The Circular Economy:
How Local Governments Can Close the Resource Loop

Corinne Rico, Senior Consultant
Gershman, Brickner & Bratton, Inc.

Illinois Counties Solid Waste Management Association
26th Annual Conference
November 1, 2018

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Gershman, Brickner & Bratton, Inc.
Solid Waste Management Consulting

- 38+ years national consultant
- Focused exclusively on solid waste issues
- Works in partnership with clients to develop innovative, cost-effective approaches that achieve measurable results
- Thinks outside of the box
- Tells it like it is – independent objective advisor
- Significant consulting resources
- Client success stories

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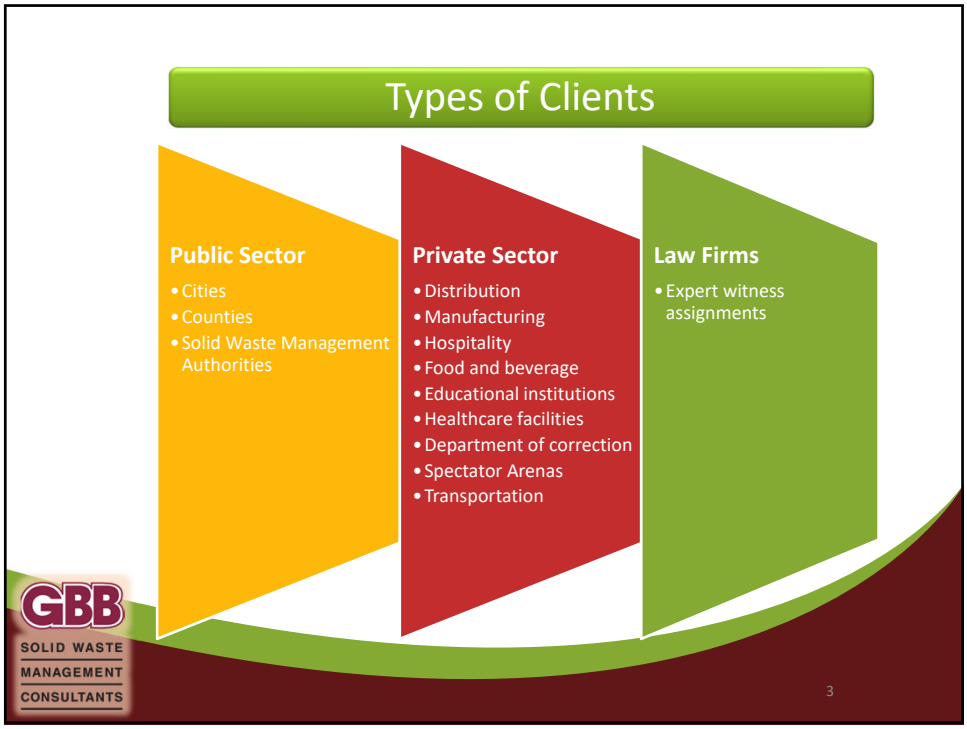
Types of Clients
Public Sector
• Cities
• Counties
• Solid Waste Management Authorities
Private Sector
• Distribution
• Manufacturing
• Hospitality
• Food and beverage
• Educational institutions
• Healthcare facilities
• Department of correction
• Spectator Arenas
• Transportation
Law Firms
• Expert witness assignments
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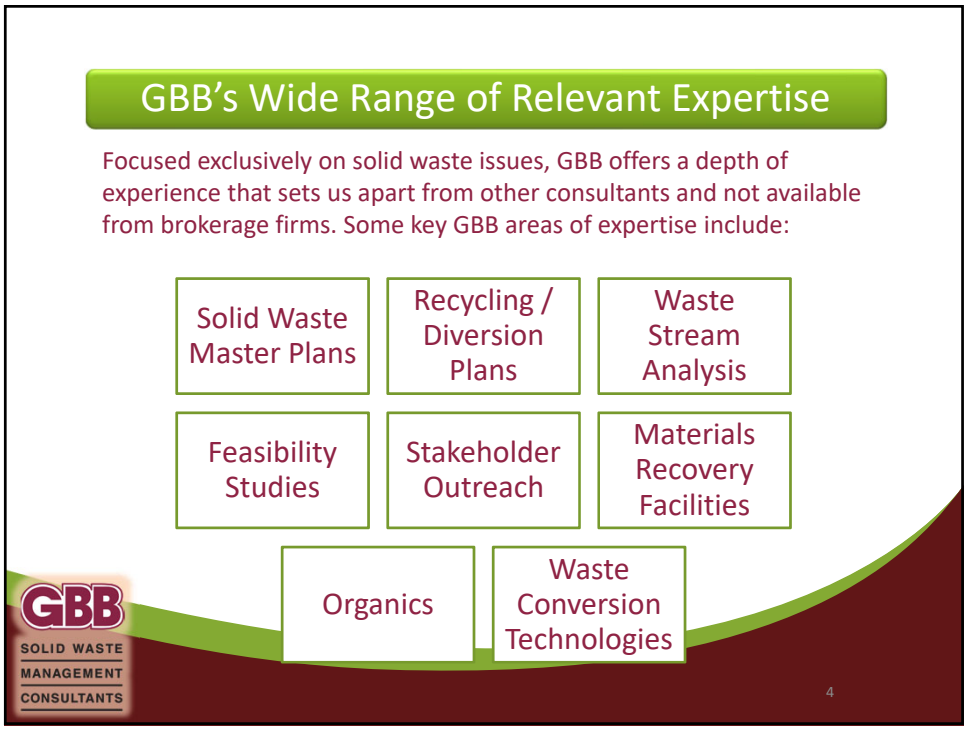
GBB's Wide Range of Relevant Expertise
Focused exclusively on solid waste issues, GBB offers a depth of experience that sets us apart from other consultants and not available from brokerage firms. Some key GBB areas of expertise include:
Solid Waste Master Plans
Recycling / Diversion Plans
Waste Stream Analysis
Feasibility Studies
Stakeholder Outreach
Materials Recovery Facilities
Organics
Waste Conversion Technologies
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The Circular Economy:

A ZERO WASTE EVOLUTION

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Current Model: The Linear Economy

Image courtesy of the European Commission[1]

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New Model: The Circular Economy

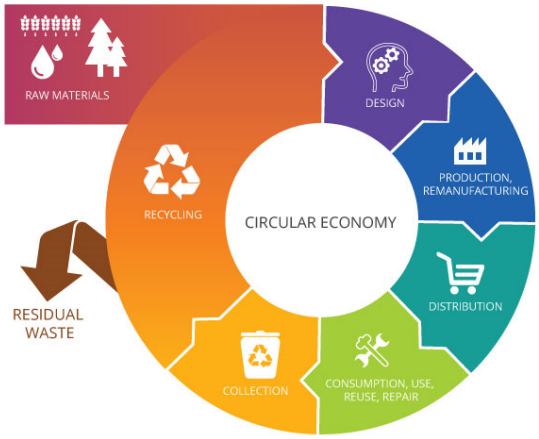

Image courtesy of the European Parliament[2]

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A Circular Economy:

- Is a systemic shift from our current linear model that builds long-term resilience
- Restores and rebuilds economic, environmental and social systems
- Aims to decouple material and resource consumption from economic growth
- Seeks to keep resources within a flow of reuse, regeneration, and recycling

Adapted from the Ellen MacArthur Foundation[3]

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Three principle foundations:

- Design out waste and pollution
  - Eliminate negative externalities of economic activity
- Keep products and materials in use
  - The Re-Service Economy
- Regenerate natural systems
  - Favors renewable resources and limitation of finite resource use

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Adapted from the Ellen MacArthur Foundation[3]

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The Circular Economy Transition

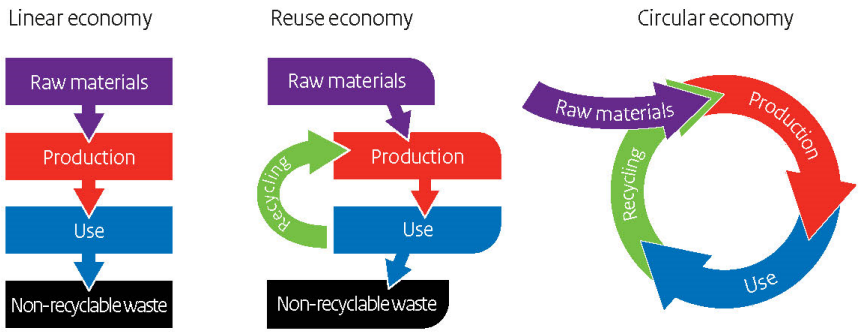

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Image courtesy of the Government of the Netherlands[4]

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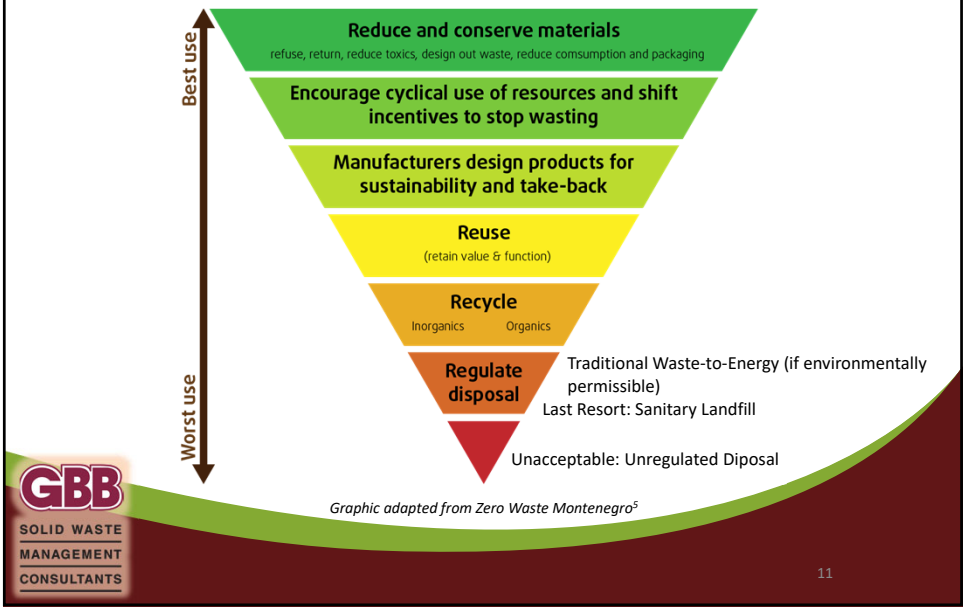
The Zero Waste Hierarchy



Graphic adapted from Zero Waste Montenegro[5]

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The CE: Designing out Waste

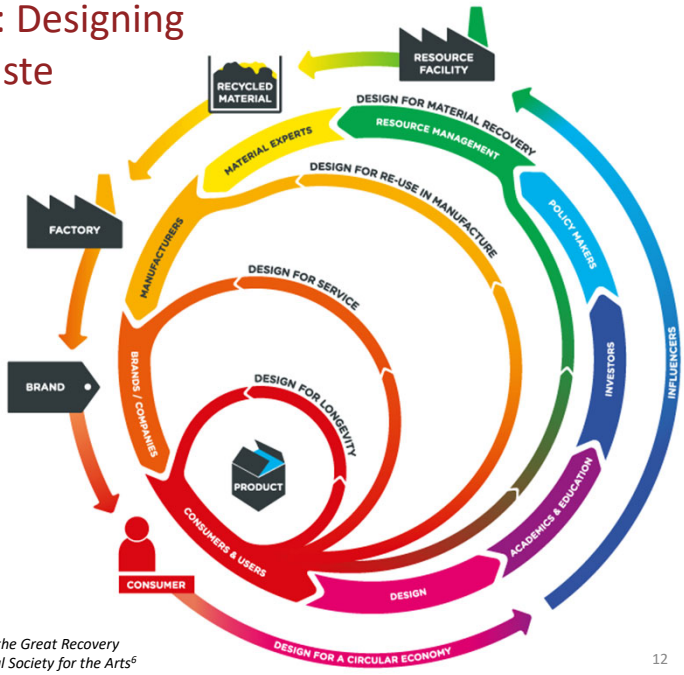

Image courtesy of the Great Recovery Project by the Royal Society for the Arts[6]

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The big idea of the circular economy:

WASTE = "FOOD"

(for the production cycle)

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The Circular Economy:

THE ENVIRONMENTAL & ECONOMIC BENEFITS

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What's the big deal?

Environmental Benefits:

- Preserves resources
- Minimizes waste
- Curbs greenhouse gas emissions
- Increases resilience to climate change and resource scarcity

Economic Benefits:

- Creates jobs
- Adds economic value
- Better connects materials processors with manufacturers
- Increases local economic resilience

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A 2030 Projection for the U.S.

2008 Baseline (34% waste diversion):	**Current Trajectory** (41% waste diversion by 2030):	**Green Economy** (75% waste diversion by 2030):
• 861,000 jobs	• 1.23 mil jobs	• 2.35 mil jobs
• 501 million tons GHG emissions annually	• 572 million tons GHG emissions annually	• 405 million tons GHG emissions annually
	• *Increase* of 71 million tons over 2008 levels, or nearly 15% *more*	• *Decrease* of 104 million tons over 2008 levels, or nearly 21% *less*

Source: https://www.nrdc.org/sites/default/files/glo_11111401a_0.pdf

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A 2030 Projection for the EU

- **32% Reduction** of materials and resources consumption, or **€600 billion annual savings** ($680 bil)
- **48% Reduction** of CO_2 emissions
- **25% Reduction** of spending on externalities (mitigation of emissions, pollution, congestion), or **€500 billion annual savings** ($565 bil)
- **20% Reduction** of spending on food, mobility, and housing, or **€700 billion annual savings** ($792 bil)
- **€1.8 trillion annual benefits/savings** ($2.04 tril)
- **€3,000** average household **income increase** ($3,395)

Source: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/EllenMacArthurFoundation_Growth-Within_July15.pdf[8,9]

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The Importance for Local Governments

- Half of world population lives in cities
- 70% expected to live in cities by 2050
- Cities generate **85% of global GDP**, consuming **half of the world's resources** to do so
- City **resource use expected to double by 2050**
- In 2012, global generation of **1.3 billion tons solid waste** cost **$205 billion to manage**
- In 2016, **2.01 billion tons solid waste** generated
- Global waste generation expected to rise by 70% to **3.4 billion tons annually in 2050**

Sources: http://www3.weforum.org/docs/White_paper_Circular_Economy_in_Cities_report_2018.pdf; https://openknowledge.worldbank.org/bitstream/handle/10986/30317/9781464813290.pdf?sequence=7&isAllowed=y[10,11]

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The Circular Economy:

EXAMPLES IN PRACTICE

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China: A Circular Economy Pioneer

- Idea promulgated by academics in 1998
- A way to treat root causes of environmental degradation and pollution, not symptoms
- Launched a series of Eco-Industrial Park projects around the country
- In 2008, became the first country in the world to adopt the circular economy as a development strategy

See endnotes 12,13,14

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Copenhagen, Denmark

Amager Bakke, Photography by Daniel Rasmussen[18]

- Today, one of the most sustainable cities in the world, but 15 years ago was going through population decline
- Inspired the creation of a livable city strategy, using the circular economy as a path
- Copenhagen landfills 2% of waste, incinerates 38%, and recycles 59%

See endnotes 15,16,17

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Copenhagen, Denmark

Image courtesy of the City of Copenhagen[19]

- Diversion programs recently expanded to include food waste composting
- Copenhagen working with 30 other Danish cities to improve regional materials recovery and recycling

See endnotes 15,16,17

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Vancouver, British Columbia, Canada

Image courtesy of the City of Vancouver[23]

- In 2011, established a goal for Vancouver to become the greenest city in the world
- Developed the Greenest City Action Plan and Zero Waste 2040 Plan
- Current recycling and composting rate of 62%

See endnotes 20,21,22

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Vancouver, British Columbia, Canada

CITY OF VANCOUVER | GREENEST CITY

Image courtesy of the City of Vancouver[25]

- Green Demolition Bylaw mandates residential demolition waste diversion
- Single-Use Item Reduction Strategy phases out use and minimizes waste from disposables between 2019 and 2025

See endnotes 24,25

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Austin, Texas

- 2005 commitment to the United Nations Urban Environmental Accords
- Austin pledged to reduce per capita waste generation by 20% by 2012, and reach zero waste by 2040, fully restorative economy by 2050
- Shift in focus towards resource recovery

AUSTIN RESOURCE RECOVERY
A CITY OF AUSTIN SERVICE

See endnotes 26,27,28; Image courtesy of the City of Austin[29]

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Austin, Texas

Image courtesy of the City of Austin[30]

- Universal Recycling Ordinance
- Austin Materials Marketplace

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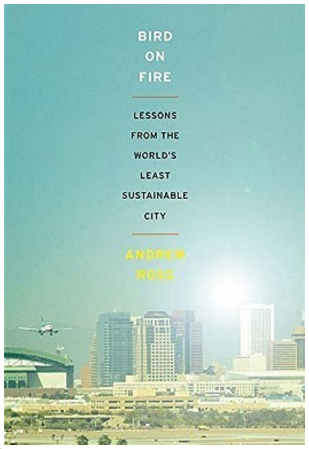
Phoenix, Arizona



- Andrew Ross's 2011 book *Bird on Fire: Lessons from the World's Least Sustainable City*
- In 2013, launched campaign *Reimagine Phoenix: Transforming Trash Into Resources*
- After waste characterization study, launched a residential yard waste composting program

See endnotes 31,32,33,34

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Phoenix, Arizona

Image courtesy of the City of Phoenix[35]

- In 2016, adopted zero waste 2050 goal
- Partnership with Arizona State University to launch the Resource Innovation and Solutions Network and plan and implement the Resource Innovation Campus

See endnotes 32,33,34

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The Circular Economy:
MAKING IT HAPPEN IN YOUR COMMUNITY
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Recommendations for Incentivizing a Local Circular Economy
• Develop a plan
• Engage all stakeholders
• Educate
• Perform a waste characterization study
• Streamline existing regulations & standards
• Identify & incentivize the waste hierarchy
• Practice sustainable (and local) purchasing
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Recommendations for Incentivizing a Local Circular Economy

- Regulate private sector production and consumption
- Create and leverage partnerships
- Invest in infrastructure and technology
- Use funding creatively
- Pilot new programs

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Kent County: ReImagine Trash

Image courtesy of Kent County[36]

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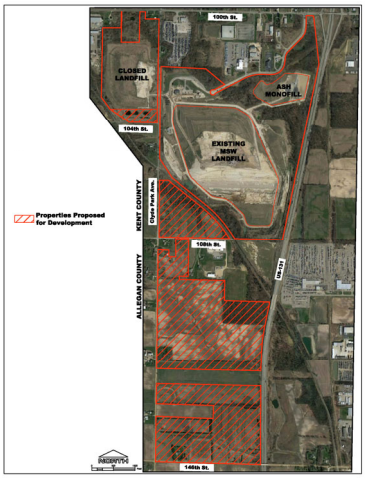
Kent County: Sustainable Business Park



- 250 acre site
- Original option to use part of site for future landfill with possible expansion
- Site will now be developed as a Sustainable Business Park (SBP)
- Goal to support a regional circular economy through private sector development and partnerships

Image courtesy of Kent County

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Kent County: SBP Master Plan

- Stakeholder Meetings and Facility Tours
- Existing Condition Analysis (Local A&E on team)
- Waste Stream and Market Analysis
- Funding Sources
- Technology Overview & Analysis
- Put out RFI and Evaluate Results of the RFI
- Conceptual Site Development Plan
- Conclusions & Recommendations

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GRAND RAPIDS NEWS

23 respond to Kent County's call for 'sustainable' garbage proposals

Posted Apr 30, 12:30 PM

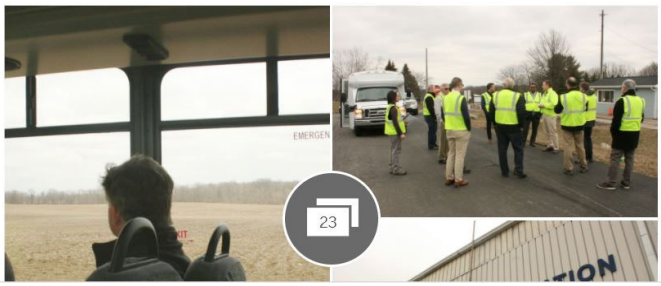

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Image courtesy of MLive[37]

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Kent County: ReImagine Trash

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Image courtesy of Kent County[36]

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Thank you!

For more information:

Corinne Rico
Senior Consultant
Gershman, Brickner & Bratton, Inc.
703.573.5800
crico@gbbinc.com

www.gbbinc.com

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