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COG Recycling Committee
Metropolitan Washington Council of Governments

December 4, 2014

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Covanta: The World's Leading Energy From Waste (EfW) Company

- Operate **45** modern EfW facilities in North America, China and Europe.
- Annual capacity to convert **20 million** tons of waste into more than **9 million** MWhrs — enough clean energy to power **1 million** homes.
- Annually recycle over **440,000 tons** of metal - the equivalent amount of steel that would be used to build **5 Golden Gate Bridges.**
- More than **3,500** professionals employed in North America.

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Material Recovery Facility (MRF) trends in U.S.

- Facilities are trending larger. Small facilities are giving way to regional projects.
- MRFs are accepting a broader range of materials
- Single stream curbside collection programs and supported by single stream MRFs are becoming the dominant form of recycling.
  - Replacing dual stream programs
- More facilities than in past are relying on mechanized and optical type sorting equipment.
  - More automation, fewer pickers
- Slow trend towards mixed waste processing MRF's – limited marketplace

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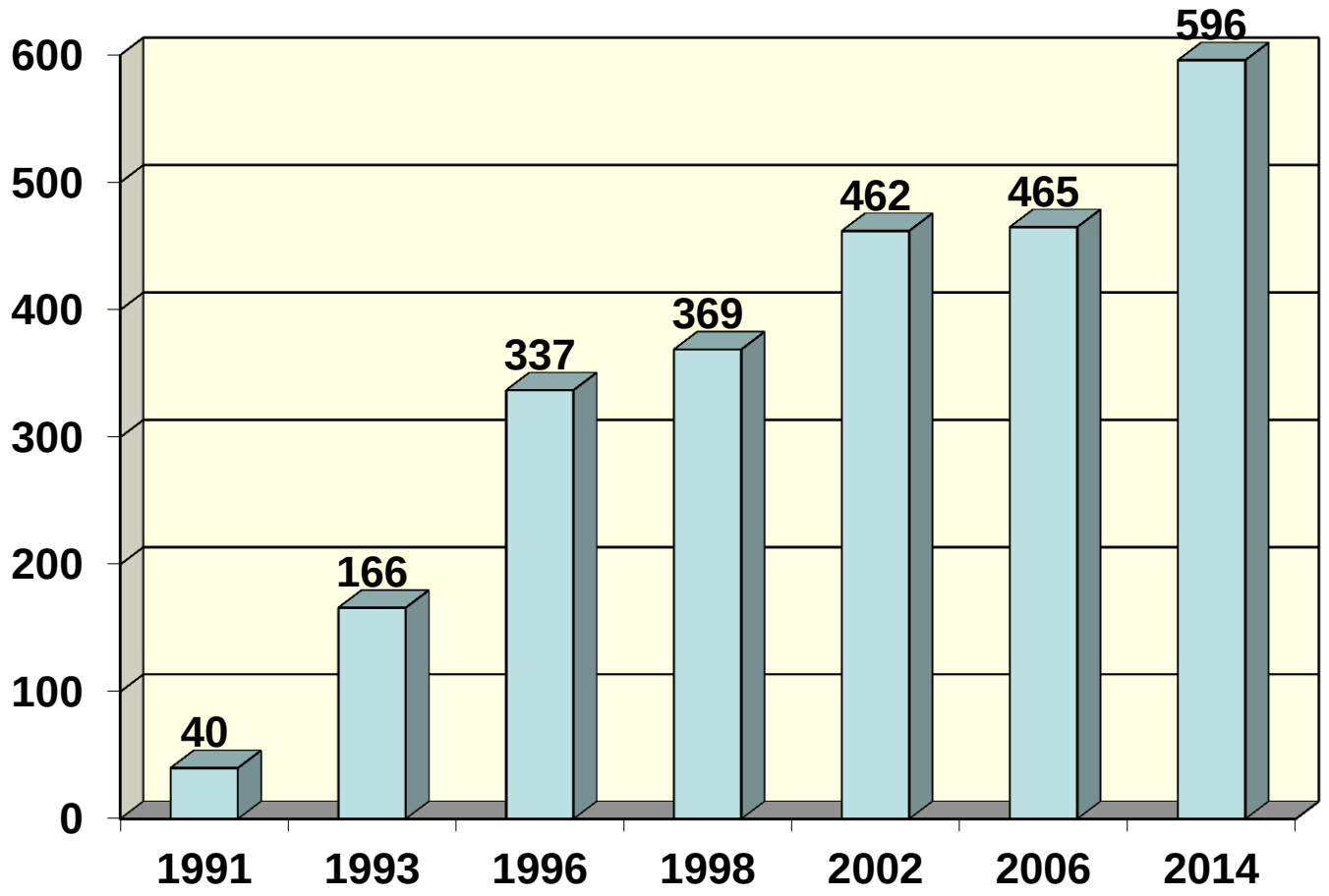
Operating MRFs in the United States



Source: Materials Recycling and Processing in the United States: Yearbook and Directory.

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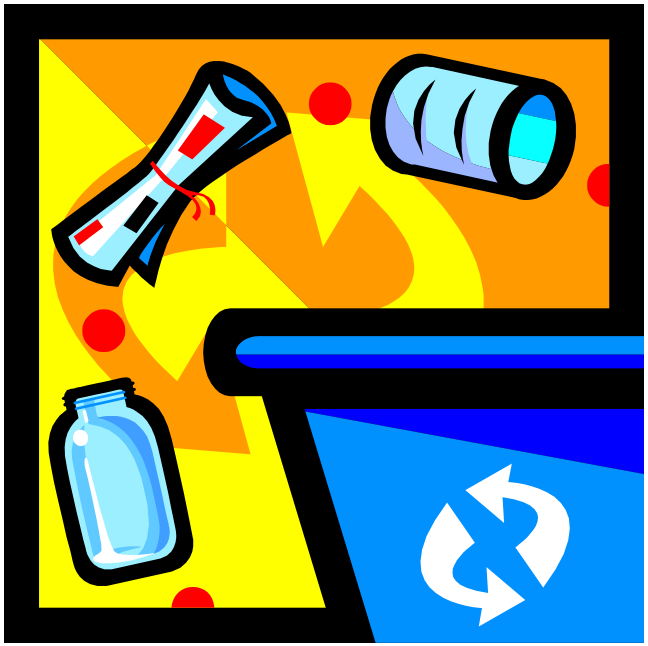
Increase in Single Stream Curbside Collection Systems

- Single stream collection is where residents place all their recyclables in a single container, which is picked up at the curb for processing. Residents do not have to separate their recyclables into different containers (dual stream).
- Single stream approach reduces collection costs and tends to increase participation and tonnages of recyclables at the MRF
- Single stream implementation key driver in the development of larger MRF's.



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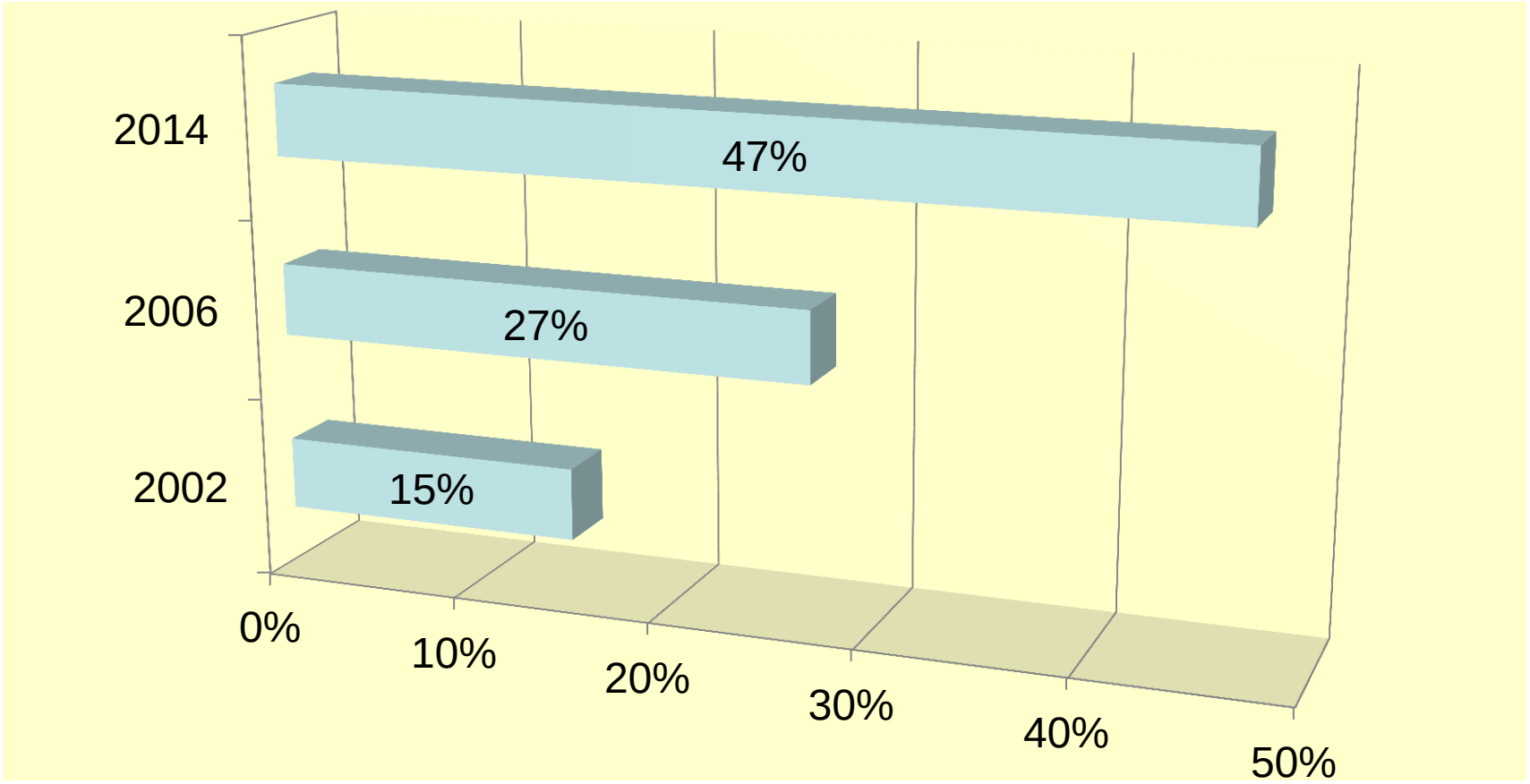
Percent of Single Stream MRFs



Source: Materials Recycling and Processing in the United States: Yearbook and Directory.

Growth in Use of Optical Sorting Systems

- 2002: 6 facilities that had one or more optical sorters.
  - These were mainly for fiber and glass
- 2014: at least 150 facilities have installed optical sorting systems or have indicated that they are planning to install such systems.
- MRF's becoming more sophisticated – yield higher recovery rates
- The average throughput at these facilities is ~ 300 TPD

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Mixed Waste Plants – Growing Trend?

- Western Placer County CA-Operating since 1996. Underwent expansion and put in a new line to handle the recyclables.
- Advanced Mixed Recovery Facility, Montgomery, AL– Infinitis Energy Project began operations this year.
- Advanced Recycling Center, Indianapolis, IN
- Athens Services – Los Angeles, CA -$50m Mixed Waste Facility
- Under review in Austin and Houston, TX

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Covanta Indianapolis Today

Waste / Steam Production

- Began operating in December 1988; 2,200 TPD of MSW processed annually
- Produces 4 billion lbs. renewable steam annually → 50% of the City's needs

Employment / Job Creation

- 78 permanent skilled jobs at the EfW plant

Economic

- $2.5 M of steam revenues shared with the City
- $19 M spent with local vendors/employees annually

Environmental

- IDEM Environmental Stewardship program member
- Diverted over 18 million tons of MSW from landfills since beginning operations
- Recycle 16,000+ tons of metal annually

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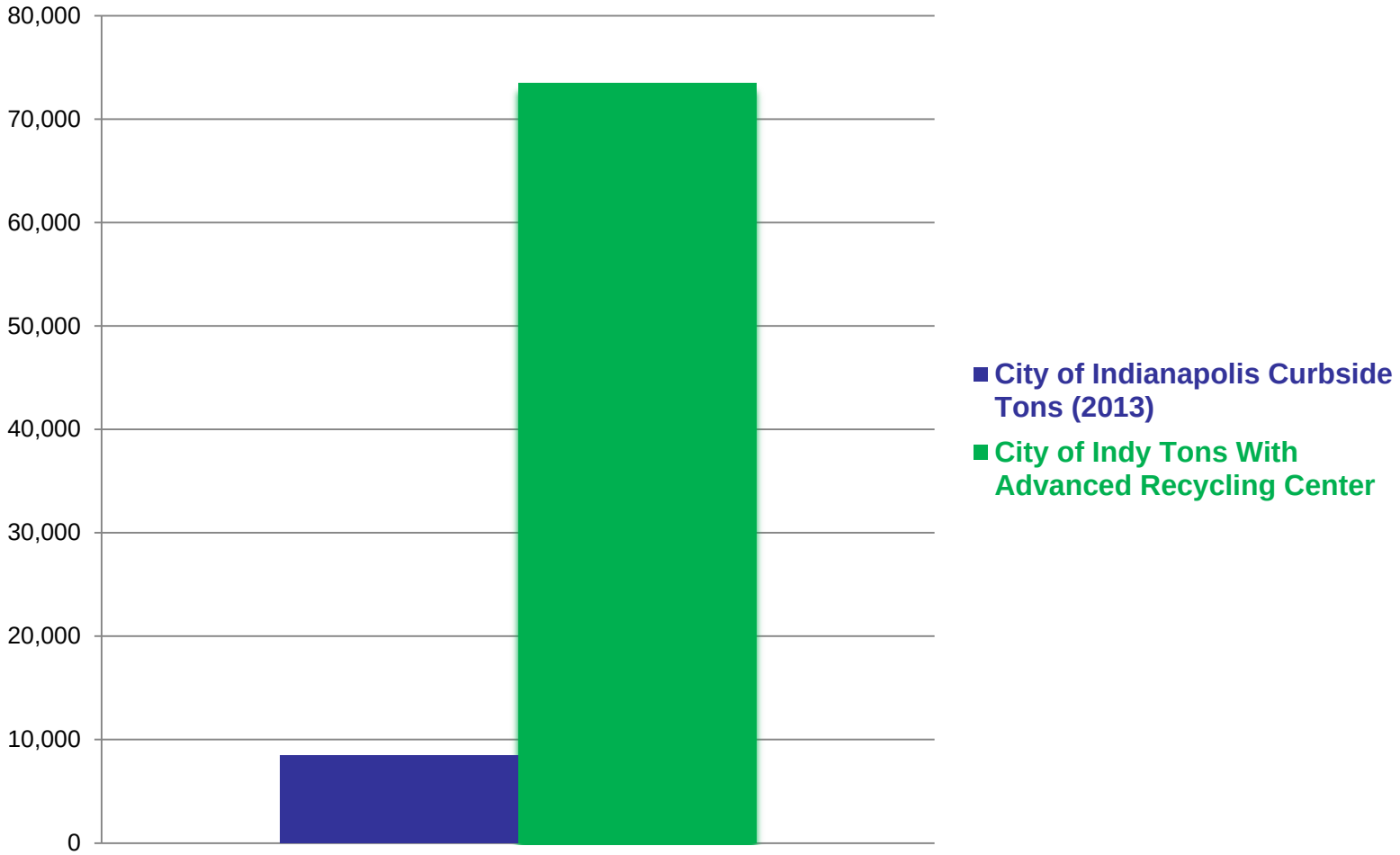
Recycling Tonnage in Indianapolis



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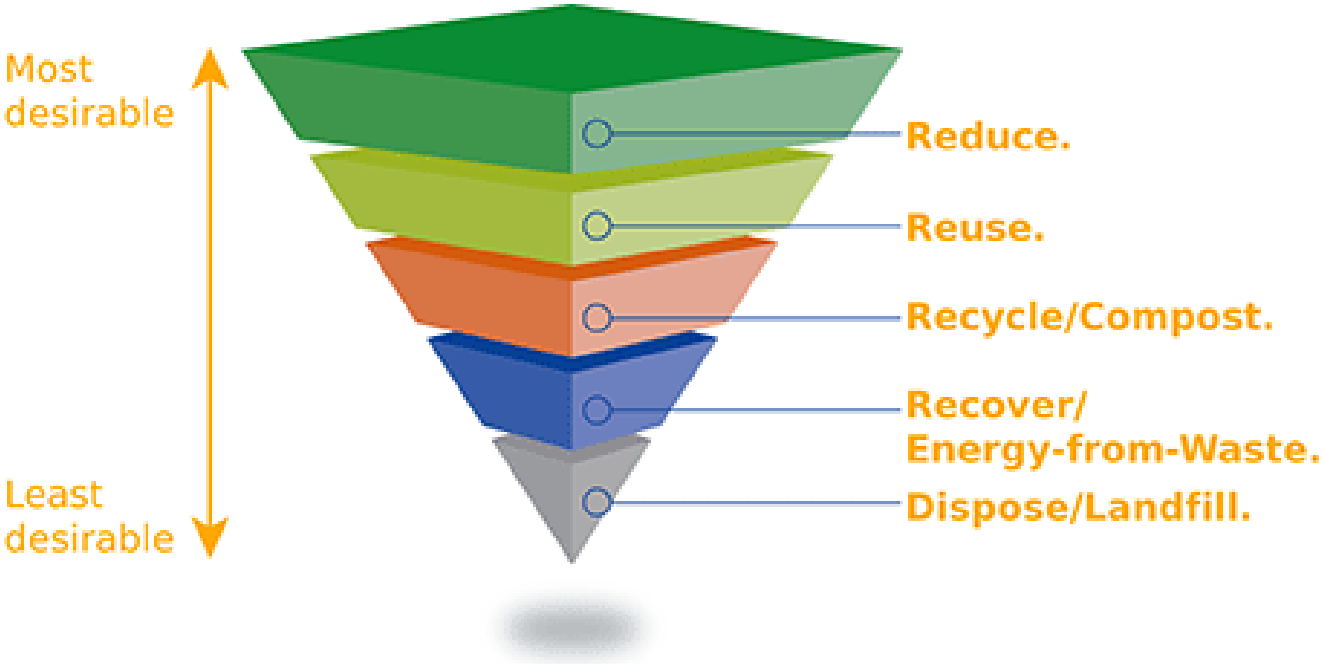
Solid Waste Management Hierarchy

Implementing the Advanced Recycling Center moves Indianapolis up the waste management hierarchy adopted by the U.S. EPA and the European Union.



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Comparing the Options

	Advantages	Disadvantages
Source Separation	• High material quality, potential for higher sales price • Lowest post-collection material loss rates • No MRF required	• Increased truck traffic • Greatest need for education • Difficult for multi-family • Highest collection costs • Lower participation rates
Single-Stream MRF	• Higher participation rates • Less consumer education required • Lower burden • More adaptable to multi-family	• Potential for contamination, particularly fiber • Processing facility needed • Truck traffic
Mixed-Waste MRF	• All materials processed • Single truck • Minimal consumer education required	• Potential for contamination, particularly fiber • Glass difficult to recover • Loss of “connection” to recycling • Sophisticated processing equipment needed

Bottom Line: What delivers the best environmental return for the community with the financial resources available?

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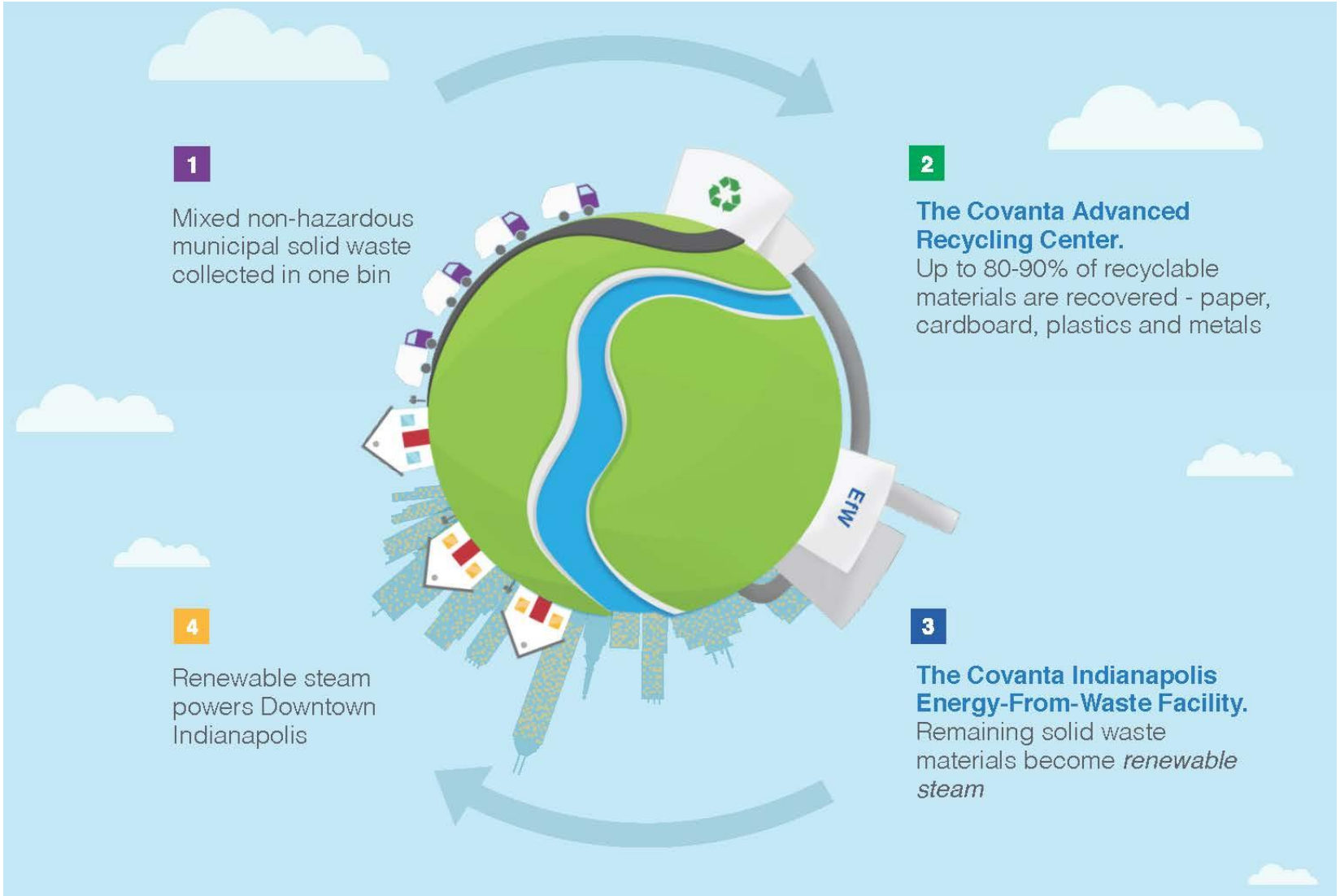
Covanta Advanced Recycling Center



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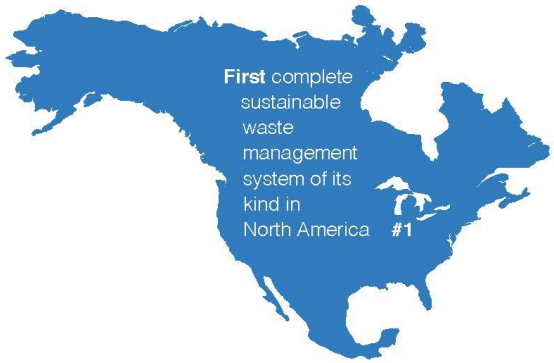
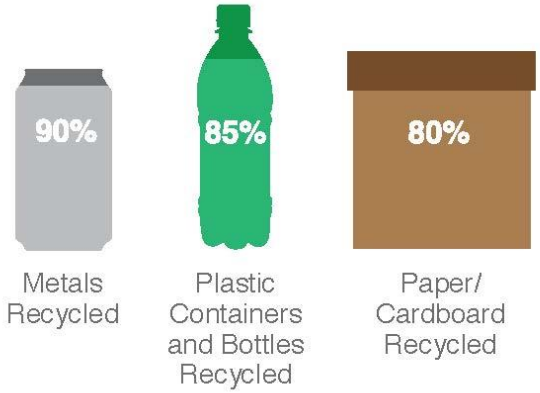
FAST FACTS



RECYCLING IMPORTANT RESOURCES



The Covanta Advanced Recycling Center will immediately increase recycling up to **five** times

Future enhancements would allow Indianapolis to reach a **world-class** recycling rate of over 50%

The project will increase energy savings **8x** – equal to the total annual energy use of **over 20,000** homes

ZERO
cost to residents or the City. Fully funded by a **$45MM** capital investment by **Covanta**

The Covanta Advanced Recycling Center recovers up to
80-90%
of paper, cardboard, plastics and metals

The Covanta Advanced Recycling Center will annually save greenhouse gas emissions equivalent to pulling **40,000** cars off the road

The Covanta Advanced Recycling Center will create **60** local full-time, green jobs once operational

Over **70** direct and indirect jobs will be created during construction

One bin for recycling and garbage.
No sorting!

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Advanced Recycling Center: Sustainable Solution for Indianapolis

Innovative Recycling Solution

- Single bin solution → zero cost to Marion County single-family residents
- High tech equipment to recover up to 90% of recyclable paper/fiber, plastic & metal

Employment / Job Creation

- 70+ jobs during construction and 60+ additional permanent jobs once operational
- Additional jobs supporting processors of recyclables in the City and State

Economic

- No additional cost to the City
- City will share in revenues from sale of recyclables

Environmental

- Immediately increases recycling in the City by 5x
- Increases energy savings 8x → equivalent to annual energy use of 20,000 homes

Once complete, Indianapolis will have North America's 1st integrated recycling and EfW facility

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Van Dyk Recycling Solutions

- North America's leading recycling and MSW equipment supplier and systems integrator
  - Founded in 1984; Headquartered in Stamford, CT
  - 10 regional 10 sales offices in North America
  - Family owned; ~$100 million in revenues

- Exclusive North American licensee of key ARC components:
  - Bollegraaf recycling machinery → 400+ Bollegraaf systems sold
  - Lubo screening equipment
  - TITECH sensor bases systems (i.e., optical sorters) → 250+ TITECH's sold in North America
  - Over 3,500 TITECH units are installed across 40 countries

- Specializes in "mega" single-stream recycling facilities
  - Delivered over 80% of all 40+ tph facilities in North America

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Summary Process Diagram

[5] 6" Trommel

[4a] < 14" Materials

[5a] 6" – 14" Materials

[7] Walair Density Separator

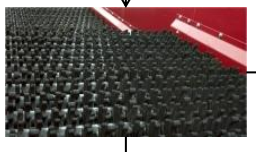
[4] 14" Trommel

[5b] < 6" Materials

[7a] Medium & Heavy Density

[7b] Light Density

[4b] > 14" Materials



[6a] 3" – 6" Materials

[8] Ballistics Separator

[6] AWS Screen

[3] Bag Opener

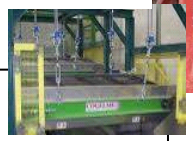
[6a] < 3" Materials

[8a] 3D Materials

[8a] 2D Materials

Overbelt Magnet*

Eddy Current*



[2] Pre-Sort Cabin

TITECH Optical Sorters

TITECH Optical Sorters

TITECH Optical Sorters

< 1" Materials

Fe, Non-Fe, and Aluminum Cans

PET

PP

HDPE

OCC

Mixed Paper

[1] MSW Delivery

Fines (to LF)

Residue – to EfW

** The ARC contains several magnets & eddy current systems in addition to what is highlighted above*

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Two Choices for Post-Recycled Waste

ARC Residue

or

Landfill

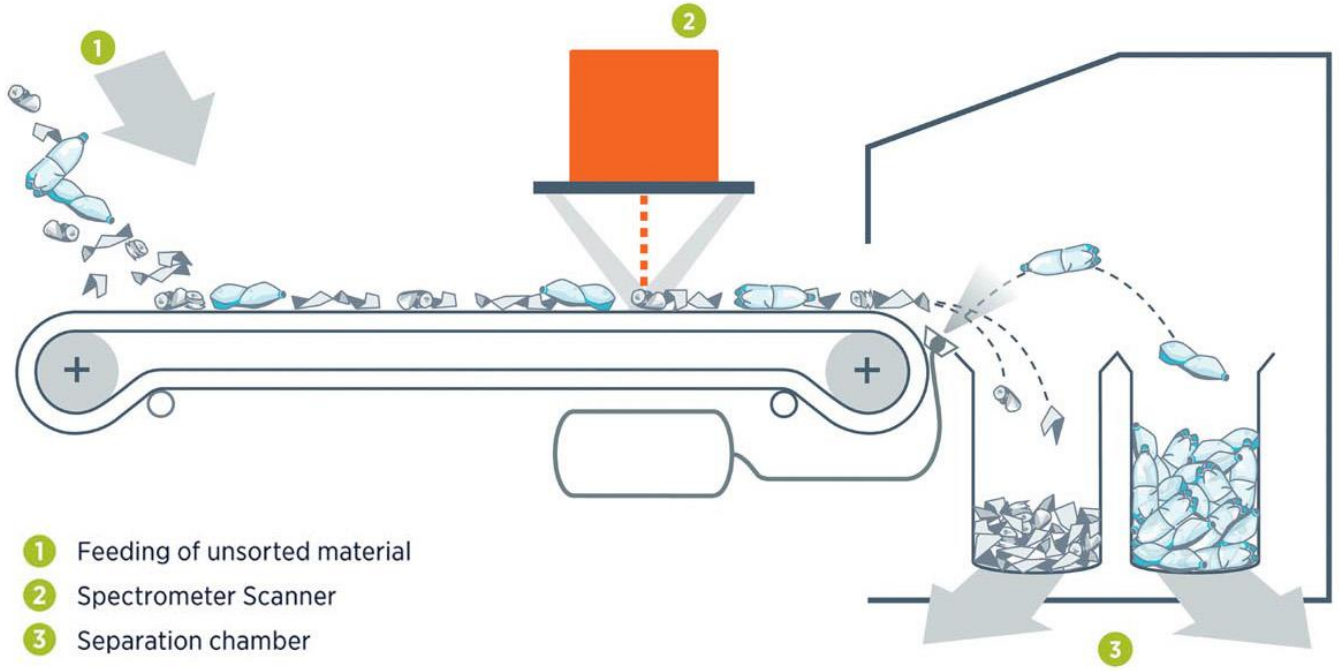
- *Landfills are a major source of man-made methane: 28-34X more potent than Carbon Dioxide over 100-years*
- *Landfills release uncontrolled emissions including carcinogens – over 170 air pollutants and over 40 air toxics.*
- *Potential ground water contamination*
- *Non sustainable use of land*
- *Renewable energy generation from landfills:* ***65 kWh per ton of waste***

EfW

- *90% reduction of waste in volume*
- *Clean energy generation*
- *Recovers metals for recycling*
- *Offsets on average one ton of carbon dioxide equivalent for each ton of waste processed*
- *Compatible with recycling*
- *Renewable energy generation from EfW:*
- ***550 kWh per ton of waste***

EfW produces 9 to 14 times the energy per ton compared to landfills.

TITECH Optical Sorters



- "Eyes, Brains, and Hands" of the Advanced Recycling Center
  - Smart: Latest technology utilizing near infra-red sensors
  - Fast: 9 ft. wide belt, running at 9 ft. per second
  - Precise: 320,000 scan points per second to pick out recyclables
- ***Easy programmable to adapt to changing material streams***

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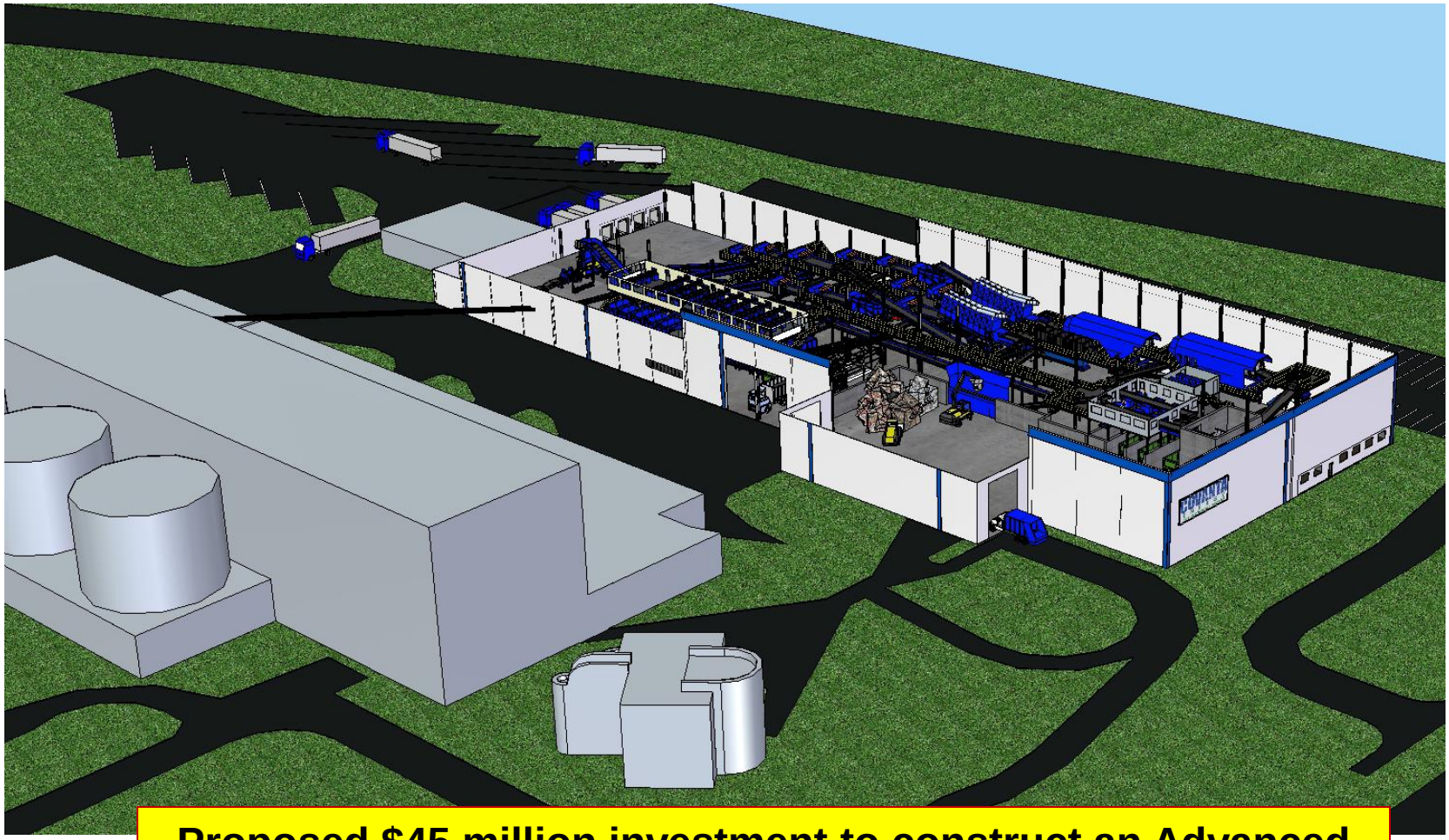
Covanta Indianapolis of Tomorrow



Proposed $45 million investment to construct an Advanced Recycling Center next to the Indianapolis EfW

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Thank you.

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