WARM Revisions

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Background

- Calculations begin at a “waste generation” reference point
- Focus on GHGs emitted, carbon stored, or utility energy displaced at following stages:
  - Waste management (downstream)
  - Raw material acquisition (upstream)
  - Manufacturing (upstream)
  - Transportation of raw material and waste

Model Design

1. Describe the baseline generation and management for the MSW materials listed below.
If the material is not generated in your community or you do not want to analyze it, leave it blank or enter 0. Make sure that the total quantity generated equals the total quantity managed.

Material	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Tons Generated
Aluminum Cans				NA	0.0
Steel Cans				NA	0.0
Copper Wire				NA	0.0
Glass				NA	0.0
HDPE				NA	0.0
LDPE				NA	0.0
PET				NA	0.0
Corrugated Containers				NA	0.0
Magazines/Third-class Mail				NA	0.0
Newspaper				NA	0.0
Office Paper				NA	0.0
Phonebooks				NA	0.0
Textbooks				NA	0.0
Dimensional Lumber				NA	0.0
Medium-density Fiberboard				NA	0.0
Food Scraps	NA				0.0
Yard Trimmings	NA				0.0
Grass	NA				0.0
Leaves	NA				0.0
Branches	NA				0.0
Mixed Paper (general)				NA	0.0
Mixed Paper (primarily residential)				NA	0.0
Mixed Paper (primarily from offices)				NA	0.0
Mixed Metals				NA	0.0
Mixed Plastics				NA	0.0
Mixed Recyclables				NA	0.0
Mixed Organics	NA				0.0
Mixed MSW	NA			NA	0.0
Carpet				NA	0.0
Personal Computers				NA	0.0
Clay Bricks	NA		NA	NA	0.0
Concrete[1]			NA	NA	0.0
Fly Ash[2]			NA	NA	0.0
Tires[3]				NA	0.0
Asphalt Concrete			NA	NA	0.0
Asphalt Shingles				NA	0.0
Drywall			NA	NA	0.0
Fiberglass Insulation	NA		NA	NA	0.0
Vinyl Flooring	NA			NA	0.0
Wood Flooring	NA			NA	0.0

2. Describe the alternative management scenario for the MSW materials generated in the baseline.
Any decrease in generation should be entered in the Source Reduction column.
Any increase in generation should be entered in the Source Reduction column as a negative value.
(Make sure that the total quantity generated equals the total quantity managed.)

Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted
				NA
				NA
				NA
				NA
				NA
				NA
				NA
				NA
				NA
				NA
				NA
				NA
				NA
				NA
				NA
	NA			
	NA			
	NA			
	NA			
	NA			
NA				NA
NA				NA
NA				NA
NA				NA
NA				NA
NA				NA
NA				NA
NA	NA			
NA	NA			NA
				NA
				NA
	NA		NA	NA
NA			NA	NA
NA			NA	NA
				NA
			NA	NA
				NA
			NA	NA
	NA		NA	NA
	NA			NA
	NA			NA

New Categories

C&D Materials

- Drywall
- Fiberglass insulation
- Asphalt concrete
- Asphalt shingles
- Vinyl flooring
- Wood flooring

Tires now open-loop

Revised Electricity Offsets

- Option to select State
  - Only applicable to offsets from landfill gas an combustion
  - Does not change production/manufacturing energy values

New Analysis

- Revised assumptions regarding capture of landfill gas based on system installation
- Incorporated decay rate for organic materials

New options

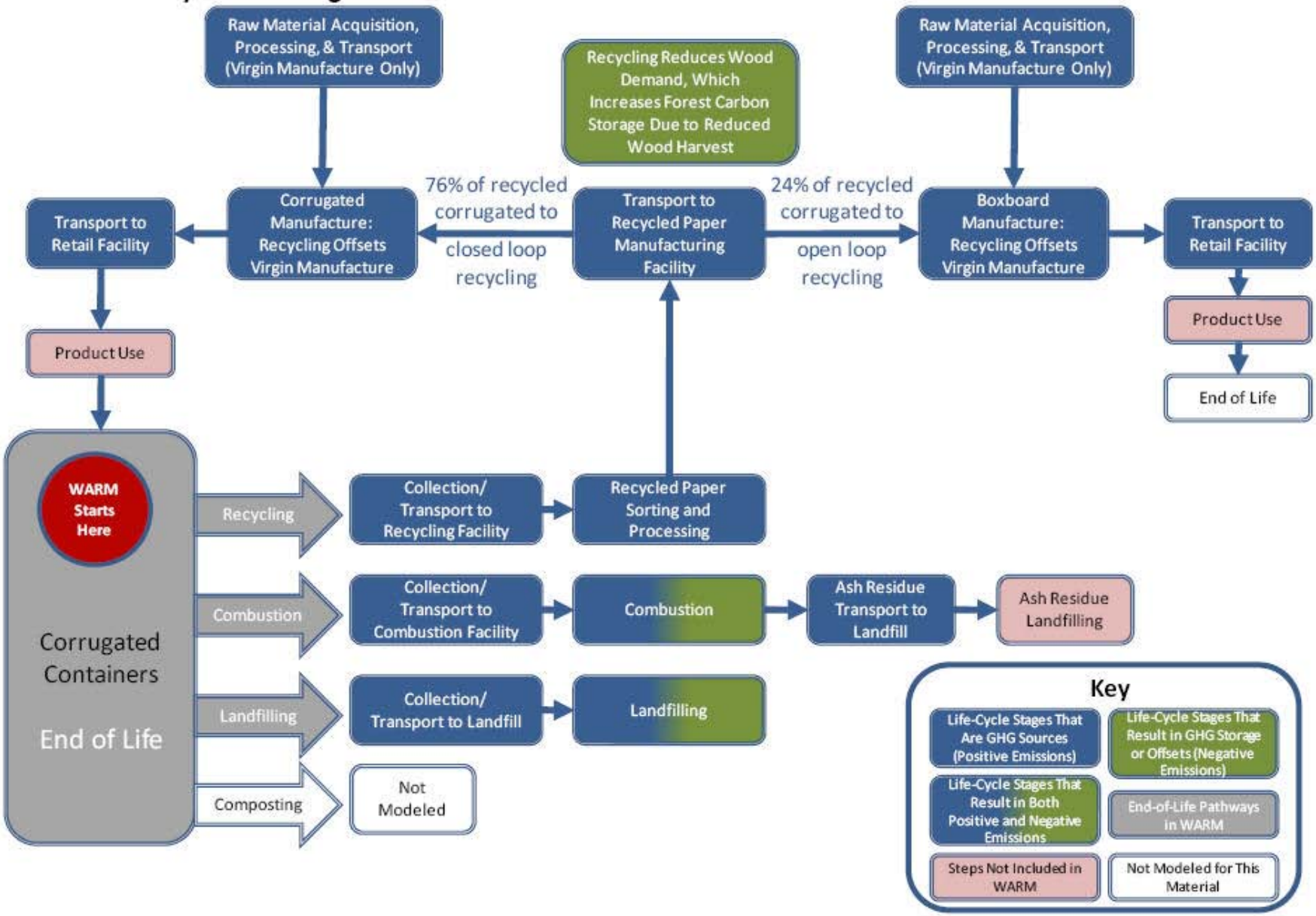
- 6a. Which of the following moisture conditions and associated bulk MSW decay rate (k) most accurately describes the average conditions at the landfill . . . [Select dry, average, wet, or bioreactor]
- 6b. For landfills that recover landfill gas, the landfill gas collection efficiency will vary throughout the life of the landfill . . . [Select typical, worst-case, or aggressive]
  - For example. Typical equates to:
    - 0 % for years 0-2
    - 50% for year 3
    - 75% for years 4-7
    - 95% for years 8-100

New Documentation

- Individual chapters for management practices, materials, and special topics (e.g. carbon storage)
- Tables with emissions data for each stage of life cycle included
- C&D materials have separate chapters

New Documentation

Exhibit 1: Life Cycle of Corrugated Containers in WARM



New Documentation

Exhibit 3: Composition of Mixed Paper Categories

Paper Grade	Mixed Paper (General)	Mixed Paper (Primarily Residential)	Mixed Paper (Primarily from Offices)
Corrugated Containers	48%	53%	5%
Magazines/Third-Class Mail	8%	10%	36%
Newspaper	24%	23%	21%
Office Paper	20%	14%	38%
Total	**100%**	**100%**	**100%**

Which format to use?

- Excel version
  - Additional options for energy grid and landfill conditions
- Web version
  - Same options as previous version

Contact Information

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EPA's Waste Reduction Model http://www.epa.gov/warm