects</u>	_____ <u>5</u>

TOTAL NON-MSW RECYCLED _____ **13,627**
 (Enter Total on Page 2, Step 2 c)

D: A credit of two (2) percentage points may be added to the Adjusted Recycling Rate #1 if the Solid Waste Planning Unit has implemented a Source Reduction Program (SRP). Examples of SRPs include Grass-cycling, Home Composting, Clothing Reuse, Office Paper Reduction (duplexing), Multi-Use Pallets, or Paper Towel Reduction. The SRP must be included in the Solid Waste Management Plan on file with the Department:

SRP description: Campus Kitchens Program is a partnership with VT Engage & Dining Svcs (Division of Student Affairs) to donate excess food to local community.

SRP description: YMCA at Virginia Tech’s YToss Program collects reusable items from our students in residence halls during Spring Move Out for sale in the Fall 2021.

SRP description: The Procurement Department’s Sustainable Procurement Policy introduced in Spring 2020 and focuses on waste reduction at the front of the waste stream.

(Certify on Page 2, Step 4)

Exclusions: For the purposes of this report, the following materials are not considered solid wastes, and should not be included in any of the data categories utilized in calculating the recycling rate.

1. Biosolids – industrial sludge, animal manures; or, sewage sludge (unless composted)
2. Automobiles – unless part of the Inoperable Vehicle Program (DMV)
3. Leachate
4. Soils – contaminated soils, soil material from road maintenance
5. Household hazardous waste
6. Hazardous waste
7. Medical waste
8. Rocks or stone
9. Woody waste derived from land clearing for development, VDOT or easement tree trimming/clearing.

Part III: Total Municipal Solid Waste (MSW) Disposed** - Report only MSW generated within the reporting jurisdiction(s), NOT imported wastes or industrial wastes.

<u>MSW TYPE</u>	<u>TOTAL AMOUNT of MSW DISPOSED (TONS)</u>
Household	_____
Commercial	_____
Institutional	<u>2,604</u>
Other (DO NOT INCLUDE INDUSTRIAL WASTES)	_____
TOTAL MSW DISPOSED	<u>2,604</u>
	(Enter Total on Page 2, Step 1 and Step 3)

Note: MSW DISPOSED for the purpose of this report means delivered to a permitted sanitary landfill, delivered to a waste-to-energy facility, or managed at a transfer station for transport to a landfill or waste-to-energy facility.

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Credits Worksheet

I. Reuse of any Solid Waste

<input checked="" type="checkbox"/>	Material description	Tons
<input type="checkbox"/>	PRM	_____
<input type="checkbox"/>	PRM	_____
<input type="checkbox"/>	PRM	_____
<input type="checkbox"/>	Industrial	_____
<input type="checkbox"/>	Construction	_____
<input type="checkbox"/>	Demolition	_____
<input type="checkbox"/>	Debris	_____
<input type="checkbox"/>	Other	_____
<input checked="" type="checkbox"/>	YToss? Program <u>Reusable Residence Hall Items</u>	<u>3</u>
<input checked="" type="checkbox"/>	Campus Kitchen <u>Food Donation w/ Dining Svcs</u>	<u>27</u>
	TOTAL TONS	<u>30</u>

(enter data on Page 4, Solid Waste Re-Used)

II. Recycling of any Non-Municipal Solid Waste

<input checked="" type="checkbox"/>	Material description	Tons
<input checked="" type="checkbox"/>	Roadwork <u>Asphalt Milling (VDOT)</u>	<u>850</u>
<input checked="" type="checkbox"/>	Construction <u>Holden Hall</u>	<u>180</u>
<input checked="" type="checkbox"/>	Construction <u>CID-Living Learning Ctr (Res Hall)</u>	<u>752</u>
<input checked="" type="checkbox"/>	Construction <u>Student Athlete Performance Ctr</u>	<u>36</u>
<input checked="" type="checkbox"/>	Quarry Ops <u>Hokie Stone "Overburden"</u>	<u>11,804</u>
<input checked="" type="checkbox"/>	Roofing <u>EPDM - various Roof Renovations</u>	<u>5</u>
<input type="checkbox"/>	Other	_____
	TOTAL TONS	<u>13,627</u>

(enter data on Page 4, Non-MSW Recycled)

III. Inoperable Vehicles Removed and Demolished – include number of vehicles that the localities received reimbursement from DMV under §46.2-1207 of the Code of Virginia.

of vehicles removed/reimbursement received _____ 0
 Average tonnage per vehicle X 1 Ton each

Total Tons _____ 0

(enter data on Page 3, PRMs, as Inoperative Motor Vehicle Program)

NOTE: Check "Exclusions" on Page 5 to avoid listing of those materials on this worksheet and/or in the data fields of this report.

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Part C: Recycling Rate Report Instructions

Amended Regulations for the Development of Solid Waste Management Plans (9 VAC 20-130-10 et seq.) require that Solid Waste Planning Units (SWPUs) in the Commonwealth develop complete, revised solid waste management plans. Section 9 VAC 20-130-120 B & C of the Regulations requires that a minimum recycling rate of the total municipal solid waste generated annually in each solid waste planning unit be maintained. It also requires that the plan describe how this rate shall be met or exceeded and requires that the calculation methodology be included in the plan. Section 9 VAC 20-130-165 D establishes that every solid waste management planning unit with populations over 100,000 shall submit to the department by April 30 of each year, the data and calculations required in 9 VAC 20-130-120 B & C for the preceding calendar year. SWPUs with populations of 100,000 or less are only required to report every 4 years (CY years 2016 and forward).

NOTE: ONLY RECYCLING RATE REPORTS FROM AN APPROVED SOLID WASTE PLANNING UNIT (SWPU) WILL BE ACCEPTED FOR PROCESSING. JURISDICTIONS WITHIN A SWPU MUST SUBMIT THEIR RECYCLING DATA TO THE SWPU FOR INCORPORATION INTO THE ANNUAL REPORT.

It is requested that all amounts included on the form be listed in **tons (2,000 pounds)**. If actual weights are not known, volumes can be converted to weight estimates. To assist you with these estimates, a standardized volume-to-weight conversion table is attached.

Contact Information Section: Please provide information on the Reporting SWPU and information on the individual completing this form. Under Member Governments, please list the local governments identified in the applicable solid waste management plan.

Calculated Recycling Rate Section: Using the formulae provided, calculate your recycling rates for the reporting period from information identified in the Recycling Rate Calculations Section.

Signature Block Section: Please provide an authorized signature prior to submitting the completed form. Authorized signatories include Executive Officer, Administrator, or other legally designated representative of the SWPU reporting entity.

Recycling Rate Calculations Section: Please provide the requested information:

Part I: Principal Recyclable Material (PRM) - Report the amount in tons of each PRM collected for recycling in the named jurisdiction(s) during the reporting period. PRMs include paper, metal, plastic, container glass, commingled, yard waste, waste wood, textiles, tires, used oil, used oil filters, used antifreeze, batteries, electronics, and other materials approved by the Director taken from the Municipal Solid Waste (MSW) generation. A one ton credit may also be entered for each inoperable motor vehicle for which a locality receives reimbursement from the Virginia Department of Motor Vehicles under §46.2-1207 of the *Code of Virginia*. The total weight in **TONS** of all PRMs collected for recycling is represented as **PRMs** in the Recycling Rate Calculation. **New for CY 2015: Provide source information for the PRMs reported on the report (permitted and unpermitted facilities).**

Part II: Credits - Report the amount in **TONS** of each material for which recycling credit is authorized in §10.1-1411.C of the *Code of Virginia*: (i) one ton for each ton of recycling residue generated in Virginia and deposited in a landfill permitted under §10.1-1408.1 of the *Code of Virginia*; (ii) one ton for each ton of any solid waste material that is reused; and, (iii) one ton for each ton of any non-municipal solid waste that is recycled. The total weight in **TONS** of all material for which credits are authorized is represented as **CREDITS** in the Recycling Rate Calculation. A credit of two percentage points of the minimum recycling rate mandated for the Solid Waste Planning Unit (SWPU) may be taken for a source reduction program that is implemented and identified in its Solid Waste Management Plan. Total credits may not exceed five percentage points above the Base Recycling Rate achieved by the SWPU.

Part III: Total Municipal Solid Waste (MSW) Disposed: Report the total amount in **TONS** of MSW that was disposed of by the Solid Waste Planning Unit (SWPU) during the reporting period for each of the source categories (Household, Commercial, Institutional, and Other). For the purpose of this report, "disposed," means delivery to a permitted sanitary landfill or waste incinerator for disposal, and excludes industrial wastes. Industrial waste and by-products should not be included in the MSW or Recycling calculation. The total weight in tons of MSW disposed is represented as **MSW Disposed** in the Recycling Rate Calculation.

Locality Recycling Rate Report Volume to Weight Conversion Table

Material	Volume	Weight in Pounds
Metal		
Aluminum Cans, Whole	One cubic yard	50-74
Aluminum Cans, Flattened	One cubic yard	250
Aluminum Cans	One full grocery bag	1.5
Ferrous Cans, Whole	One cubic yard	150
Ferrous Cans, Flattened	One cubic yard	850
Automobile Bodies	One vehicle	2,000
Paper		
Newsprint, Loose	One cubic yard	360-800
Newsprint, Compacted	One cubic yard	720-1,000
Newsprint	12" stack	35
Corrugated Cardboard, Loose	One cubic yard	75-100
Corrugated Cardboard, Baled	One cubic yard	1,000-2,000
Plastic		
PETE, Whole, Loose	One cubic yard	30-40
PETE, Whole, Loose	Gaylord	40-53
PETE, Whole, Baled	30" x 62"	500
Film, Baled	30" x 42" x 48"	1,100
Film, Baled	Semi-Load	44,000
Film, Loose	Standard grocery bag	15
HDPE (Dairy Only), Whole, Loose	One cubic yard	24
HDPE (Dairy Only), Baled	32" x 60"	400-500
HDPE (Mixed), Baled	32" x 60"	900
Mixed PET & Dairy, Whole, Loose	One cubic yard	32
Mixed PET, Dairy & Other Rigid (Whole, Loose)	One cubic yard	38
Mixed Rigid, No Film	One cubic yard	49
Glass		
Glass, Whole Bottles	One cubic yard	600-1,000
Glass, Semi-Crushed	One cubic yard	1,000-1,800
Glass, Crushed (Mechanically)	One cubic yard	800-2,700
Glass, Whole Bottles	One full grocery bag	16
Glass, Uncrushed to Manually Broken	55 gallon drum	125-500
Arboreal		
Leaves, Uncompacted	One cubic yard	200-250
Leaves, Compacted	One cubic yard	300-450
Leaves, Vacuumed	One cubic yard	350
Wood Chips	One cubic yard	500
Grass Clippings	One cubic yard	400-1,500
Other		
Battery (Heavy Equipment)	One	60
Battery (Auto)	One	35.9
Used Motor Oil	One gallon	7.4
Used Oil Filters (Uncrushed)	55 gallon drum	66 Lbs./Used Oil + 110 Lbs./Ferrous Metal
Used Oil Filters (Crushed)	55 gallon drum	16.5 Lbs./Used Oil + 368 Lbs./Ferrous Metal
Tire - Passenger Car	One	20
Tire - Truck, Light	One	35
Tire - Semi	One	105
Antifreeze	One gallon	8.42
Food Waste, Solid & Liquid Fats	55 gallon drum	412
Electronics: CRT/CPU/LapTop/TV	Each (avg wt from NCER)	38/26/8/49 respectively
This Table For General Guidance Only.		