Disposal Data for SWIP Reports

According to the 2019 Vermont Materials Management Plan (MMP):

> *"To track progress with state waste reduction goals, Solid Waste Management Entities (SWMEs) must report their disposal rate in SWIP years one and five. SWMEs may use the method in the ANR Date Guidance to calculate their disposal rate or another method approved by ANR. Disposal rate reports must be based on calendar year data and be submitted to ANR via ReTRAC by July 1st. SWMEs are not required to report diversion rates to ANR; however, it is strongly recommended that SWMEs track their diversion efforts to determine the success of their programs and services."*

Ultimately, ANR requires one number to satisfy this portion of the annual SWIP report in **years one and five**:

Per capita MSW disposal rate from SWME region (total tons MSW divided by total SWME population)

The per capita MSW disposal rate should be entered into the Annual SWIP Report in Re-TRAC under *G1. Disposal Rate.* Reporting is due July 1st for data on the previous calendar year. Although disposal rate is only required in years one and five, SWMEs may choose to calculate disposal annually. Note that Municipal solid waste "MSW" *does not* include special wastes, construction and demolition debris (C&D), or biosolids. SWMEs may choose to track disposal of other wastes, such as C&D.

Estimate total tons MSW via ReTRAC

Every solid waste facility in Vermont is required to report the amount and type of materials handled, processed, or transferred at their facility each calendar year. This includes transfer stations, drop-off centers, recycling facilities, composting facilities, and asphalt, brick, and concrete processors. All facilities report to ANR using the Re-TRAC database.

In order to access disposal data use the "Vermont Material Generation Report" module under the Analytics tab in Re-TRAC (see at right) and select:

- Years; **reporting year**
- State Location; **All State Locations**
- Survey Type; **All Survey Types**
- Quarters; **All Quarters**
- Members; **All Members**
- Municipalities Served and/or States; **a specific SWME**
- Materials**; Municipal Solid Waste**

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For example, see below for the configuration to generate a 2019 report for Addison County Solid Waste Management District.

The "Generate" button creates a filtered set of data that shows all MSW reported as coming from Addison County SWMD. The data can then be exported (see below) to Excel and manipulated lightly to assure that double-counting does not take place. To do this, check the individual facility reports (either within the destination analytical reports, or the 'read-only' reports) to see where the facility reported sending generated MSW. If it went to another certified Vermont facility and that facility is also within the excel sheet stating they accepted waste from the SWME, the duplicate tonnage should be removed from the final tonnage calculation.

Estimate total SWME population

Obtain SWME region population from the U.S. Census Bureau estimates. The U.S. Census Bureau projects population figures by town based on the most recent Census data and predicted growth rates. For updated figures for Vermont, visit the dataset webpage for Vermont at the U.S. Census Bureau website.

If applicable, estimate the seasonal population in your area by visiting the Vermont Housing Finance Agency's database and search for housing stock data by city/town (entering the towns/cities in your region one by one). The database will return information on the number of vacant housing units "for seasonal, recreational, and occasional use" for the town or county typed into the search, based off the most recent Census data (2010). Multiply this number by the average number of people per household for Vermont (2.34 persons/household) to return the seasonal population for that town/county. Add the seasonal population to base population when calculating per capita disposal rate (total tons MSW divided by total SWME population).

Vermont Department of Environmental Conservation
Solid Waste Program

Calculate the per capita disposal rate

The disposal rate per capita is the amount of MSW that is disposed per person:

$$\boldsymbol{Tons\ per\ person\ (disposal\ rate)} = \frac{SWME\ total\ population\ (including\ seasonal)}{Total\ tonnage\ MSW}$$

To calculate pounds per person per day, divide the tons per person by 365 to get tons per person day and multiply that answer by 2000 to convert it to pounds per person per day:

$$\boldsymbol{Lbs\ per\ person\ per\ day} = (\frac{Tons\ per\ person}{365\ days})\ x\ 2000$$

Diversion Rate (NOT required)

Diversion data is inherently more complicated to track and document than disposal data. It is not solely based on the recycling rate so it is important to document activities that are not part of regular facility reporting within Re-TRAC. To calculate a diversion rate as a percentage, you will need to know your generation tonnage which includes both your disposal tonnage and your diversion tonnage:

Generation Tonnage = Diversion Tonnage + Disposal Tonnage

$$\boldsymbol{Diversion\ Rate}\ \% = \frac{Diversion\ Tonnage}{Generation\ Tonnage}$$

As needed, use the E.P.A. [volume-to-weight conversions](#) for common MSW materials.

Diversion tonnage could include (see below for more details):
- Marketed materials from solid waste facilities (i.e. recyclables, compostables like food scraps and leaf and yard debris, and construction and demolition debris)
- Marketed materials directly from businesses (i.e. economic recycling)
- Reuse of materials in alternative projects
- Backyard composting
- Extended Producer Responsibility (EPR) program collection totals
- HHW collection totals
- Other Diversion activities, if applicable (see below)

EXAMPLE TABLE FOR DIVERSION REPORTING (below) *Adapted from Vermont Diversion & Disposal Reports*

Row A—From Reporting Facility
- Use the Vermont Material Generation and Destination reports in Re-TRAC to view recycling tonnages reported as outgoing from facilities in your region, or reported as accepted by MRFs from your region.

- Work with facilities in your area to improve records of the sources of incoming loads/drop-offs of divertible materials (improve source data).

- What materials to consider?
  - Fibers = Paper (mixed, other, office), boxboard, cardboard, textiles

- o Containers = Aluminum (cans, foil), Glass (bottles and jars, some ground), HDPE (film, rigid), LDPE (film, rigid), mixed #3-#7, mixed (containers, film, rigid), other (cans, glass, plastic), PET #1, Steel/Tinned Cans
  - o Single Stream = Single Stream
  - o Scrap Metal = Scrap metal and some 'other recycling' items (primarily copper wire)
  - o Organics = Animal Offal/Carcasses, burlap, mixed organics, other composting, cooking oil/grease, food processing residuals, food scraps, clean high carbon bulking, clean wood
  - o Miscellaneous = 'recycled' (not disposed/incinerated) and tires (this is a small percentage of tires reported; tires that are sent for incineration for TDF are not counted as diversion.) and true miscellaneous items which vary from reporting year to reporting year (i.e. maple tubing, agricultural plastics, propane tanks, cork, cereal bags etc.) often reported under 'other plastics' or 'other recycling'.

- It's important to avoid double counting of materials. If a facility reports sending recyclable materials to another reporting Vermont facility, you will need to look at that facility's report to determine whether it should remain in your calculation or if it's already included.

- Diversion is measured <u>at the point of generation</u>. For example, if materials are picked up in a Solid Waste Alliance Communities (SWAC) town and pass through the Addison County SWMD facility on their way to be managed at the Northwest Vermont SWMD facility – SWAC would count the diversion, while Addison and Northwest would not.

Row B—Estimate of Direct to Broker or Market (Economic Recycling)

- Phone Survey – Attempt to achieve contact with a certain percentage of businesses in your area; determine who uses a local processor or who contacts a broker directly; collect estimated volumes/tonnage.

- Require businesses to report materials diverted through a broker or sent to non-SWME facilities. For example, CSWD has a provision in their ordinance that allows the district to require reporting of diverted materials from businesses. CSWD also licenses and requires reporting by recycling and composting facilities in their jurisdiction, including those that are not required to obtain a solid waste facility certification from ANR, like document shredding companies.

- Make connections with the large supermarkets, businesses, etc. in your area and maintain the relationship with an annual check-in. The most successful outreach and communications with businesses has occurred when they are assured that business information will remain confidential and that SWMEs will only distribute aggregated information.

- Bottle bill estimate for your area: use the estimate of diverted containers within the entire Vermont system (approx. **17, 480 tons**) each year, and interpolate an estimate for your area using the population of your region against the population of the entire State. The Bottle Bill estimate is supplied in Table 40 (p. 92) of the Act 148 Systems Analysis Report (2013, DSM Environmental).

Row C—Reported Reuse Activities

- Use basic facility reporting data in Re-TRAC as accessed through the Vermont Material Destination report and selecting 'reused' under 'Choose Fate of Materials'.

Row D—Estimated Household Composting

- Use results of survey that was completed in first year of SWIP adoption to estimate percentage of households that compost within your SWME.

- In a 2018 food scrap survey, DSM Environmental estimated that 58% of Vermont households compost an average of 367 pounds of food waste annually.

- DSM Environmental made a conservative estimate that average households produce 250 pounds of leaf and yard debris annually in this 2001 study (pg. 16).

- Estimate the percentage of households in your area that backyard compost, and apply that percentage to the number of households in your area (U.S. Census data). Finally, multiply the average pounds of organics diverted per household by the number of households composting.

- Other approaches may include:
  - Compost bin sales (likely an underestimate)
  - Regional phone survey

Row E—EPR Programs, HHW and Universal Waste Collection

- Use total collection numbers for paint, mercury containing lamps, mercury containing thermostats, e-cycles and batteries that are provided from each of the EPR programs.

- For additional materials that are not covered under an EPR program such as HHW and non-program lamps and/or batteries, provide your region's collection totals. These totals should have already been compiled for the annual Re-TRAC HHW collection event or facility survey.

Row F— Other Diversion Activities, if available

- These diversion activities will be the ones that vary significantly from SWME to SWME dependent on the type of data tracked or available. It is important to note that in order for a material to be counted towards diversion tonnage, it must have originally been destined for the municipal solid waste stream before the diversion activity occurred (i.e. ANR does not consider metals processed through salvage yards (cars, bulk metal etc.) diversion as that material would not typically have been included within a municipal solid waste stream). Examples of this type of data might include, food residuals that are processed for a beneficial use.

(in tons)	Fibers	Containers	Single Stream	C&D	Scrap Metal	Organics	Miscellaneous
A- From Reporting Facility to Market	*Data comes from what is collected at facilities in your area; some data can be found in Re-TRAC, or by direct reports from facilities to SWMEs (if applicable).*						
B- Estimate of Direct to Broker or Market (Economic Recycling)	*Data comes from businesses or manufacturers in region that are willing to share recycling data; some SWMEs have authority in their ordinance to require certain large businesses to report.*						
C- Reported Reuse Activities	*Some re-use data can be found in Re-TRAC. Other source is to connect with public works entities for info on re-use of glass in construction projects, etc.*						
D – Estimated Household Composting							
E – EPR Programs, HHW and Universal Waste Collection							
F – Other Diversion Activities, if available							
Total Diversion (Sum Row A + B + C + D + E + F): _____							

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