



March 5, 2021

U.S. Environmental Protection Agency  
Office of Resource Conservation and Recovery  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460

RE: Comments on Draft National Recycling Goal – Recycling Rate Measurement Methodology  
Docket ID No. EPA-HQ-OLEM-2020-0443

To Whom It May Concern:

The Pennsylvania Department of Environmental Protection (DEP) appreciates the opportunity to provide comments to the United States Environmental Protection Agency (EPA) on its Draft National Recycling Goal.

Several years ago, the Commonwealth of Pennsylvania (Commonwealth) ended its use of rate-based metrics for recycling programs and shifted its focus to metrics that consider the environmental and economic benefits spurred by recycling. The latter underscores the relationship between environmental stewardship and economic growth. Ultimately, by focusing on the environmental and economic benefits, we gain better insight and perspective for building a sustainable society.

Listed below are the metrics used by the Commonwealth to evaluate the impact of its recycling program. All environmental and economic benefits derived from diverting material from disposal should be recognized and accounted for, to the greatest extent possible, when determining the impacts of recycling.

### **Environmental Metrics**

The United States Environmental Protection Agency's Waste Reduction Model (WARM) was created to help solid waste planners and organizations track and report greenhouse gas emission reductions, energy savings, and economic impacts from several different waste management practices. Using WARM, the Commonwealth converted its recycling effort into environmental benefit equivalencies realized, derived from recycling nearly 27.5 million tons of material between 2015 and 2018.

#### *Recycling reduces greenhouse gas emissions*

- Over 39,682,785 metric tons of CO<sub>2</sub> emissions were avoided.
- This is equivalent to removing 8.57 million vehicles from the road.

#### *Recycling saves energy*

- 6.7 million homes' worth of electricity was saved.

- This is equivalent to conserving the annual energy use of 4.57 million U.S. households.
- This is equivalent to saving over 4.4 billion gallons of gasoline.

#### *Recycling saves natural resources*

- Over 268,000 acres of forest were saved from conversion to cropland.
- This is equivalent to conserving 51.5 million acres of forest-storing carbon.

### **Economic Metrics**

#### *Employment*

- In 2015, the recycling marketplace in Pennsylvania directly employed over 66,000 people, while stimulating almost 110,000 indirect and induced jobs.
- Activity related to the core recycling sectors supported over 32,000 direct, indirect, and induced jobs. This was matched by over 122,000 downstream manufacturing jobs and almost 21,000 reuse/remanufacturing jobs.
- For every direct job within the recycling marketplace, an additional 1.7 jobs are supported in Pennsylvania.
- For every job associated with the core recycling sectors, an additional 4.4 jobs are supported in Pennsylvania.

#### *Economic Output*

- Every \$1,000 in direct output (sales activity) leads to an additional \$700 in indirect and induced sales activity.
- Every \$1,000 of output in the core recycling sectors leads to more than \$5,000 of output across the downstream manufacturing and reuse/remanufacturing sectors.
- Every \$1 million in direct output supports six workers throughout the direct, indirect, and induced categories.
- Every \$1 million of output related to the core recycling sectors supports 21 workers in the recycling marketplace.

#### *Value-Added Contribution to Gross State Product (GSP)*

- In 2015, the recycling marketplace contributed \$22.6 billion to Pennsylvania's GSP. Every dollar of direct activity was matched by another dollar of combined indirect and induced value added.
- Activity related to the core recycling sectors lead to \$3.8 billion of value-added contribution to GSP in 2015. The corresponding figures for the Downstream manufacturing and reuse/remanufacturing sectors were \$17.3 and \$1.5 billion, respectively.

In closing, the Commonwealth believes the use of weight-derived metrics for the purposes of measuring the effectiveness and success of any public recycling program is fundamentally flawed. This flaw is born out of the rate-based equation (recycling rate = tons recycled / (waste

generated + tons recycled)). This equation reveals a reliance on incomplete data sets for the numerator and loosely projected numbers for the denominator.

In this equation, the numerators are profoundly impacted by the lack of data reported from commercial entities and inconsistent measurements from residential settings. The denominator is flawed because there are very few, if any, entities that maintain verifiable data on the amount of waste generated. This data gap is demonstrated by the exclusion of materials managed by backyard composting, drop off programs, other onsite management of waste, and diversion of materials to reuse or repurposing. It is also noteworthy to mention the content of the waste stream is continuously evolving to include more light weight containers which skews weight-based metrics. The recovery rates for individual industries such as the single serve beverage industry, water bottles, beer bottles, and juices appear reasonably accurate, as these entities have direct knowledge of the amount of materials they put into commerce and can accurately determine and evaluate what volumes are being recovered.

DEP appreciates the opportunity to provide comments on EPA's Draft National Recycling Goal. Thank you for your time and consideration of DEP's comments. If you have any questions, please contact Krishnan Ramamurthy, Deputy Secretary for the Office of Waste, Air, Radiation and Remediation by e-mail at [kramamurth@pa.gov](mailto:kramamurth@pa.gov) or by telephone at 717. 772.2725.

Sincerely,

A handwritten signature in black ink, appearing to read "Patrick McDonnell". The signature is fluid and cursive, with a large initial "P" and "M".

Patrick McDonnell  
Secretary