

The Arauco logo is positioned in the top right corner of the slide. It consists of the word "arauco" in a white, lowercase, sans-serif font. The background of the slide is a dark grey color with abstract geometric shapes: a bright orange triangle in the top left, a large yellow-green triangle on the right side, and thin white lines that intersect to form various shapes across the slide.

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Arauco North America *Sustainability Program*

John Bird, P.E.
April 2018 CAPCA

Arauco Sustainability Policy

ARAUCO

Ensuring that our business is both successful today and sustainable for the long term is critically important for all ARAUCO North America employees. We sustain our company through application of our business principles, continued re-investment in our operations, engagement of all our employees, and a deep commitment to environmental stewardship and carbon footprint reductions.

At ARAUCO North America we are committed to:

- Sustaining our operations through our Business Principles.
 - Continually re-investing in our operations, people, and communities.
 - Supporting vertical integration and co-location to reduce freight and greenhouse gases when possible.
 - Reducing impacts by cutting energy, resin and fiber use.
 - Offering products that conform with environmental stewardship and green building standards.
-

Raw Material Sourcing

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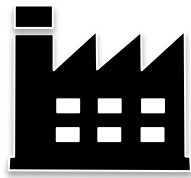
- The foundation for a manufacturing operation is the sourcing of raw materials. The raw materials need to be secure, stable, and legal.
- Arauco relies on local forestry and wood products residuals to supply all of its North American operations with raw materials.
- Arauco also conducts internal and 3rd party auditing of its raw materials streams to verify the materials are harvested from sustainable working forests.

Efforts to Reduce Energy and GHG Across North America

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- Developing an Emissions/Energy Inventory
- Energy Management Systems
- Creative Process Management to Reduce Emissions
- Prevention of Greenhouse Gas Generation in Project Management

GHG Emissions Definitions



Scope 1

Scope 3



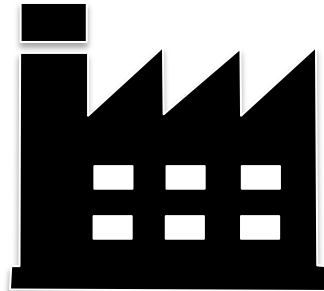
Scope 2

Scope 1 – Direct emissions from owned or controlled sources.

Scope 2 – Indirect emissions from power generation.

Scope 3 – Indirect emissions that occur in the value chain of the facility

GHG Emissions Profile



Scope 1 (60%)




Scope 2 (36%)



Scope 3 (4%)

Arauco is an energy intensive manufacturing company. Scope 1 emissions and Scope 2 emissions can be managed to a greater impact than Scope 3. For example reducing natural gas usage by 1% across the company = removal of ~600 cars from the road.

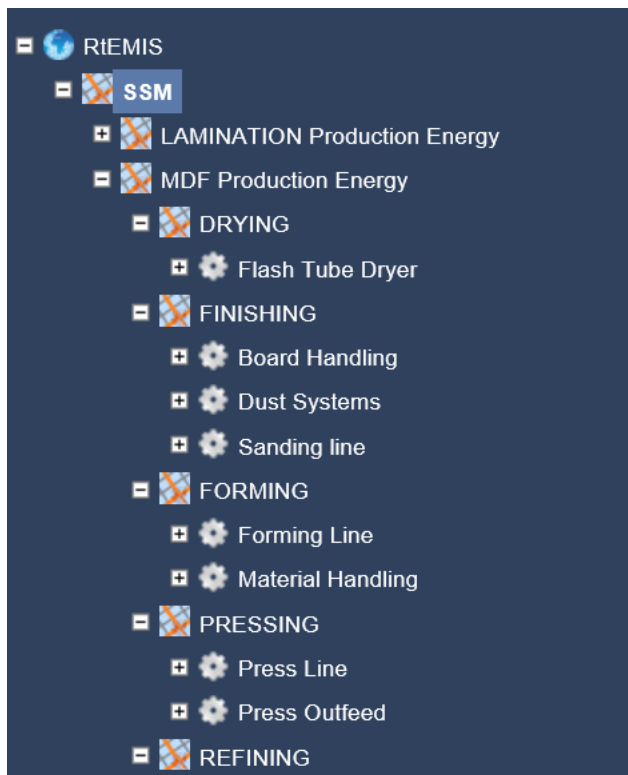
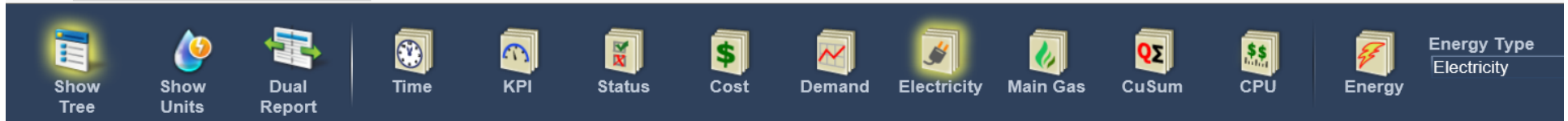
For now, Scope 1 and 2 emissions have internal metrics and goals.

The Arauco logo, consisting of the word "arauco" in a bold, lowercase, sans-serif font.Two thin, light gray lines that intersect. One is a straight line sloping upwards from left to right. The other is a curved line that starts high on the right and curves downwards towards the left, crossing the straight line.

How have we reduced emissions
and energy use?

Energy Management Systems

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Site has the ability to actively manage electrical, water, natural gas, and other process inputs through an intuitive user interface.

Plant is broken in to manufacturing areas with multiple drop downs for pieces of equipment with individual meters tied to one interface for tracking

Example Energy Management System

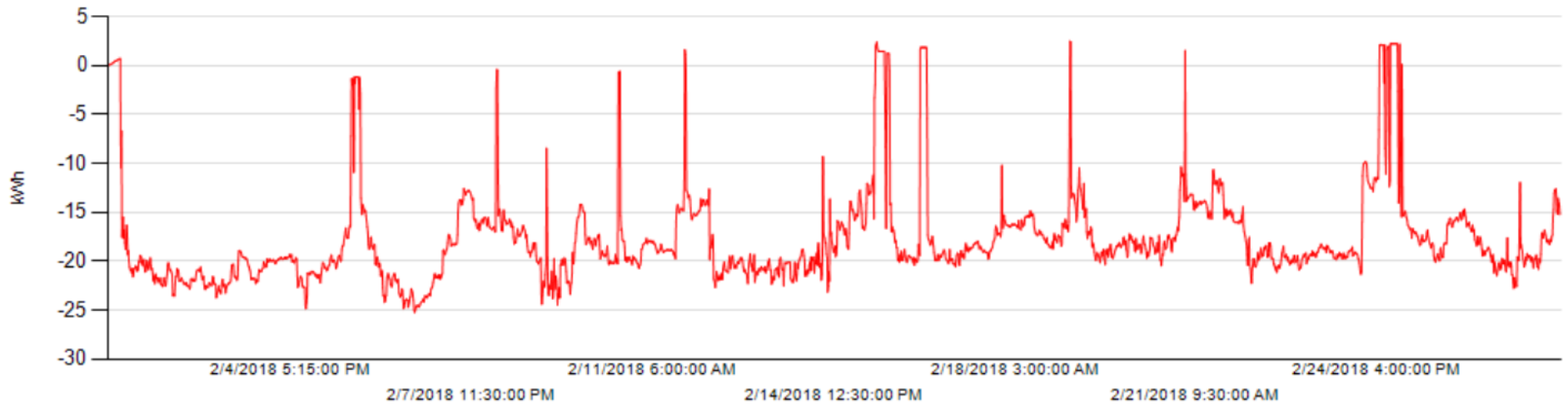
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Navigation menu with icons and labels: Show Tree, Show Units, Dual Report, Time, KPI, Status, Cost, Demand, Electricity, Main Gas, CuSum, CPU, Energy Type Electricity.

Start Date: 2/1/2018 12:00:00 AM

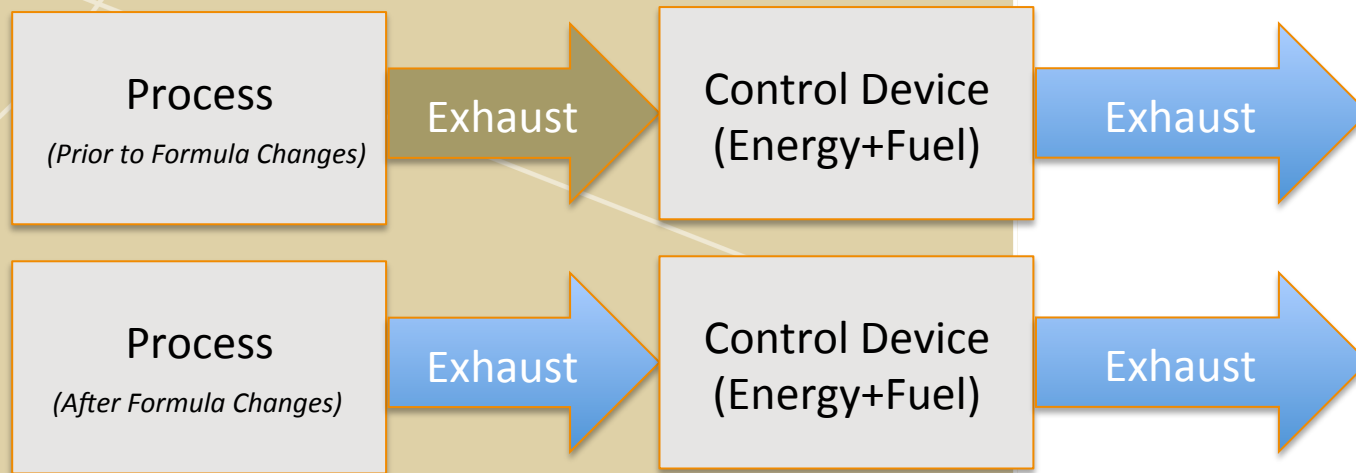
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Cumulative Sum of Savings vs. Target



Creative Process Management

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The Hierarchy of Hazard Control rates the best solution to a hazard as the elimination altogether of the hazard. Arauco has voluntarily complied with the California Air Toxics Control Measure since 2009 and has worked with resin suppliers to significantly reduce other targeted HAPs resulting in compliance with Federal emission standards prior to emissions control equipment.

Applied to Grants for Energy Efficiency Projects



Our sites have taken advantage of grants through the US Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) Advanced Manufacturing Office. This office has provided grants funding the consulting on energy efficiency and tracking down locations of electrical waste onsite.

GHG Prevention in Permitting

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Arauco is always researching the newest and best technologies for implementation at sites. Working through the N.C. Department of Environmental Quality, Arauco successfully permitted a biofilter as BACT for wood products dryers. Industry standard for MACT and PSD BACT has been incineration based technology. By installing a biofilter instead, Arauco has reduced its potential CO₂ emissions by 9,600 metric tonnes per year (~2,000 cars) and prevented the subsequent significant increase in NO_x emissions as well.

Sustainability Program Challenges

- Ensuring stewardship/certification programs are providing value.
- Questionable accuracy of Emissions and Electrical Usage
- Developing New Metrics and Means to Measure Them
- High Implementation Costs of Energy Management Systems
- Passive participation & Lack of leadership at local sites

Sustainability Program Benefits

- Major cost savings can be found in primary input costs for production like electricity and fuel.
- Employees can become more engaged and empowered in managing their equipment with real results affecting their paychecks.
- Significant societal benefits can be made in reducing direct and indirect impacts from manufacturing.

Results thus far...

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