Embracing Circular Economy: Industrial Strategies for Zero Waste

Introduction to Circular Economy and Zero Waste

October 15, 2025

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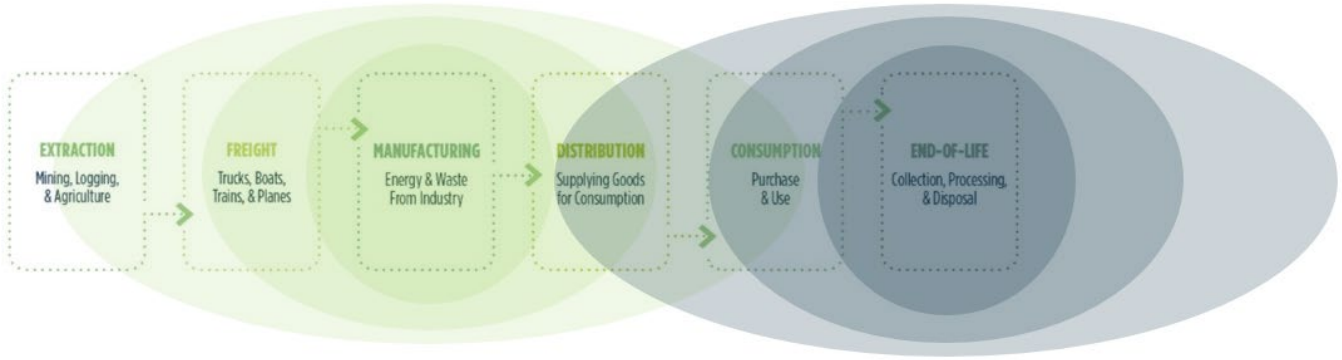
Why Circularity, Why Now?



Challenges of Linear Economy

Traditional linear models extract, use, and discard resources, causing major waste and environmental harm.

Benefits of Circularity

Circular economy designs out waste, keeps materials in use, and regenerates natural systems for sustainability.

Industrial Role in Circularity

Industries can drive systemic change by adopting circular strategies, reducing footprints, and meeting regulations.

Strategic Opportunity

Transitioning to circularity offers innovation, cost reduction, supply chain resilience, and competitive advantages.

What Is a Circular Economy?

Core Circular Economy Principles

Focuses on designing out waste, keeping materials in use, and regenerating natural systems.

Shift in Business Models

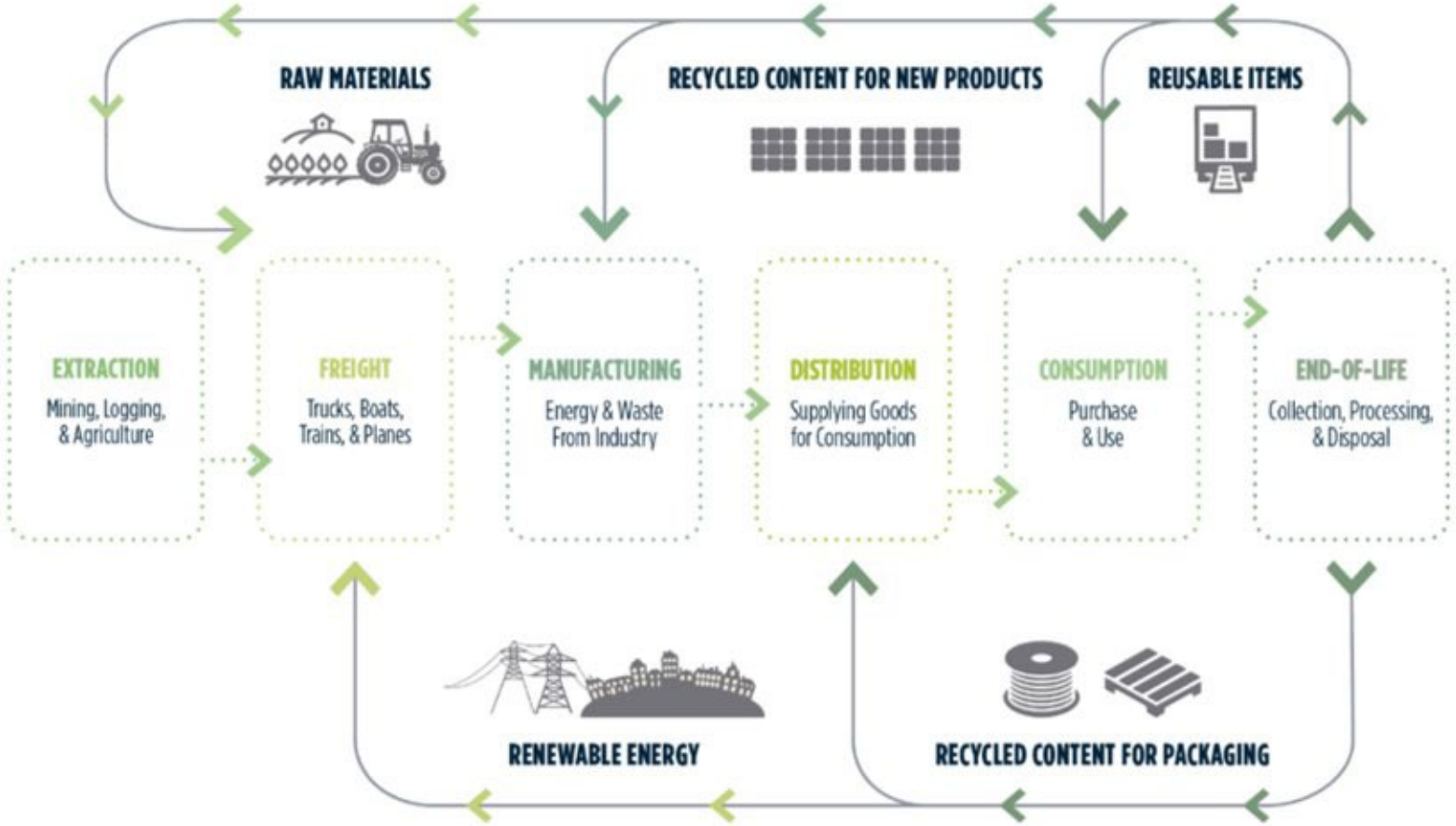
Moves from ownership to access models emphasizing durability, reuse, and closed-loop systems.

Industrial Integration

Integrates circular principles into procurement, production, logistics, and end-of-life management.

Benefits of Circular Economy

Reduces environmental impact, lowers costs, and enhances brand reputation.



Strategic Implementation of Zero Waste

Zero Waste as a Strategic Goal

Zero Waste Definition

Zero waste aims to divert 90% or more waste from landfills via reduction, reuse, recycling, and recovery.

Strategic Alignment

Zero waste aligns with ESG priorities and enhances operational efficiency and regulatory compliance.

Implementation Practices

Organizations use waste audits, source separation, and employee training to advance zero waste goals.

Environmental Benefits

Zero waste reduces disposal costs, improves resource use, lowers emissions, and supports climate goals.

Besides being the right thing to do, there are several strategic reasons to invest in a Zero Waste culture within your organization.
Add **YOUR** logo here!

Leveraging Existing Infrastructure

Optimizing Waste Networks

Existing waste hauler networks can be optimized to improve material recovery and recycling efforts efficiently.

Data Systems for Tracking

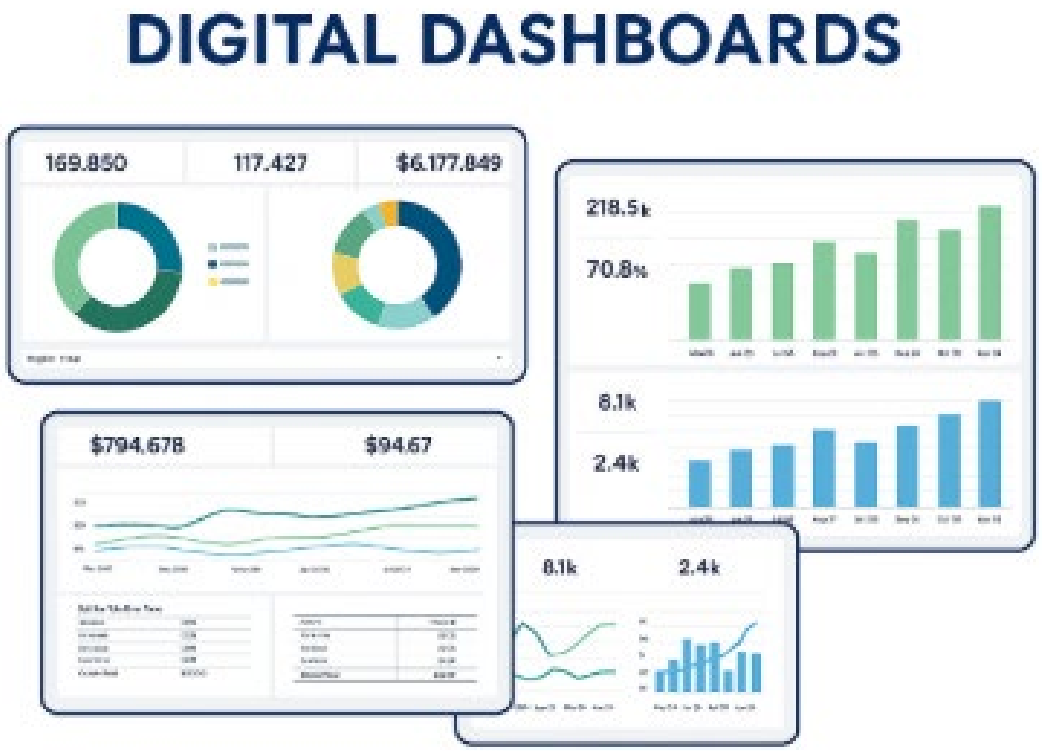
Data platforms enable tracking of waste generation, identifying hotspots, and measuring circularity progress effectively.

Employee Training Programs

Training programs can be adapted to integrate circular economy principles, promoting best sustainability practices among staff.

Enablers and Benefits of Circularity

Technology as an Enabler



Smart Bins and Container Sensors

Smart bins equipped with sensors provide real-time data on waste generation and contamination for targeted waste management interventions.

Digital Platforms and Analytics

Digital platforms facilitate transparent reporting, compliance, and stakeholder engagement through actionable insights and dashboards.

AI and Robotics in Waste Sorting

AI-powered optical sorters and robotics improve waste sorting accuracy, reducing contamination and boosting material recovery value.

Collaboration Is Key

Internal Team Alignment

Effective collaboration requires alignment among departments like EHS, procurement, operations, and sustainability.

External Partnerships

Collaborating with vendors, manufacturers, recyclers, and regulators ensures scalable and compliant circular solutions.

Shared Goals and Trust

Clear communication, mutual accountability, and trust foster innovation and continuous improvement in collaboration.

Systemic Change Through Collaboration

Joint initiatives and partnerships accelerate the transition to circular economy by overcoming barriers and leveraging synergies.

Economic & Environmental Benefits

Economic Savings

Circular economy reduces disposal costs, recovers materials revenue, and improves operational efficiency.

Environmental Impact

Circular practices reduce emissions, conserve resources, and minimize pollution, supporting climate goals.

Stakeholder Alignment

Circularity enhances brand reputation and attracts customers, investors, and talent valuing sustainability.

Measurement & Adoption

Quantifying benefits via metrics strengthens business case and encourages wider circular economy adoption.

Case Studies and Enabling Technologies

Case Study: Smart Bins Donated to Rutland City

Casella donated 10 "smart" trash bins to Rutland City, which were installed in the downtown area earlier this month. These high-tech bins feature sensors that monitor their capacity, enabling better collection time planning and preventing overflowing bins. Additionally, they feature a solar-powered compacting mechanism that enables them to hold more waste than standard trash bins, thereby enhancing waste management efficiency. These smart bins will help keep the downtown area cleaner and improve everyone's experience when visiting downtown Rutland, VT.

"I was so impressed when they came out," Downtown Rutland Partnership Executive Director Hal Issente said. *"That is unbelievable technology."*

Outcomes and Next Steps

Call to Action: Start Where You Are

Begin with Waste Audits

Start by auditing waste streams to find opportunities for reduction, reuse, and recycling within the organization.

Engage and Educate Teams

Involve cross-functional teams and provide education to build awareness and drive behavior change for circularity.

Pilot and Scale Initiatives

Test circular economy programs at one location or with one material before expanding to larger scales.

Set Goals and Collaborate

Establish clear goals, track progress, and collaborate with external partners to enhance circular business practices.

Waste Audit

WHAT?

Purpose of Waste Audit

Waste audits quantify waste types and amounts to identify reduction and recycling opportunities.

Benefits for Businesses

Waste audits improve sustainability, lower costs, and enhance environmental compliance for industries.

Audit Process Steps

The waste audit involves preparation, collection, sorting, documentation, and analysis phases.

Support for ESG Goals

Waste audits help companies align with ESG reporting and corporate sustainability objectives.

HOW?

- **Define Goals and Scope**
- Establish clear objectives for the audit such as reducing landfill use or boosting recycling rates.
- **Prepare Location and Participants**
- Select audit site, staging areas, involve staff and partners, and schedule audit with facility operations.
- **Conduct Waste Sorting**
- Collect waste samples, sort by material type, and record measurements and sources accurately.
- **Analyze Data and Report**
- Evaluate audit data to identify recycling opportunities and operational improvements, then compile findings.

WHY?

Cost Savings from Recycling

Waste audits identify recyclable materials, reducing disposal costs and producing significant monthly savings for industries.

Environmental Sustainability

Audits increase recycling rates and divert waste from landfills, supporting environmental protection and sustainability goals.

Support for ESG Metrics

Waste audit data aids in greenhouse gas reduction efforts and lifecycle analyses for better sustainability reporting.

Team Alignment and Collaboration

Audits encourage internal team alignment and external collaboration to drive systemic sustainability change.

Green Team- Promote Change from Within

WHAT?

Cross-functional Collaboration

Green Teams include members from departments like EHS, Operations, HR, and Procurement to ensure diverse input.

Sustainability Initiatives

They identify and implement projects that reduce environmental impact and improve resource efficiency.

Promoting Environmental Stewardship

Green Teams align employee actions with corporate sustainability goals and foster a culture of awareness.

Driving Change from Within

They encourage participation and track progress toward measurable sustainability goals in the organization.

WHO?

"Be the change that you wish to see in the world."

- Gandhi

HOW?

Identify Sustainability Champions

Select passionate leaders from diverse departments to drive the Green Team's initiatives and foster sustainability.

Set Clear Sustainability Goals

Define measurable targets like waste reduction and energy savings aligned with company objectives.

Maintain Regular Communication

Hold consistent meetings to share progress, ideas, and keep accountability among team members.

Conduct Waste Audits

Analyze waste streams to find reduction opportunities and prioritize sustainable actions effectively.

Reducing Greenhouse Gases

WHAT IS THE EPA WARM REPORT?

Purpose of EPA WARM

The WARM report helps estimate greenhouse gas emissions reductions from various waste management practices.

Lifecycle Analysis

It provides a lifecycle analysis comparing environmental impacts of recycling, landfilling, composting, and combustion.

Sustainability Planning Tool

WARM supports sustainability planning by quantifying benefits of waste diversion strategies for organizations.

Industrial Application

The model is useful for industrial businesses aiming to improve environmental footprints and meet regulations.

BENEFITS FOR INDUSTRIAL BUSINESSES

Measure Environmental Impact

The WARM report quantifies greenhouse gas reductions from waste management scenarios to gauge environmental impact.

Support Lifecycle Analysis

It assists lifecycle analysis of materials for improving supply chains and production processes.

Prioritize Waste Management

WARM helps prioritize recycling and composting efforts, leading to cost savings and resource efficiency.

Enhance ESG Reporting

The report provides data to strengthen Environmental, Social, and Governance reporting for stakeholders.

Resources

General Recycling Tips

- Empty and Clean
- Keep it Loose
- Shape Matters
- When in Doubt…THROW it OUT!
- Don’t Forget to Reduce and Resue

Boxes and Packaging

As your online shopping starts showing up at your door, remember that cardboard boxes are recyclable. Bubble wrap and packing peanuts are not recyclable - save these items for reuse or discard them in your trash.

Happy Fall

As the leaves start to come down, please remember that leaves do not belong in your recycling bin. Check locally to learn your community’s program for leaf and yard debris. Or consider starting a backyard compost pile for your leaves!

Plastic Bags Don’t Belong

WHY NOT: They wrap around the sorting equipment.

INSTEAD: Recycle your bags at a participating grocery or retail store.

Plastic bags don’t belong in your recycling bin, but you can recycle them at participating grocery and retail stores. You will notice that many stores have a bag collection bin in their entry area. Click **here** for an online directory. Another great option is to get into the habit of bringing reusable bags when you shop.

Thank You!

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To learn more, please visit **casella.com**

Who We Are

Casella, headquartered in Rutland, Vermont, is one of the most experienced fully integrated resource management companies in the Eastern United States. Founded in 1975 as a single truck collection service, Casella employs over 5,000 people. In addition, we serve as the largest recycler in the Eastern United States, recovering over 1 million tons of recyclables and nearly 360,000 tons of organic residuals each year. With a clear strategy to serve our customers with integrated services, we continue to lead the solid waste industry with an innovative business model that creates sustainable value beyond the traditional waste disposal model.

Our operations include over 200 owned and/or operated facilities spanning from Maine to Maryland, delivering services to residential, commercial, municipal, industrial, and institutional customers. We service nearly 2 million customers in our Eastern United States operating footprint and provide professional resource management services to customers across North America.

5K+

EMPLOYEES

~$1.5B

ANNUAL REVENUE

2.3K+

COLLECTION VEHICLES

1.4M+

TONS RECYCLED PER YEAR

Approximations as of October 2024. Subject to change.

John and Doug Casella

Our Locations

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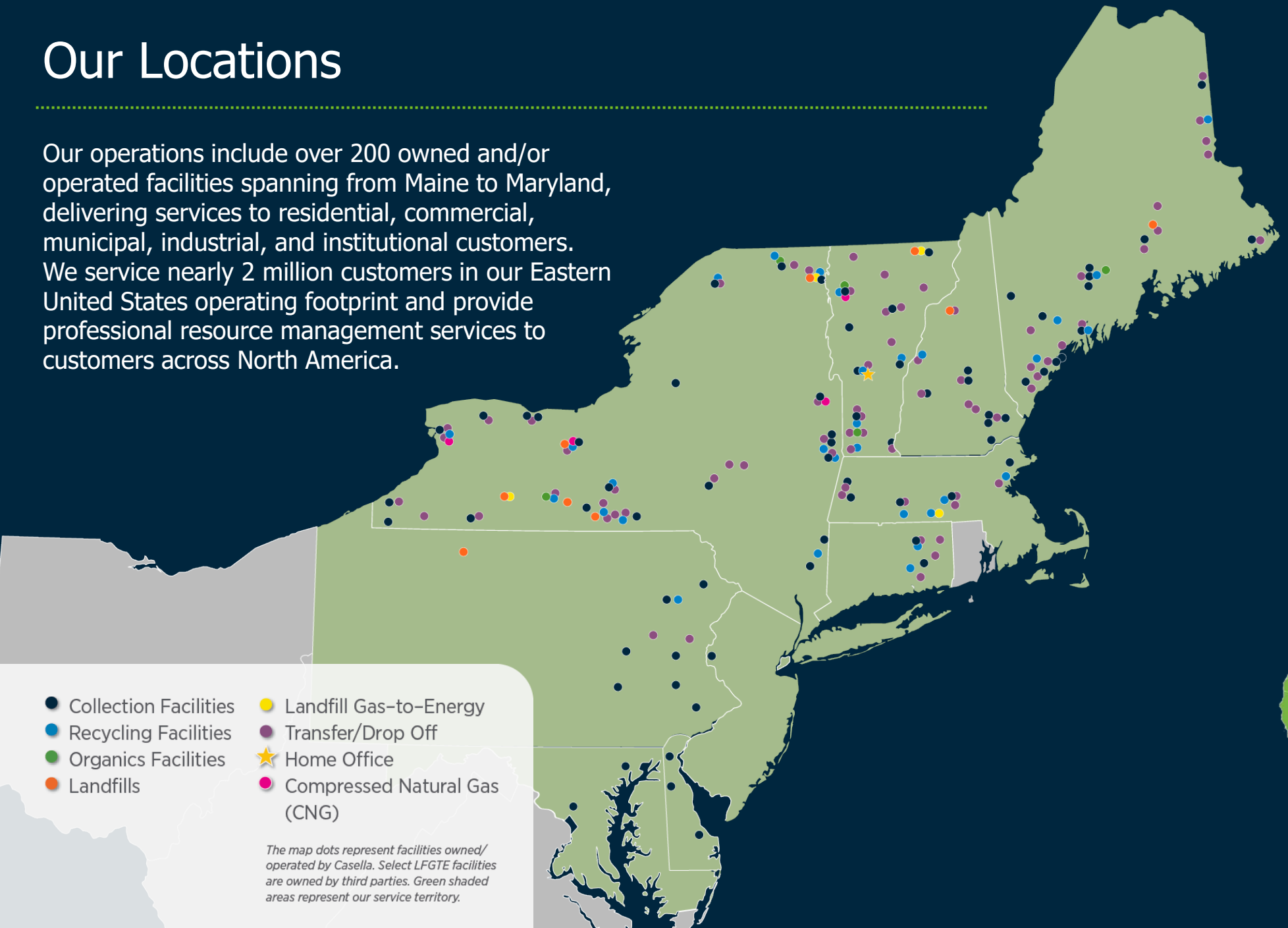

- Collection Facilities
- Recycling Facilities
- Organics Facilities
- Landfills
- Landfill Gas-to-Energy
- Transfer/Drop Off
- Home Office
- Compressed Natural Gas (CNG)

The map dots represent facilities owned/ operated by Casella. Select LFGTE facilities are owned by third parties. Green shaded areas represent our service territory.