

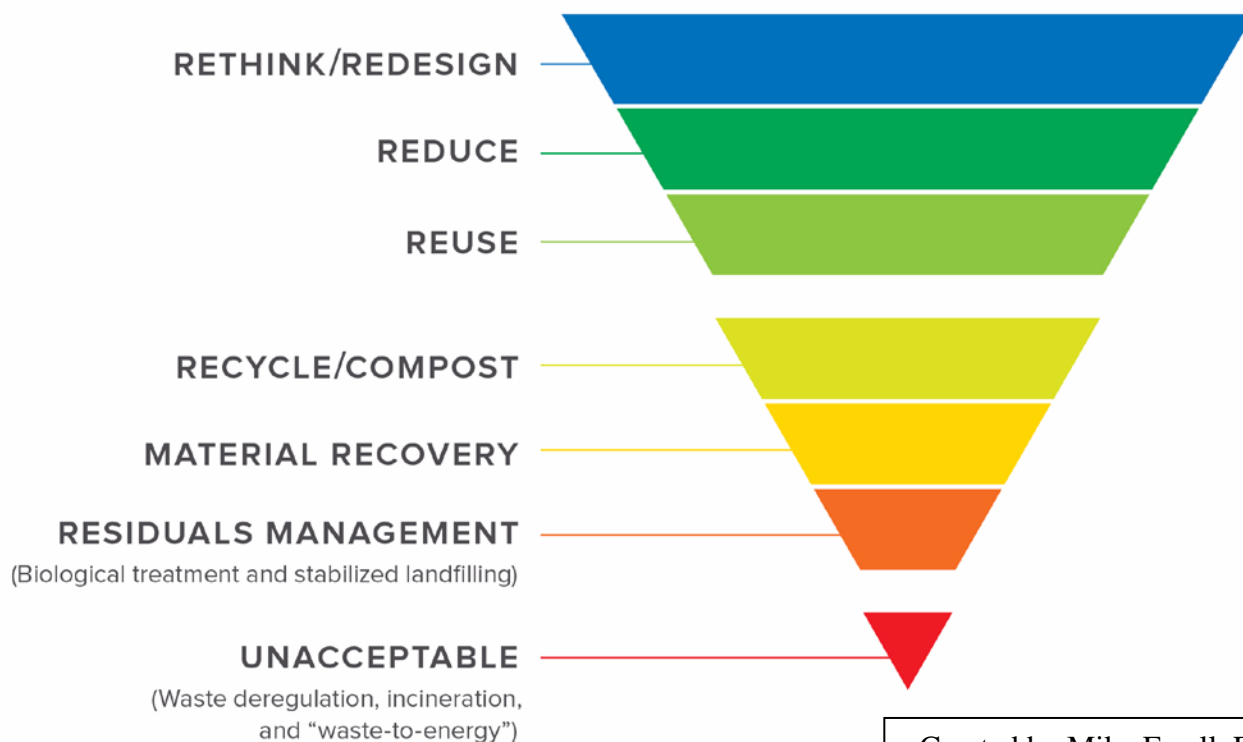
“Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.

Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and **not burn or bury them**.

Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health.”

Peer-reviewed definition of Zero Waste, by the Zero Waste International Alliance
www.zwia.org/standards/zw-definition/

THE ZERO WASTE HIERARCHY



OUTLINE VERSION:

Redesign

Reduce

Source Separate: (reusables, recycling, composting and trash)

- **Reuse / Repair**
- **Recycle** (multi-stream)
- **Compost** (aerobically compost clean organic materials like food scraps and yard waste to return to soils)
- **Waste:**
 - **Waste Composition Research** (examine trash to see how the system can be improved upstream)
 - **Material Recovery** (mechanically remove additional recyclables that people failed to separate)
 - **Biological Treatment** (composting or digestion of organic residuals to stabilize them)
 - **Stabilized Landfilling** (biological treatment reduces volume and avoids gas and odor problems)

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*[An earlier version of the Energy Justice Network's hierarchy was the basis for the Zero Waste International Alliance original zero waste hierarchy, available at:
www.zwia.org/standards/zero-waste-hierarchy/]*

FULL VERSION:

Redesign – make products durable, recyclable or compostable, and from sustainable / recycled materials

Reduce

- Toxics Use Reduction
 - Reduce amounts of toxic chemicals in production
 - Replace toxic chemicals with less toxic or non-toxic alternatives
- Consumption Reduction
 - Reduce pervasive advertising
 - Teach people to use less, to buy products with less packaging, and to avoid disposables and non-recyclables products
- Packaging Reduction
 - Includes polystyrene and PVC plastic bans and single-use paper/plastic bag bans and taxes

Source Separate:

- Avoid [single stream](#) (paper mixed with bottles/cans) and [“one bin for all”](#) (no source separation)
- Better separation = more valuable materials to market

Reuse & Repair

- Mandate deconstruction of buildings
- Thrift stores & charity collections
- Legalize wastepicking / dumpster diving
- Encourage discard exchanges like Freecycle
- Incentivize food recovery
- Paint recycling / exchange
- Repair centers for bikes, computers, furniture, appliances, etc.

Recycle

- Dual-stream recycling (paper separate from glass/metal/plastic) to a Material Recovery Facility
- Incentivize recycling through per-bag utility pricing, called “Pay As You Throw” (PAYT)
- Adopt a bottle deposit bill
- Buy recycled and create local markets for materials
- Seek the highest end-use and avoid “downcycling”
- Create recycling programs for electronic waste (e-Stewards certified), household hazardous wastes, etc.
- Residuals from recycling (that which can’t be recycled at a MRF) jump down to the research step below

Compost

- Weekly curbside collection of recyclables and organics can be done while decreasing the collection of trash to every other week (what smells in trash is the compostables, so this encourages composting).
- Ban clean organics (not [sewage sludge!](#)) from landfills. Sewage sludge, even once digested, does not belong on farm fields or in urban gardens. Clean compost from food scraps and yard waste can be used in landscaping and non-food agriculture uses.

Research

- Do a regular waste sort to see what’s left in the waste stream. Use Extended Producer Responsibility campaigns, product bans and other measures to eliminate remaining materials from the waste stream, ensuring that they’re dealt with higher in the hierarchy.

Material Recovery

- For the remaining waste, mechanically pull out additional recyclables. This uses the sorting capability of a “Dirty MRF,” or “Mixed Waste Processing” facility, but should never be a replacement for source separation, upstream recycling and composting, as it will get people out of good recycling habits and will degrade the quality of recyclables, lowering their value, and far less will actually be recycled.

Biological Treatment

- Stabilize organic material in the remaining residuals, using aerobic composting (or, to be more thorough, anaerobic digestion followed by aerobic composting to dry it out). This avoids having gassy and stinky landfills. Digestion removes the methane generating potential from the waste, and is the only so-called “waste-to-energy” component of a zero waste system.
- Digested residuals are too contaminated to be marketed as fertilizer or soil amendment.

Stabilized Landfilling – monofill the stabilized waste in separate landfill cells at existing landfills. Ensure proper landfill management (don’t mismanage the landfill by managing it for energy production):

If disposing of the stabilized residuals in a conventional landfill full of decaying organic material, it’s important to manage the landfill properly, as follows:

- Minimize gas production: Don’t manage the landfill as an energy facility by stimulating gas production.
- Maximize gas collection:
- Clean the captured gas prior to use, by filtering toxins in the gas into a solid medium like a carbon filter, to be containerized and stored on-site.
- The purified gas can be used for industrial heating or heating trucking purposes.
- Landfill gas-to-energy should not be considered renewable (That allows it to undercut clean sources like wind and solar and puts source reduction, reuse, recycling and composting at a competitive disadvantage.)

For more details on proper landfill management at the back end of the Zero Waste Hierarchy, see www.energyjustice.net/zerowaste/hierarchy and www.energyjustice.net/lfg