Keeping it Circular: Observations from Sweden

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Sweden

- 2018 Visit to Minnesota of Swedish Ambassador to US
- Sweden invitation and support for Delegation
- Circular Economy—focus on Waste Management and Recycling
- Stockholm and MPLS Sister City Uppsala
- What can we learn from Sweden?
Sweden: A model for residential development

- Royal Seaport, Stockholm
- Pneumatic Waste Conveyance System
Landfill Avoidance Champs of the World

- Sweden landfills just $\frac{1}{2}$% of their waste
- Global rate of 59% goes to landfills
- Sweden big on Waste to Energy
- WTE plants sometimes uses waste from EU neighbors
- Germany & Austria come in first for recycling at >50%
Uppsala—Biogas for Busses

Organics, horse manure, and agricultural waste fuels a digester to generate biogas.

Biogas then fuels buses. Uppsala’s depot had dozens of buses being refueled with biogas

Ever-green Energy CEO: Great example of displacing carbon through holistic cross-sector thinking
Organics to Fertilizer and Biogas

Water, energy and manpower savings
Eating your clothes

• Retail clothing industry is changing
• Swedish company Houdini aiming for 100% sustainability
• A new generation of shopper wants their Clothes—and other products to stay out Of the landfills
Some overall Observations from Minnesota EQB

• 44 waste incinerators across country
• Strong policy framework
• No buses in cities use fossil fuels
• Swedish national goals: 70% lower emissions by 2030, 100% renewable by 2045
• CO2 tax since 90’s
• Federal law requires producer responsibility for all packaging
• Law requires curbside organics collection
Other International Trends

- **Ireland** “Pay as you Throw”
- **Russia**: Other end of the spectrum. Recycling rate of 4%. Public protests over open landfills near residential areas
- Growing use of Internet of Things technology to drive efficiency
Waste in a Connected World

• Harmony Enterprises—World Leader in Balers and Compactor
  – Using IoT to monitor bins for fullness—saves manpower
• Organix Solutions—Using robotics to sort organics
• Minnesota is a world leader in Internet of Things know-how and technology—call on them!
Plan Ahead
Key Messages

• Let’s look to our international partners
• A connected world can serve our waste management needs
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