Civil & Environmental Consultants, Inc.

IERG Land and Waste Conference

Waste Industry Trends From a Consultant’s Perspective

Presented By
Civil & Environmental Consultants, Inc.

February 27, 2025

John Hock, P. E.

- **Education**: B.S. in Chemical Engineering, **The Ohio State University**
- **Professional Engineer (P.E.)** licensed in **six states**, including Illinois
- **37+ years** in **solid waste industry** (industry & consulting)
- **CEC Overview:**
  - 1,400+ employees | 30 offices nationwide
  - Multidisciplinary consulting firm
- **Key Roles at CEC:**
  - Solid Waste Practice Lead
  - Office Lead – Naperville, IL

Presentation Topics

- **Waste industry information**
  - Disposal amounts
  - Generation and recycling amounts
  - Numbers, ownership and location of infrastructure
- **Waste industry trends**
  - Ongoing acquisitions
  - Transportation logistics/ Vertical integration
  - Recycling challenges
- **Suggestions** for consideration

Consultants Perspective – Waste Industry Stakeholder Goals

- Manage waste in an appropriate environmental manner
    - protective of public health, safety and welfare
    - minimizing nuisance issues
- Reduce the amount of waste disposed in landfills
- Maximize recycling and beneficial reuse
- Perform as efficiently and cost effectively as practical

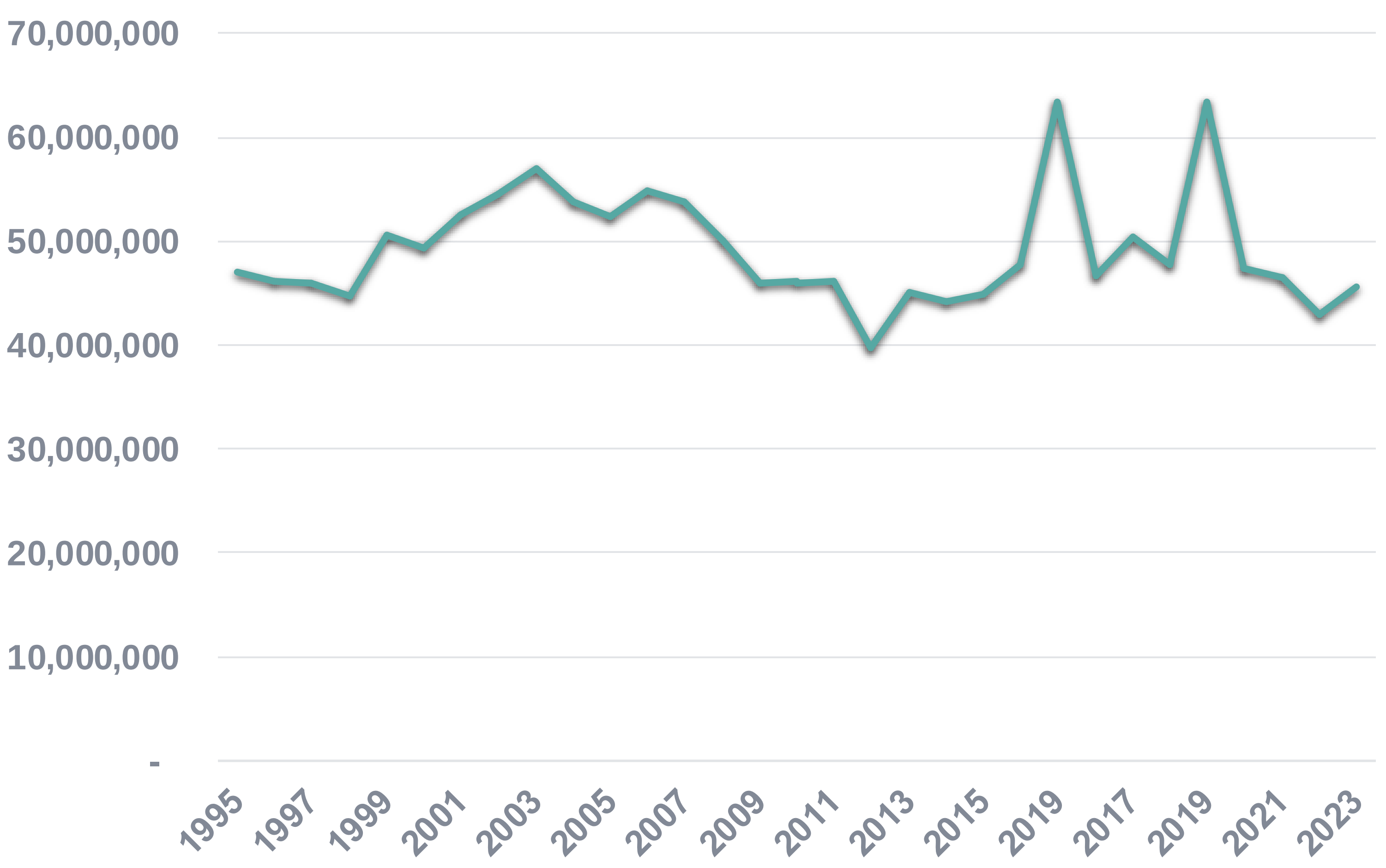
Definitions

- **Waste**: Non-hazardous solid waste, including special waste
- **Non-Hazardous Solid Waste**: Primarily **municipal solid waste (MSW)**, per IEPA definition which includes:
  - Garbage and general household waste
  - Institutional and commercial waste
  - Landscape waste
  - Construction or demolition debris
- **Recycling**: Any discarded material **not** disposed in a landfill, including beneficial reuse

Caveats

- **Multiple data sources** – IEPA, USEPA, County Solid Waste Management Plans, Publicly Available Reports, Own Experience, Interviews
- **Data aggregation not precise** - Data sources use different definitions and quantification of same terms (e.g., municipal solid waste, recycling)
- *Would appreciate any better data*

Amount of Waste Disposed in Illnois Landfills (Gate CY per Year)



Amount of Waste Disposed in Illinois Landfills (cont.)

- **Total waste**: ~14 million tons per year (**~ 10% from out-of-state**)
- **Daily waste**: ~49,000 tons per day
- **Chicago metropolitan area**: 65% of waste comes from six counties (Cook, Lake, DuPage, Will, McHenry, Kane)

Waste Generation and Recycling in Illinois

- **Recycling Rate**
  - **~33%** (best information source is county SWMPs)
  - Increased since 1995
  - Appears to be relatively unchanged for over 15 years
- **Waste Generation**
  - **~21 million tons annually**
  - Equivalent to **~8 pounds per person per day of MSW**

Waste Industry Infrastructure

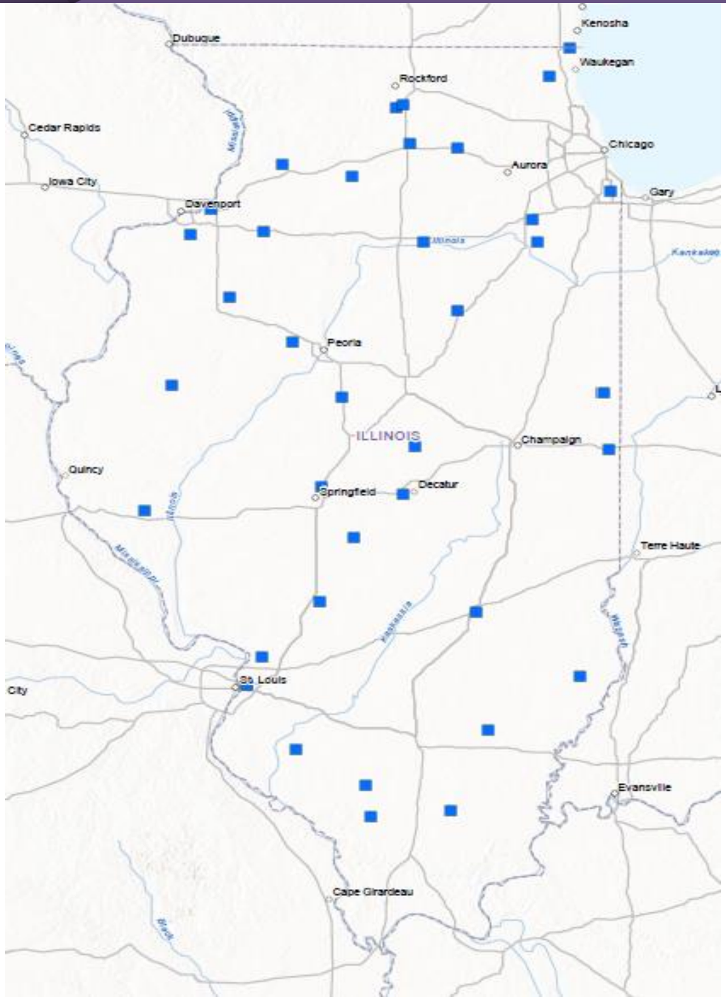
- **Landfills**
- **Transfer stations**
- Compost facilities and **landscape waste** transfer stations
- General construction or demolition debris (**GCDD**) recovery facilities
- Clean construction or demolition debris (**CCDD**) fill sites/ uncontaminated soil fill only (**USFO**) sites
- Material recovery facilities (**MRFs**)

Active Landfills in Illinois

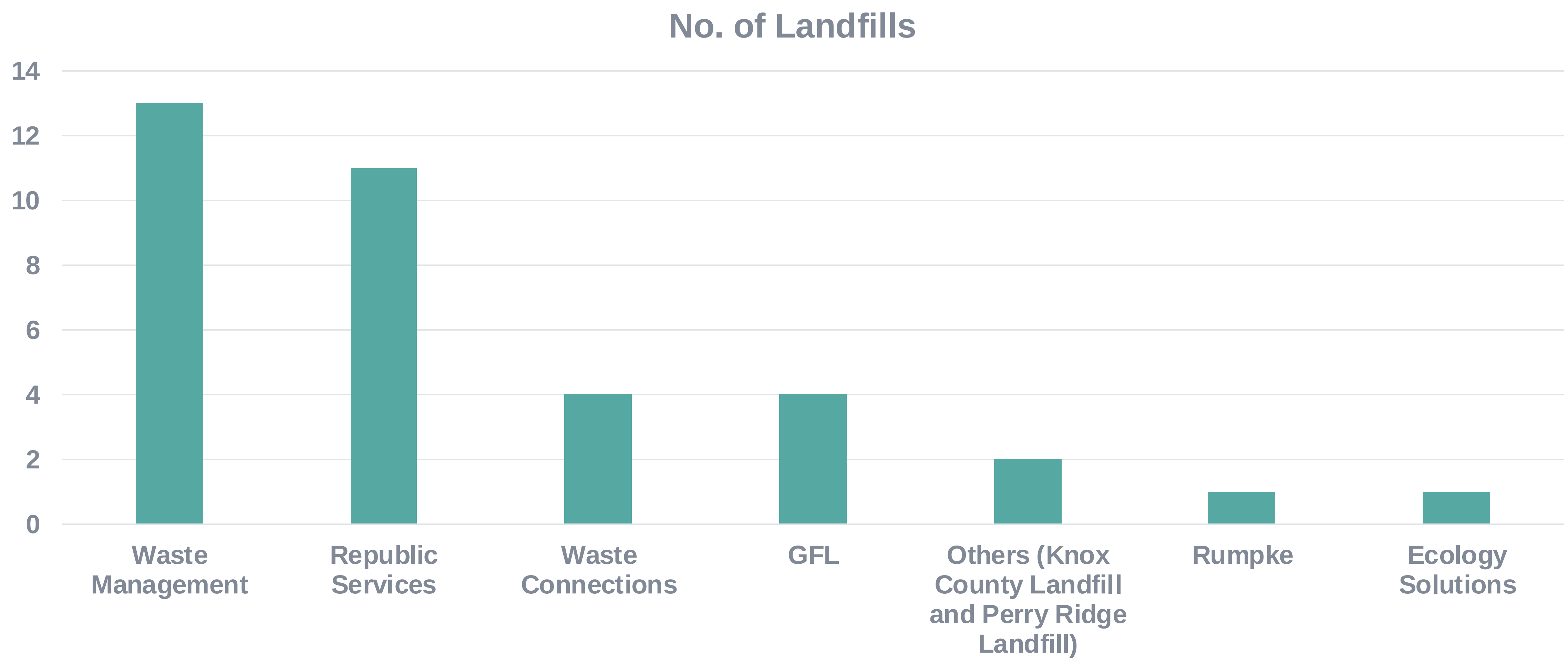
Year	Active Landfills
1995	58
2000	53
2005	51
2010	43
2015	38
2020	36
2023	36

Active Landfill Locations

- **Increased Distance from Population Centers**
- **Limited Landfill Availability in Northeast Illinois:** Only three active MSW landfills remain in the nine-county northeast region—**two in Lake County and one in Will County**.
- **Two Highest-Volume Landfills Near Rockford**



Active Landfill Ownership



Transfer Stations

- **Growing in number over time**
  - **~65 in 1995 → ~80 currently**
- **Location Breakdown**:
  - **~60%** (48 transfer stations) **in Chicagoland** metropolitan area
  - **~40%** (32 transfer stations) **in the remaining 95 counties**
- **Waste Flow & Operations**:
  - **~80%** of waste is disposed **via transfer stations**
  - **~75%** of transfer stations are operated by **four publicly traded companies (WM, RS, WC, GFL)**

Advantages of Transfer Stations

- **Waste Volume:** One transfer trailer (TT) holds the equivalent of 3-4 collection vehicles (CV)
- **Fuel Efficiency:** Transfer trailers have more than twice the gas mileage of collection vehicles
- **Operational Efficiency:** Transfer trailers result in less wear and tear on vehicles and enable quicker unloading

Transfer Stations – Why Not More?

- **Perpetual Operational Life**: No expiration so long-term availability
- **Flexible Operations**: Many facilities have been operational for over 25 years, and have managed larger volumes over time and/or now also transfer recyclables
- **Challenging and Long Permitting Timeline**: Common for local siting to be contested and approval (if obtained) to be appealed; Permitting can take between 2 to 5 years
- **High Investment:** Typically requiring a minimum investment of $500K for permitting and > $5M to construct

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Landscape Waste Facilities

- **Compost facilities**
  - About 50 permitted facilities
  - About 50% in Chicagoland metropolitan area
  - Exempt from local siting
- **Landscape waste transfer stations**
  - Approximately 40 permitted facilities
  - Approx. 80% in Chicagoland metropolitan area
  - Exempt from local siting if transfer landscape waste within 24 hours (challenge for smaller facilities)

GCDD Recovery Facilities

- Approximately 30 GCDD recovery facilities
- Approximately **85% in Chicagoland metropolitan area**
- Variety of predominantly independent owners
- **Exempt from local siting** if exclusively accept GCDD and meet certain operational requirements per 35 IAC Part 820
- **Challenge** for facilities **to meet recycling requirement** without acceptance of "heavies"

CCDD/USFO Fill Sites

CCDD Site

USFO Site

- **Over 100** CCDD/ USFO fill sites
- **Variety of owners** who are predominantly mining/ aggregate companies with quarries
- **Not subject to local siting** if meet certain operational requirements per 35 IAC Part 1100
- Soil **must meet MACs**, which disqualifies a percentage of appropriate material due to naturally occurring concentrations

MRFs

- **Very little information** that is publicly available (since generally not regulated)
- Apparent that **number and capacity has been increasing** (about 35% of residential collection amounts are recyclables)
- Mostly located in Chicago metropolitan area with limited options in Central Il (e.g., Pekin, Bloomington)
- **Generally operated by** four publicly traded companies (**WM, RS, WC, GFL**) with at least one independent (Midwest Fiber)
- **More or less than the number of active landfills?**

Waste Industry Trends – Ongoing Acquisitions

- **2019:** Lakeshore Recycling Systems acquired Atkinson Landfill (now Eco Hill)
- **2019/2020:** WM acquired Advanced Disposal Services
- **2020:** WM/Advanced Disposal assets were divested to GFL
- **2021:** GFL acquired Peoria Disposal Company
- **2024:** Rumpke Waste & Recycling acquired Sanitation Service

Waste Industry Trends – Transportation Logistics (TL)

1. **Collection Vehicle Staging**: Drive CV to the collection route and return
2. **Waste Collection**: Gather waste from generation points (e.g., homes, businesses)
3. **Transport to Transfer Station**: Drive the CV to a transfer station for offloading
4. **Waste Transfer**: Load the MSW into a TT – typically, 1 TT equals 3 CV loads
5. **Transportation to Landfill**: Transport the MSW to a landfill
6. **Waste Disposal**: Dispose of the waste at the landfill

Waste Industry Trends – Transportation Logistics (cont.)

	Percentage of Revenues Attributed to Collection	Percentage of Waste Which is Internally Disposed
Waste Management (2019 thru 2021)	>65%	Not Available
Republic Services (2019 thru 2021)	>74%	68%
Waste Connections (2019 thru 2021)	>71%	Not Available
Advanced Disposal (2019)	>66%	62%

Waste Industry Trends – Vertical Integration

- **Ownership/ operation of** each of the components of the waste management system (**hauling, transfer and disposal**) **in or proximate to a market area** including:
  - Collection vehicles - packer and roll off
  - Containers – variety of sizes
  - Hauling company - Maintenance facility and fueling
  - Transfer station/ GCDD recovery facility/ MRF (recyclables and MSW)
  - Transfer trailers and dump trucks
  - Landfill

Waste Industry Trends – Advantages of Vertical Integration

- **Cost Control -** Primarily over transfer and disposal pricing
- **Hauling contracts**
  - Most hauling contracts include disposal costs in the pricing
  - Without control over disposal pricing, a company faces a significant competitive disadvantage
  - Companies tend to win and perform hauling services in areas where they have proximate transfer stations and landfills

Waste Industry Trends - Disadvantages of Not Having Full Vertical Integration

- Collection companies in the Service Area **must pay fees to a competitor**, which reduces their margins and improves the competitor’s margins
- The inability for a company to control all of their costs:
  - Creates a significant **unknown cost factor when bidding** on MSW hauling contracts
  - Creates **hurdles for making capital investments**
  - Causes **operational inefficiencies**

Waste Industry Trends - Recycling Challenges

- **Public**
  - Awareness/ **modification of behaviors**
  - Limitations on **the amount the public will pay** for recycling
- **Processing facilities/ end users**
  - **Limitations** of capacity and number
  - **Distant Locations** from collection points
  - **Fluctuations/ unpredictability of pricing**
  - **Higher purity requirements** for acceptance of recyclables
  - Increases in **costs to meet purity requirements**

Waste Industry Trends - Recycling Challenges (cont.)

- **Rural areas – Lack of infrastructure** including transfer stations and MRFs
- **GCDD recovery facilities**
  - **Landfills limiting acceptance of screening fines due to** generation of hydrogen sulfide from drywall dust
  - Decreasing market for Reclaimed Asphalt Shingles (RAS)
- **Food waste/ organics – Little local options;** weight of food waste makes transportation an extra challenge

Key Takeaways

- **Steady waste volumes disposed in landfills**: Remaining relatively steady even with increasing transportation distance, with no indication of significant changes in the near future
- **Development of infrastructure was key to recycling successes** - Encouraged through new regulations and local siting exemptions
- **Environmental benefits due to reduced transportation** – Management/ recycling of waste closer to the source/ generation locations (relative to the landfill locations) has provided massive environmental benefits in itself due to lower fuel usage (and thus emissions) and roadway wear and tear

Key Takeaways (cont.)

- **Recycling Plateau**: Recycling rates not expected to increase substantially without significant changes in consumer behavior and/ or additional infrastructure

- **Importance of Transportation Logistics**: A key cost for the waste industry is hauling/ transportation, where costs have been effectively controlled through vertical integration (including consolidation and technological advancements)

Suggestions

- **Facilitate Incremental recycling Improvements from existing infrastructure**
  - **Landscape waste** – Consider longer transfer time (e.g., 48 hours) at least for lower volumes
  - **GCDD** – Consider flexibility on the 40% recycling requirement
  - **CCDD/ USFO** – Consider increase MACs for problematic parameters (e.g., arsenic, manganese), and do not require groundwater monitoring

Suggestions (cont.)

- **Make process for development of new “large-size” transfer stations more reasonable**
  - Local siting statute are very general and has caused process to become a **very specialized legal process**
  - Expense and **unpredictability** is a major hurdle
  - **Consider revamping local siting process** requirements to provide more consistency of application requirements, hearing process and IPCB decision-making upon appeal

Suggestions (cont.)

- **Facilitate additional infrastructure in rural areas**
  - Most rural areas do not have access to curbside recycling, proximate drop off areas or related recycling infrastructure
  - **Consider exemption** from local siting **for transfer stations below a certain acceptance volume** (e.g., 100 tons per day)
  - **Consider exemption** from local siting **for transfer station that only accepts GCDD** and transfer to a GCDD recovery facility

Suggestions (cont.)

- **Facilitate food waste recycling**
  - Food waste is generally recognized to be the next major component of MSW with potential to be recycled
  - Processing close to the generation source is believed to be key for success
  - Consider providing an exemption from local siting for food waste processing (e.g., aerobic digestor, containerized composting)
- **Any efforts to improve public awareness or increase available markets (e.g., asphalt shingles, drywall)**

Contact Information

- John Hock
- Phone – (630) 291-6026
- Email – jhock@cecinc.com