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The Advantage in the Waste and Recycling Industry



Creating a New Waste Management Paradigm

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By spurring waste industry innovation and showcasing American waste technologies and zero-waste methodologies to the world's cities, America can be a world leader in small-scale waste industry innovation and the journey to zero-waste.

By Rob Steir

I believe that we can apply American ingenuity and innovation to create a new waste management paradigm for Post-Maria Puerto Rico that could be the reason why the U.S. becomes one of the world's recycling leaders (best is just over 60 percent), rather than its current pedantic middle of the pack global status among developed countries at about 35 percent.

Equally important, we could drastically improve both the future long-term waste management situation (and save money) in Puerto Rico itself and the quality of life of everyone there. From a dollars and sense (and cents) perspective, we can spur waste industry innovation and showcase American waste technologies, and zero-waste methodologies to the world's cities, big and small, many of which are choking in waste. America can be a world leader in small-scale waste industry innovation and the journey to zero-waste.

I make these statements with firsthand experience on the uphill battle fought by waste startups in America as I founded a production-ready manufacturing startup, Frontline Waste, that focuses on small-city waste disposal and management. I've also seen many extremely innovative ideas, with passionate management teams, run up against the same chicken/egg funding hurdle required by mostly risk-averse cleantech investors: "Tell me about your first successful pilot." For in the U.S., it's nearly impossible to get small or large cities, even those who champion zero-waste initiatives to trial/pilot new potentially game-changing smaller-scale ready-to-market solutions. In small cities, where capital expenditures require rock-hard ROIs, mayors and controllers have learned, often the hard way, to be cautious.

If we re-think how we attack and solve the waste problem in Puerto Rico, I believe we have the potential to transform small city waste management around the world.

The “Most Likely” Waste Fix Will Cost Billions (The Same Old, Same Old)

With 3+ million people, Puerto Rico, in most respects, consists of 78 small-city municipalities—even San Juan; the largest city only has a population of 400,000. Before Hurricane Maria, Puerto Rico had a terrible waste problem on its hands, and the island was bankrupt:

- More than 50 percent of Puerto Rico’s 29 landfill facilities already were beyond their capacity
- The EPA had already negotiated the closure of 13 of them at considerable future cost
- A whopping 87 percent of waste was sent into these over-capacity landfill sites in 2016
- Only a dismal 10 percent was recycled.

The waste system was already broken. It is now much worse due to all of the extra hurricane cleanup debris. To clean up Puerto Rico, all waste solutions need to keep in mind the following basic premises:

- Tailored to smaller-scale, affordable solutions
- Maximize practical recycling
- Convert as much of the residual (non-recyclable) organic and inorganic waste into useful products and services (compost, energy, heat, recycled plastic goods)
- Improve the environment and living conditions
- Find ways to work with the community to increase recycling levels
- Above all, minimize waste going to existing landfills

The most likely outcome, which I propose we reject outright, is that the status quo “comes to the rescue” and almost none of the above occurs. The American taxpayer should not pay billions of dollars and issue large contracts to reconstruct the failed landfill sites with more modern landfill solutions designed for large cities. We don’t need to recreate the same failed waste infrastructure and collection systems as plenty of for-profit companies previously failed trying to do. We don’t need to have the same pathetic recycling rates. We don’t need status quo. While dire in outlook, it’s a high probability, unfortunately, as this is what typically happens in disaster recovery situations.

Puerto Rico Can Become Our Zero Waste Innovations “Pilot” Leader

There’s a better way. Puerto Rico can become our best zero-waste success story (even better than San Francisco which seems to kick everyone else’s butt with their high recycling rates, but still has a long way to go). To get there, we need to take a new smaller-scale approach: let’s take taxpayer money and empower all 78 municipalities to proactively harness American ingenuity to build out new ways to innovate waste management, recycling and zero-waste practices. Municipalities can partner with other nearby municipalities as “local teams” to pool resources, or go at it alone, or even form larger regional consortiums—whatever makes the most sense. As U.S. taxpayer money will most likely be used, let’s put a firehose to spark/foster American startup waste entrepreneurs as well as entrepreneurs within waste companies to rise to the challenge and deploy/showcase, in real-time use cases, their newest innovations.

Think about it: In real-time, we would have as many as 78 ongoing small city zero-waste “petri dishes” or, in Silicon Valley terminology, approved MVP (Minimal Viable Product) ventures to test new technology solutions and zero-waste best practices. Each of these grass-root zero-waste efforts would be championed by mayors and local waste operators, have involved local governments and communities, and structured with proper fiscal reward incentives to outperform. Unsuccessful MVP pilot projects would be quickly terminated, with strict and transparent metrics and oversight, and replaced by ones that are gaining market traction. The spotlight will be squarely in all 78 communities and administrators. These efforts would include a large number of startups, all funded by using a fraction of the money that would have been spent doing the “same old, same old.” By involving the cities and citizens of Puerto Rico to work to create zero-waste success stories, we can invigorate the economy, adopt the best solutions, put people to work, and build commercially viable and replicable zero-waste programs that smaller municipalities around our country and world can use.

Sure, there will be failed technologies that can’t scale and a number of them will under perform. There will be

innovative recycling programs that never catch the attention of the local community and have poor results. For every clunker, there will be far more success stories where the community, the startups and waste operators work together to create amazing recycling results.

I can imagine a dynamic process: each team, and its MVP solution, receives a certain amount of money, spread over five years—based on a set formula including its per capita waste produced in the past and taking into account their current debris-induced problems. The municipality would meet with as many as 100 U.S. startups over a multi-day matchmaking program in San Juan. To participate, each early stage firm or true

startup has to prove it is production-ready, its technology is above a certain TRL level, and it has less than \$X million in revenues. I would also encourage startups to meet in advance to team with each other to form synergistic eco-system waste solutions to present to the municipalities. As part of the solution set, each municipality can bring in a smaller percent of mature technology solutions, too, if justified, and hire a waste consulting team at a modest (and inflexibly set) advisory fee. Each municipality will be measured by real metrics, i.e. the percentage of recyclables and many other factors. The beauty of this program is that a municipality has to use the money wisely and can't hide behind bureaucracy. The 78 municipalities will be ranked against each other. I believe what will happen is that the residents of each municipality will be big participators and demand success.

And let's not forget Puerto Rico's struggle to secure off-grid and grid power. What if one of these MVP pilots also factored in a new approach to both waste and power, at the same time. In fact, if Tesla or GE, for examples,were smart, and they both are, they would see the opportunity to partner with local municipalities and waste startups, like ours, to create minigrid-powered municipalities that promote powerful zero-waste compliance incentives by offering electricity discounts.

The Transformative Effect on the U.S. Waste Industry Can Be Profound

For the most part, the current thinking about waste management is dominated by the perception that it only makes sense in large scale. These investor and buyer false perceptions would vanish with the successful implementation in Puerto Rico of these small-scale zero-waste technologies and programs.

First let's look at the possible results. The year is 2023, five years from today: In Puerto Rico, a healthy number of these MVP pilots were successes, including some clear winning zero-waste community engagement processes and programs, as well as various combinations of technology solutions that produced very high recycling rates. Built into each five-year funding program would be a secondary pool of money to allow each municipality to incorporate "best practices" and make cost-justified adjustments (perhaps, as a worst-case scenario, even scrapping a failed pilot for one of the most successful programs). Overall, waste, in 2023, is viewed as a resource by the 3+ million people—a complete reversal of today's situation. The island is cited worldwide as a shining example of both American ingenuity and innovation. Most important, Puerto Rico is the new Gold Standard for what other islands and countries aspire to match.

Second, let's look at the effect on small municipalities throughout the 50 states by 2023. Similar to how the Canadian government recently created the Canadian Cleantech Alliance to bring together startups, municipalities and best solutions, I propose we create in 2018 a similar national organization to institutionalize (both financially and organizationally) the successful zero-waste solutions that spring forth from Puerto Rico and, at the same time, from other leading U.S. cities.

In addition, mayors and city councils in small and large cities will have successful proven "real city" zero-waste blueprints (and support) to choose from to wisely spend their limited budgets on new recycling zero-waste technologies and programs. Here are two potential results: 1) 300 small cities (populations 50,000 to 100,000) throughout the country sign up with this new entity to replicate a particular successful zero-waste program in one of Puerto Rico's larger success zero-waste municipalities; 2) Another 250 smaller cities (under 25,000) sign up for a similar program championed by a smaller municipality. What if social impact investors could then buy Impact Infrastructure Bonds backing these proven waste solutions? The sustainable/impact financing investor demand is there; let's build the supply.

Finally, what's the role of the waste industry? We have a great model: the railroad industry. They self-funded the Transportation Technology Center (TTCI) in Colorado. TTCI is a world-class transportation research testing



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organization, providing emerging technology solutions for the railway industry throughout North America and the world. They basically test new technologies. Our testing center would be the entire island of Puerto Rico, funded by the U.S. Government at considerable savings to American taxpayers. Our industry could create a waste testing organization in Puerto Rico that could serve the same function as TTCL. Unlike TTCL, which is controlled by the Tier 1 U.S. railroad oligopolies, our center should serve both waste innovators and the hundreds of large and small U.S. cities with zero-waste programs.

In Sum

Imagine if what I wrote above happened how much easier it would be for startups to get market traction first in Puerto Rico, then in American cities, and finally throughout the world. Imagine the new manufacturing and waste industry jobs that could be created. Imagine thousands of U.S. cities with successful zero-waste programs, all saving money for local and state governments. Imagine how many small cities throughout the world—the 4 billion people without any formal waste management due to size and cost constraints—will also benefit. Let's make it happen.

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waste management system, called a SMRF, anchored by an onsite proprietary, small-scale combustor that cleanly disposes valueless residual waste. He also recently co-founded Ocean Currency International for creating waste-free islands and waterways, with the goal of stopping plastic from entering our oceans. Until his foray as a waste entrepreneur, he managed an early-stage and tech-transfer consulting practice, MindForce Consulting, where he worked with industry innovation leaders, the NSF, and universities. One proud accomplishment was founding a non-profit after 9/11 that placed 200 MBA professionals to work with 90 small business owners. They provided more than 3,000 hours of consulting assistance in 18 months. His areas of expertise include business development, growth strategy and go-to market business plans. Rob can be reached at (212) 579-1781, email rob@frontlinewaste.com or visit www.frontlinewaste.com and www.oceancurrency.com.

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