



WASTE TO ENERGY:

Recovering Resources.
Providing Reliable Power.

Clean, Reliable, Renewable Power

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Minnesota Resource Recovery Association



- Minnesota Perspective
- Energy Benefits
- Environmental Benefits
- Future





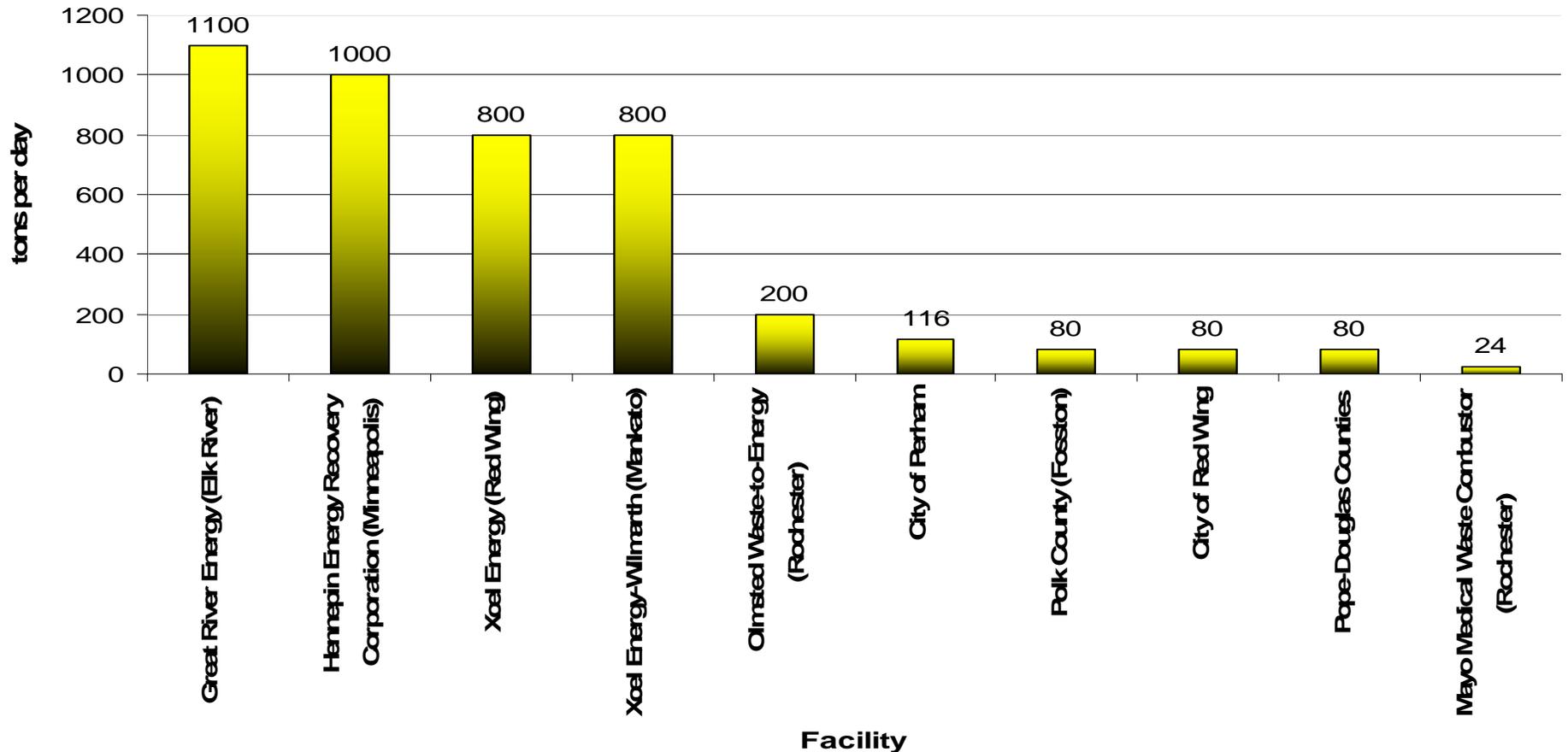
Minnesota Perspective

- 10 Facilities
 - 3 Mass Burn: 433,620 tons/year
 - 3 RDF: 886,950 tons/year
 - 4 Modular: 113,004 tons/year
- Annual Capacity: 1.35 Million Tons

Waste Combustor Design Capacities



Waste Combustor Design Capacities



Facilities



NRG - Elk River



Xcel Energy -
Wilmarth



Olmsted County



HERC



GRE - Elk River

Facilities That Are Growing



- Olmsted County
 - Increasing size from 200 to 400 TPD
 - Serving 26 buildings in downtown Rochester; “green pipes” to College
 - Adding more electrical generation

Facilities That Are Growing



- Pope Douglas
 - Serves 3M's Abrasives Plant and Douglas County Hospital
 - Growing from 80 – 200 TPD
 - Tri County's waste
- Perham (?)
 - Considering moving to electrical only
 - Tuffy's Dog Food Manufacturing Plant
 - Bongaard Cheese

Facilities that Can Manage Additional Waste



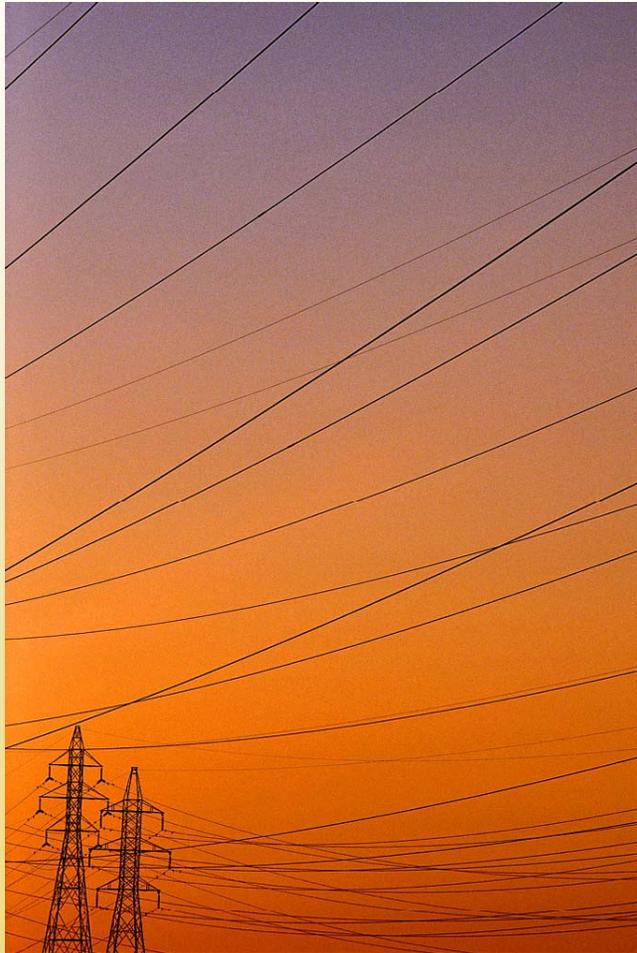
- Olmsted County
- City of Red Wing
- GRE in Elk River
- Xcel's Wilmarth Facility

HERC (Hennepin County)



- Artificial Permit Cap
- Approximately 40,000 additional tons could be processed
- Increasing Co-Gen capabilities with ball park, downtown
- Approvals pending

Facilities Producing Electricity



- Per Day:
 - HERC- 26,000 homes
 - GRE- 35,000 homes
 - Wilmarth- 25,000 homes
 - Red Wing- 25,000 homes



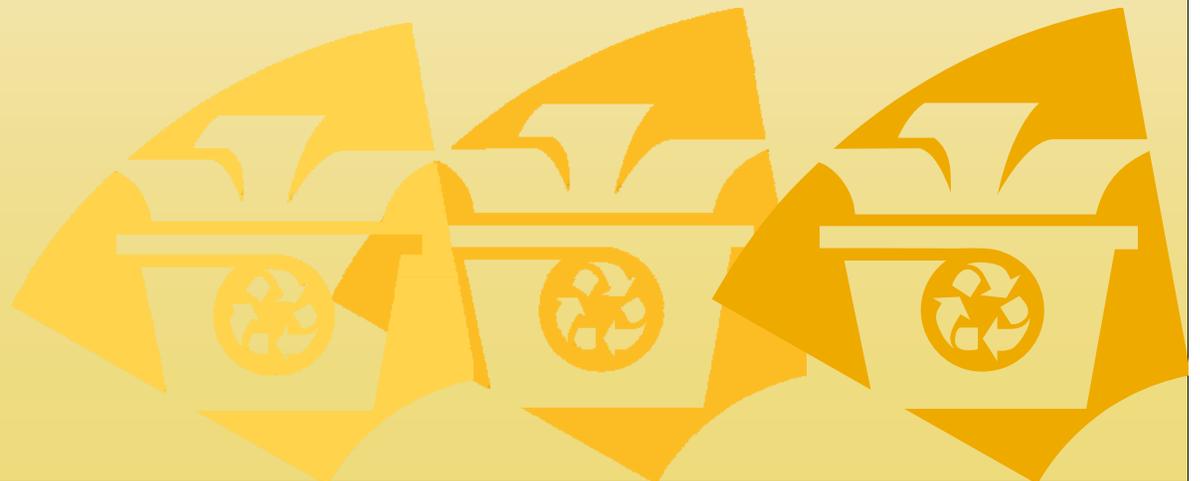
Renewable!

- 100 MWH from Coal is Equivalent to a 9,000-Unit Coal Train
- Waste – To – Energy Allows us to Conserve Our World's Natural Resources
- Waste – To – Energy Increases Our Energy Independence Locally
- And- We Get the Added Benefit of Reducing the Volume of Waste Landfilled by 90%

Environmental Benefits



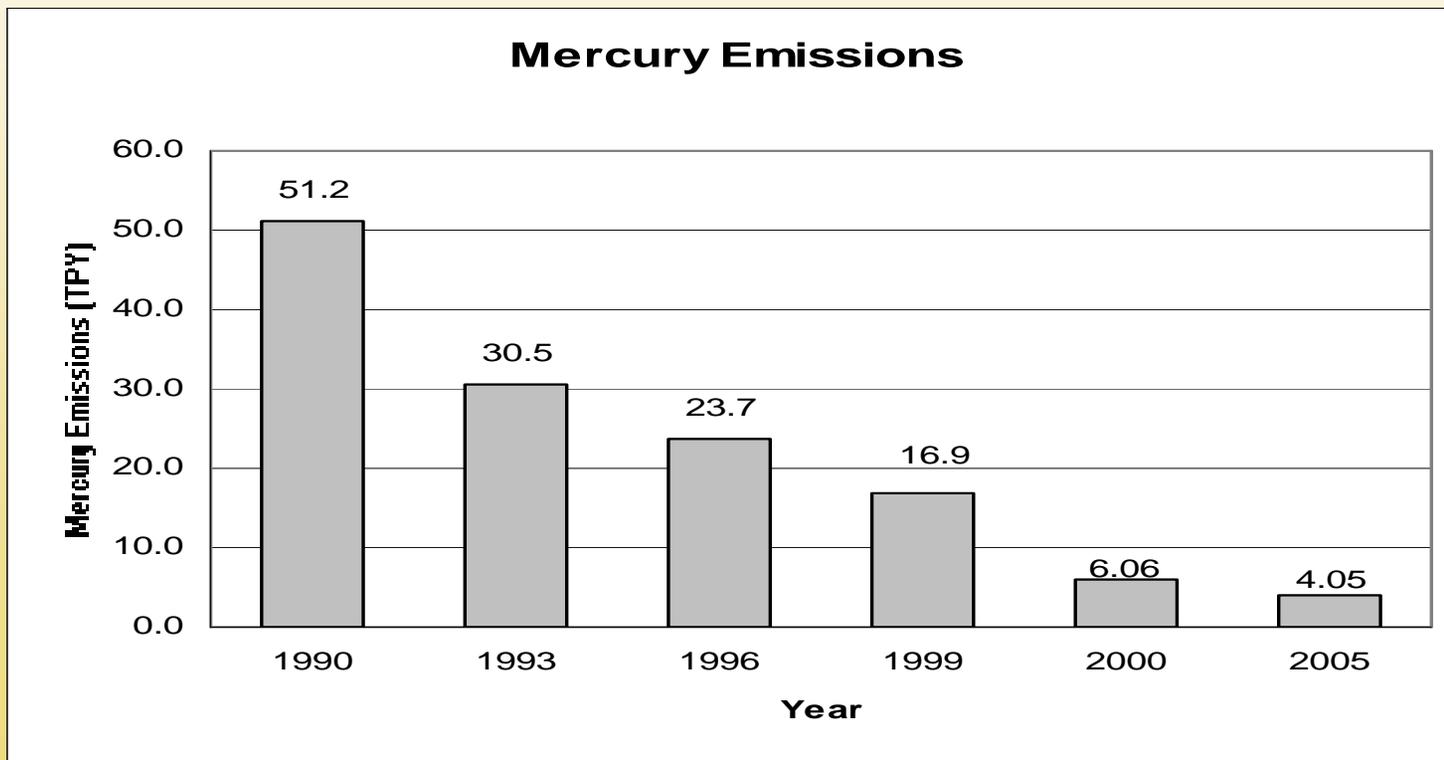
- New Clean Air Act Standards
- Reduction in Greenhouse Gases
- Land Use Benefits
- Support for Recycling
- Keeps Our Waters Clean



Environmental Benefits



- Controlling Mercury



Source: Environmental Protection Agency, 9/99



Environmental Benefits

- Reducing Greenhouse Gas
- Kerry-Lieberman Bill: Carbon Credits
 - Minnesota's Waste – To – Energy Facilities:
 - In 2005, MN WTE and recycling activities reduced carbon dioxide and methane gases
 - Reduction was the equivalent of taking **89,736** cars off of the road



Environmental Benefits

- Land Use Benefits
 - Resource conservation
 - Trash volume is reduced by 90%
 - Resulting 10% ash is stable, inert
 - Heavy metals do not leach
 - Ash consistently passes EPA and State Tests
 - Combined / bottom ash leachate meets drinking water quality standards for metals

Environmental Benefits



- Land Use Benefits
 - Ash disposal in lined landfills with leachate collection
 - Ash Reuse:
 - Landfill daily cover (instead of virgin dirt)
 - Road and concrete construction
 - Polk County's Experience

Environmental Benefits



- Supporting Recycling
 - Waste – to – energy and recycling do not compete; they are complimentary parts of integrated waste management program
 - Recycling rates of Minnesota communities with waste – to – energy facilities are consistently some of the highest in the State
 - Nationally, communities with waste – to – energy are 5% higher than others

New Technologies/New Facilities



- Europe
- Japan
- East Coast
- Rational energies/others

Keys To Success for Development



- State Support
- Landfill Crisis
- Energy Market
- Economic Development
- Believing It Is The Right Thing To Do

