SUSTAINABLE BUSINESS PARKS: A Circular Economy

Presented at:

Presented by:
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Outline

- Circular Economy Vision
- Sustainable Business Park (SBP) Concept Development
- SBP Master Plan – Specific Project
- SBP concept in Virginia

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CIRCULAR ECONOMY VISION

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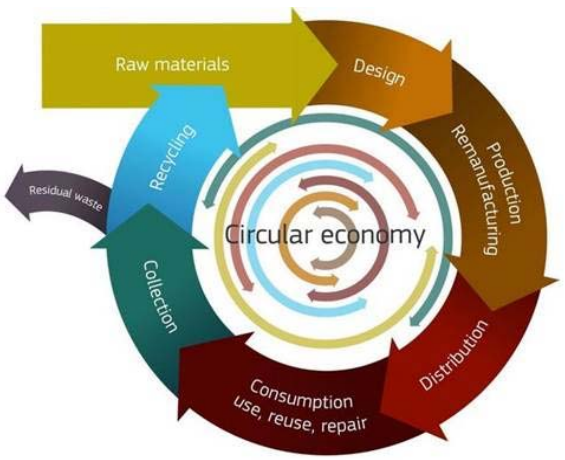

VS

Linear economy

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Circular Economy

- **Looks beyond the current "take, make and dispose" extractive industrial model (Linear).**
- **Is restorative and regenerative by design.**
- **Relies on system-wide innovation, it aims to redefine products and services to design waste out.**
- **Minimizes negative impacts.**
- **the circular model builds/preserves economic capital, natural resources and social capital (ie – cooperation and market agents produce goods and services not mainly for individuals but for the common good .**

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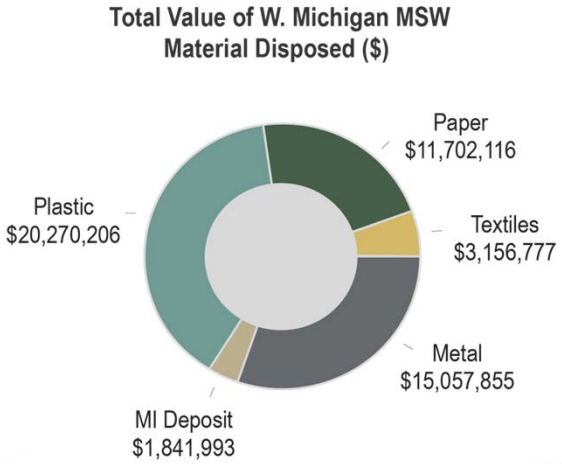
The Vision: Landfilling as a Last Resort



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Source: West Michigan Sustainable Business Forum
2016 Michigan MSW Valuation Study, wmsbf.org/msw

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The Vision: Landfilling as a Last Resort

- Construction & Demolition Debris Processing
- Composting
- Energy Technology
- Materials-specific Processing
- Business Incubator
- One-to-One Materials Exchange
- Research

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SUSTAINABLE BUSINESS PARK CONCEPT DEVELOPMENT

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SUSTAINABLE BUSINESS PARK CONCEPT DEVELOPMENT (KENT COUNTY, MICHIGAN)

- HISTORY
- EARLY EXAMPLE
- LOCAL DEVELOPMENT FOR KENT COUNTY

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HISTORY

- *Sustainable Business Parks, known by several names:*
  - Eco-Industrial Parks / EcoParks
  - Industrial Symbiosis
  - Industrial Ecosystem
- *Field: Industrial Ecology - Fairly new: early 1990s*
  - Applies concepts of symbiosis in nature to industry in order to entropy energy, maximize efficiency, and gain economic edge
  - Companies in proximity to each other collaborate to use each other's by-products as inputs and share resources when possible.

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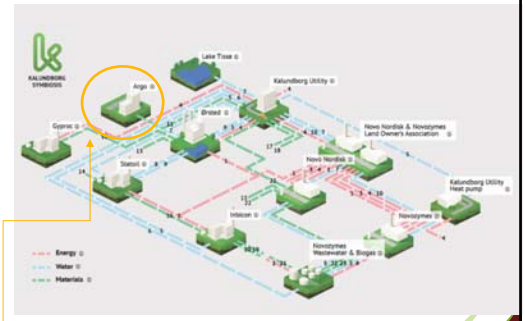
EARLY EXAMPLE

- Kalundborg Eco-Industrial Park
  - Kalundborg, Denmark
    - First known Industrial Symbiosis
  - First companies: 1959
    - Refinery, powerplant, pharmaceutical plant
  - Began organizing as a Symbiosis in late 1980s
    - "a cooperation between different industries by which the presence of each…increases the viability of the others, and by which the demands of society for resource savings and environmental protection are considered" [2]



ARGO handles waste for companies in the Kalundborg Symbiosis as well as companies and households in nine municipalities on Zealand. ARGO is a stakeholder owned waste management company. The waste is divided into fractions and recycled and reused as much as possible. The remainder is used for electricity and heat production[2]

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[1] web.archive.org/web/20080210080326/http://www.earthportal.org/?p=364
[2] www.symbiosis.dk/en/

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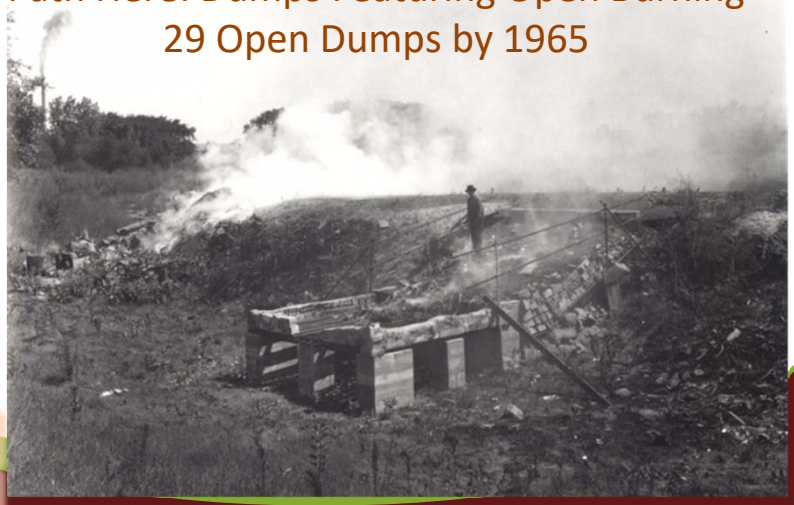
LOCAL DEVELOPMENT (Western Michigan)

Path Here: Dumps Featuring Open Burning
29 Open Dumps by 1965



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Today – A Western Michigan Integrated Solid Waste Management System including:

+ Transfer Station
+ Household Hazardous Waste Centers
+ Recycling Drop-Off Stations

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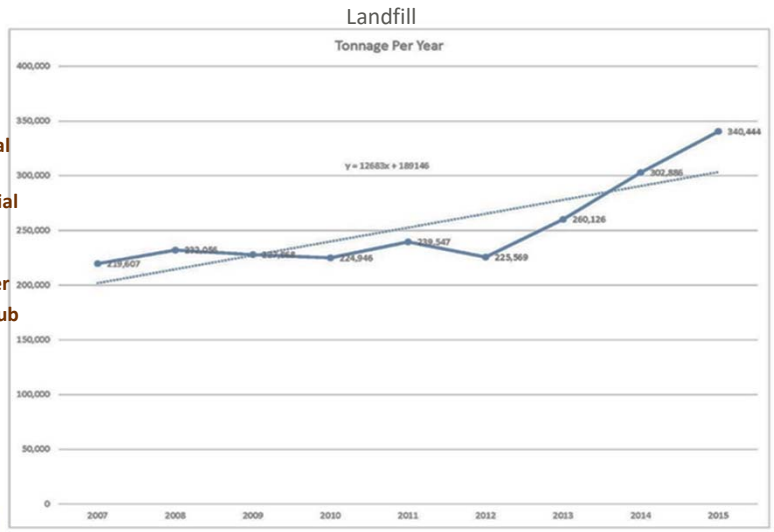
Growth from Innovation

- **Regional Manufacturing Center**
- **Regional Medical Center**
- **Regional Financial Center**
- **Regional Education Center**
- **Sustainability Hub**
- **Green Building Center**



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County Waste to Energy Facility

- Two lines; room for a third
- 678 TPD average processed in 2014
- Third line could be as large as 500 TPD (Covanta)
- Current contracts end in 2023

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GBB Zero Waste to Landfill Study

Purpose

- Identify opportunities for the County to work with industries to increase Zero Waste to Landfill (ZWLF) options in the region
- GBB and SRG hired to investigate

srg SUSTAINABLE RESEARCH GROUP

Scope

- Communicate with major regional industries interested in ZWLF
- Determine feedstock available for processing/conversion
- Evaluate approaches and technologies

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GBB Zero Waste to Landfill Study *(cont'd)*

Methodology

- Collect data about the regional manufacturing marketplace
- Conduct meetings with four manufacturers
  - GRLABEL
  - HAWORTH
  - HermanMiller
  - Trendway
- Do independent research
- Develop three generalized project concepts
- Analyze information

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GBB Zero Waste to Landfill Study *(cont'd)*

Conclusions

- Industry has high interest in ZWLF
- Significant fuel supply
- Reusable MDF supply possibly
- County has land for SBP
- *The Right Place* wants to help

THE RIGHT PLACE
Advancing the West Michigan Economy

Recommendations

- Develop MOU with *The Right Place* to advance ZWLF projects with manufacturers
- Involve other strategic partners, like the Design Group
- County participate as long as industries do
- Develop conceptual site plan for South Kent Landfill SBP
- County expand offerings to provide recycling technical assistance to commercial waste generators

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KENT COUNTY SUSTAINABLE BUSINESS PARK MASTER PLAN

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Current Site Plan

Instead of using these 200 acres for future landfill, we will develop a Sustainable Business Park that:

- Lays the **critical infrastructure** to support a regional circular economy
- Leverages **private sector development**
- **Attracts business** to localize the entire recycling or conversion process
- Preserves **open space**
- Expands **research**
- Generates and uses **renewable energy**
- Begins to **close the loop** in West Michigan

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Kent County SBP Master Plan

- The vision is that SBP will replace the need for consuming significant landfill resource continuously
- GBB Team will identify the type of technologies and tenants that could inhabit the SBP to be the missing link between the waste stream and the final consumer.
- Develop a Master Plan for the design and construction of public infrastructure to support the businesses locating into the SBP.
- Research and describe potential funding sources for both the SBP infrastructure improvements and the potential SBP tenants.
- Evaluate how the waste management services provided by the SBP tenants might interact with Kent County's existing waste management infrastructure

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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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Stakeholders Meetings

- Held November 14-16, 2017 in Grand Rapids
- Participants included:
  - Business/economic development
  - Haulers
  - Regional Manufacturers
  - Municipal Officials
  - Environmental Groups
- Maintain engagement throughout process

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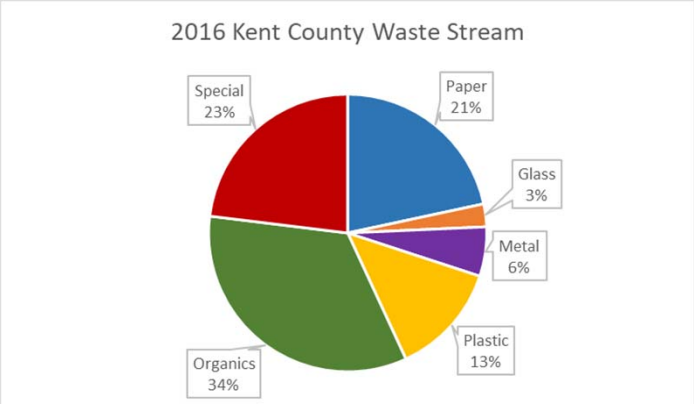
Waste Stream and Market Analysis



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Facility Tours

- Team of County representatives visited several advanced waste processing facilities
- San Jose, California during the week of March 19, 2018.
- California leader in implementation of policies, programs and technologies that promote recovery and recycling of discarded materials and diversion of waste away from disposal in landfills.
- Over a two and half day period, the County team visited six material processing facilities
- Facilities included publicly and privately-owned systems processing
  - residential and commercial single stream recyclables
  - mixed MSW
  - yard waste
  - source separated organics
  - construction and demolition waste (C&D) and
  - a product reuse center.

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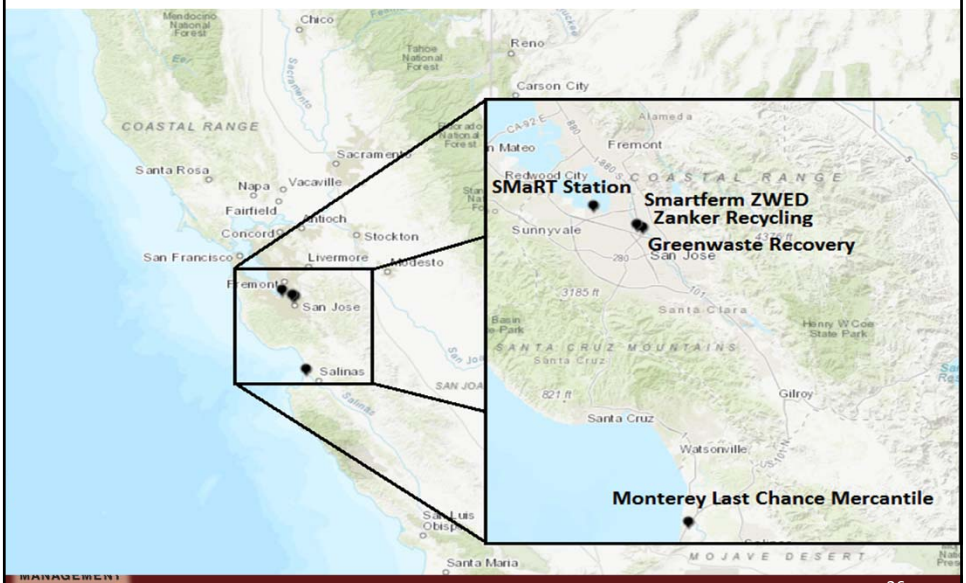
Facility Locations



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Request for Information

- Purpose to identify
  - Active technology/equipment suppliers
  - Project developers
  - Technology developers
  - Endmarket users
- Interested in developing a project and advancing DPW's economic and environmental goals
  - Design
  - Build
  - Finance
  - Own
  - Operate
- Seeking information and qualifications from companies who present innovative
  - Waste processing technologies
  - Waste conversion technologies
  - Other beneficial technologies

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Request for Information (Cont'd)

- Respondents will be expected to
  - Provide solutions to significantly reduce the tonnage of material that require landfill disposal
  - stimulate demand for recycled commodities
- Respondents can present
  - large-scale (greater than 250 ton per day in capacity)
  - medium-scale (between 50 and 250 tons per day in capacity)
  - and small-scale (less than 50 tons per day in capacity)
- Technology status will be categorized as
  - Commercially-Proven (i.e. commercially viable technology with operating reference facility or facilities);
  - Commercially-Demonstrated (i.e. proven technology without a Commercially-Proven reference facility or facilities)
  - Pilot (i.e. start-up/emerging technology with a functioning prototype prepared for deployment on a trial basis).

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Desired Offerings Matrix

Technology Status	Large scale	Medium scale	Small scale
Commercially-Proven	X	X	X
Commercially-Demonstrated	X	X	X
Pilot			X

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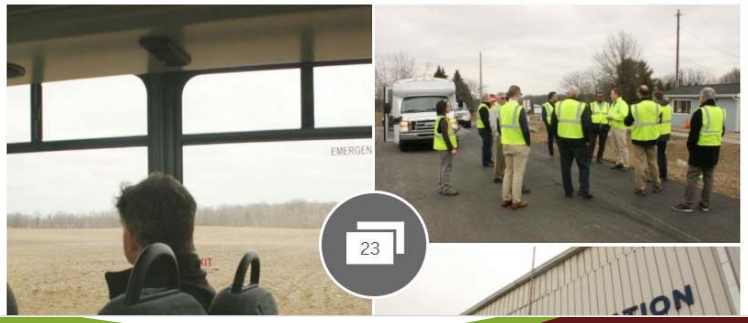
GRAND RAPIDS NEWS

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

Posted Apr 30, 12:30 PM



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Master Plan Tasks to be completed

- Evaluate RFI responses;
- Conceptual site development;
- Research funding sources;
- Evaluate how SBP tenants might interact with existing waste management infrastructure.

www.reimaginetrash.org

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APPLICATION OF SBP CONCEPT IN VIRGINIA

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Sustainable Business Park in Virginia

- Prince William County Renewable Energy Park

  Attributes:
  - Specific Subset of a SBP that focuses on energy recovery
  - County has expressed desire to save landfill space – ie use sparingly as possible
  - Organics Project– Free State Farm - final approvals expected. Anaerobic energy production system, compost by-product
  - Future project looks at energy product from MSW and produces energy. Small MWP unit included
- Others?

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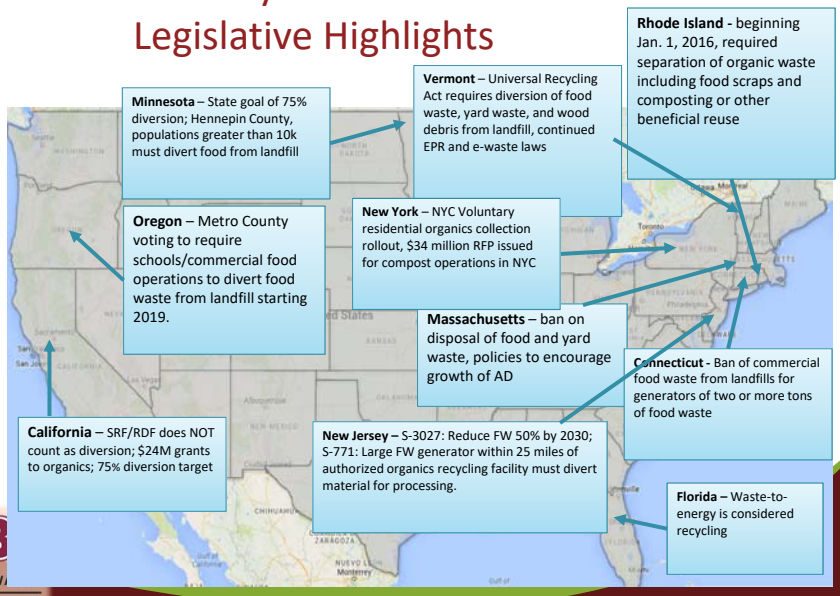
State-by-State Legislative Highlights



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Thank you!
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