



February 1, 2024

Carolyn Hoskinson, Director  
United States Environmental Protection Agency  
Office of Resource Conservation and Recovery  
1200 Pennsylvania Avenue, NW (5306T)  
Washington, DC 20460

Attn: Docket No. EPA-HQ-OLEM-2023-0451

Re: Comments in response to EPA's Notice of Availability – Waste Reduction Model version 16

Dear Director Hoskinson:

Thank you for the opportunity to provide input on Version 16 of the Environmental Protection Agency's (EPA) Waste Reduction Model (WARM). The following comments are being submitted by the Pennsylvania Department of Environmental Protection (DEP) in response to Docket Number EPA-HQ-OLEM-2023-0451.

WARM continues to be an effective tool in comparing and estimating greenhouse gas (GHG) emissions, energy savings, and economic impacts for baseline and alternative waste management practices, but it could be modified to enhance the accuracy of the benefits calculation. WARM Version 16 does capture additional material groups not previously available, including various wood products and electronics, and adjusts the landfill emission factor for water content associated with food waste; however, the tool should also capture additional information to reflect the impacts and benefits of waste reduction measures by the user, such as providing the user with the ability to capture additional waste management practices and the addition of material categories. WARM's methodology should also be depicted in a more equitable manner that will account for the disparity between populations.

While the recent enhancements to the Model are clearly improvements, the ability to input additional material categories into WARM should be considered. The addition of material categories would provide entities who collect data for recycled materials not currently included in the model the capability to view how their recycling efforts have increased the energy, environmental, and economic benefits of their programs. The DEP recommends EPA add the following material categories to WARM: scrap metals, appliances, furniture, mattresses, textiles, and household hazardous wastes (i.e., antifreeze, motor oil, batteries, paints, and solvents).

The EPA should also consider recognizing additional material management practices such as reuse and repurposing in WARM. The addition of these practices will allow states the opportunity to capture these practices in their respective calculations, thereby providing a better representation of the environmental and economic impacts of the recycling programs within their state. Those states that have the ability to capture this data should not be limited by the material management practices offered by WARM. The ability to include reused and repurposed material

Secretary

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management practices in WARM would enhance and encourage users to increase their reuse and repurpose efforts and encourage the development of these types of programs.

Finally, DEP recommends that WARM provide users with the ability to define the material percentages for mixed material types. This would give users the ability to customize their analysis to allow for more accurate distribution of materials based on their own local waste characterization studies or allow them to continue to use the default mixed material percentage distribution.

While WARM is used as a comparative tool, discretion must be utilized when attempting to compare one program to another due to the many factors within recycling programs that are not part of the model. Decision making using WARM should proceed with caution, especially when limited resource allocations or funding may be involved.

Version 16 of WARM was needed, and further modifications as mentioned will demonstrate EPA's continued commitment to understanding the impacts of states' waste reduction efforts and encourage further participation in alternative waste management practices. The DEP is supportive of WARM or any other tool that can be utilized as a true metric for capturing the environmental and economic benefits of recycling programs rather than determining recycling rates.

If you have any questions or comments, please contact Larry Holley, Director of the Bureau of Waste Management, by e-mail at [lholley@pa.gov](mailto:lholley@pa.gov) or by telephone at 717.787.8684.

Sincerely,



Jessica Shirley  
Interim Acting Secretary