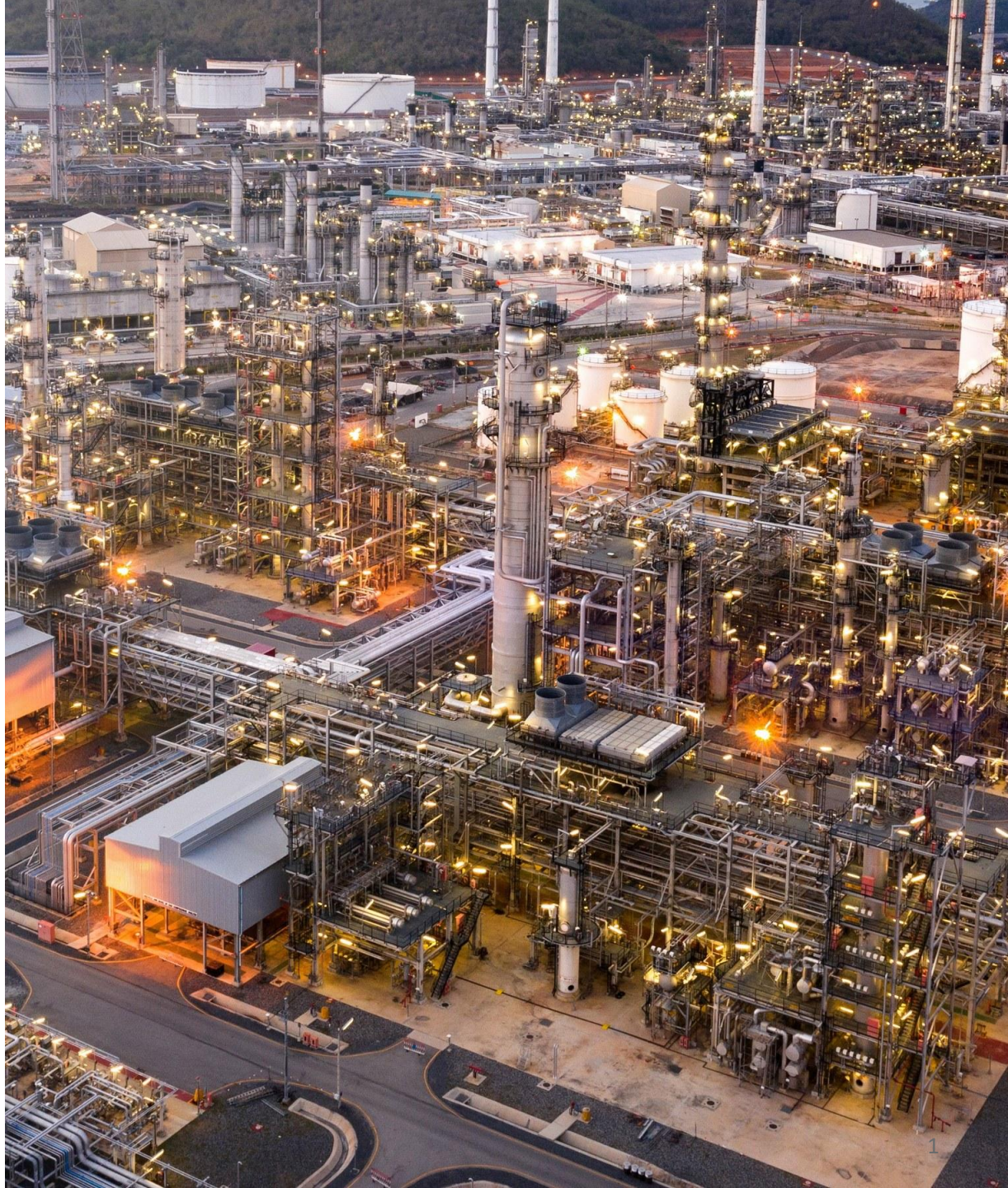
LOUISIANA SECTION A&WMA · 2026 FALL CONFERENCE

On-Site Compaction of Plant Waste

Reducing haul trips, diesel emissions and cost for non-hazardous industrial waste

Alex Nicosia
President, Crushr South Louisiana



General non-hazardous plant waste

- Generated continuously at refineries, chemical plants and industrial sites.
- Typical contents: packaging, wood, insulation, office and cafeteria trash, general debris.
- Collected in open-top roll-off containers and hauled to a landfill.
- Containers are hauled when full, year-round.

Underutilized Tonnage

- Loose/low-density trash leaves large voids.
- A roll-off container reaches its volume limit well before its weight limit.
- Most hauls are typically 50-75% below the hauler's included tonnage weight.





Crush Instead of Haul

- A mobile compaction truck compacts waste in place, in the existing roll-off container.
- With two to three compactions between hauls, one container holds three to four loads.

Without	With
3 loads = 3 hauls	**3 loads = 1 haul**



Hydraulic compaction

- **Hydraulic downforce:** the arm's main cylinder delivers 9,400 lbs of downforce onto the trash.
- **Built for roll-offs:** designed specifically for open-top roll-off containers.
- **No heavy equipment in the bin:** no excavator or loader bucket working the container.
- **Avoids equipment damage**: forklifts and front-end loaders are not designed to push down.
- Mobile Compaction Trucks are the safest way to compact waste in dumpsters.



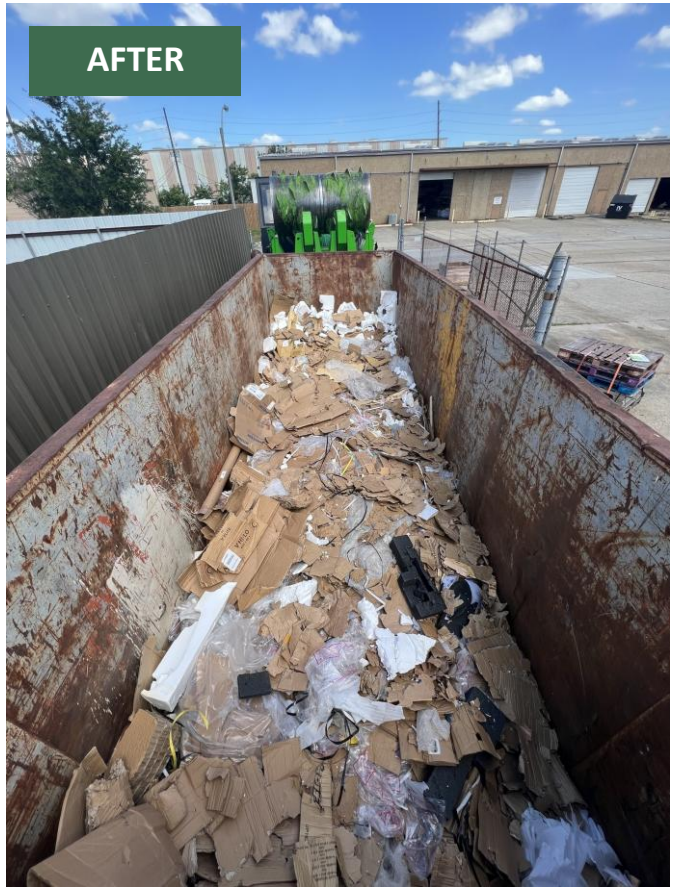
Before and after one compaction

Same 30-yard container, one compaction visit.

Before: pallets and loose cardboard at the top rail.

After: contents compacted to a fraction of the height; the container stays in service.





One compaction avoids one haul

- Compacting 2–3 times before a haul removes 66–75% of trips.
- For calculation, each compaction counts as one avoided haul:

1 compaction = 1 haul avoided

Each haul is a round trip

- Loaded roll-off trucks are among the least fuel-efficient vehicles on the road.
- NOx: contributes to ground-level ozone.
- Particulate matter: diesel exhaust along haul routes, often through residential areas.
- CO_2: about 10 kg per gallon of diesel.

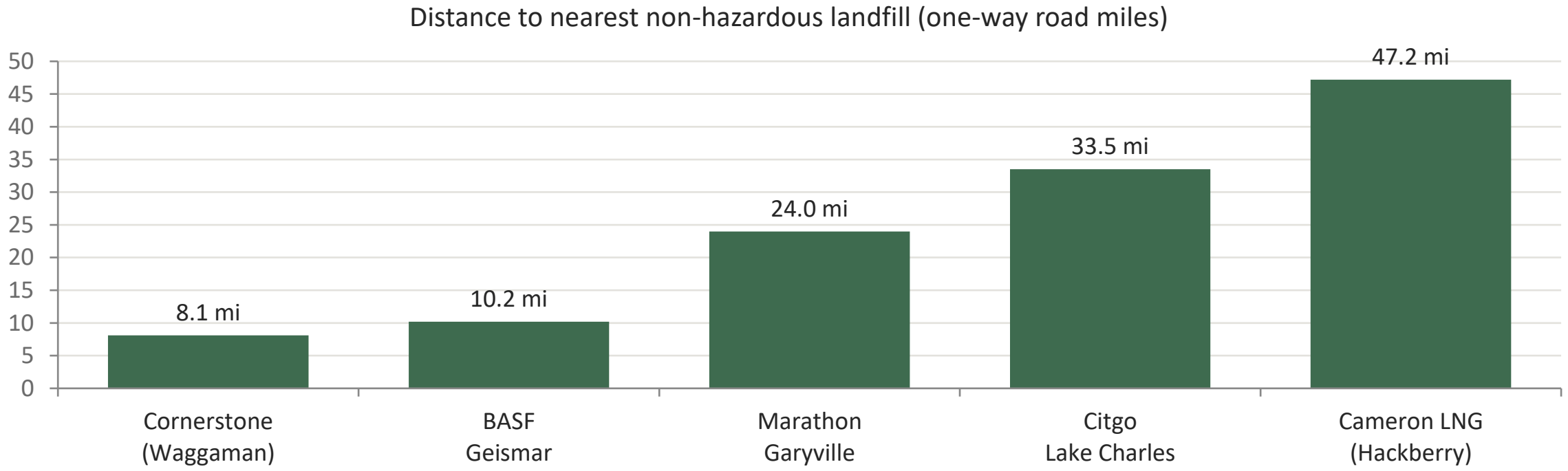
Distance study

- Facilities: 27 south Louisiana refineries, chemical plants and LNG terminals.
- Landfills: LDEQ-permitted Type I and Type II landfills that accept off-site industrial waste.
- Distance: road miles to the nearest landfill, by driving route.
- Conservative: nearest landfill used. Contracted hauls are usually equal or longer.

Sources: LDEQ 2023 Biennial Solid Waste Capacity Report · U.S. EPA Facility Registry Service · U.S. EIA · Global Energy Monitor

Haul distance: 25 miles one way, 50 round trip

25 miles conservative one-way distance to the nearest landfill (measured average: 29), a **50-mile round trip** per load. Lake Charles-area plants are 30 to 40 miles one way.



River-corridor plants are close to a landfill; Lake Charles-area plants are not. Longer hauls produce larger savings.

Emissions Reduction

- Hauls avoided per year: 66–75% of current haul count.
- Round-trip miles to the landfill: from waste records (conservative state figure: 50 miles).
- CO_2 per mile for a heavy diesel truck: published EPA factor.

hauls avoided × round-trip miles × CO_2 per mile = emissions eliminated

Plant Example

15 containers, each hauled twice a month	→ 360 hauls per year
Compaction removes 2/3 of hauls	→ 240 hauls avoided per year
× 50 miles round trip	→ 12,000 truck-miles avoided per year
÷ 5 mpg (heavy truck)	→ 2,400 gallons of diesel not burned
× 10.18 kg CO_2 / gal (EPA)	→ **≈ 27 US tons of CO_2 avoided per year**

Regulatory and reporting relevance

- Air permitting: fewer diesel miles; a measurable reduction in NOx and particulate matter.
- Scope 3 reporting: waste transport is a quantifiable value-chain emission.
- Community impact: fewer heavy trucks near fenceline neighborhoods; less dust, noise and road wear.

COST

Hauling cost & haul count

Haulers bill per trip. On average, compaction removes 2/3 to 3/4 of all trips.

WITHOUT COMPACTION

~100

hauls per year

WITH COMPACTION

~25–35

hauls per year

COST

Typical reduction in hauling spend

40–50%

reduction in roll-off hauling spend

- Example: $40,000 annual roll-off hauling → $16,000–$20,000 saved.
- No capital cost: same containers, nothing installed.
- Savings begin with the first month of service.

COST

Savings at scale: 5, 15 and 30 containers

	5 containers	15 containers	30 containers
Hauls per year, before	120	360	720
Hauls per year, after	40	120	240
Diesel avoided per year	800 gal	2,400 gal	4,800 gal
CO_2 avoided per year	**9 tons**	**27 tons**	**54 tons**
Net savings per year	**$28,000**	**$84,000**	**$168,000**

CASE STUDY

Chemical plant, Iberville Parish

General plant trash, 30-yard roll-off containers. Monthly averages, then annual results.

BEFORE · PER MONTH

30

hauls per month · $15,000 total

AFTER · PER MONTH

7

hauls per month · 23 compactions · $6,950 total

EMISSIONS AVOIDED · PER YEAR

31 US tons

CO_2 per year · 2,760 gal diesel · 13,800 truck-miles

COST SAVINGS · PER YEAR

$96,600

net savings per year (−54%), after compaction cost

CHALLENGE

Bin Management and Optimization

- **Container swaps:** bins are getting hauled when they can still be compacted.
- **Scale:** 10 or more containers spread across a plant.
- **Tracking**: many bins do not have a bin number and are impossible to track.
- **Early hauls:** a container hauled before it is full gives back the savings.
- **Late hauls:** a full container left in place overflows.
- **Invoice review:** without a service record, hauler invoices cannot be verified.

SOLUTION

Container tracking system

An organized system to track which bins need crushed and which need to be hauled.

- Waste coordinator can be hands off and still benefit from efficient and accountable compaction and hauling.
- Crushr ensures that each haul is optimized for weight and volume.
- **Monthly report:** hauls reconciled against hauler invoices.

CONCLUSION

Lower emissions at lower cost

- Reduces operating cost; no capital project.
- Emissions and cost decrease together.
- No equipment to install; no change to site operations.

Non-Hazardous Waste Management System

- Comprehensive way to manage an often-overlooked aspect of environmental operations.
- Lightens the workload for the environmental team.
- Provided at no additional cost; included in the compaction service.

Questions

Thank you

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Mobile roll-off dumpster compaction across Louisiana