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Recycling Advocate Says Voluntary Programs Only Go So Far. Eco-Cycle of Boulder, Colo., has developed a 10-year bridge plan for municipal governments to transition to a zero waste system. The plan includes a mix of public relations, facility development and gradually increasing regulatory pressure to eliminate mixed waste and non-recyclable products and packaging.

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How can municipal waste management leaders transition their communities away from landfills and incinerators to make way for a zero-waste society? Eric Lombardi has a 10-year plan. But, the Boulder, Colo. recycling advocate said market forces alone won't build the green infrastructure necessary to close the loop on waste.



Illustration: Eco-Cycle

10-Year Zero Waste Plan

Eric Lombardi of Eco-Cycle has developed a 10-year bridge plan for municipal governments to transition to a zero waste system that does not involve incineration. The plan includes a mix of planning, public relations, facility development and gradually increasing regulatory pressure to eliminate mixed waste and non-recyclable products and packaging.

"The market takes care of a lot, but not everything, and it's not going to give us a green infrastructure," Lombardi said. "It's going to give us the leanest, meanest, lowest-cost infrastructure, yes, but that doesn't

necessarily mean the greenest. And I think because of the environmental, public health and economic externalities everybody is starting to come around to the concept that there are different ways to assess value."

Lombardi is executive director of [Eco-Cycle](#), one of the largest non-profit recyclers in the United States. The organization's volunteers brought recycling to Boulder in 1976, making it one of the first 20 communities in the U.S. to offer curbside recycling. Eco-Cycle is now a \$5 million company with 70 employees handling more than 50,000 tons of material per year. In a presentation at the American Public Works Association's congress and exposition in Denver, Lombardi said the entire waste management industry is currently in turmoil.

"There is change whether you like it or not. And that's because if you've gone through the brain damage of siting a landfill in the last 10 years, you won't do it again. And, you cannot site a waste energy facility anymore. A new green-field waste energy facility has not been built in America in 15 years. All we've had are some expansions. And you'll hear a lot about conversion technologies, but there's not a commercial-scale conversion tech plant project in America. All of them are pilot-scale."

The answer, according to Lombardi, is to transition America's waste management system by shifting subsidies to green approaches, reducing the amount of waste generated by producers, funding appropriate recycling facilities and, ultimately, mandating recycling by law.

Lombardi said the economics of recycling have never been better.

"The value of recyclables is out of sight. It's now \$150 a ton for the basket of goods I've been recycling for the past 20 years, and everyone I know in the business is looking at their landfills and incinerators and saying 'why am I burying and burning \$150 a ton?' It doesn't make sense."

The term "zero waste" is actually a misnomer, as most authorities agree that 90 percent recovery can legitimately be considered "zero waste."

"If we get to 90 percent, we have changed the world significantly," Lombardi said, "and we'll have that discussion about the last 10 percent then."

To achieve zero waste, Lombardi said waste managers must have a total commitment to three things:

- 1) Maximizing downstream resource recovery through recycling and composting;
- 2) Maximizing mid-stream longevity through reuse, repair and durable design;
- 3) Maximizing upstream waste reduction through re-design, zero-waste purchasing, producer responsibility and implementing regulatory changes.

Upstream waste reduction is what differentiates zero waste from total recycling, Lombardi said. "We're talking about nipping waste at the source. You've got industries that are starting to design their products and packaging to be recovered in the downstream systems."

Purchasing practices also play an important role, he said. "How are we spending the tax dollars? We're buying the future we want. We need to start buying the cleaner, greener stuff."

And, Lombardi said integrated solid waste management and existing waste-to-energy technologies (except anaerobic digestion) should be abandoned because they are not ecologically sound and they distract society from the achievable goal of virtually eliminating waste altogether.

He said there are four reasons governments need 10 years to make the shift to zero waste:

- 1) To avoid spending millions on incinerators and other expensive landfill diversion methods;
- 2) To build the necessary recovery facilities;
- 3) To make the regulatory shifts that will allow the cleanest companies to win the profits;
- 4) To achieve the cultural behavior shifts necessary to convince citizens to separate their waste into three bins: recycling, composting and other trash.

The six facilities needed to achieve zero waste include:

- Material Recovery Facilities (MRF)
- Organic Recovery Facilities
- Construction, Deconstruction & Demolition (CD&D) Facilities
- Center for Hard-to-Recycle Materials (CHaRM)
- Reuse & Repair Facilities (R&R)
- Residual "Sort, Stabilize & Transfer" Stations (ZWTS)

Lombardi said global markets are starting to open up for recyclable materials, making traditional single-stream recycling centers extremely profitable. It is now less expensive for manufactures to make paper, metal and plastic out of recycled materials than it is to make them out of raw natural resources. "These are economic realities that have come home," he said.

Organic composting facilities can be complex indoor facilities or simple outdoor "compost heaps." They create valuable soil amendments, bioplastics and biofuels.

The deconstruction industry is also growing rapidly, Lombardi said, because of the value of lumber, masonry and other building materials. Many communities are already requiring deconstruction at various levels. The materials can be sold at re-use and repair facilities.

CHaRM facilities help find markets for non-traditional uses of hard to recycle materials like Styrofoam, plastic bags, books, textiles, shoes, sinks, bicycles and cooking oil. "The theory is that if you get a big enough pile of any one material, you'll find a buyer or a taker for it," Lombardi said.

Zero waste transfer stations are different than existing transfer stations that typically compact mixed waste and haul it to a distant landfill. These mixed-waste sort, stabilize and transfer stations use mechanical, biological treatment (MBT), which essentially separates out the recyclables through mechanical means and then uses anaerobic digestion to extract and capture any gases. At the end of that process the inert remains are safe to bury, Lombardi said.

To reduce the amount of material that can't be recycled, Lombardi said government entities are working with manufacturers to convince them to re-design their products and packaging in order to make them easier to recycle.

Lombardi's 10-year "bridge" plan to zero-waste calls for communities to recover 50 percent of their waste in years one through four by offering universal (not mandatory) curbside collection of recyclables, weekly food and yard waste collection and a CD&D deposit for building permits. In these first four years, the municipality should set a community zero waste goal, start a "pay-as-you-throw" pricing structure for non-recycled trash, lobby for state-level Expanded Producer Responsibility (EPR) programs and invest \$2 per capita each year for community education.

"Pay as you throw is tough for some communities," Lombardi said. "A lot of the public perceives free trash as the one thing they get for their taxes, so it's really tough to switch that and make it into the pay-as-you-throw system. We need to move toward unit pricing in trash. Four thousand communities in America now do it. It's the single most powerful reward system for recyclers."

EPR programs get industries involved in the recycling processes. For example, the paint industry has begun to take responsibility for collecting unused paint; the computer industry is taking responsibility for recycling computers, and so on.

In years five through eight, the plan calls for reaching 70 percent recovery by mandating recycling and composting, moving to bi-weekly trash service, and mandating CD&D recovery. In those years, the community should analyze the trash that is not being recycled, enact local EPR programs, establish new rules for recyclable/compostable packaging, establish government purchasing policies that favor green businesses and products, set waste reduction targets and invest \$3 per capita each year for community education.

Lombardi said more and more communities are beginning to require participation in recycling programs. These include Minneapolis, Charlotte, Oakland and San Francisco, among others.

"It's starting to happen that mixed waste, which is really the enemy, won't be picked up. For 35 years, Eco-Cycle has been trying to make the voluntary system work. If you're not on board now, you're never going to get on board, so we're going to make you get on board," Lombardi said. "Some members of the Boulder City Council have agreed to that and we're starting to move toward mandatory ordinances."

Once all the "stinky" organics are taken out of the waste stream through composting, regular trash can be picked up less often, he said.

In years nine and 10, Lombardi said communities should reach 90 percent recovery through zero waste labeling, product bans and taxes on non-recyclable packaging, funding at least half of the zero waste system with EPR programs and "hammering down" on mixed waste through various fines and fees, while continuing a vigorous community education program.

"We've got to hammer mixed waste. Because once we get rid of mixed waste, all of the virtuous zero-waste cycle begins. Mixed waste is only good for one thing: bury it or burn it. You can't sort it. I've been watching people try to sort mixed waste for 30 years. You just can't do it."

Lombardi said Eco-Cycle is planning to release a handbook later this year and will start a one-week training academy to educate waste managers on the zero-waste bridge plan.