





November 2016

In Memphis, we spend a hefty sum – about \$5.5 million every year – to send 222,000 tons of municipal waste to local landfills. Diverting recyclable materials from landfills can save us some money, though. And whatever we save can be reinvested into the community via my priorities of strengthening core city services. We are not alone in this country, as cities and businesses across the United States spend billions of dollars a year to send materials with value to landfill. Each year, these behaviors get more expensive – both economically and environmentally – for society at large and here in Memphis. Our solid waste “problem” will become an opportunity to double the amount of material Memphis recycles every year and create millions more in economic value for our city in the coming years.

In partnership with the Closed Loop Fund, Memphis is providing single stream recycling carts for nearly every household across our city this year to help make it easy for our residents to recycle. Yes, this was a significant upfront investment. While many of my peers and I understand the value to investing in this infrastructure, it can be difficult to allocate millions of dollars upfront given the critical challenges cities face. Accessing affordable capital from the Closed Loop Fund was critical to moving forward as quickly as we did on this priority in my first 100 days as mayor.

Old models won’t get us where we need to go. Investing in successful recycling programs takes commitment from municipal leaders and the community. It requires citizen engagement. And it requires partnership with the private sector. Together with creative public-private partnerships like the Closed Loop Fund, we intend to be an example for cities across the South and across America on how to invest to both save taxpayer dollars and build a more livable community.

Sincerely,

Jim Strickland

Mayor, City of Memphis

Municipalities and businesses in the United States spent over \$5 billion last year disposing of waste in landfills. Much of this waste, if recycled, would have had a market value of billions of dollars. This cost represents a significant drain on municipal and corporate budgets, while the lost revenue is a missed opportunity to invest in local communities or innovation. Recognizing the costs associated with the current system and stagnant recycling rates, leading brand owners and the world's largest retailer created Closed Loop Fund: a first-of-its-kind investment platform dedicated to shifting the flow of materials out of landfills and uncovering economic opportunities within a closed loop system.

The opportunity to achieve strong financial and environmental returns by investing in the expansion of recycling is real. Since the launch of Closed Loop Fund in 2014, 10 of the world's largest consumer goods companies have invested in the Fund. The Fund has received over 150 inquiries requesting more than \$350M in financing. In the past 12 months, the Fund has invested nearly \$19M in 9 projects alongside other financial institutions and government agencies for a total amount invested of \$70M.

Closed Loop Fund and our partners have much work to do to address new challenges and opportunities and achieve results in the years ahead. Thinking beyond our current Fund, we're asking ourselves: *How do we, as first-mover investors, attract capital - at a greater scale and in other forms - to close the loop?*

We are actively developing new ways to deploy the forms of capital needed to turn systemic problems in recycling into financial opportunities that attract more municipalities, companies, and brand owners to participate in the circular economy. On the occasion of our first impact report, we are pleased to reintroduce our work under a new umbrella: Closed Loop Partners.

Closed Loop Partners is an investment firm using venture capital and project finance, through the Closed Loop Fund, to commercialize and scale solutions for the circular economy. Closed Loop Foundation, an independent 501(c)3 founded by Ron Gonen with an inaugural grant provided by the Walmart Foundation, supports research and seeks to incubate business models that improve the long-term economic and environmental impacts of the circular economy. Both Closed Loop Partners and Closed Loop Foundation aim to close the loop and build healthy recycling systems for communities across the country.

The opportunity to achieve strong financial and environmental returns by investing in the expansion of recycling is real.



Ron Gonen

Ron Gonen



Rob Kaplan

Managing Directors, Closed Loop Partners

P. 05 **Building Momentum**

P. 08 **About Closed Loop Fund**

P. 12 **Insights from Closed Loop Fund’s First Two Years**

P. 16 **Closed Loop Fund Portfolio**

 P. 17 Case: Waste Commission of Scott County, Iowa

 P. 20 Case: Lakeshore Recycling System’s Heartland MRF

 P. 21 Case: QRS of Maryland

 P. 23 Projects in Detail

P. 26 **Closed Loop Foundation**

 P. 27 Case: Jonathan Rose Apartments, New York City

P. 29 **The Path to Scale**

P. 32 **Acknowledgments and Methodology**



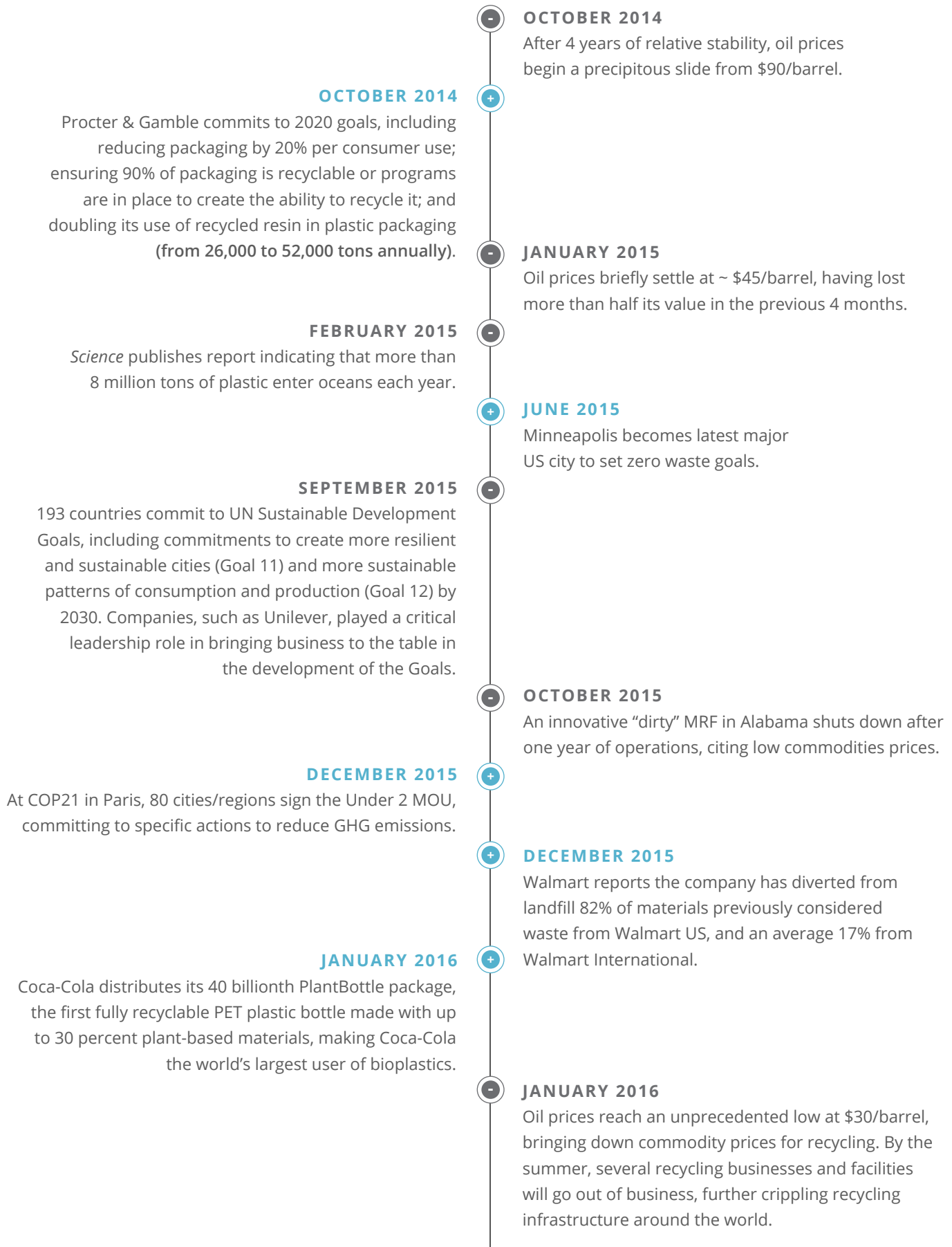
Building Momentum Amidst Challenging Market Conditions

Closed Loop Fund was born from the commitments and leadership of 10 brand owners and the world's largest retailer to solve systemic challenges in recycling infrastructure. The launch of the Fund coincides with a number of cities and governments beginning to recognize the need to build more sustainable and resilient communities for their citizens. In the past two years, we've seen momentum build as the private and public sectors, together, have become more aware of, and committed to, actions needed to combat climate change and manage our resources sustainability.

***“Closed Loop Fund
is helping impact
investors like Calvert
Foundation understand
the investable
opportunities within
the circular economy.”***

—JENNIFER PRYCE, PRESIDENT & CEO, CALVERT
SOCIAL INVESTMENT FOUNDATION

Unfortunately, ever louder calls for urgent action on environmental issues, such as ocean pollution and landfill capacity, are competing with significant challenges within the current market conditions. Unprecedented lows in recycled commodities prices have become an “innovation killer” in the near-term, while continued low interest rates reflect a lack of growth and investment opportunities. Our expectation is that the current commodity market trends will reverse or at least stabilize; and those business models that have weathered the storms will emerge stronger and more profitable than those who maintained the status quo. Our hope is that these best-in-class operators from the private and public sectors will have a positive influence on the rest of the system.



FEBRUARY 2016

Ellen MacArthur Foundation launches the Circular Economy (CE100) Network in US, bringing together major corporations and others to advance the concept.

JUNE 2016

Unilever announces that the company incorporated approximately 4,900 tons of post-consumer recycled materials into its plastic rigid packaging in 2015, and sets a goal to increase use of post-consumer recycled materials to 25% of its plastic packaging by 2025.

JUNE 2016

With 27 years remaining in any of the state's landfills, the Michigan Department of Environmental Quality puts forward recommended policy changes that would help the state reimagine recycling and composting policies and increase recycling rates to 30%.

AUGUST 2016

Johnson & Johnson commits to increasing recyclability of its consumer product packaging to 90+% in the United States by 2020.

SEPTEMBER 2016

Government, NGO and private leaders, including Dow Chemical Company, commit to more than \$1 Billion in investment (and \$5B in value) to address marine pollution and support ocean conservancy efforts at the Our Ocean Conference, hosted by US Secretary of State John Kerry.

MARCH 2016

The City of Houston, with nearly 800,000 households, stops curbside collection of glass, due to operators' costs. Other US cities consider removing glass from recycling programs due to costs associated with transporting, sorting, and processing.

JUNE 2016

Keurig Green Mountain introduces its first varieties of recyclable K-Cup® pods as a part of their commitment to converting 100% of all K-Cup® pods to a recyclable format by 2020.

JULY 2016

Nonprofit organization, The Recycling Partnership, supports its 100th community in improving local recycling programs.

SEPTEMBER 2016

Unilever reaches a new industry-leading achievement of sending zero non-hazardous waste to landfill across more than 600 sites in 70 countries, including factories, warehouses, distribution centers and offices.

SEPTEMBER 2016

PepsiCo's Recycling program surpasses 3,000 unique partnerships it has created or joined to help solve recycling in the US, with the Closed Loop Fund being one of the most ambitious.



About

Closed Loop Fund

Closed Loop Fund is a debt fund that aims to invest \$100M by 2025 in scaling recycling through municipal infrastructure, private companies, materials and packaging.

“Walmart and the Walmart Foundation were proud to help establish the Closed Loop Fund, and we are excited by the progress it has made. The Fund is a great example of how companies can come together to catalyze recycling in communities, bringing us all closer to a circular economy. We hope to see even more companies get involved and support the efforts of CLF.”

— KATHLEEN MCCLAUGHLIN, PRESIDENT, WALMART FOUNDATION AND SVP, WALMART SUSTAINABILITY

Investors include the following major retail and consumer brands:



We believe that lack of infrastructure is one of the greatest barriers to more recycling in the United States. In 2013, lack of recycling infrastructure caused US cities to collectively spend billions of dollars to landfill billions more worth of commodities that could have been recycled. Closed Loop Fund was created to address bottlenecks and barriers in recycling infrastructure and build confidence in recycling interventions among public and private investors – from **collection** and **sortation**, to end-market **processing**:



Collection Current infrastructure does not adequately capture recyclable packaging from the waste stream. Consumers need access to easy and convenient recycling programs, or they don't recycle. For example, a recent access study indicated that 47% of Americans still have to choose to participate in a curbside recycling program; 21% only have access via drop-off program. Bins or carts that are too small, confusing labeling and receptacle signage, distant drop-off sites, inefficient trucks, and lack of recycling education all contribute to the collection problem. Therefore, the Fund invests in programs that increase access in:

Recycling “deserts,” where citizens' access to single-stream curbside recycling is limited or sub-standard, particularly in small towns and rural communities

Recycling for **low-income, multi-family housing**, where recycling rates are typically well below local and national averages overall



Sortation With the rise of single-stream (all-in-one bin) recycling, sortation of mixed materials has become increasingly important to ensure that distinct materials can be re-sold on the commodities markets. At the same time, an ever-evolving mix of materials has made sortation increasingly difficult for MRF operators to operate efficiently or profitably in a down commodities market or make long-term investments in the latest equipment and technology. Therefore, the Fund invests in:

Creating or improving **materials recovery facilities** (MRFs) with limited ability to accept broader range of post-consumer materials

Innovations and profitable business models for **sorting technologies** to address “problem” materials, such as glass, small format, flexible plastic, and films



Processing For some materials, especially glass and mixed plastics, the demand pull from end-market manufacturers has been limited. As a result, processing infrastructure is under-developed and low- or no-value materials that could be recycled are sent to landfill. The Fund invests in:

Infrastructure for **glass processing**

End-market development for low-/no-value materials such as mixed plastics and glass





Leveraging the momentum around the circular economy, Closed Loop Fund will focus on driving value throughout the recycling system, even in current market conditions, and generating the greatest environmental benefits. If we are successful, we expect to see:

Impact on society, from increased diversion from landfill, decreased GHG emissions, job creation, and savings to taxpayers

Improvements in local and regional infrastructure, by increasing value and alignment throughout the system

Financial return to CLF and the borrower, in the form of revenues, profits, savings, and operational efficiencies

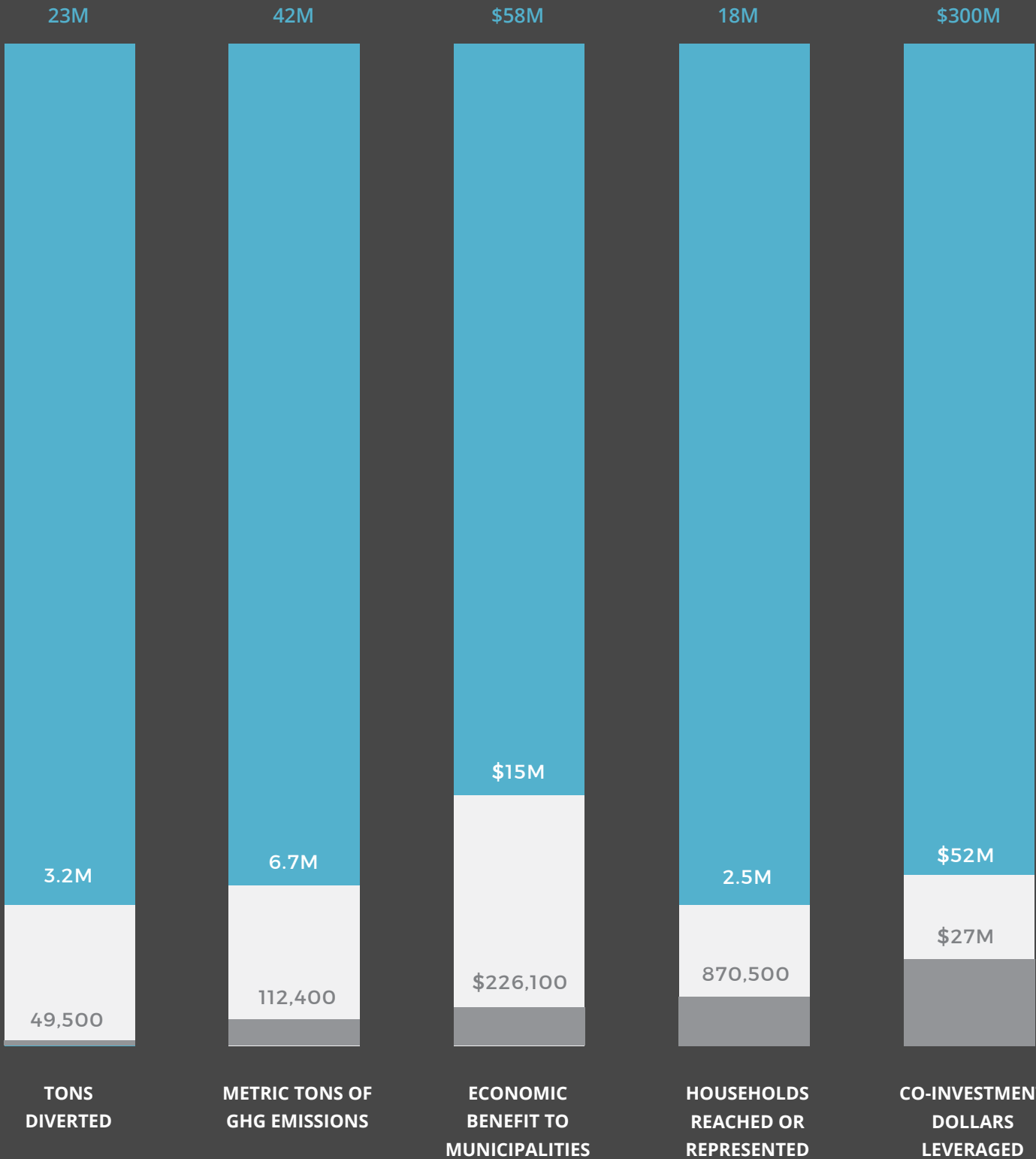
Leverage in the form of public and private co-investment, and replication beyond CLF's portfolio

Key Indicators

1. IMPACT	2. SYSTEM-LEVEL OUTCOMES	3. PORTFOLIO OUTPUTS	4. PROJECT ECONOMICS
<ul style="list-style-type: none">• GHG emissions avoided• Waste diverted from landfill• Economic benefit to municipalities	<ul style="list-style-type: none">• More investment, access to affordable capital• More projects replicated across portfolio• Stronger regional infrastructure for recycling• Improved efficiencies across the system• More municipalities shifting to pro-recycling policy frameworks• Savings to taxpayers• Improved pricing/PCR, demand from CPGs	<p>ALL</p> <ul style="list-style-type: none">• Capital efficiency• Loan repayment• ROI <p>COLLECTION</p> <ul style="list-style-type: none">• More households with access to single-stream curbside service• Participation rates• Tonnage collected, diverted• Campaign efficiency <p>SORTATION AND PROCESSING</p> <ul style="list-style-type: none">• Throughput, capacity, and utilization• Tonnage recovered, processed as feedstock• Contamination, residue rates• Secured contracts• Demand, value of materials	<ul style="list-style-type: none">• Cost savings• Operational efficiency• Revenue• Profitability

Key Metrics, as of
August 30, 2016

■ ACTUAL TO DATE ■ PROJECTED IMPACT OF PORTFOLIO BY 2025 ■ OVERALL FUND TARGET



What We're Learning: Insights from Closed Loop Fund's First Two Years



- 1. Recycling makes economic sense for cities.** Based on data from our first “live” investments, we are seeing municipalities and private companies – especially those with integrated models – generate savings, revenues, and profit as a result of expanding or upgrading recycling infrastructure. For example, in less than one year, Council Bluffs has reported nearly \$250K (equal to the total amount borrowed from CLF for equipment purchase) in additional revenues and savings.
- 2. Success requires leadership, alignment, focus on performance, and diversified resources.** Declining/unstable commodities prices expose the challenges in the current system, as operators adapt to ever-evolving single-stream materials with outdated equipment, operational inefficiencies, and misaligned contracts. Many excellent “how to”s are emerging from the operators we are working with, such as:

Public leadership and commitment to recycling for the economic and environmental good of the community, such as in Memphis, where Mayor Jim Strickland made access to recycling a priority for the city within his first 100 days in office.

Aligned RFPs and contracts among parties throughout the material chain, such as pay-for-success incentives, transparency around individual commodities, and revenue sharing or rebates. In the Twin Cities, the nonprofit social enterprise Eureka Recycling recently won 5-year contracts with the cities of St. Paul (renewed) and Minneapolis (new), in part, because Eureka differentiates itself in areas that are well-aligned to both cities’ concerns for the system and community as a whole. Eureka offers greater transparency in pricing, quality, and destination to downstream markets of individual commodities. The organization also focuses on the social impacts of their employees, providing full-time employment with benefits at living wages.

Attention to performance that includes “fit for feedstock” equipment solutions, vertically integrated business models, and data systems to monitor progress. The Waste Commission of Scott County, for example, has designed their new program based on a robust study of residents’ behavior, municipal solid waste composition, the latest single-stream MRF equipment, and regional commodities markets over time.

Project financing often requires multiple investors – from municipal bonds and traditional bank loans to public and private grants, and equity – in addition to impact investment from CLF (and, increasingly, others). The average project size of CLF’s portfolio is nearly \$8M, with 4:1 co-investment ratio.

3. We need to accelerate market development and innovation.

Low end-market values prevent both the public and private sectors from building long-term infrastructure. Alternative end-markets, particularly for polypropylene, polyethylene, flexible films, and glass (fines), are emerging, but are still not fully established; **market development needs more attention** to build a pipeline of opportunities and customers for upstream operators. QRS, for example, has been building a new customer base for post-consumer PP and PE flake with its PRF model.

While scale is key to improving the overall system, **more innovation is also needed** – in technologies (such as flexible film projects receiving Closed Loop Foundation grants), consumer-oriented solutions (such as our pilot projects around convenient access for multi-family housing and hard-to-recycle textiles and e-waste), and business models (such as innovations we are seeing in food waste). We also see opportunity for a closed loop approach to product design and innovations that would shift practices of brand owners and manufacturers at the very beginning of the life cycle. A number of CLF's limited partners have started down this path.

“We saw the problems created by glass in single stream recycling and identified an opportunity to create a viable business model here in Colorado, with potential for replication in other parts of the country. Without a loan from Closed Loop Fund, we could not have pursued this opportunity.”

—JOHN LAIR, CEO, MOMENTUM RECYCLING



CAPTION

These insights from our portfolio and from our own experience as fund managers are leading us to an evolution of our work.

“Closed Loop Fund and The Recycling Partnership each play unique roles in building a better recycling system and we value Closed Loop Fund’s ability to provide financing for infrastructure expansions and industry innovation. In Memphis, our two organizations are playing complementary roles to increase recycling access, support community development, and protect the environment.”

– KEEFE HARRISON, EXECUTIVE DIRECTOR,
THE RECYCLING PARTNERSHIP

1. We are creating a shared definition of success

We believe we can’t solve the problems of one company, city or material unless we address the system as a whole. In our pursuit of collective impact, Closed Loop Fund has successfully brought together key partners who share a common problem – The recycling system isn’t working – and are coordinating significant resources to solve it. CLF may be uniquely positioned to move partners toward a shared definition of success, but it can be challenging to facilitate the necessary level of collaboration, focus, and commitment to action among so many diverse interests. Defining success requires a mindset shift, so that our partners and stakeholders seek outcomes for the system as a whole, beyond the individual success of a single loan, company, facility, or municipality. As a backbone, the Fund has learned that we must constantly balance the tensions between the two.

2. There are no silver bullets, and it’s not just about financing

For municipalities and private recycling companies to succeed, the system around them must also change. This is why we invest across the value chain, and not just in more carts, trucks, or MRFs. Furthermore, in order to maximize the catalytic potential of our capital, other kinds of resources are needed. In many of our investments, we have learned that our capital works better when we work closely with others to ensure critical aspects, such as project management, consumer education and downstream markets, are addressed. Operators are not always used to this level of engagement, and it takes trust and patience. For example, in Memphis, we are working collaboratively with the City, ReCommunity, The Recycling Partnership, and other partners in the community and recycling industry.

3. More and different capital is needed

As investors, we see a massive gap between capital needed in the waste and recycling industry and capital available. Capital markets have yet to seize on this opportunity. We know we cannot meet demand on our own; the balance of available capital must change if we are to influence the system at scale. We also see the need for other forms of capital in addition to debt financing. Emerging technologies and business models may show tremendous potential, but are at too early a stage for debt. This year, we created Closed Loop Ventures to invest in commercializing early stage solutions. We need philanthropy, venture capital, and other impact investors to play a role as well. In the next few months, Closed Loop Foundation will be surveying the industry and investors to understand how the trends may be changing.

COUNCIL BLUFFS | IA

EUREKA | MN

LAKESHORE | IL

MEMPHIS | TN

MOMENTUM | CO

PORTAGE COUNTY | OH

QRS | MD

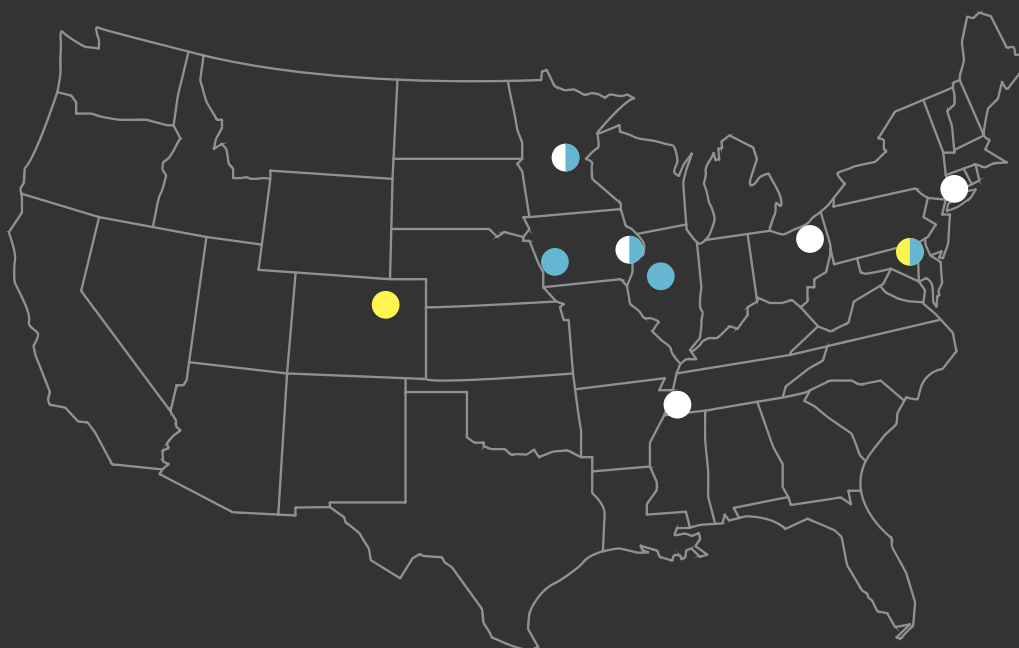
SCOTT COUNTY | IA

WATERBURY | CT

■ COLLECTION

■ SORTATION

■ PROCESSING



“Closed Loop Fund was a useful sounding board for us as we put together the business model for the Heartland facility. Their capital helped make the opportunity possible for Lakeshore.”

— ALAN HANDLEY, CEO, LAKESHORE RECYCLING SYSTEMS



REPLICABILITY

● WITH THE RIGHT OPERATOR

As more municipalities consider privatizing recycling operations, Scott County is a model for how public management of integrated services can succeed. What to look for:

Committed and aligned public

officials: Bettendorf and Davenport city leaders were instrumental in guiding the Commission's transition to single stream and supporting the bond measure for this project.

Vertically integrated operations:

The Commission manages collections and sortation, as well as markets its commodities throughout the area.

Solutions for a wide range of

accepted materials: The Commission operates programs for household hazardous waste, e-waste, appliances, and yard waste, in addition to the recycling center and landfill, which means cross-contamination has greater chance of being handled appropriately.

Sufficient volumes in the

County with additional regional opportunities: With the upgraded MRF, the Commission is well positioned to support the recycling needs of not only all residents of the County, but also those of the greater Quad Cities region and western Illinois.

Scott County Goes All In

When the Scott Area Recycling Center's aging recycling equipment needed to be replaced, Waste Commission of Scott County and its intergovernmental partners pursued the change from dual to single stream recycling. The change allows for the preservation of space at the Commission's Scott Area Landfill, saves natural resources, and allows for safer and more efficient collection by member cities' public works departments. The Commission has invested in larger capacity carts for curbside recycling, a redesigned single-stream MRF, and an extensive education campaign to increase diversion and participation in recycling.



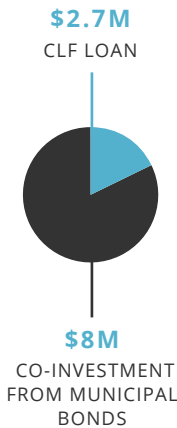
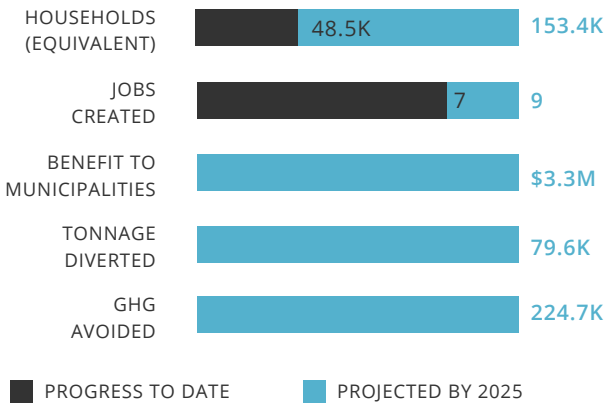
BORROWER

WASTE COMMISSION OF
SCOTT COUNTY

PORTFOLIO AREAS

COLLECTION, SORTATION

Since the program started on August 1st, the recycling facility has collected 75 percent more recyclables than in the same period in 2015.



BEFORE

Prior to this investment, the Commission's curbside program included a mix of dual stream carts and bins; its Recycling Center processed 27 tons of materials per day, charging a \$15/ton flat tip fee. The Commission-managed landfill charges \$26/ton.

AFTER

Today, the Commission has upgraded to 95-gallon carts for single stream curbside collection at 48,500 residences; the Recycling Center now has capacity to manage 10 tons/hour, or 15,000 tons/year. The MRF will share revenue opportunities on sales of commodities with haulers (an even 50/50 split on estimated \$100/ton), less an \$80 processing fee which is expected to cover costs of operations. Each ton diverted will also bring savings on landfill tip fees avoided. The recycling program will be a net positive contributor to the Commission's overall budget, projected at 18% of revenues, 12% of expenses in the next fiscal year.



“Closed Loop Fund’s loan was a godsend. (The cities of) Davenport and Bettendorf, and the Waste Commission (of Scott County) had been talking about moving to single stream for ten years. As budgets were tightening, it wouldn’t have been possible to do this project without Closed Loop Fund’s help.”

– TODD JONES, DEPUTY DIRECTOR OF PUBLIC WORKS, CITY OF DAVENPORT, IOWA

Best Practice in Education

Campaign Effectiveness

Commission Director Kathy Morris understood that a successful rollout required focused attention and resources to engage residents and stakeholders. In preparation, the Commission developed a robust plan:

Use Data to Understand Residents

A public perception survey conducted in 2013 highlighted potential gaps in the Commission’s education efforts. For example, residents, particularly young residents (18-34), want recycling information at the time of recycling, and not through print publications—hence the use of full-color, pictorial in-mold labels (IMLs) on the lids of all new recycling carts.

Commit Resources

The existing “culture of recycling” and environmental stewardship has been a core asset on which the Commission was able to build – even still, the Commission has invested heavily in public education, using best practice tools from The Recycling Partnership and a multimedia, digitally-focused communications strategy supported by a local PR firm, Bawden & Lareau. The “Go All In” campaign and related education activities cost approximately \$3.50 per household.

Create Ambassadors

To get ready for roll out and implementation, Commission staff went on a learning tour to nearby MRFs and received extensive training from CP Group. Commissioners and other community partners were briefed on all aspects of the project well in advance of the public roll out and campaign. Volunteers were recruited to share their stories and promote the new program at community events. By proactively engaging stakeholders, a relatively small team of Commission staff created an army of ambassadors to support the broader campaign.

Follow Through

To carry forward the message post-launch and rollout, the Commission is committed to ongoing education and resident engagement through the year. In the first year post-launch, the County has retained PR support to address targeted follow-up messaging to residents. It will also conduct a follow-up survey to gauge whether resident perceptions and behaviors changed after the “Go All In” campaign.

Best Practice Checklist

✓ Appropriate investment has been made

- Municipality has allocated an appropriate total budget / # of households reached, including dedicated resource for ongoing resident engagement and education
- Comprehensive communications plan is in place for launch and ongoing education
- Effort leverages value-added expertise and community partners (e.g., TRP, local KAB affiliate, Municipal leadership, community leaders, media organizations)

✓ Residents are aware of the program

- Campaign materials are clear; activities have a broad reach (% of households)
- Residents indicate they are aware, understand program (e.g., through survey or other mechanism)
- Questions/concerns are responded to quickly and satisfactorily

✓ Residents are changing behavior

- # of households participating is increasing
- Tonnage collected is increasing

✓ Contamination is low; trouble spots are identified and being addressed

- % residue is maintained/declining
- # of households and instances per household/neighborhood are maintained or declining



REPLICABILITY

● WITH THE RIGHT OPERATOR

Lakeshore is a best-in-class operator with a highly replicable, yet still relatively atypical model. What to look for:

Established success with pure play

model: Lakeshore’s model is predicated on not having a landfill, and is therefore not “conflicted” over inexpensive disposal costs. The company has successfully managed other MRFs in the area prior to the Heartland facility.

Integrated operations: Lakeshore operates residential and commercial hauling services, MRFs, C&D recycling, and an organics program, creating leverage across businesses and greater opportunity for diversion

Significant market share: Lakeshore controls nearly one-third of the region’s material, ensuring sufficient volumes

Operator agnostic, or “Plays Well with Others”: Lakeshore attributes its success, in part, to its ability to maintain excellent working relationships with local private operators and municipalities alike

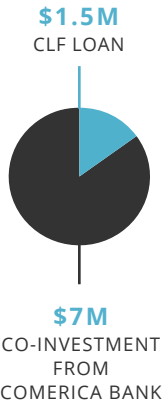
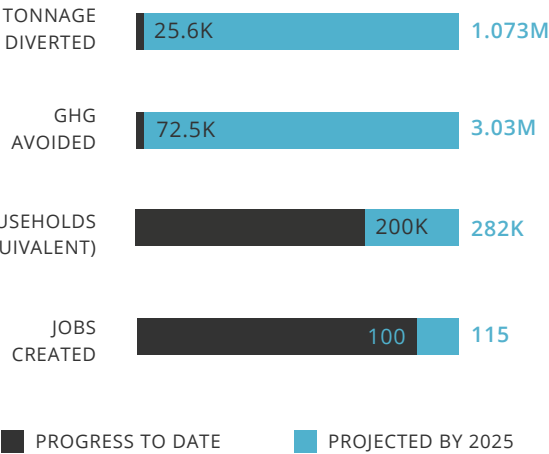
Recycling capacity in Chicagoland gets significant boost

An increase in residential single stream material leads to a bottleneck in MRF capacity in the Chicagoland region and a significant expense for Lakeshore. An upgrade of an existing MRF increases throughput from 20 tons/day to 20 tons/hour, with increased revenue opportunities and savings for Lakeshore.



BORROWER
LAKESHORE RECYCLING SYSTEMS

PORTFOLIO AREAS
SORTATION



BEFORE

The cost of recycling material collected (20+% of COGS) was weighing down Lakeshore’s profitability. Tip fees at other MRFs were approaching \$50/ton; disposal at landfill cost \$20/ton in tip fees.

AFTER

Since opening, the Heartland MRF has been generating nearly \$100/ton in revenues from commodity sales. Operating costs/ton (including disposal of residue) are approximately \$50/ton, making Lakeshore’s net operating profit at Heartland \$50/ton. In addition, the broader operations benefit from transportation and tip fee savings. Expanding the Heartland facility required total project investment of \$8.5M, of which CLF provided \$1.5M at a below-market interest rate, and Comerica Bank provided additional financing and MRF business model expertise.



REPLICABILITY

● WITH THE RIGHT OPERATOR

PRF infrastructure is needed across the country, with few viable options for recycling #3-7 plastics, even in major markets. Regions west of the Rocky Mountains (Pacific Northwest, West Coast, Southwest) present new opportunities for QRS’s model. What to look for:

Prior success with plastics recovery:

QRS had developed a deep understanding of the PRF model from previous facilities.

Support from state or municipal

entities: For example, California has set aggressive statewide goals to increase recycling and reduce waste that lend urgency and support to infrastructure projects.

Established marketing partner:

Just as Canusa-Hershman has been a critical partner for QRS Maryland on the East Coast, a similar broker with established relationships would be vital to building a supplier and customer base in the region. In this region, a PRF must be able to compete with export markets for feedstock.

Access to sufficient volume in the

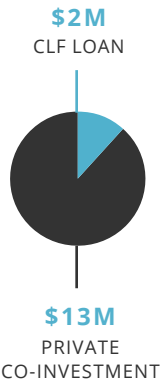
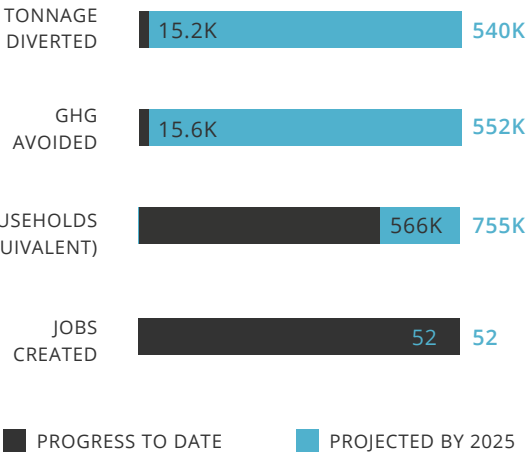
region: With transportation cost being high relative to the cost of mixed bales, an operation would benefit from proximity to high volume MRFs.

There is insufficient processing capacity for #3-7 plastics east of the Mississippi. As a result, much of this material is being landfilled or exported. Building on prior operating and marketing experience, QRS and Canusa-Hershman have partnered to create a state-of-the-art PRF (plastics recovery facility) with capacity to handle more than 50,000 tons/year.



BORROWER
QRS OF MARYLAND
(CANUSA-HERSHMAN AND QRS)

PORTFOLIO AREAS
SORTATION, PROCESSING



BEFORE

Prior to investment, QRS had built PRFs in Louisville and Atlanta. With each facility, the team developed a better understanding of the PRF model. At the time, demand for PCR was on the rise as a price-competitive alternative to virgin resin (at \$100/barrel for oil).

AFTER

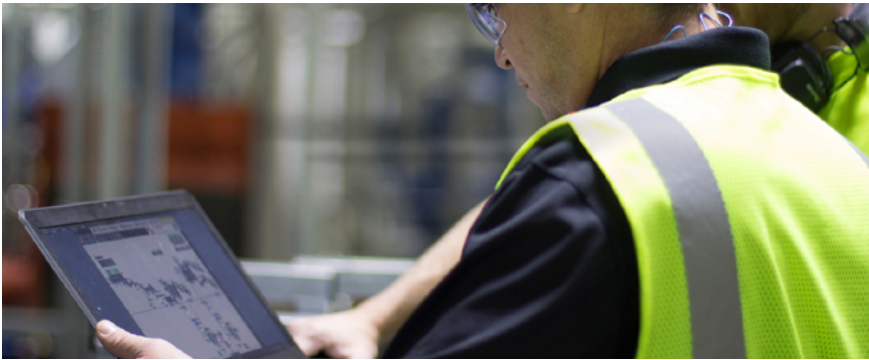
Although oil (and virgin resin) prices have declined significantly in the past 2 years, PCR continues to be a commodity of interest. With QRS’s Maryland facility, #3-7 mixed bales from single-stream MRFs are transformed into a high-quality, post-consumer PP and PE flake that can be used by a variety of plastics manufacturers, within margins of 25-35 cents/lb in the current market. An investment of \$2M from CLF and other private sources supported the \$15M project.



The Contamination Challenge

A viable business model in sorting and processing #3-7 plastics is emerging. One of the most significant challenges to the business model is contamination. Bales of mixed plastics often contain a fairly high level of contamination. Within this residue, certain materials can create costly impacts on operations. A recent analysis of QRS’s residue indicated the challenges and economic impacts of the current material in a #3-7 plastics mixed bale.

Material Type Found in a Mixed #3-7 Bale	Example Product	Resin Code	% of Total Residue	Process Cost/lb.	Disposal Cost/lb.	Margin/lb. if recovered *
PET COLOR CONTAINERS	OPAQUE DETERGENT POD CONTAINERS, AMBER SODA BOTTLES	1	11.00%	\$ 0.07	\$ 0.03	\$ 0.04
BLACK PE AND PP TRAYS AND CONTAINERS	(VARIOUS)	2, 5	9.40%	\$ 0.07	\$ 0.03	\$ 0.31
POLYSTYRENE CUPS AND CONTAINERS	SINGLE-USE BEVERAGE CUPS, YOGURT CONTAINERS	6	3.30%	\$ 0.07	\$ 0.03	\$ 0.12



As the above analysis illustrates, feedstocks that are technically recyclable, yet have no end-market of value, become a drag on the QRS business model. Thus, the “long exotic trip to the landfill” creates negative impacts, both environmental and economic.

Council Bluffs Recycling Center's aging infrastructure and low tonnage was preventing it from efficiently handling materials. A new baler installed at the existing facility is creating new revenue opportunities to receive and resell commodities that would otherwise go to landfill, and save on transportation costs.

\$250,000

CLF LOAN

\$450,000

TOTAL PROJECT

REPLICABILITY● **HIGHLY REPLICABLE***What to look for:*

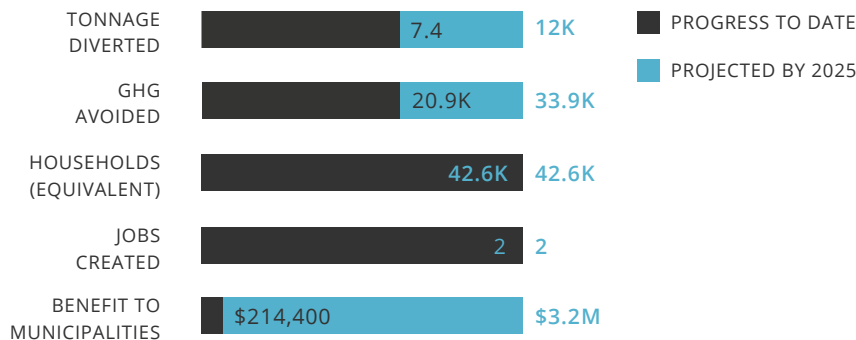
- Smaller communities (<100HH) with transfer station or small MRF
- Ability to see substantial lift in transportation savings and sales revenue to offset capital required
- Access to additional volumes in the region / can act as "hub" with many spokes

IA**BORROWER**

COUNCIL BLUFFS RECYCLING CENTER

PORTFOLIO AREAS

SORTATION



The city of Memphis' local recycling infrastructure was under-utilized when, in early 2016, the new mayor of Memphis committed to expanding residential single stream curbside service across the city. With an investment in carts for more than 100,000 households, the city of Memphis expects to increase the volume of recycling collected by more than 17,000 tons/year.

\$3,250,000

CLF LOAN

\$7,500,000

TOTAL PROJECT

REPLICABILITY● **HIGHLY REPLICABLE***What to look for:*

- Mid-sized community (>100K HH)
- Universal access to curbside recycling, but sub-standard (bins v. carts)
- Ability to realize substantial lift from savings (e.g., operational efficiency or landfill tip fees avoided) and/or revenues (e.g., commodities sales)
- Access to, or relationship w/, MRF with capacity
- Incentive to recycle (e.g., high tip fees, landfill closures, political commitment)

TN**BORROWER**

CITY OF MEMPHIS SOLID WASTE MANAGEMENT

PORTFOLIO AREAS

COLLECTION

PROJECTED IMPACT BY 2025**164,000**

TONNAGE DIVERTED

463,000

GHG AVOIDED

147,000

HOUSEHOLDS (EQUIVALENT)

17

JOBS CREATED

\$4,200,000 (AT LEAST)

ECONOMIC BENEFIT TO MUNICIPALITIES

Eureka Recycling

St. Paul has recently committed to moving from bins to carts, a program change that will make single-stream recycling more convenient and provide additional capacity to all residents including all multifamily households ; Minneapolis made a zero waste commitment in 2015 and recently entered into a five-year processing agreement with Eureka. In order to service the new contracts, Twin Cities recycling partner Eureka Recycling (a private nonprofit) needed to expand its collections capabilities and also invest in their MRF to improve material quality while maintaining efficiencies at higher volumes. The investment will allow Eureka to collect and sort more than 75,000 tons/year while continuing their focus on highest and best use and material quality.

<div><div>MN</div><div><div>BORROWER</div><div>EUREKA RECYCLING</div></div></div>	<div><div>PORTFOLIO AREAS</div><div>COLLECTION, SORTATION</div></div>
<div>PROJECTED IMPACT BY 2025</div> <div><div><div>717,600</div><div>TONNAGE DIVERTED</div></div><div><div>2,027,000</div><div>GHG AVOIDED</div></div><div><div>279,000</div><div>HOUSEHOLDS (EQUIVALENT)</div></div><div><div>10</div><div>JOBS CREATED</div></div></div>	

\$2,200,000

CLF LOAN

\$9,900,000

TOTAL PROJECT

REPLICABILITY**WITH THE RIGHT OPERATOR***What to look for:*

- Established success w/pure play model
- Integrated operations
- Significant market share



The city of Waterbury has a diversion rate of just 6%, with few residents setting out 18-gallon bins for recycling collection. An investment in new carts for expanded single-stream recycling collection will increase volumes by 6,000 tons/year, and increase diversion rate to 30%.

<div><div>CT</div><div><div>BORROWER</div><div>CITY OF WATERBURY BUREAU OF REFUSE</div></div></div>	<div><div>PORTFOLIO AREAS</div><div>COLLECTION</div></div>	
<div>PROJECTED IMPACT BY 2025</div>		
<div><div>51,000</div><div>TONNAGE DIVERTED</div></div>	<div><div>142,800</div><div>GHG AVOIDED</div></div>	<div><div>32,000</div><div>HOUSEHOLDS (EQUIVALENT)</div></div>

\$3,800,000 (AT LEAST)

ECONOMIC BENEFIT TO MUNICIPALITIES

\$2,520,000

CLF LOAN

\$3,675,000

TOTAL PROJECT

REPLICABILITY**HIGHLY REPLICABLE***What to look for:*

- Mid-sized community (>100K HH)
- Universal access to curbside recycling, but sub-standard (bins v. carts)
- Ability to realize substantial lift from savings (e.g., operational efficiency or landfill tip fees avoided) and/or revenues (e.g., commodities sales)
- Access to, or relationship w/, MRF with capacity
- Incentive to recycle (e.g., high tip fees, landfill closures, political commitment)

Momentum Recycling

12,000 tons of glass is sent to landfill in Colorado every month; just 23% of recyclables are diverted in the state. Building on the success of its collection and processing operations in Utah, Momentum Recycling is building glass processing infrastructure that will handle close to 60,000 tons of glass/year for the Rockies through partnerships with local haulers and national glass manufacturers.

<div><div>co</div><div>BORROWER</div><div>MOMENTUM RECYCLING</div></div>	<div>PORTFOLIO AREAS</div> <div>PROCESSING</div>				
<div>PROJECTED IMPACT BY 2025</div> <table><tr><td><div>552,000</div><div>TONNAGE DIVERTED</div></td><td><div>153,000</div><div>GHG AVOIDED</div></td><td><div>769,000</div><div>HOUSEHOLDS (EQUIVALENT)</div></td><td><div>15</div><div>JOBS CREATED</div></td></tr></table>		<div>552,000</div> <div>TONNAGE DIVERTED</div>	<div>153,000</div> <div>GHG AVOIDED</div>	<div>769,000</div> <div>HOUSEHOLDS (EQUIVALENT)</div>	<div>15</div> <div>JOBS CREATED</div>
<div>552,000</div> <div>TONNAGE DIVERTED</div>	<div>153,000</div> <div>GHG AVOIDED</div>	<div>769,000</div> <div>HOUSEHOLDS (EQUIVALENT)</div>	<div>15</div> <div>JOBS CREATED</div>		

\$1,500,000
CLF LOAN

\$12,000,000
TOTAL PROJECT

REPLICABILITY

● WITH THE RIGHT OPERATOR

What to look for:

- Prior success with single material
- Proximity to significant source volumes (> 500K HH) and customer(s)
- Support from local government

Portage County Solid Waste Management District

As the state of Ohio transitions to single stream recycling, Portage County's municipal recycling service needed to address an aging transfer station and trucks, as well as sub-standard 18-gallon bins used for residential curbside collections. Instead of scaling back recycling collections services, the County increased its operational efficiency by investing in new trucks and 25,000 95- and 65-gallon recycling carts . The new single stream program is generating more tonnage from participating communities, as well as new interest from nearby communities to convert from drop off to curbside recycling.

<div><div>OH</div></div> <div>BORROWER</div> <div>PORTAGE COUNTY SOLID WASTE MANAGEMENT DISTRICT</div>	<div>PORTFOLIO AREAS</div> <div>COLLECTION</div>
<div><div><div>TONNAGE DIVERTED</div><div><div><div></div><div>1.2K</div></div><div>36.6K</div></div></div><div><div>GHG AVOIDED</div><div><div><div></div><div>36.6K</div></div><div>103.3K</div></div></div><div><div>HOUSEHOLDS (EQUIVALENT)</div><div><div><div></div><div>25K</div></div><div>62.2K</div></div></div><div><div>BENEFIT TO MUNICIPALITIES</div><div><div><div></div><div>\$12K</div></div><div>\$350K</div></div></div></div> <div><div><div></div>PROGRESS TO DATE</div><div><div></div>PROJECTED BY 2025</div></div>	

\$3,000,000
CLF LOAN

\$3,000,000
TOTAL PROJECT

REPLICABILITY

● HIGHLY REPLICABLE

What to look for:

- Mid-sized community (>100K HH)
- Municipal curbside recycling program, but sub-standard (bins v. carts)
- Ability to realize substantial lift from savings (e.g., operational efficiency or landfill tip fees avoided) and/or revenues (e.g., commodities sales)
- Access to, or relationship w/, MRF with capacity



About Closed Loop Foundation

Solutions to big systemic challenges in recycling are not always addressable through debt financing. Support from philanthropic capital is also needed if we are going to succeed. Since its creation in 2013, Closed Loop Foundation has continued to research and seek to incubate innovative business models that build long-term roadmaps toward a more circular economy. With its philanthropic partners, Closed Loop Foundation has invested in knowledge building and early-stage grants to address many key problem areas facing recycling systems today and will continue to focus in these areas in the year ahead.



Food Waste

The United States spends \$218 Bn a year growing, processing, transporting, and disposing of food that is never eaten. Closed Loop Foundation joined [ReFED](#) – Rethink Food Waste Through Economics and Data – to create a data-driven roadmap for businesses, government, funders, and nonprofits to collectively reduce food waste at scale. In July 2016, Closed Loop Foundation announced a Food Waste Solutions Search to provide seed capital to companies and nonprofits that have the potential to unlock food waste solutions at scale. Grantees will be in late 2016.



Flexible Film

While there are environmental advantages to lighter-weight packaging, there are currently no scalable solutions for recycling flexible films. With support from SC Johnson, Closed Loop Foundation commissioned a national study on the challenges and innovations in recycling flexible films, due out in late 2016. In September, the Foundation announced grants to Zzyzx and Drought Diet, two end-market innovations with potential to divert millions of pounds of film annually.



Electronics

Closed Loop Foundation supported [research](#) by the National Center for Electronics Recycling and The Sustainability Consortium on the evolving landscape of post-consumer electronics waste in the United States. Released in May 2016, the report details the scale and nature of the challenges in electronic waste management, and provides guidance to stakeholders. To enable a systems solution, the report recommends three actions: more convenient and systematic collection; innovation; and collaboration and integration throughout the supply chain.



Low-income Multifamily Recycling

In major metropolitan areas, 29% of multifamily housing lack access to curbside recycling programs. Affordable multifamily housing units typically have even lower levels of access to recycling, lower participation rates, and higher contamination rates. With support from the Goldman Sachs Foundation, Closed Loop Foundation is seeking more effective solutions for this significant and growing segment of households. Our first pilot program was developed with the New York City Housing Authority, the city's Department of Sanitation, Jonathan Rose Apartments, and community partners and runs through November 2016.



Glass

For years, mixed glass from single stream MRFs has been a challenge for glass processors. In 2016, the Foundation co-hosted a convening of cities, glass recyclers, and industry leaders to discuss the future of glass in MRFs. This year, the Closed Loop Foundation, with HEINEKEN USA, is researching viable solutions that could improve the quality of single-stream mixed glass in MRFs. Our findings will be shared in late 2016.



REPLICABILITY

● HIGHLY REPLICABLE

Closed Loop Foundation is now launching a second pilot in Newark, NJ at another Jonathan Rose property serving low-income senior residents. Nationally, more than 6M families live in multifamily housing; approximately 1.6M live in the largest 24 cities. What to look for:

Onsite staff and residents who can be ambassadors and champions for the program

Aligned financial incentives (e.g., revenue opportunities from commodity sales, operational savings) between property manager/owner, hauler, and municipality

Increasing Recycling at Jonathan Rose Apartments

For New York City, the challenges of implementing effective recycling in low-income multifamily housing are weighed against the cost of not recycling. Waste disposal is expensive in NYC (\$100/ton tip fees); haulers miss revenues from commodity sales (such as \$10/ton for mixed paper/OCC).

Closed Loop Foundation, with Goldman Sachs Foundation, the New York City Housing Authority, the city's Department of Sanitation, and Jonathan Rose Apartments, is testing effective models for residential recycling in multifamily affordable housing. The goal is to increase recycling with a financially sustainable solution. Our initial pilot ran from March through November, 2016.



PROJECT

MULTIFAMILY AFFORDABLE HOUSING RECYCLING PILOT

PORTFOLIO AREAS

COLLECTION



RESOURCES

Program design and expertise provided by Closed Loop Foundation, in cooperation with Jonathan Rose Apartments and New York City Housing Authority; grant from the Goldman Sachs Foundation

BEFORE

Prior to the pilot, a baseline analysis revealed that each of 200 apartments, on average, recycled just 2.5 lbs a week. The diversion rate was 9% (average weekly diversion over 11 weeks, March-May 2016).

AFTER

Early results indicate that recycling rates can increase with the right intervention. In the first 2 months of the pilot, we observed a modest lift in volumes of recycling. By November 2016, our goal is to see an increase in the recycling rate to 15%.



Lessons Learned

*We have learned
4 key lessons from our initial
pilot that we will carry forward in
future programs.*

1.

Build relationships and buy-in with staff and residents.

In consultation with building residents and staff, Closed Loop Foundation proposed a valet service, using washable, 3-gallon canvas bags to collect recyclables (one for paper, one for aluminum, plastic, and glass containers). Since launch, Closed Loop Foundation staff has also continued to play a hands-on role throughout the pilot.

2.

Conduct continuous education – in writing and in person.

Site managers and custodial staff were trained on how to implement the program, record participation, and weigh material on a biweekly basis. Residents received letters communicating the new program one week prior to, and during, the bag distribution. Communications were written in multiple languages to reach residents. Common Grounds Composting, a community nonprofit, conducts weekly site visits to collect data and help with resident and staff education.

3.

Provide easy data collection tools.

Custodians are collecting, weighing, and bagging resident recycling for curbside collection twice a week. Paper tally sheets are used to record participation and volume; program staff collect tally sheets from custodians on a regular basis.

4.

A culture of recycling should be backed by incentives.

Changing behaviors with a new recycling program takes time. Incentives – for property owners, managers, custodians, and residents – can help reinforce and expedite the change. Aligning the program design to financial savings and/or revenue is key to sustaining a successful recycling program.

Closed Loop Fund was created to address the costs of the country's waste problem and the opportunity to unlock value across the recycling system. The Fund was proposed as an innovative investment approach unlike traditional lending or philanthropy, linking waste, recycling and manufacturing infrastructure. Ever since, we have been building our case, and looking for opportunities to learn and improve on what we're doing.

As we enter our third year, we are just getting started. We are increasingly confident in the potential to solve the problem at scale. Our strategy and investments are paying back, driving tonnage from landfill to recycling streams, and attracting co-investment from multiple entities. We are seeing powerful business cases that can be instructive to the industry and to other investors. We also have a long way to go to reach the scale and ambition of the Fund.

Based on what we've learned, we are already starting to adapt our approach for Closed Loop Fund and will continue to do so in the year ahead. First and foremost, we will continue to execute on the Closed Loop Fund model, continuously developing our pipeline, deploying funds, and managing the current portfolio. Furthermore, there are other critical steps we must take in order to get to scale:

- 1. Replicate recycling models that we know work** by seeking out more best-in-class operators that will feed our pipeline, and by sharing proof points with investors and other industry stakeholders. For example, we have announced an [RFP](#) to finance comprehensive infrastructure models that serve recycling deserts. We are also leveraging additional capital through co-investment partnerships with leading impact investors, such as a pilot investment with RSF Social Finance (lead lender to Eureka Recycling) and Calvert Foundation.
- 2. Help more operators understand how to implement similar projects and take action** by using what we've learned. With the publication of our first impact report, we are introducing a set of tools, such as the education campaign effectiveness checklist (see p. 19), that we hope others will use to create successful projects themselves.
- 3. Use our expertise, networks, and other forms of capital to create change.** We are actively working to advance end-markets for post-consumer polyethylene flake and other low- or no-value materials by connecting and convening stakeholders across value chains. We have also begun to invest in commercializing early-stage innovations through Closed Loop Ventures, which will help create new markets, build circularity, and, when scaled, further strengthen the system. Our first investments address: on-demand residential collections routing for textiles and e-waste, apparel refurbishment, and a home food waste-to-energy system.

Having tested the Closed Loop Fund model, the opportunity for Closed Loop Partners to drive environmental and financial returns seems boundless. We are excited by the prospect of applying our approach with partners to new areas, such as food waste or emerging markets, in ways that further strengthen the core fund and our ability to drive impact throughout recycling systems.

This is a critical moment for closing the loop. More brand owners, more operators, more municipalities – more consumers and citizens too – need to step up. If we are going to solve this problem, we all must do more to advance a more circular economy in the coming years. We hope you will join us, and look forward to revisiting our progress with you in 2017.

DISCLAIMER

Notice to Recipients

This document has been prepared to provide investors in Closed Loop Fund, LP (the “Fund”) and other stakeholders with certain information about the social impact of the Fund’s investments and the impact of certain other entities founded by Ron Gonen, Rob Kaplan, and/or certain limited partners in the Fund, and describing the Fund’s use of funds and the progress made toward achieving the purposes of the Fund. This document may not be used or reproduced, in whole or in part, for any other purpose.

No offer to purchase or sell securities. The information contained in this report has been prepared solely for informational purposes and does not constitute an offer to sell or a solicitation of an offer to buy any security and may not be relied upon in connection with the purchase or sale of any security.

Hypothetical illustrations and pro forma information. The statements in this report that contain terms such as “may,” “will,” “should,” “expect,” “anticipate,” “target,” “project,” “estimate,” “intend,” “continue” or “believe” or the negatives thereof or other variations thereon or comparable terminology are forward-looking statements and not historical facts. Any market analysis presented in this report represents the subjective views of Closed Loop GP, LLC, the general partner of the Fund (the “General Partner”). Actual events are difficult to predict, are beyond the control of the General Partner and its affiliates and may differ from those assumed. There can be no assurance that estimated returns or projections will be realized, that forward-looking statements will materialize or that actual returns or results will not be materially lower than those presented. All forward-looking statements included are based on information available on the date hereof, and neither the General Partner nor its affiliates assumes any duty to update any forward-looking statement.

No representations or warranties. No representation or warranty, express or implied, is made as to the accuracy or completeness of the estimates, projections and other information contained in this report, and nothing contained in this report shall be relied upon as a promise or representation whether as to the past or future performance. All performance information included herein is based on information reported to the Fund by municipalities and other borrowers and has not been independently verified by the Fund or the General Partner.

NOTES ON METHODOLOGY

Descriptions and analysis of specific projects have been synthesized from reports and interviews with borrowers and their project partners, and is provided with their permission.

Relevant milestones have been collected by the Closed Loop Fund from publicly available articles, reports, and announcements, or from the organizations themselves. Limited partners were invited to contribute milestones or commitments related to package recycling and circular economy.

We believe globally held standards of impact are important measures of our success, and apply definitions developed by the UN (SDGs) and GIIN (IRIS) to our reporting.

“Economic benefit to municipalities” is calculated for CLF municipal loans, where “economic benefit” is the sum of landfill tip fees avoided (tons x \$/ton) + revenue from commodity sales (tons x \$/ton, by material when possible). Projections are based on averages from our current portfolio (tip fees of \$25/ton and revenues of \$5/ton).

“Households reached or represented” refers to the number of households served by CLF projects. We use 2 different methodologies, depending on the type of project. (1) For Collections projects, this number is the actual number of carts or households that benefit from new or expanded service, as provided by the borrower or by using most recent US Census data. (2) For Sortation and Processing projects, the number of households is an amount equivalent to material diverted by a project divided by the amount of that same material found in a typical household’s recycling cart (780 lbs. of mixed recycling per year). For example, if a project sorts or processes 50,000 tons of mixed recyclables annually, we use 128,000 households (50,000 tons x 2000 lbs/ton ÷ 780 = 128,205). In a typical residential single stream mix, we assume 20% is glass, 11% is plastic.

At the time of printing, CLF’s potential investment in Waterbury is pending and in the final stages of closing. We are including projected impact of the City’s project in this report based on current confidence in proceedings, and reserve the right to revise at a later date.

PHOTO CAPTIONS

Cover – Top left to bottom right: Recycling carts, Scott County residents, line staff at Lakeshore MRF, product from QRS of MD | p. 05 – Momentum Recycling facility in Denver, CO | p. 08 – CEOs gather to announce their commitment to create Closed Loop Fund at 2014 Walmart Sustainability Summit. | p. 11 – Scott County resident with new cart | p. 13 – Memphis skyline, line staff at Lakeshore MRF | p. 14 – QRS’s post-consumer plastic flake | p. 17, 18 – Images featured in Scott County’s education campaign | p. 20 – Employees of Lakeshore Recycling | p. 21, 22 – Employees of QRS | p. 24 – A truck from Eureka’s fleet | p. 27 – CLF and partners with assets from Jonathan Rose Apartments pilot | All photos courtesy of CLF staff or borrowers unless otherwise noted.

ACKNOWLEDGEMENTS

Our limited partners have exhibited tremendous leadership in coming together to support a new model for systems change. They gave great consideration to an ask that is not made every day – not philanthropy, procurement, or marketing. It took commitments at the C-level to ensure that the Closed Loop Fund model could become what it is today.

The municipalities, operators and entrepreneurs that we lend to have shown the vision and execution to do the hard work of systems change every day. Most are rethinking old business models and leading their peers in the industry. The Closed Loop Fund is fortunate to have the opportunity to support and learn from these individuals.

Our legal partners at Dentons have exhibited incredible patience and collaboration in structuring both our unique fund and our innovative investments.

CLF acknowledges the excellent service of our auditing firm, CohnReznick.

We would also like to acknowledge the support and service provided by our banking partners, Silicon Valley Bank and First Republic Bank.

We also work with a great team of professionals, who bring expertise and passion to building this innovative platform.



Contact

All inquiries regarding this report can be directed to Bridget Croke bridget@closedloopfund.com
www.closedloopfund.com