

Emissions Effluents & Waste Plan

Novelis North America

First Edition
March 2025

Novelis

Contents

01

About

02

Air Emissions

03

Water

04

Spills

05

Waste

06

Plan Revision and
Update

01

About

About

Novelis

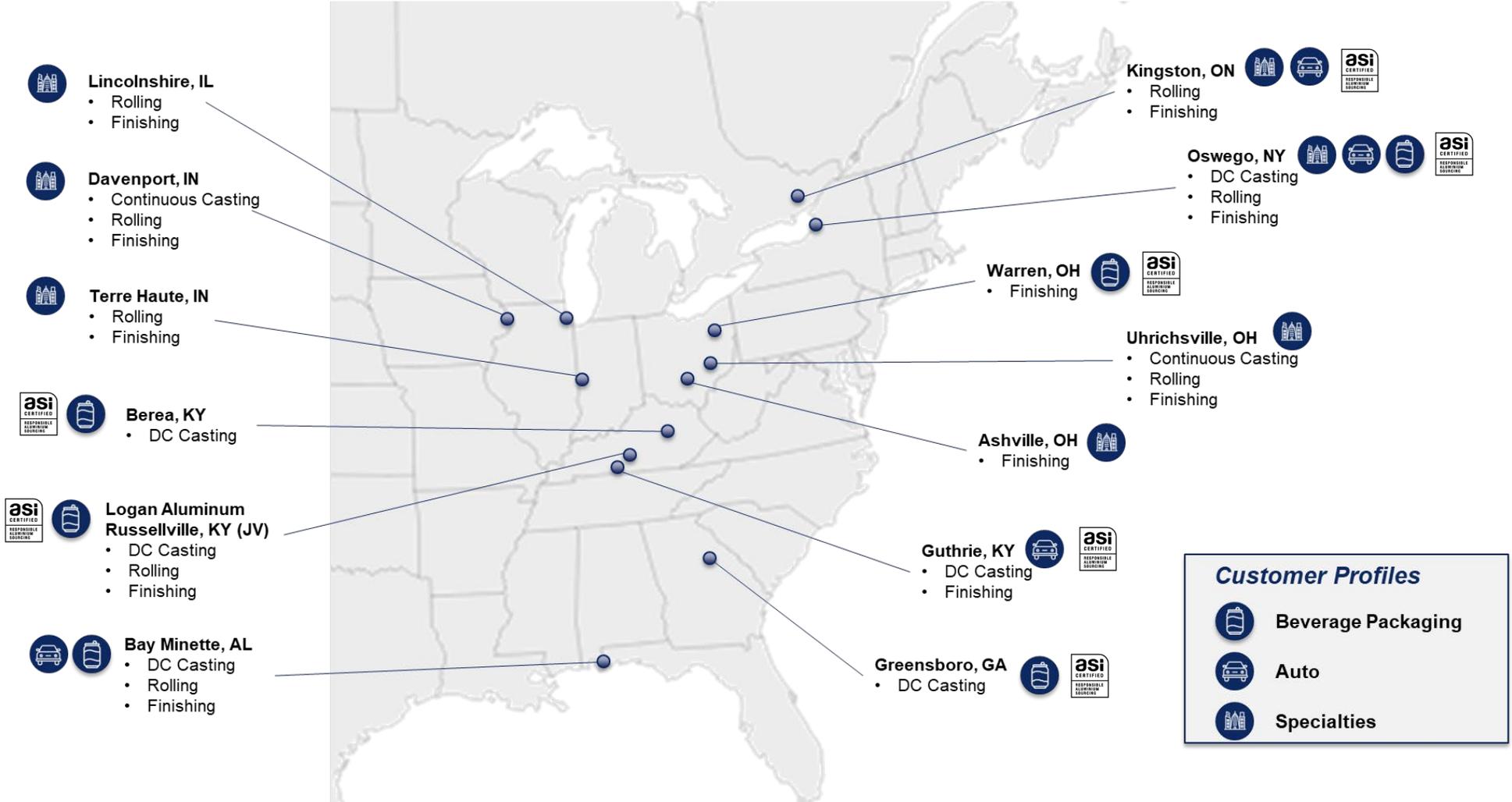
- Novelis is a leading sustainable aluminum solutions provider and a world leader in aluminum rolling and recycling.
- Driven by our purpose of “shaping a sustainable world together,” we work alongside our customers to provide innovative, low-carbon, and high-recycled-content aluminum solutions to the aerospace, automotive, beverage packaging and specialty markets.
- Novelis is a subsidiary of Hindalco Industries Limited, an industry leader in aluminum, copper and metals; and a flagship company of the Aditya Birla Group based in Mumbai, India.

Aluminum Stewardship Initiative (ASi)

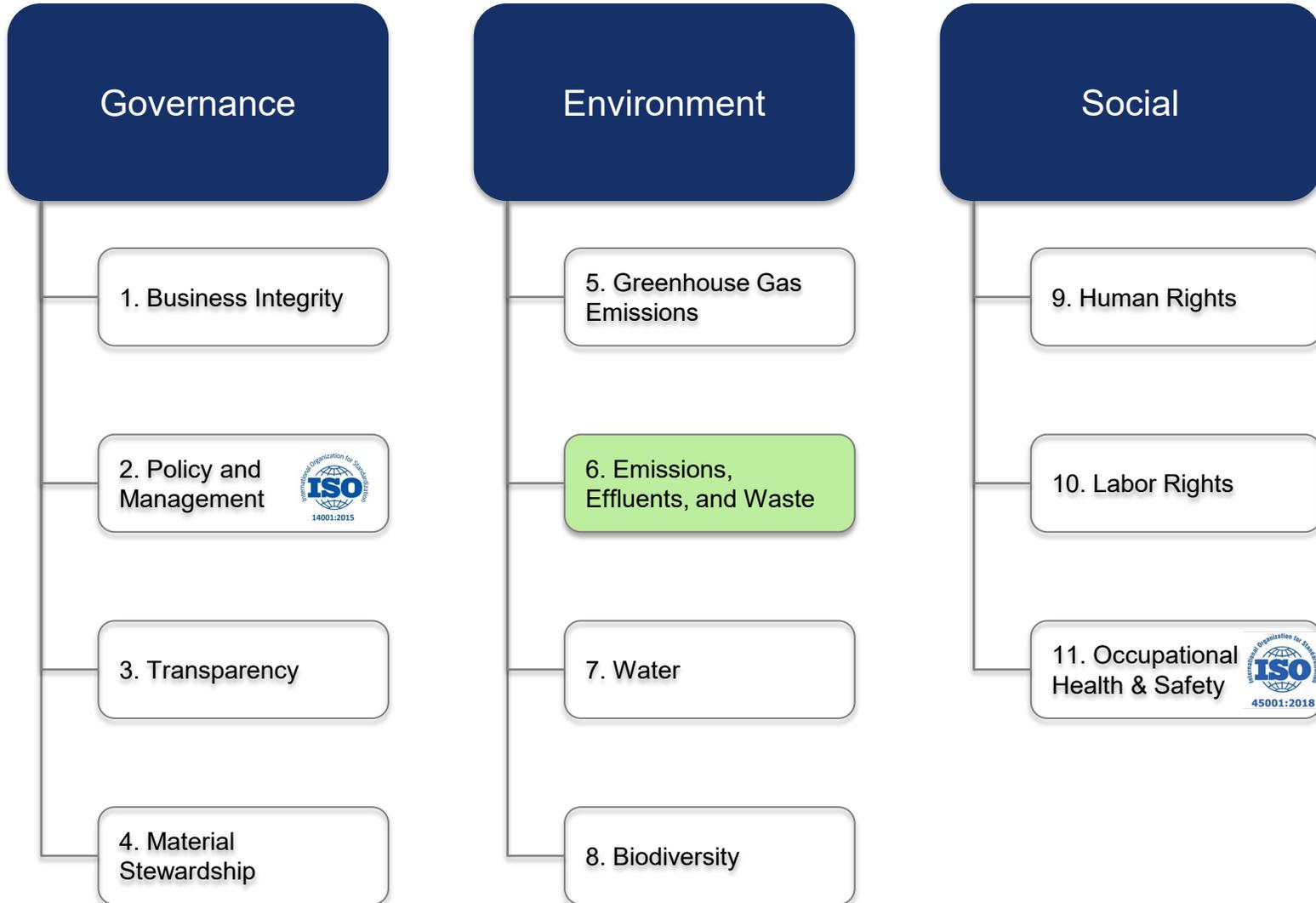
- ASi is a set of globally applicable standards for sustainability performance and material chain-of-custody for the aluminum value chain.
- ASi members voluntarily commit to Environmental Social Governance (ESG) requirements and disclosures
- Seven (7) Novelis North American sites are certified to the ASi Performance Standard and the ASi Chain-of-Custody (CoC) Standard.

Novelis North America

Locations



ASi Performance Standard



ASi Principle:

The Entity shall minimize emissions and effluents that have the potential to adversely impact human health and safety or that of the environment and manage Waste according to the Waste Mitigation Hierarchy.

Emissions, Effluents and Waste

ASi

Plan Organization & Scope

- Novelis has developed an **Emissions, Effluents, and Waste Plan** to meet the substantive requirements of Version 3.1 of the ASi Performance Standard.
- The Plan provides an overview of the efforts across Novelis North America to:
 - minimize exposure to, and impacts from, emissions to air;
 - minimize exposure to, and impacts from, discharges to water;
 - prevent, detect, and respond to spills; and
 - implement a waste management process in accordance with the Waste Minimization Hierarchy
- The plan is available to the public

02

Air Emissions

Air Emissions

ASi

Air Emissions Disclosure

Material air emissions from the Novelis North America sites are disclosed annually in the Novelis Sustainability Report.

[Sustainability - Novelis](#)

Operating Permits

- Air emissions from all Novelis North American sites are governed by Federally enforceable operating permits (Air Permits) issued by the state / province in which the facility operates.
- Operating permits comply with all applicable Federal, State (Provincial), and Local air regulations and are designed to ensure compliance with National Ambient Air Quality Standards (NAAQS)
- Permits establish operating & maintenance requirements for each source of air emissions and each air pollution control device at the facility
- Novelis sites submit semi-annual compliance reports to State environmental agencies and U.S. Environmental Protection Agency

Industry Emissions Standards

Maximum Achievable Control Technology (MACT)

- US-based Novelis facilities are required to comply with stringent emissions standards related to both general industrial processes and aluminum industry
 - **Secondary Aluminum MACT** (40 CFR 63 RRR) establishes emissions standards for aluminum recycling, melting, and casting operations
 - **Metal Coil Surface Coating MACT** (40 CFR SSSS) establishes emissions standards for coil coating processes
 - **Boiler MACT** (40 CFR 63 DDDDD) establishes emissions standards for industrial processes boilers and heaters
- Compliance with MACT standards requires the implementation of rigorous operating and maintenance processes to sustain compliance with industry-leading air emission limits established by the United States Environmental Protection Agency

Site	RRR	SSSS	DDDDD
Berea, KY	X		
Greensboro, GA	X		
Guthrie, KY	X		X
Oswego, NY	X		X
Warren, OH		X	X

Material Air Emissions

Pollutant	Primary Source(s)	Novelis Air Pollution Control
Oxides of Nitrogen (NO _x)	<ul style="list-style-type: none"> • NO_x is a byproduct of the natural gas combustion process • Natural gas is used in aluminum melting and annealing furnaces 	<ul style="list-style-type: none"> • Low-NO_x burners improve heat efficiency and reduce NO_x emissions by 30-50% • Urea injection (Berea, KY) • Combustion system tuning and preventive maintenance
Particulate Matter (PM)	<ul style="list-style-type: none"> • PM is a byproduct of the natural gas combustion process and from aluminum recycling operations • Recycling involves the handling and shredding aluminum scrap 	<ul style="list-style-type: none"> • Baghouse systems are designed to capture air emissions from processes • Emissions pass through filter housings that can reduce particulate emissions by 99+%
Volatile Organic Compounds (VOC)	<ul style="list-style-type: none"> • VOC is generated primarily from aluminum rolling and coating operations • Rolling is the process whereby aluminum is downgauged into coils using specially designed rolling oils 	<ul style="list-style-type: none"> • Emissions from the application of rolling oils are drawn through multi-stage separation technology, including plates, filters, and mist eliminators • Thermal destruction of VOCs from coating operations • Recovered oils are filtered and reused in rolling applications, where possible
Hydrogen Chloride (HCl)	<ul style="list-style-type: none"> • Low levels of HCl are primarily produced from the decoating and melting of aluminum scrap 	<ul style="list-style-type: none"> • Baghouses where HCl emissions are present use a reactant (lime, calcium carbonate, sodium bicarbonate) to neutralize HCl and collect it with the particulate emissions for disposal

Beyond Compliance

Air Pollution Commitment

As the industry leader in aluminum recycling and rolling, Novelis is committed to pollution prevention and operation of world-class facilities

- Since 2020, Novelis has installed or voluntarily upgraded air pollution control systems at several sites across North America
- Voluntary upgrades include new baghouses and rolling mill fume exhaust systems to improve the capture & removal of air pollutants
- New recycling centers in Guthrie, KY and Bay Minette, AL feature best in class technology to minimize air emissions

Looking ahead, Novelis will continue to include pollution control system upgrades in its Capital plan and develop an air pollution control performance standard that will establish minimum expectations for all Novelis sites



**Air Pollution
Control
Investments**

>\$50MM

(Since 2016)

03

Water

Discharges to Water

ASi

Water Use Disclosure

Water consumption from the Novelis North America sites are disclosed annually in the Novelis Sustainability Report.

[Sustainability - Novelis](#)

Water Discharge Permits

- Water discharged from the Novelis North American operations are regulated by three types of permits:
 - General permits for stormwater discharge
 - NPDES permits for discharges from point sources
 - Industrial User Permits for sanitary connections
- Permits are issued by the state in which the facility operates
- Regular sampling of effluent is required to demonstrate compliance

Industry Emissions Standards

Effluent Guidelines

- Novelis facilities are required to comply with stringent discharge limits for both direct and indirect (e.g., sanitary wastewater) discharges from aluminum operations
- Novelis facilities are designed to meet Best Available Technology (BAT) regulated by USEPA under the Aluminum Forming Guidelines
- In addition to USEPA limits, states and municipalities provide additional parameters to sustain local water quality
- Novelis samples wastewater on a regular basis to demonstrate compliance with its permits and reports the results to the governing agency
- Effluent results that exceed regulatory limits are reviewed using the site's corrective action process

Site	Casting	Rolling
Berea, KY	X	
Greensboro, GA	X	
Guthrie, KY	X	X
Oswego, NY	X	X

Industrial Wastewater Parameters

Parameters	Primary Source(s)	Novelis Wastewater Treatment
Dissolved metals	<ul style="list-style-type: none"> • Direct-chill casting process • Etching (surface quality) 	Metals precipitation is incorporated into onsite wastewater treatment facilities to remove dissolved metals
pH	<ul style="list-style-type: none"> • Acids and bases used in surface treatment and to adjust wastewater 	pH is a measure of the acidity of basicity of wastewater. pH is continuously monitored and adjusted (up or down) to meet the permitted effluent range (typical range is 6.5-9.5 S.U.)
Oil & grease	<ul style="list-style-type: none"> • Residual oils from rolling and leveling operations 	Oil/water separation is used to remove residual oils from wastewater prior to discharge
Solids	<ul style="list-style-type: none"> • Metals/fines from machining operations • Solids formed by coagulation in wastewater treatment 	Settling of aggregated materials in a clarifier and filtration using sand or multimedia filters

Beyond Compliance

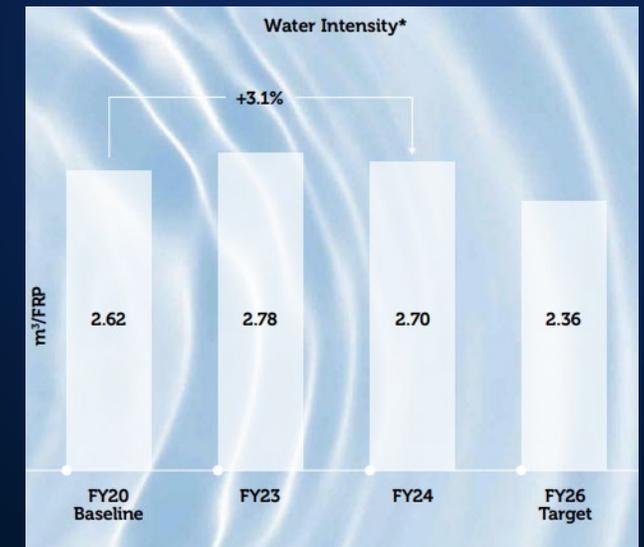
Water Conservation and Pollution Prevention

As the industry leader in aluminum recycling and rolling, Novelis is committed to water conservation and pollution prevention

- Novelis continues to invest in water and wastewater facilities across its facilities
- Improvements include:
 - Closed-loop water system installed in Terre Haute, IN
 - Water supply reliability infrastructure improvements in Oswego, NY
 - Cooling water optimization at Guthrie, KY Recycle Center
 - Bay Minette water optimization and wastewater facilities



Water Conservation



Water Conservation

Novelis is committed to water conservation

- Water is used for direct chill casting and non-contact cooling applications
- Sources of water include municipal water, surface water, and groundwater
 - Novelis discloses the volume of water by source in the Sustainability Report
 - Assessments of water scarcity have been completed for all ASi sites using the Aqueduct tool
- All Novelis North America sites operate cooling water systems to recirculate and reuse water
- Novelis partners with water treatment chemical suppliers to maximize the cycles of concentration in its cooling water systems prior to discharge
- Novelis tracks cooling water intensity (cubic meters of water per metric ton of aluminum produced) on a monthly basis



04

Spills

Spills

ASi

Spill Plan Disclosure

Novelis publishes its spill response and notification process as part of an integrated emergency response plan on the Novelis ASi website. Material spills and environmental liabilities are disclosed in quarterly financial reports on the Novelis Investors page.

[Aluminum Stewardship Initiative: ASI – Novelis](#)

[Novelis Investors & Media](#)

Spill Prevention Control & Countermeasure (SPCC)

- US-based Novelis facilities are required to comply with federal and state regulations pertaining to:
 - Chemical and petroleum storage tanks
 - Spill containment
 - Spill pathways and response measures
 - Spill reporting
- All Novelis North American sites have implemented an SPCC Plan, which includes a detailed spill risk assessment, inspections, non-destructive testing, and spill identification & response procedures
- Material spill events are reported to local and state agencies

Beyond Compliance

Spill Prevention

As the industry leader in aluminum recycling and rolling, Novelis is committed to pollution prevention and operation of world-class facilities

- Novelis developed an internal standard for Spill Prevention, Control, and Response that exceeds regulatory requirements
- Novelis has installed state-of-the-art facilities across North America to prevent the release of petroleum and chemical products

Looking ahead, Novelis will continue to enhance and improve its pollution control facilities at all Novelis sites

05

Waste

Waste

ASi

Waste Disclosure

Landfilled waste from the Novelis North America sites is disclosed annually in the Novelis Sustainability Report.

[Sustainability - Novelis](#)

Waste Management and Reporting

- Novelis facilities are required to comply with federal and state / provincial regulations pertaining to:
 - Waste characterization
 - Waste storage and handling
 - Waste disposition
- All Novelis North American sites have a waste management program that complies with regulatory requirements.
- Novelis follows the waste mitigation hierarchy

Waste Management

Non-Haz Waste	Volume ¹	Description	Application of Waste Mitigation Hierarchy
Dross / Salt cake	74%	Aluminum oxide layer formed during aluminum melting process	Prevention: Guidelines to minimize dross generation Recycling: Dross is shipped to a 3 rd party recycler for aluminum extraction and returned to Novelis for recycling
Baghouse waste	13%	Collected particulate from scrap handling and melting processes	Prevention: Optimal use of lime / bicarbonate Reuse: Beneficial reuse application in sludge stabilization
Refractory	5%	Furnace brick removed from aluminum melting furnaces	Reuse: Beneficial reuse as road base Recycling: Extraction of minerals from waste refractory
Filter Media	3%	Media used to filter rolling oil for reuse	Waste to Energy: Combustion of pulp-based filter media

¹ Percent of total Novelis North America FY2020 baseline



Beyond Compliance

Waste Management

As the industry leader in aluminum recycling and rolling, Novelis is committed to waste minimization and landfill avoidance

- Seek to eliminate hazardous waste generation
 - Hazardous waste currently accounts for <0.1% of total landfilled waste in North America
- Inexpensive landfill options and transportation costs impact availability of beneficial use alternatives in North America
- Novelis conducts environmental assessments of beneficial use alternatives to verify proper management of Novelis materials

Looking ahead, Novelis will continue to seek opportunities to divert waste from landfill, with prioritization of dross residuals (e.g., salt cake) and baghouse waste

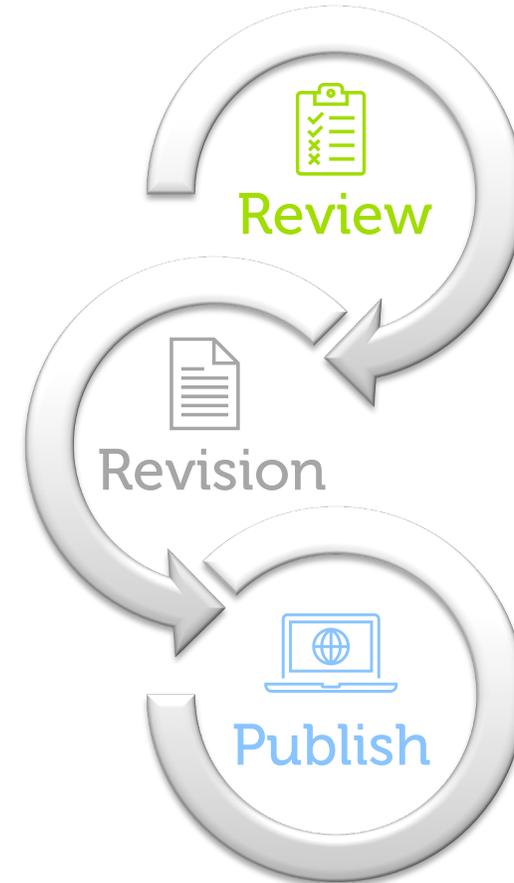
06

Plan Revision and Update

Plan Review & Revision

Governance

- Novelis will review the Emissions Effluents and Waste Plan on a regular basis based on:
 - Changes in operations
 - Changes in regulatory requirements
 - Events that exceed permit limits
- The current version of the plan will be posted on the Novelis.com website



Thank you.

Novelis