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## The Role of Solid Waste Management in Eco Cities of the Future

John G. Carlton, P.E., BCEE  
Gershman, Brickner & Bratton, Inc.


October 19, 2014



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*In solid waste management,  
there is no “away”*



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### Presentation Outline


- I – Background
- II – The Role of Solid Waste Management
- III – Challenges and Opportunities
- IV – Success Stories
- V – Questions




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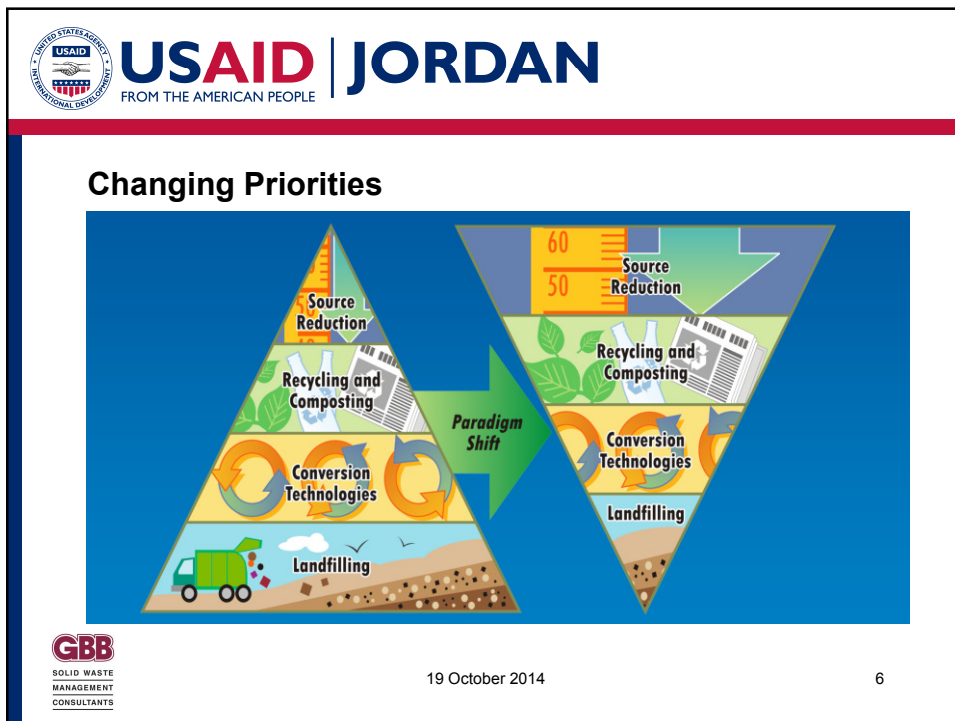
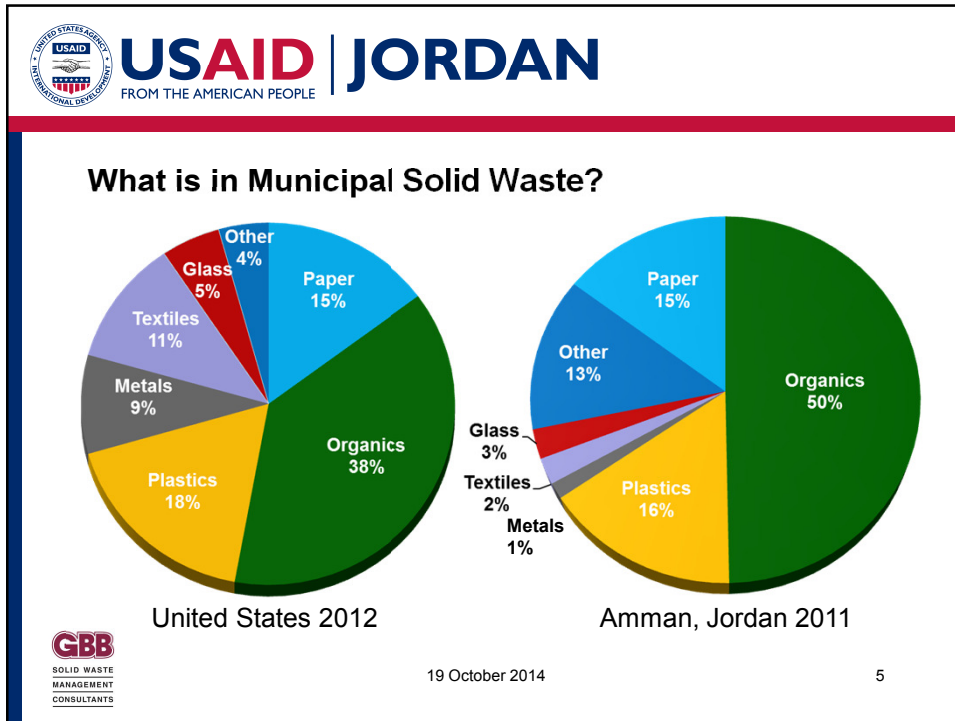
- Quality – Value – Ethics - Results
- Established in 1980
- Located in Washington, DC Metro Area, USA
- Solid Waste Management and Technology Consultants
- Helping Clients Turn Problems into Opportunities

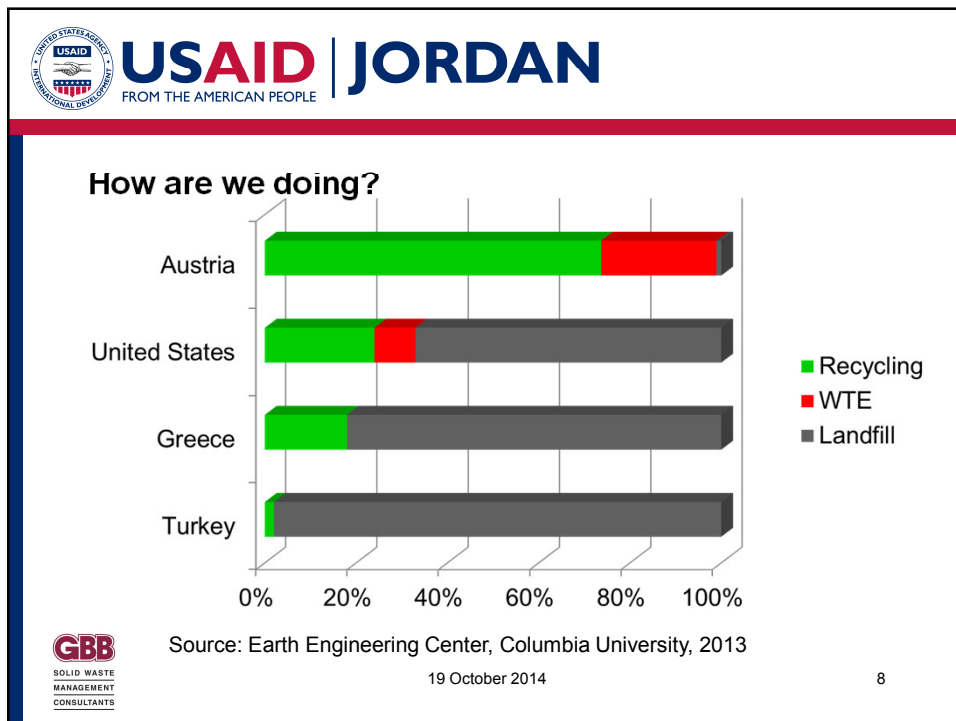
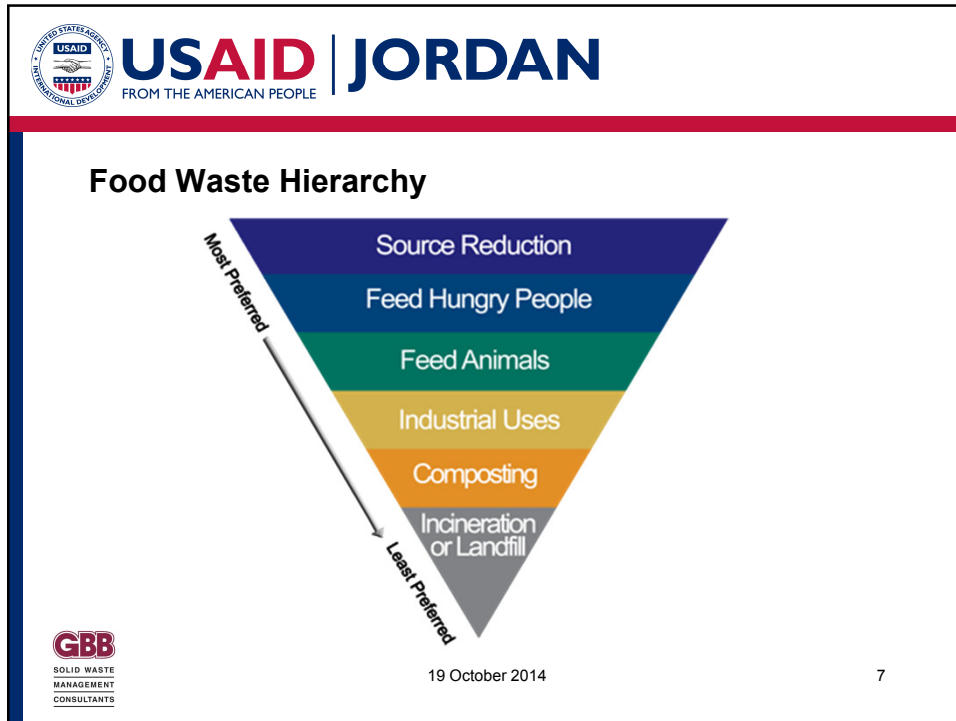


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## The Role of Solid Waste Management in Eco Cities


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### Key Features of an Eco City

Healthy	Self-Contained	Zero Waste
Renewable Energy	Industry / Jobs / Economy	Local Agriculture




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The slide features the USAID JORDAN logo at the top left. The main content is the title "Challenges and Opportunities" centered in a large, bold, black font. At the bottom center, the date "19 October 2014" is displayed. The slide number "14" is located in the bottom right corner.


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### Challenges

<b>Cost</b>	<ul style="list-style-type: none"><li>• Waste management &amp; sweeping – large costs</li><li>• Cost recovery</li></ul>
<b>Laws and Regulations</b>	<ul style="list-style-type: none"><li>• Affordable</li><li>• Implementable</li></ul>
<b>Social Integration</b>	<ul style="list-style-type: none"><li>• Behavioral change</li><li>• Cultural acceptance</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• If it sounds too good to be true, it probably is</li><li>• Commercialization and risk</li></ul>


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### Opportunities

<b>Environmental</b> <ul style="list-style-type: none"><li>• Clean cities</li><li>• Water quality</li><li>• Air quality</li><li>• Resource management</li></ul>	<b>Energy</b> <ul style="list-style-type: none"><li>• Electricity</li><li>• Refuse Derived Fuel (RDF)</li><li>• Biogas</li><li>• Solar</li><li>• Wind</li></ul>	<b>Economic</b> <ul style="list-style-type: none"><li>• Diverse economy</li><li>• Jobs</li><li>• Industry</li></ul>
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## Success Stories

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### Lancaster County Solid Waste Management Authority, Lancaster, Pennsylvania, USA



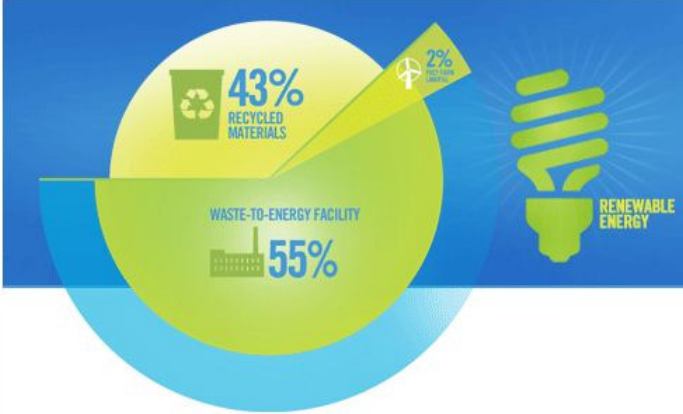
  
[www.lcswma.org](http://www.lcswma.org)

  
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**Lancaster County Solid Waste Management Authority, Lancaster, Pennsylvania, USA**



**43% RECYCLED MATERIALS**

**55% WASTE-TO-ENERGY FACILITY**

**2% RENEWABLE ENERGY**

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**Lancaster County Solid Waste Management Authority, Lancaster, Pennsylvania, USA**

 **Recycling**


- 43% of generated waste
- Special waste collection

 **Waste-to-Energy**

- 55% of generated waste
- 47 MW (2 mass-burn facilities)
- Co-locating industrial facilities to use steam and/or electricity


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### Lancaster County Solid Waste Management Authority, Lancaster, Pennsylvania, USA




#### Landfill

- 2% of generated waste
- Landfill gas to electricity (3 MW)
- Waste heat to local dairy (ice cream)



#### Solar/Wind

- 80% transfer station electricity by solar
- 3.2 MW wind provides 80% electricity of local dairy (ice cream)

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### Hillsborough County, Florida, USA



Alabama Georgia Florida  
Atlantic Ocean  
Tampa  
Gulf of Mexico




**Hillsborough County**  
GOVERNMENT  
*Florida*


[www.hillsboroughcounty.org](http://www.hillsboroughcounty.org)

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### Hillsborough County, Florida, USA




#### Recycling

- 43% of generated waste
- Highest overall rate in Florida




#### Waste-to-Energy

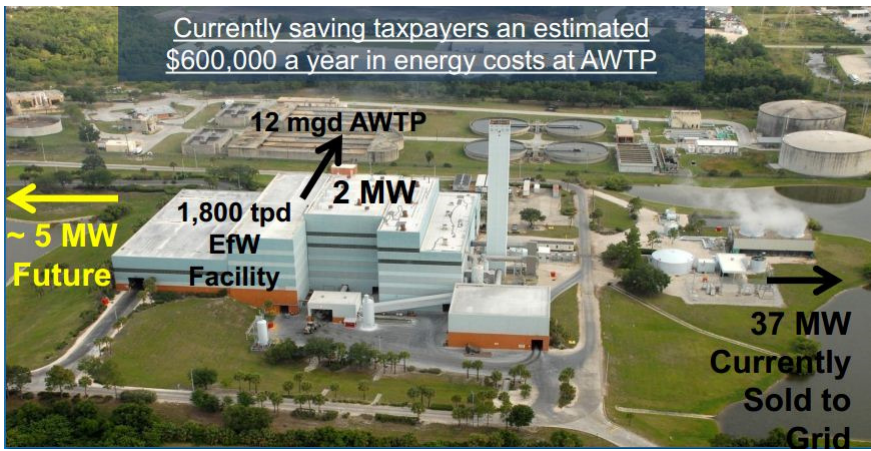
- 30% of generated waste
- 47 MW (mass-burn facility)
- Co-located next to wastewater treatment plant that takes electricity

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Currently saving taxpayers an estimated \$600,000 a year in energy costs at AWTP




12 mgd AWTP → 2 MW


← ~ 5 MW Future

1,800 tpd EfW Facility

→ 37 MW Currently Sold to Grid


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***“You’ve got to be careful if you don’t know where you are going, because you might not get there”***

***Yogi Berra***

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**Thank you!**

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