INTERNATIONAL CONFERENCE ON LCA AND OTHER ASSESSMENT TOOLS FOR WASTE MANAGEMENT AND RESOURCE OPTIMIZATION

Development of a 2nd Generation Decision Support Tool to Optimize Resource and Energy Recovery for Municipal Solid Waste

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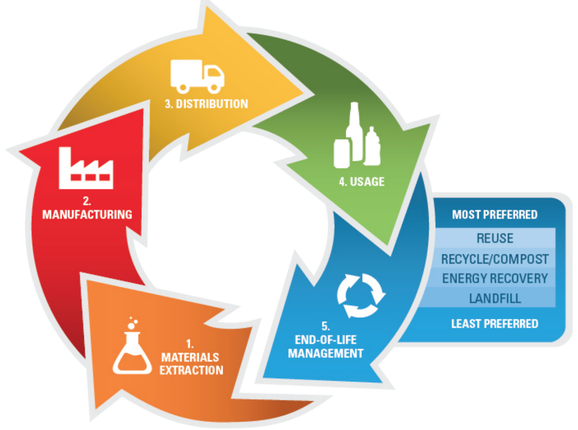
The Life-Cycle of "Stuff"



EPA has defined benificial use as the incorporation of an industrial material into a commercial produat that:

- provides functional benifit
- meets relevant design specifications and performace standards for the proposed use
- replaces virgin, raw materials in a product already on the market
- is implemented in a environmentally acceptable manner

First Generation Tool

1st Generation tool for identifying more sustainable strategies for managing MSW materials and discards

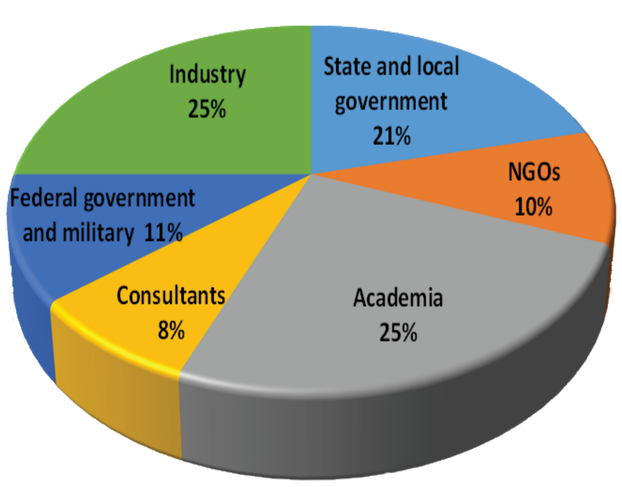
- In 2012, EPA released a decision support tool to simulate existing MSW management practices and conduct scenario analyses of new strategies based on cost and environmental objectives.

- The tool is freely available including multiple design options for MSW collection, transport, transfer, materials recovery, composting, waste-to-energy, and landfill disposal.

- Has been used in over 200 studies by industry, academia, World Bank, NGOs, and state and local government.

Distribution of 1st Generation Tool

* Over 400 downloads since 2012



Second Generation Tool

2nd Generation Tool for Optimizing MSW as a Resource (anticipated work to be completed by 2018)

- Updates to life-cycle based process models and addition of new process models (i.e., anaerobic digestion) based on research conducted by North Carolina State University

- Mixed-integer optimization to allow for analysis of MSW system evolution over a period of time

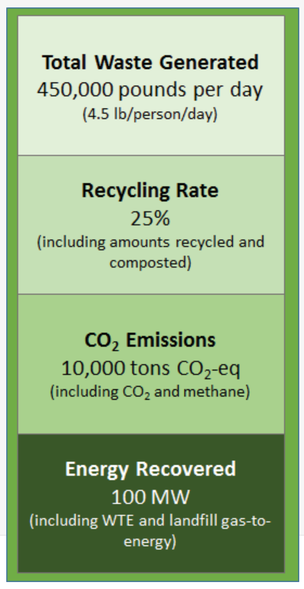
- Estimate of metrics for cost, LCA environmental and energy tradeoffs, and societal aspects (such as land usage and population density).

  - Cost is based on full cost accounting

  - Environmental metrics include greenhouse gas emissions, energy and land usage, water borne pollutants, air criteria pollutants, and other life-cycle environmental tradeoffs

Possible Dashboard Parameters

- Amount of waste generated
- Percentage of waste recycled /composted
- GHG emissions (and/or emission savings)
- Criteria pollutant emissions (and/or savings)
- Energy consumed and/or recovered
- Transportation (e.g., number of truck miles)
- Total system cost
- Revenues from sale of material and energy



Example of a Community Dashboard

Benifits from Using These Tools

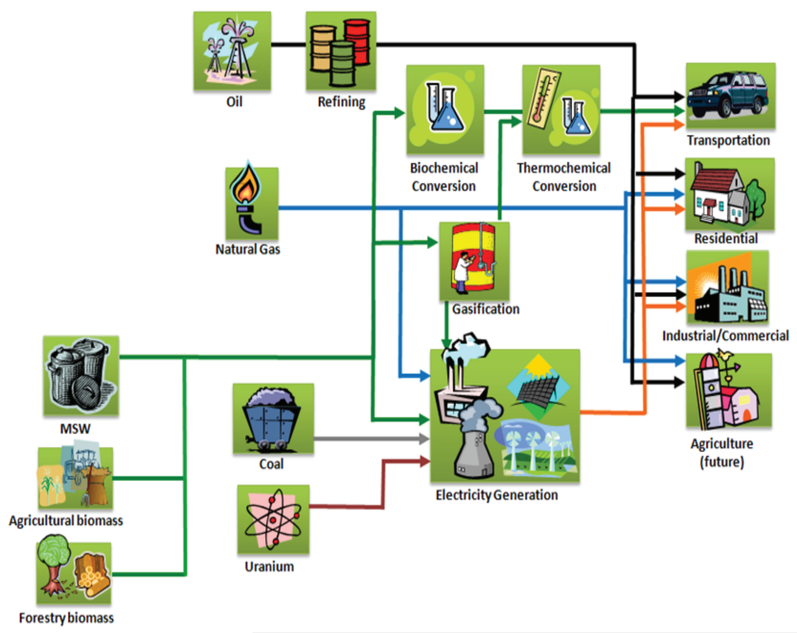
Have standardized process for evaluation that is internally consistent and can reflect the net LCA environmental tradeoffs, costs, and other societal aspects

- Assess the potential roles of specific technologies or strategies to meet policy goals
- Identify important system interactions and potential unintended consequences

- Consider uncertainties in fuel prices, technologies, and policy

- Provides information to benchmark and track environmental performance over time

- Reflecting differences in how the energy system evolves over time which will have profound impacts on our environment, including climate, air and water



Notes

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For further information on these tools refer to the tools section at this EPA web address:
http://www.epa.gov/land-research/models-tools-and-databases-land-and-waste-management-research

Or access to tools and further information can be found on the project websites
https://mswdst.rti.org/