Waste Management's Natural Gas Fleet

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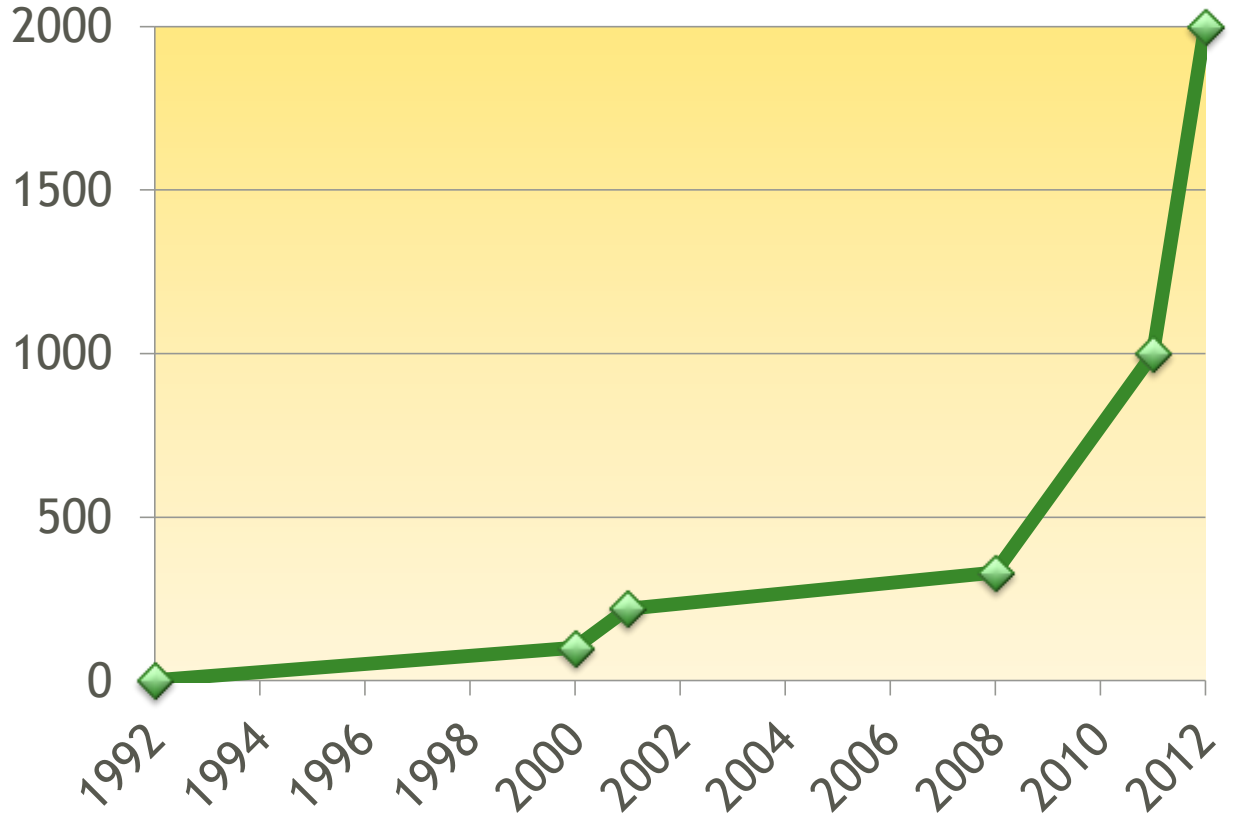
An Early Adopter of NGV

CNG, LNG Vehicles in Fleet



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Tightening EPA Diesel Emission Limits

Heavy emission control equipment reduces payload

Weight needed to comply with new regulations	
2004	117 pounds
2007	1,000
2010	900
TOTAL	**2,017 pounds**

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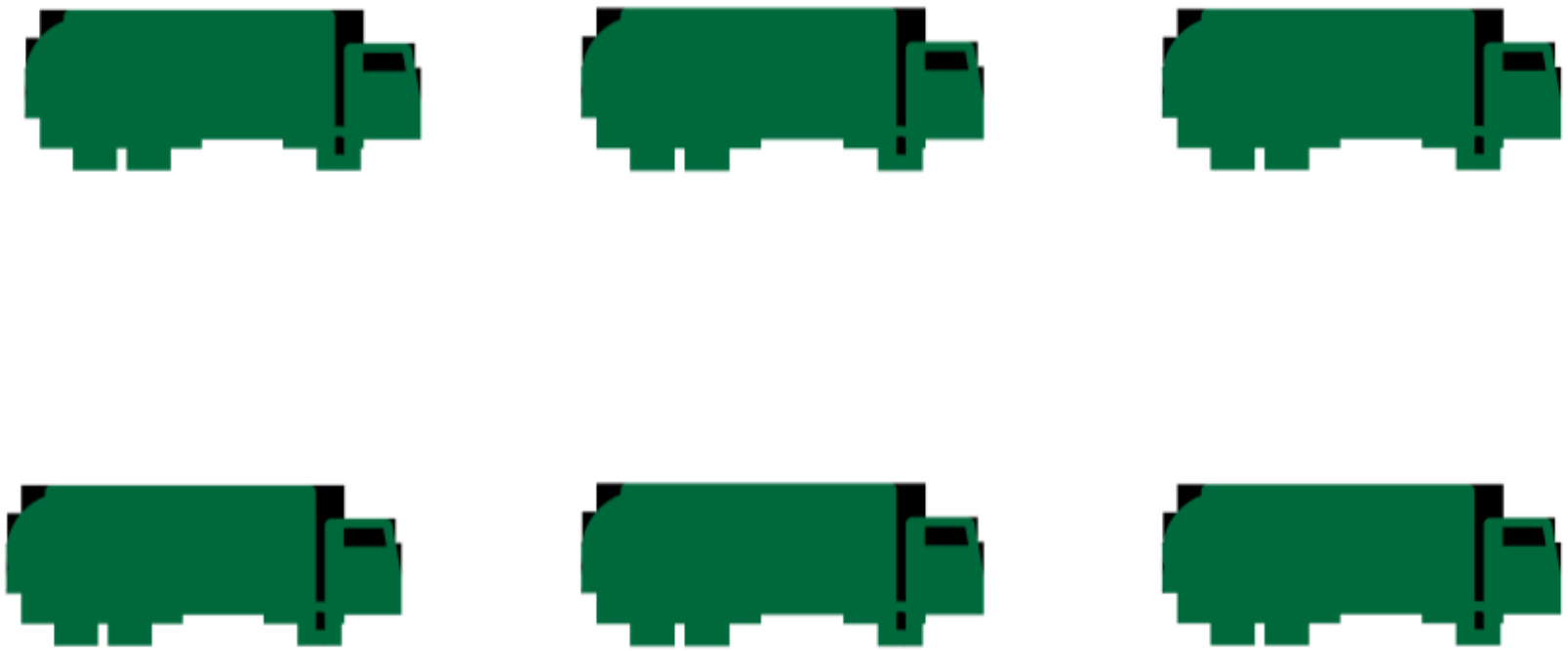
Added trucks needed to transport 1,000 tons

Pre-2004 v. 2010



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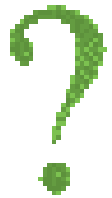
2008 Forces of Change

- EPA regulations reducing efficiency
- Customer demand for cleaner trucks
  Example: City of Seattle
- New generation of engines and appealing warranties

2007 Forces of Change

- EPA regulations reducing efficiency
- Customer demand for cleaner trucks --
  City of Seattle contract required 100+ alternative fuel trucks
- New generation of natural gas engines carried appealing warranties, but were expensive and unproven – Were they the answer?



NGV: A Clear Winner

- Maintained Payload
- Lower Fuel Costs
- Domestic Fuel Sources
- Maintenance Savings
- Quieter
- Customer Appeal
- Lower emissions

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Emissions Reduction

The Benefits:

- Smog-producing NOx emissions are reduced up to 50% compared to 2010 diesel engines and even more compared to the older diesel engines we are replacing;
- Greenhouse gas emissions (GHG) are reduced up to 25 percent over standard diesel engines; and
- When we can use LNG or CNG derived from landfill gas versus standard pipeline gas GHG can be reduced by over 90%.

WM's NGV Opportunity

- WM has 32,000 vehicles
- Over 18,000 are Class 8 collection trucks
- 12,000 support vehicles including heavy off-road equipment used at landfills, delivery vans and supervisor trucks

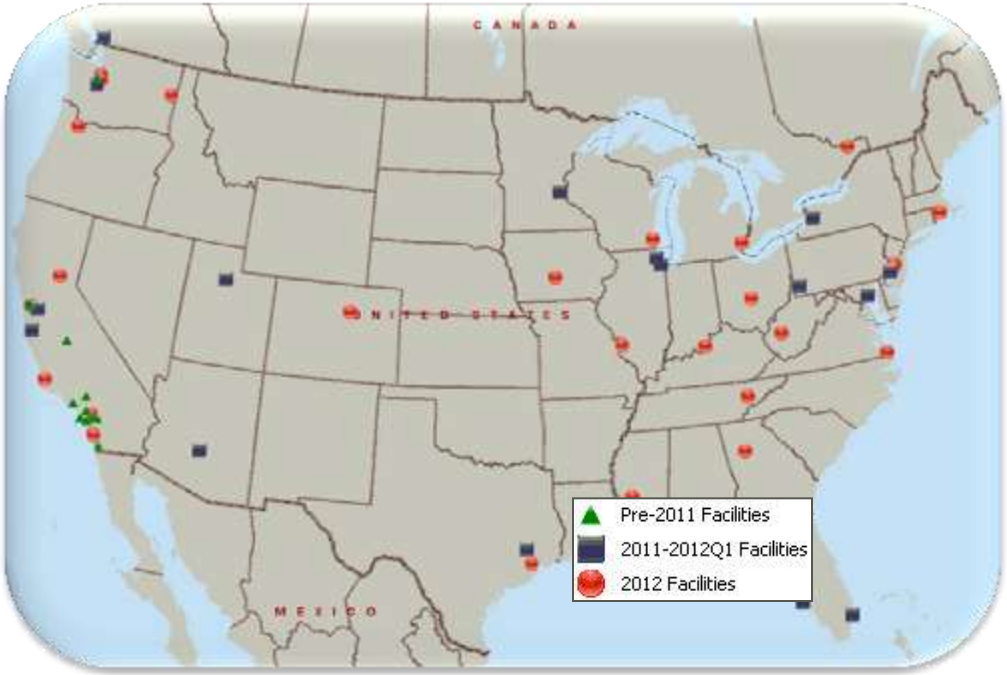
WM's Fleet Goal: Reduce emissions and increase fuel efficiency by 15% by 2020

- WM will replace 80% of its new class 8 vehicles with natural gas trucks
- We will build 25 natural gas fueling stations each year
- We will purchase 700-1,000 natural gas vehicles each year

Current Status of WMs Green Fleet Transition

- 2,000 natural gas trucks on the road today - the largest fleet of heavy duty natural gas trucks in N. America
- In 2012 we achieved our 2020 emissions and fuel efficiency goals -- saving 350 million gallons of fuel and reducing 3.5 million metric tons of carbon dioxide
- We are investing in new natural gas fueling stations to support our fleet:
  - ✓ 40 stations were operational by year end 2012.
  - ✓ 13 new CNG fueling stations opened In 2012 – 7 more are under construction
  - ✓ 15 stations have public access & another 7 have public access for pre-approved customers

2012 Deployment



- 2,000 NGV trucks, the largest heavy duty NGV fleet in North America
- 40 natural gas fueling stations

- In 2012 we achieved our 2020 emissions and fuel efficiency goals -- saving 350 million gallons of fuel and reducing 3.5 million metric tons of carbon dioxide

The Quest for Renewable Fuels

WM's Strategy:
Extract value from the materials we handle

We manage over **100 million tons** of feedstock each year that can be used to create electricity, fuel and green chemicals

New technologies will let us tap this valuable resource

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The Link

Feedstock

- WM manages over 100 million tons of materials annually
- 30-35 million tons are organic in nature (excluding recycled paper, cardboard, etc)

Processing

- The organics we manage can be converted to biogas
- WM is investing in technologies to convert waste materials into electricity, fuel and green chemicals

Off-Take

- WM's 8,000 heavy duty vehicles each use an average of 8,000 gallons of diesel/year

Biogas / Technology Investments

Landfill Gas: The Low Hanging Fruit

- Anaerobic decomposition of organic waste creates biogenic gas
- Gas is about half methane and half carbon dioxide.
- Quantities are 450 to 550 BTU per cubic foot of landfill gas
- It's a medium BTU gas

Landfill Gas Collection System

Landfill Gas to Fuel

- A joint venture with Linde North America resulted in the world's largest plant to convert landfill gas to ultra low-carbon liquefied natural gas.
- Carbon emissions are 97% lower than diesel.
- The facility produces up to 13,000 gallons of LNG a day and powers over 300 WM natural gas trucks in California.
- $15.5 million capital investment and $2 million in government grant funding

Future Plans

- Natural gas engines are flexible and can be powered by other renewable fuels such as bio-methane
- WM will continue to experiment with Class 6 & 7 electric vehicles and hybrids as the technology becomes economically viable.
- Transitioning off-road, heavy equipment to alternative fuels.
- Testing four diesel-electric hybrid bulldozers that have a dramatically different life cycle than our traditional power train tractors as well as improved fuel efficiency.

WM considers natural gas trucks to be a bridge to future technologies. We are striving to move towards a true zero emissions vehicle (ZEV)

Thank You!

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