Driving to a Closed Loop Business Model & Zero Waste

Zero Waste Business Council Conference

John Gardner, Chief Sustainability Officer
World’s Largest Aluminum Roller

Novelis
Working Closely With Our Customers On Next-Generation Products

**Beverage Cans**
- Anheuser Busch
- Crown Cork & Seal
- Coca-Cola
- Rexam
- Ball

**High-End Specialties**
- Pactiv
- LG
- Samsung
- Velux
- Prefa

**Automotive**
- Audi
- Jaguar
- Land-Rover
- Hyundai
- BMW
- GM
- Mercedes-Benz

*Long-term annual growth rate (CY10-15)*
Creating a Closed Loop Circular Economy

- Bauxite Mining
- Alumina Refining
- Primary Smelting
- Production Scrap
- Rolling
- Ingot Casting
- Re-Melting
- Shredding & De-Coating
- Customer Production
- Recycle/Collection/Scrap
A Lifecycle Approach

- Half Absolute GHG Emissions
- Zero Waste-to-Landfill 2020 Goal at Novelis Operations
- Improve Energy Efficiency by 39% & Water by 25% by 2020
- Work with Customers to design for improved Life Cycle & Recycling
- Increasing Consumer Recycling Rates
Our Focus
On Recycling

Novelis will increase its current use of recycled aluminum from 33% to 80% by 2020.

This will remove 10 million metric tons of greenhouse gas emissions from the aluminum product value chain annually.
Primary Aluminum & Waste

Aluminum is 3\textsuperscript{rd} most abundant element. It is refined from the raw material bauxite.

Refining bauxite produces 2 tones of “red mud” waste for every tone of aluminum.

This past year, Novelis recycling prevented the production of \textit{2.5 million metric tones of red mud waste}. 
Our Waste Profile

Landfilled Material By Type (%)

- Dross (est. third-party disposal) 66
- Refractory
- Sludges 6
- Plant Trash 5
- Filter Media 5
- Other 3

Many different waste products

Waste By Process Method (FY13)

- Landfilled 24%
- Incinerated 1%
- Recycled 75%

We currently recycle 75% of our waste
Our Waste Challenges

- Increasing global footprint and growing recycling operations
- Increased volumes of waste
- More types and less clean scrap
- More impurities and thus more waste
- Unique waste profile, & new wastes coming with new processes
- Difficult to find end-use markets for our waste
Our Actions

- Created a Global Environmental Waste network to share best practices & develop strategic plans to meet Zero Waste goal
- Using research & development to find solutions to both increase the efficiency of our processes and reduce waste
- Seeking markets & partners that can use our waste products as feedstock, such as the cement industry

As of FY14, Novelis had 4 plants that were zero waste
We are nearly **doubling our recycling capacity** from 1.2 million metric tons to 2.1 million metric tons by 2015.
Growing & Diversifying our Scrap Inputs

- Can Scrap
  - 1 Million Tons
  - 2 Million Tons
  - >4 Million Tons

- Non-Can Scrap
  - 1 Million Tons

- 2011
- 2015
- 2020
So how is the 80% progressing?
Working Closely With Our Customers On Next-Generation Products

Driving research and innovation to:
- find ways for products to be more sustainable, use more recycled content
- develop products that are more easily recycled, recycling process technology
evercan™
New Standard of Sustainability for Beverage Packaging

We aim to change our “whole business model from a traditional linear one to a closed-loop one”.

- World’s first independently certified high recycled content can body sheet
- Now commercially available in Asia, Europe, North America & South America

Not just aluminum, Novelis Aluminum.
Novelis is a Catalyst for Sustainable Innovation

2014 Range Rover: 100% Novelis Aluminum

Weight Loss
700 lbs saved from Aluminum unibody and hang-ons

Performance
“...light-weighted Range Rover feels likewise transformed”

Economy
9% improvement in mpg while cutting 0 to 60 mph by one second

Awards
“...the cycle of burgeoning weight and engine power has ended”

Not just aluminum, Novelis Aluminum.
Thank you for Recycling

Novelis
Not just aluminum, Novelis Aluminum.