

GENERAL MOTORS



## The Role of Collaboration in Driving Sustainable Manufacturing

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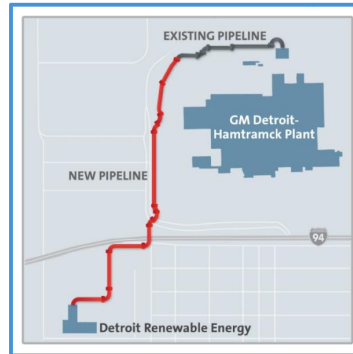
Global Sustainability Manager, General Motors

# RENEWABLE ENERGY

We believe in harnessing the power of renewable and alternative energy and we're one of the leading users in the manufacturing sector.



Solar



Waste to energy



Landfill Gas



# Solar Power – Installations

*Global solar footprint equivalent to the size of 104 football fields*



46MW at  
18 facilities

Commitment:  
125MW by 2020

*Opel Rüsselsheim facility in Germany, 8MW rooftop array*



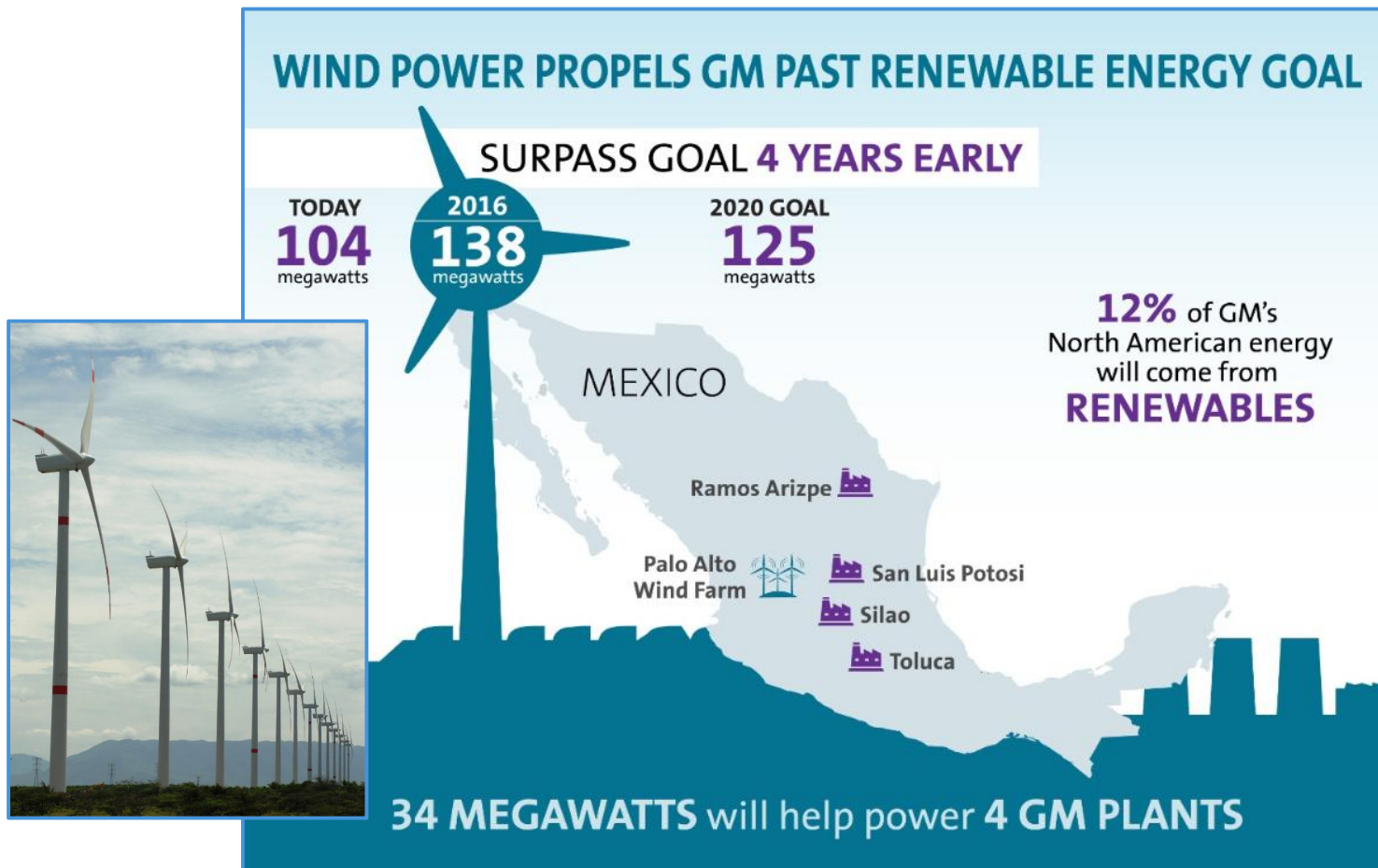
# Landfill Gas

- One of the largest industrial users of landfill gas in U.S.
- Three plants use landfill gas
  - Ft Wayne Assembly 22%
  - Orion Assembly 21%
  - Toledo Transmission 16%



# Wind Power

*First investment in wind power; expected to be live in 2016*



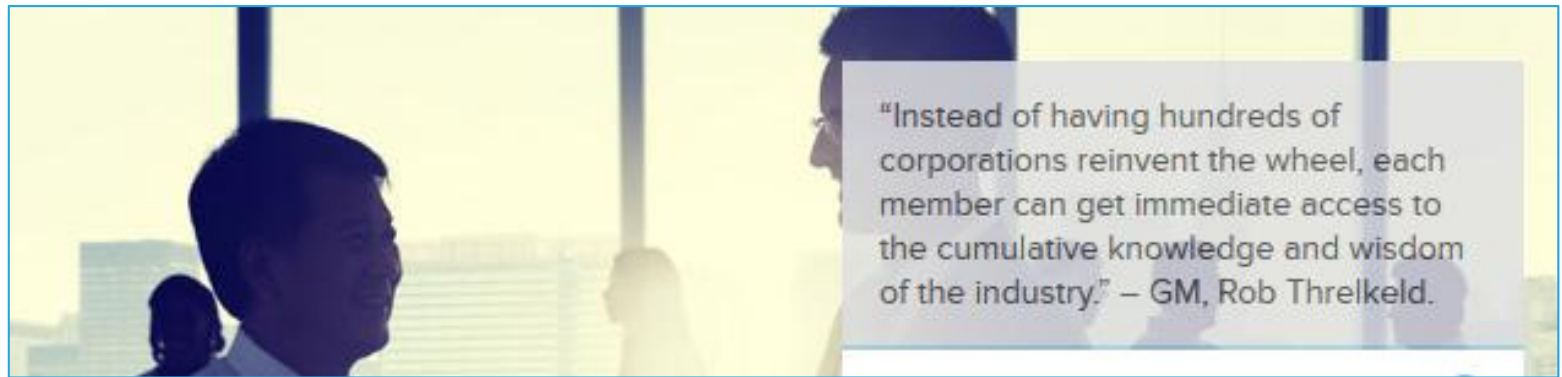
# Renewable Energy Buyers' Principles

*WWF, World Resources Institute and other companies teamed up to establish guidelines to help make renewable investments easier*



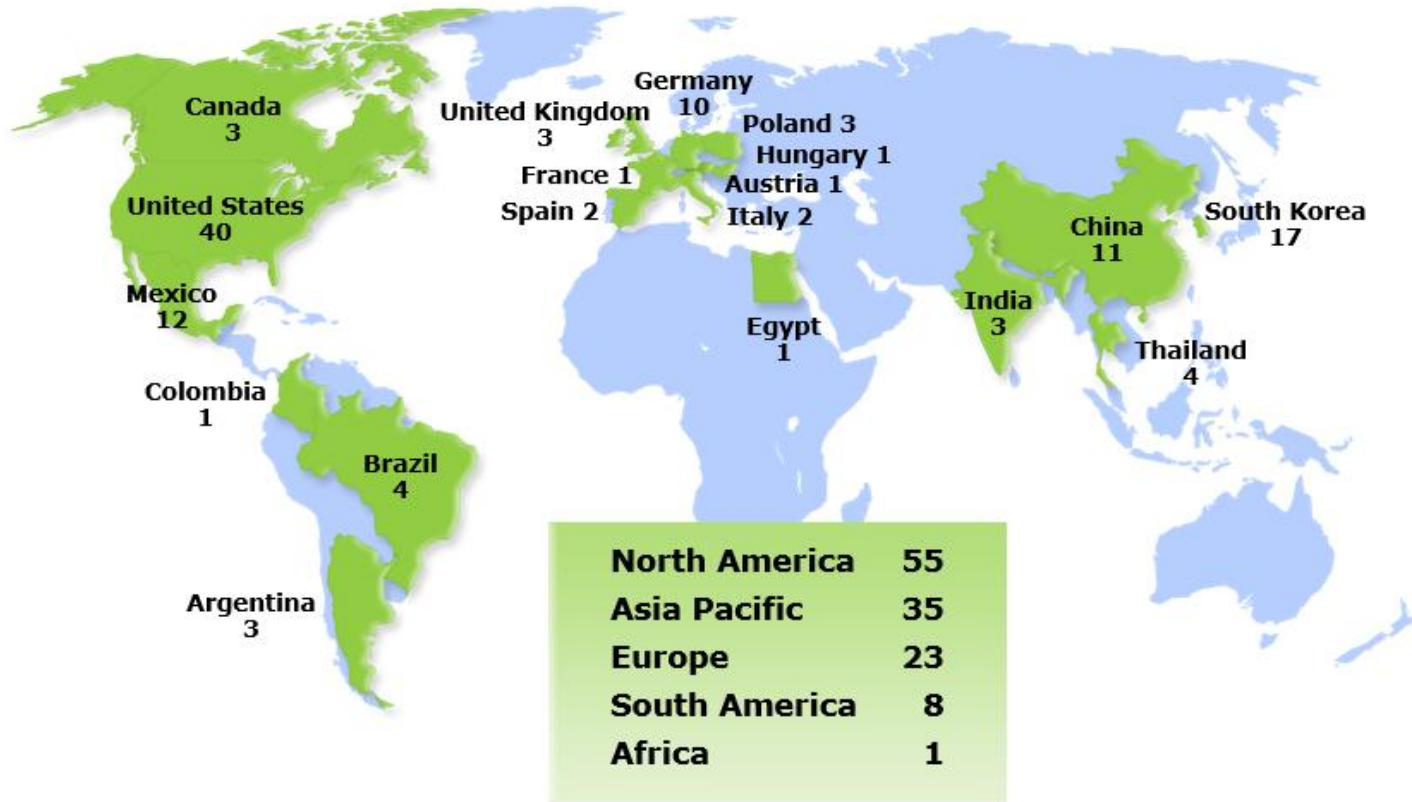
# Business Renewables Center

*Collaboration with Rocky Mountain Institute and other companies to accelerate renewable energy procurement*



# 122 Landfill-Free Facilities

*No other manufacturer has as many facilities contributing zero waste to landfill*



**88** MANUFACTURING OPERATIONS

**34** NON-MANUFACTURING OPERATIONS

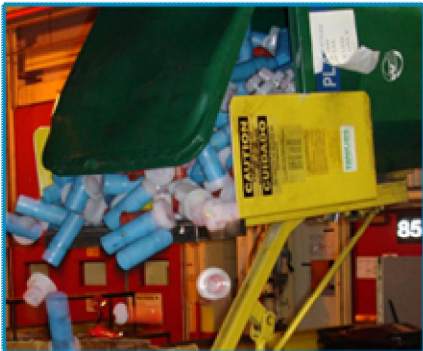




# Re-Use of Automotive Byproducts



Buick Verano  
Recycled cardboard  
used in headliner



GMC Sierra  
Plastic caps and  
shipping aids used  
in radiator shrouds



Chevrolet Volt  
Old tires used in air  
and water baffles



# Gulf Oil Booms Find New Life in Chevrolet Volt



**227 miles**  
of booms incorporated  
into air deflectors

**212,500 pounds**  
of waste prevented from  
entering landfills



**149 tons**  
of CO<sub>2</sub>-equivalent  
emissions eliminated

# Shipping Crates = Raised Urban Garden Beds

1,200 shipping crates from Orion Assembly turned into raised beds



Provides nearby residents and soup kitchens with nutritious, locally grown food



# Volt Battery Cases Benefit Wildlife

- **700** scrap Volt battery covers repurposed into wildlife nesting boxes
- Provides safe place to lay eggs
- Alternative use for thermoset, glass filled commodity



# Corvette Adhesive Repurposed as Stalactites

- Piloted turning leftover adhesive into **stalactites**
- Anti-chip paint coating gives it the texture needed for bats to grip the surface



# Collaboration Key to Innovative Projects

- Helped launch **Reuse Opportunity Collaboratory Detroit**
- Brings together institutions, businesses, and entrepreneurs to develop zero-waste partnerships
- Concept: one organization's waste becomes another's raw material



ROC DETROIT



# Habitat Enhancement

40 sites certified by:



5,000 acres  
dedicated



# Watershed Education

GM GREEN: Global Rivers Environmental Education Network

- 10,000 students matched with GM volunteers/year
- Supported GREEN since 1989
- Educated over 150,000 students
- In 53 communities





# Engaging Dealers: Green Dealer Program

*Encourage dealers to continue their sustainability efforts and build a best-practice sharing network*



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