Detroit, USA

GHG reduction potential in Road-to-ZW scenario: 102%

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Key statistics (2017)

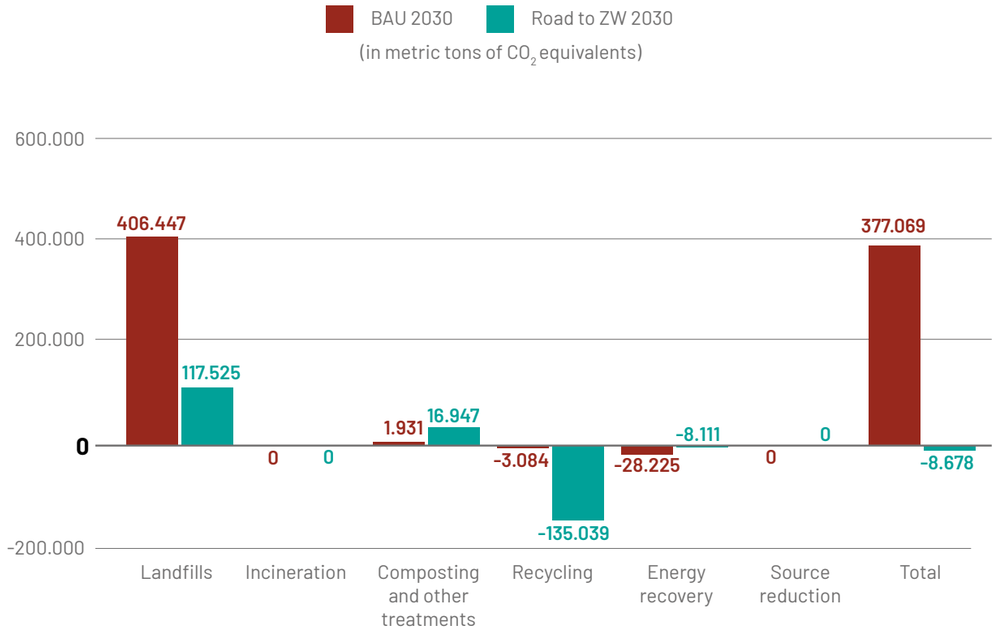
- **Population in 2021: 632,464**
- **Total municipal solid waste generation: 493,188 tonnes of waste per year (including residential and commercial, illegal dumping, bulky waste streams)**
- **City declared diversion rate: 4.15%**
- **Curbside recycling participation rate (2022): 38%**

Once the wealthiest city in the United States on a per capita income basis, Detroit has undergone decades of socioeconomic downturn and remains the second poorest large city in the country and the most segregated. Despite the fact that Detroit is undoubtedly experiencing gradual economic resurgence, the city has been struggling with de-industrialization, divestment, and a declining population. Until recently, the city was host to one of the largest municipal waste incinerators in the U.S., which burned not only the city's waste, but that of surrounding suburbs and even Canada, at a substantial financial loss, and with severe impacts on residents' health. The overcapacity of the incinerator discouraged investment in alternative approaches to waste management, resulting in very low rates of recycling, composting, or other forms of waste diversion. After decades of grassroots advocacy efforts and campaigns, such as the ultimately successful Breathe Free Detroit campaign, spearheaded by the Zero Waste Detroit (ZWD) Coalition in collaboration with some of its key member organizations, the East Michigan Environmental Action Council, the Great Lakes Environmental Law Center, and the Ecology Center, residents finally succeeded in closing down the incinerator in 2019, and are now grappling with the task of transitioning the city's existing waste management system into a sustainable materials management one. Confronted with systemic injustice, Detroiters have come to be on the leading edge of grassroots community activism and organizing efforts, as well as artistic and cultural creation, to make their city a more sustainable, equitable, and just place to live.

Detroit was the last major metropolitan area in the U.S. to implement a citywide curbside recycling program in 2014, which partially explains the current low waste diversion rate of 4%, far under the State's 19.3% rate. However, the official diversion rate doesn't reflect efforts led by Detroit-based grassroots community organizations, urban farms, food rescue programs, a university, and local recycling, upcycling, and composting companies. In 2021, these grassroots networks have diverted at least 2,336 metric tons of material, which have not been included in the 19,955 metric tons of materials that the city declared as being diverted that same year. That being said, a significant portion of Detroit's waste diversion and zero waste initiatives of the past 10+ years have been led and/or initiated by the city's grassroots networks. Their initiatives include: implementing a community recycling drop-off center funded by the city; increasing the city's opt-in single-stream curbside recycling program participation rate through community education and outreach campaigns; managing food rescue programs; building citywide decentralized compost networks; running robust informal upcycling, sharing, reuse, donation and repair networks; and forming committees to advise Detroit City Council on sustainability principles and policies. Currently, collaborative efforts among grassroots activists and the city are taking place to bring a material recovery facility (MRF) to Detroit, as well as to develop a city-lead opt-out curbside recycling pilot program, and a citywide composting system, amongst others.

Detroit in 2030 – Business as Usual vs. Road to Zero Waste

The below chart shows annual GHG emissions estimated for Detroit by 2030 in two scenarios: 1) Business as Usual based on the data from 2021 collected from the City of Detroit's Department of Public Works (DPW), Resource Recycling Systems (RRS), NextCycle Michigan, and 2) Road to Zero Waste based on consultations with DPW, RRS, and 22+ community partners, including local recycling and composting companies, grassroots organizations, urban farms, businesses, and policymakers. Assumptions that informed each scenario are detailed in the table below.



Treatment	BAU 2030	Road-to-ZW 2030
Landfill	437,466 tonnes of municipal solid waste landfilled – The source of virtually all emissions	740,848 tonnes of municipal solid waste landfilled per year 45% reduction in landfilling, 59% reduction in landfill gas emissions
Incineration	none	none
Composting & other treatments	10,397 tonnes	80,338 tonnes
Recycling	5,731 tonnes through voluntary drop-offs and curbside recycling	208,405 tonnes through an increase in the city's curbside recycling program. The emissions reductions of recycling alone are greater than the emissions from landfilling.
Energy recovery	-28,225 tonnes CO_2e from landfill gas to energy	-8,111 tonnes CO_2e from landfill gas to energy
Source reduction	none	none
Overall diversion rate	4%	59%

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Key takeaways

1. The major source of GHG emissions in Detroit is methane emissions from landfilled organic waste, which will amount to 406,447 metric tons of CO_2e by 2030 in the Business As Usual scenario.

2. In the Road to Zero Waste scenario**, Detroit would achieve an increase in overall diversion rate from 4% to 59%, avoiding annual GHG emissions by 385,747 tonnes CO_2e in 2030. This is equivalent to emissions from 48,590 homes' energy use for one year.**

3. **This approach would reduce annual residual waste by 62%, landfill methane emissions by 71%, and overall GHG emissions by 102%, compared to the BAU 2030 scenario,** transforming Detroit's waste sector from being a major emitter of GHGs (377,069 metric tons of CO_2e by 2030) to a net-negative sector (-8,678 metric tons of CO_2e by 2030).

4. The Road to Zero Waste scenario includes 80% diversion of organics, glass, metals, wood, paper and cardboard, and 15% diversion for plastic and textiles, with electronic waste and other recycling remaining approximately constant (overall 59% diversion).

5. Generational inequities and injustices need to be addressed in order for a more zero waste, climate resilient, and equitable Detroit to be truly possible. Supporting the powerful grassroots work already taking place in Detroit is the key to strengthening meaningful zero waste and sustainability solutions.

Recommendations & vision for 2030

- **Increased City leadership and engagement to promote zero waste** through more effective data tracking of Detroit's MSW streams; performing a cost-benefit analysis for increasing waste diversion services; mass promoting those services to residents through messaging platforms (buses, signage, ads) ; investing in existing and much needed new waste diversion infrastructure; building staff capacity for sustainability
- **Overcoming state and local policy roadblocks for zero waste by**, 1) Amending Michigan's Waste Solid Disposal Law with Part 115, an 8 bill package proposing to transition Michigan to a sustainable materials management paradigm; 2) Amending Detroit's Solid Waste & Illegal Dumping Ordinance into a Sustainable Materials Management one; 3) Increasing landfill tipping fees to incentivize waste reduction, composting and recycling; 4) Removing the renewable energy credits being provided by the State to waste-to-energy facilities; 5) Implementing an equitable Extended Producer Responsibility law in Michigan; 6) Repealing the ban on the ban (also known as Preemption Law) on single-use plastic (SUP) bags so municipalities like Detroit can regulate SUPs; 7) Developing union-led workforce development opportunities in the field
- **Increasing public awareness through education and outreach** to youth in public schools and residents and businesses (citywide litter prevention, waste diversion and reduction, citizen science campaigns and trainings)
- **Increasing Detroit's recycling diversion rate** by making recycling services available to all by 2030; reducing contamination through further resident education and glass recycling improvements; building up Detroit's MRF and drop-off center capacity
- **Implementing a citywide integrated network of multiscale (household, community, industry) compost systems** by increasing the city's organics management infrastructure; supporting urban farmers in their collection efforts; increasing public outreach and education efforts; creating onsite organics managements projects for large scale entities; and recirculating city-made compost within city borders
- **Increasing food rescue capacity for the city**, by having centralized food donation infrastructure like in Milan; further training the public and businesses about food waste prevention and reduction; and implementing a citywide food waste ban
- **Localizing our supply chains and building micro circular economies** with nonprofit trading posts for teaching materials and other giveaways, fix-it and reuse centers, a reusable to-go containers program for restaurants, and hyperlocal labor and materials processing and end-markets, as well as delivery systems for locally grown food and secondhand goods.
- **Utilizing matching funds from the State's NextCycle Michigan program**, which can provide financial assistance to meet many of these goals. The City of Detroit has applied for funding with NextCycle and there are significant plans and ideas to implement many of the above recommendations.

@Garrett MacLean

Written by: Cat Diggs. This case study was prepared as part of the report, "Zero Waste to Zero Emissions: How Reducing Waste is a Climate Gamechanger (GAIA, 2022)." Please visit www.no-burn.org/zerowaste-zero-emissions to access the full report and detailed notes on data and methods.