New York City Solid Waste Alternatives

Lessons from Domestic and International Examples

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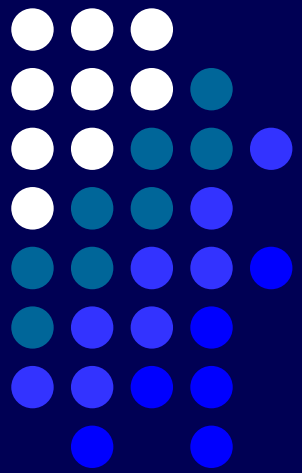


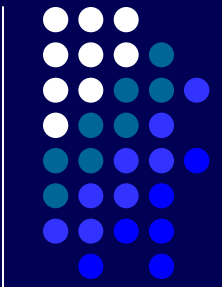
Overview

- Introduction to the problem
- Key Lessons Learned
- Examples of Alternative Waste Facilities
- Key Findings
- Comparative Analysis
  - Application to New York
- Conclusion
- Questions

Introduction

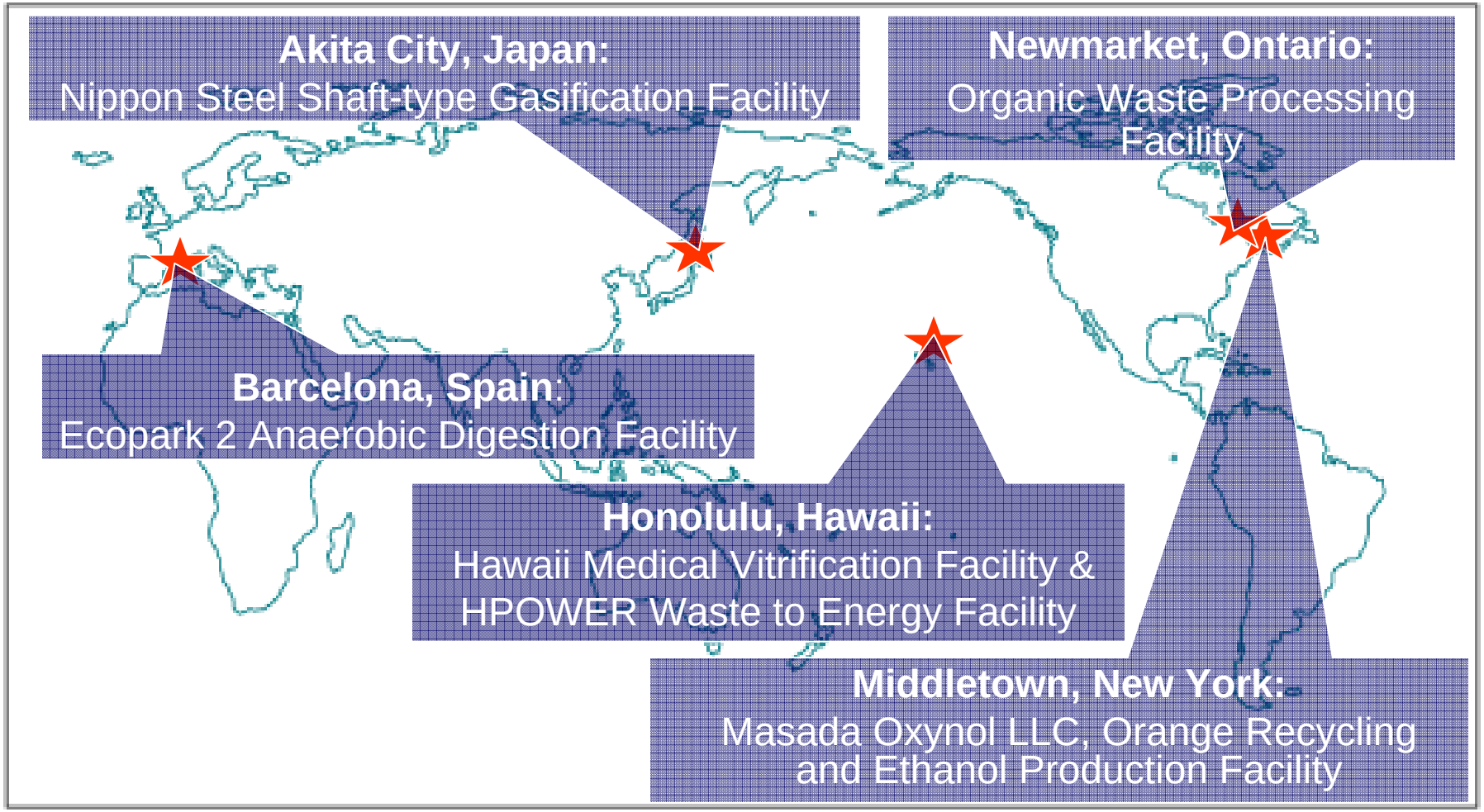
- NYC residents: 13,000 tons per day
- No local disposal facility
- Export by diesel truck
- Research on 5 cities' alternative solid waste management strategies
- Interesting results…

Key Lessons Learned



- Politically feasibility in New York
  - Work with communities
- Alternative facilities exist around the world
- Process significant volume of waste
- Environmental advantages
- Cost effective
  - Can be financed through traditional mechanisms

Examples of Alternative Waste Facility Siting



Key Findings

- Barcelona, Spain: *Anaerobic Digestion*
  - Processes 19% of Barcelona's waste stream
  - Proactive community relations
  - Use of design for aesthetic appeal
  - Competitive cost per ton: $43

- Akita City, Japan: *Gasification*
  - Plant owned by Akita City
  - Biannual meetings with town representatives and the City Department of Environment
  - Technology used in 26 other plants in Japan and South Korea

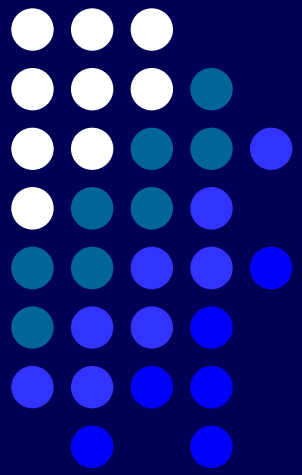
Key Findings, Continued

- Honolulu, HI:
- *Gasification*
  - Treats only medical waste
  - Generates and sells electricity from fuel gas
  - Pilot project treats up to one ton per day
- *Waste-to-Energy (Incineration)*
  - Honolulu increased this plant's capacity rather than landfilling or constructing a gasification facility
  - Incineration accepted as an alternative to landfilling
  - Generates electricity and sells it to a grid
  - Competitive cost: $50/ton

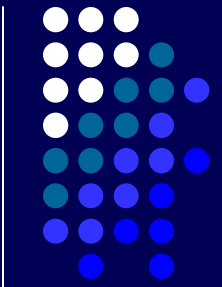
Key Findings, Continued

- Newmarket, Ontario: *Anaerobic Digestion*
  - Sited in an industrial zone 30 miles north of Toronto
  - Odor is a problem, exists due to construction flaw
    - Primary source of community opposition
- Middletown, NY: *Recycling* + *Waste-to-Ethanol*
  - Secured all State, Local, and Federal environmental permits
  - Proactive community relations
  - Private ownership and operation
  - Competitive cost: $65/ton
  - CEO Daryl Harms passed away

Comparative Analysis

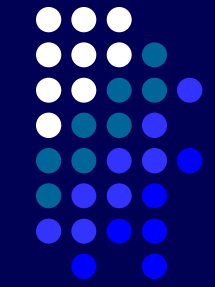


New York City's Challenges



- High volume of waste
- Low government credibility on waste management issues
- High competition for land
- Political contention over new construction projects

Volume of Waste Processed



- Existing facilities around the world process significant volumes of waste
  - Scalable technologies
  - Treat a portion of New York City's waste
- Waste-to-energy incineration processes high volume of waste
  - 67% of Japanese waste: incineration
  - Gasification in response to concerns over emissions

Costs

Alternative facilities studied

- Cost per ton of disposal
- Capital costs of new facility construction
  - Technology is proven and attracts private investment
  - Traditional financing mechanisms
- Large capital investment
  - Might be economically viable compared to current practices

Cost Comparison

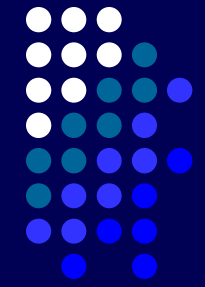
City	Technology	Cost per ton
New York City	Landfilling	$69*
Barcelona, Spain	Anaerobic Digestion	$47
Akita City, Japan	Gasification	$145
Honolulu, Hawaii	Gasification Waste-to-Energy	$150 $50
Newmarket, Ontario	Anaerobic Digestion	$39
Middletown, New York	Waste-to-Ethanol	$65

*New York City Independent Budget Office 2004, brought to 2005 dollars

Environmental Considerations

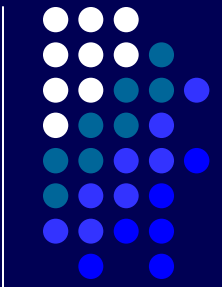
- Lower emissions
  - Sophisticated control technologies not available to landfills
- Clean power source
  - Products like biogas and ethanol are cleaner to burn than fossil fuels
- Substantial reduction in volume of waste to landfill
  - Up to 90% by volume

Siting



- Possibly the biggest challenge
- Location, location, location
  - Existing waste management sites
  - Industrial zoned lands
- Urban/rural siting options
  - Newmarket
  - Barcelona

Community Relations



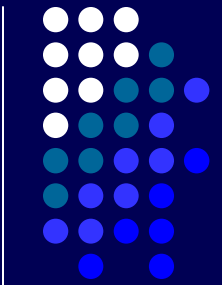
- High transparency
  - Gain community trust and support
- Community involvement
  - Influence over facility design and construction
- Regular forum for communication and complaints
- Facility image
- Education
- Environmental Groups

Conclusion

Application to New York

- Financial feasibility
- Reasonable volume of waste processed
- Environmental advantages
- Politically challenging

Thank You.



Team Members:

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