Sustainable Steel Buyers Platform

Aggregating Buyer Demand for Near Zero-Emissions Steel

November 2023 Webinar

Agenda

5 min	RMI & Our Work in Steel
10 min	Steel Transition Background
15 min	Sustainable Steel Buyers Platform
10 min	Request for information
15 min	Q&A

RMI's Focus Areas to Decarbonize Iron & Steel

RMI is an independent, nonprofit organization of experts accelerating the clean energy transition.

Producers

Working with **producers** to achieve product parity and accelerate FOAK project development

Finance

Working with **lenders** to establish measurement and disclosure for steel portfolios

Policymakers

Informing policymakers on regional economic development opportunities and collaborating on mechanisms to accelerate transition

Purchasers

Working with **buyers** to establish a climate differentiated markets and advance related accounting & digital tools

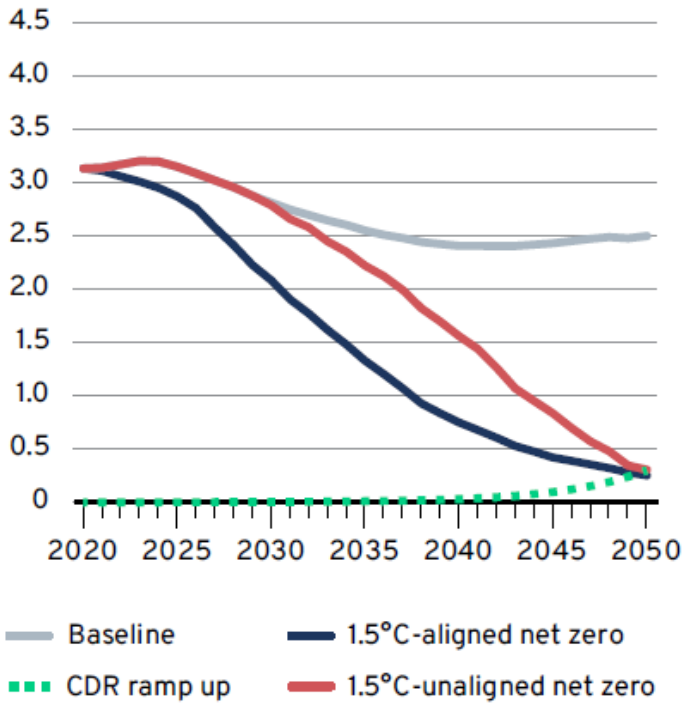
SUSTAINABLE STEEL BUYERS PLATFORM

Our Goals

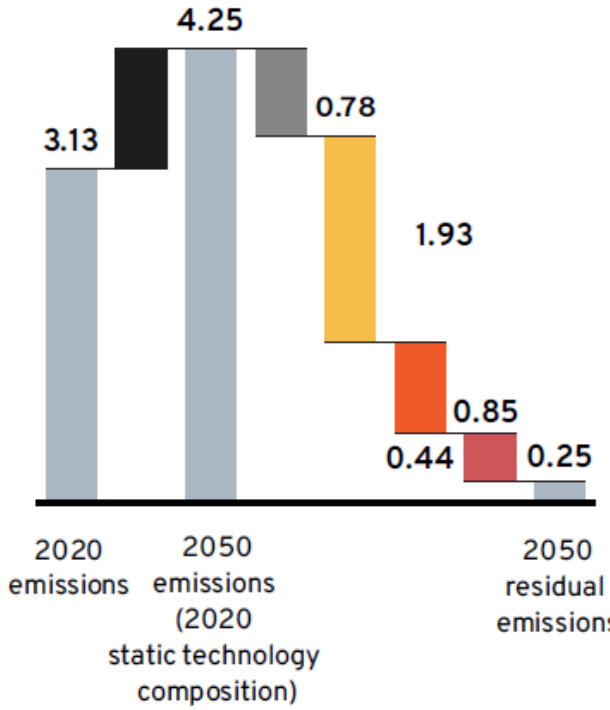
1. Accelerate the **investment case** for breakthrough technologies for near-zero emissions assets as ~190mtpa capacity needed by 2030 for 1.5C Climate Alignment.
2. Provide a platform for iron and steel supply chain industries, policymakers and NGO partners to engage with **topics related to procurement** of sustainable steel.

Global steelmaking can achieve net zero by 2050

Annual CO_2 emissions (Scope 1 & 2), in Gt CO_2/y



Annual CO_2 emissions (Scope 1 & 2) reduction per decarbonisation lever, in Gt CO_2



% of cumulative reduction (2020–50)

~19%

Secondary steelmaking
- Increasing availability and usage of scrap for crude steel production

~44%

Near-zero-emissions ironmaking
- Iron reduction with natural gas, green hydrogen, and bioenergy

~21%

Carbon capture
- Capturing and/or utilising carbon from process and energy emissions

~9%

Other lower-carbon technologies
- Novel technologies that are lower carbon but not near-zero emissions (e.g., smelting reduction without CCUS)

~7%

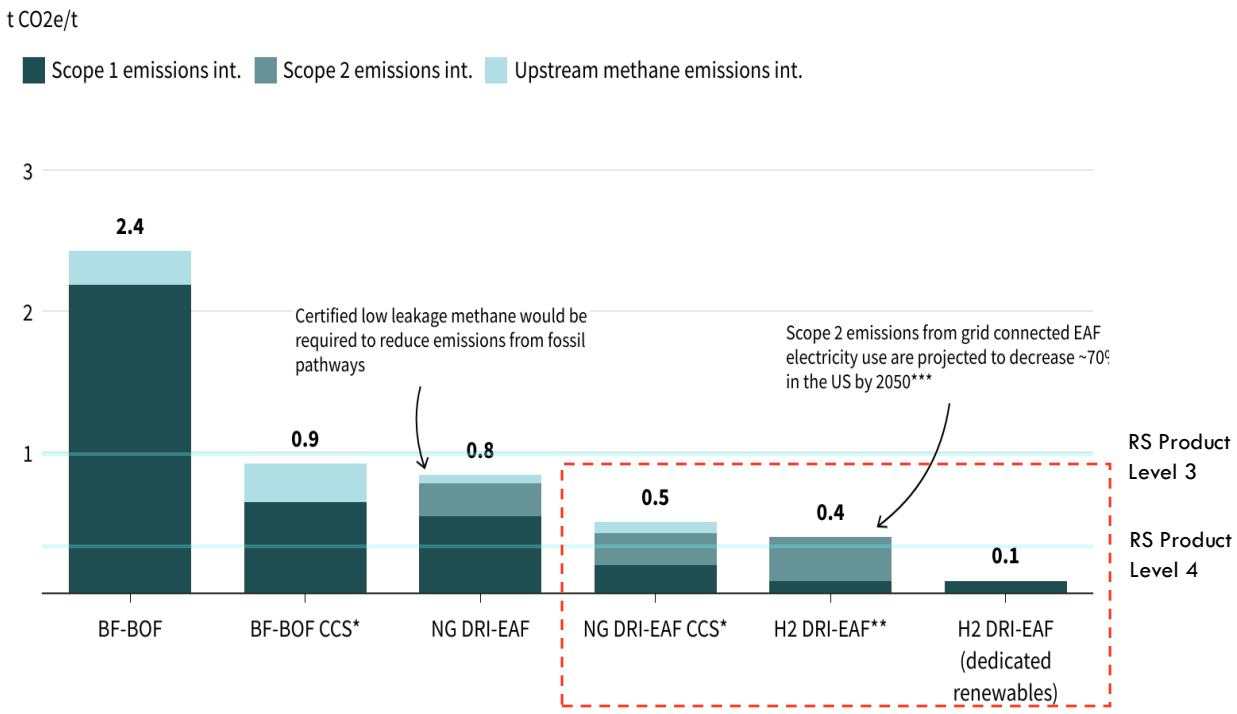
Carbon dioxide removals
- To address residual emissions (e.g., direct air carbon capture)

Cumulative CO_2 emissions (2020-2050): 47 Gt CO_2e (compared to 56 Gt sectoral carbon budget, 63 Gt from delayed action to net zero, and 84 Gt in Baseline scenario)

Source: MPP Net-Zero Steel Initiative Analysis (2022)

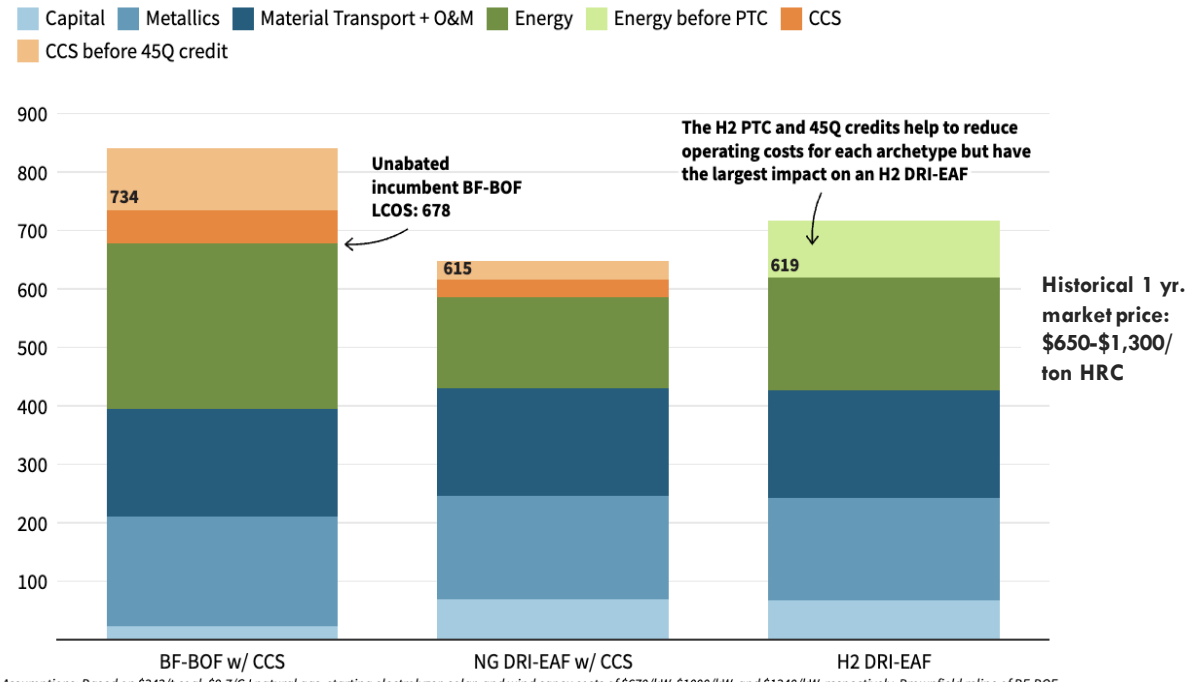
Deep decarbonization technology is cost competitive given US federal incentives

Average Emissions Intensity of Various Steel Production Pathways (20% Scrap Ratio)



*Assumptions: *Capture Rate: 75%; **Scope 2 emissions resulting from grid power use today; ***Grid decarbonization projections from NREL; Methane Leakage Rate: 1.2%; 20% scrap ratio used for all pathways*

Levelized Cost of Steel: Hydrogen-Based Production vs Incumbent Blast Furnace at Today's Fossil Prices



Assumptions: Based on $342/t coal, $9.7/GJ natural gas, starting electrolyzer, solar, and wind capex costs of $670/kW, $1000/kW, and $1340/kW, respectively. Brownfield reline of BF-BOF and greenfield DRI-EAF capital costs assumed. Representative plant location in Ohio assumed. Note: today's metallics prices are higher than those showcased in this graphic. However, given that change would apply across archetypes, historic prices displayed for consistency between graphics.

Market price for HRC reflects Aug 2022-July 2023.

Demand aggregation is necessary to support a green steel facility

Producing 1t of steel requires…

60 kilograms of hydrogen for reduction

3.5 MWh of electricity fed to an electrolyser

For a typical 2 Mtpa steel plant this means…

2 GW of electrolysers

4 GW of solar PV and wind to feed the electrolysers

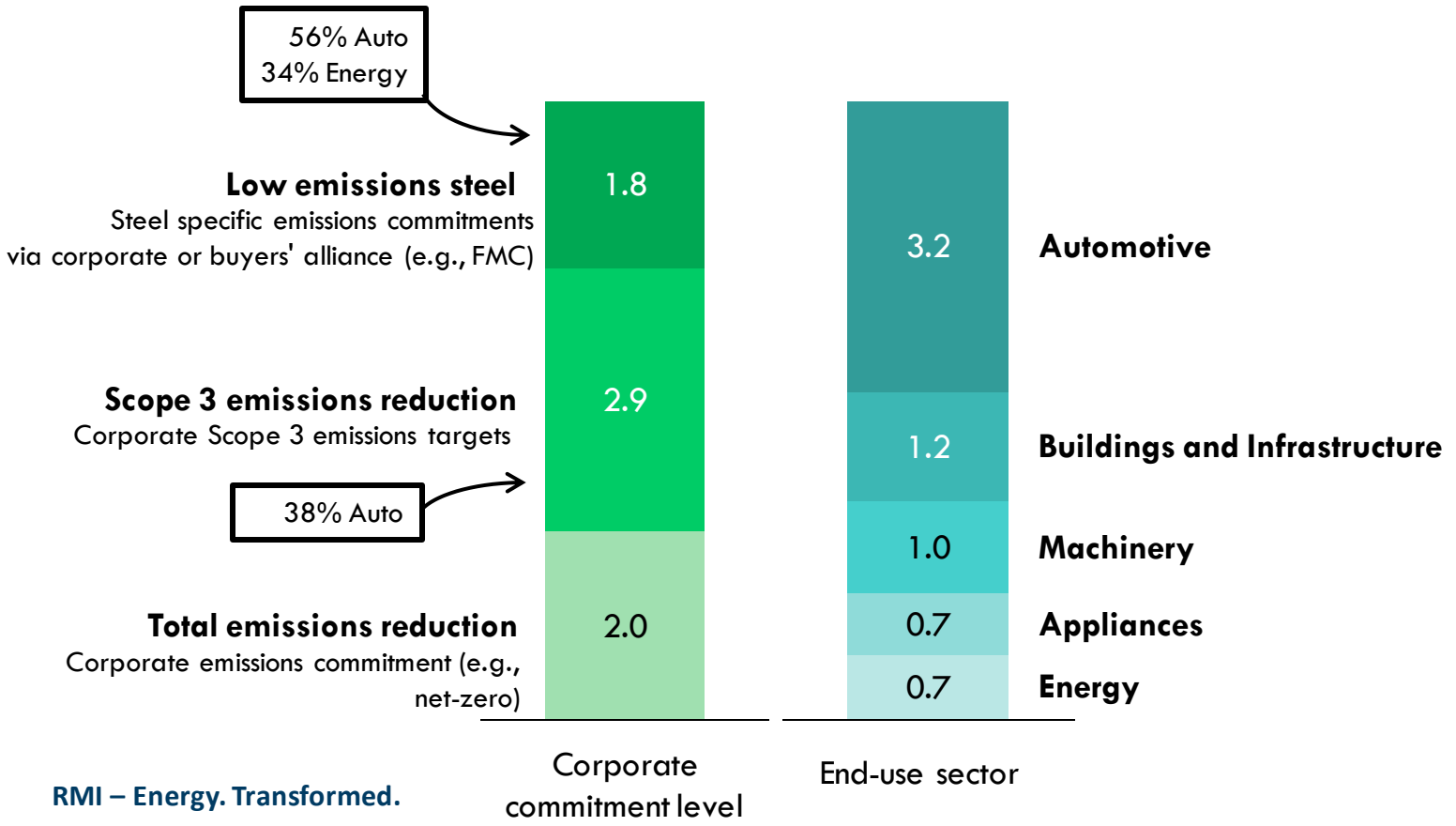
In context this is…

6 times the global installed electrolyser capacity in 2020

50 percent of the average consumption for all of New York city

Commitments are accelerating – next step is to translate to offtakes which support investment

In 2030 6.7 Mt of green steel will be required across ~58 companies to meet their sustainability commitments



Green steel requirements are growing via corporate sustainability commitments and buyer coalitions.

To deliver on these commitments companies will need to **aggregate demand** through coordinated offtakes to accelerate investment in new low-emissions supply.

Based on RMI analysis

Accelerate steel industry decarbonization this decade

Investments in Near Zero Emissions Ore Based Steelmaking

Committed buyers signal demand for near zero emissions steel as a **collective**, that enables capital investment in **asset level technology shift** for **new near-zero steel supply.**
Scales bilateral agreements currently offered for lower emissions steel.

Operational Improvements & Increasing Scrap

Companies undertake **operational changes and** investments to increase **scrap utilization** to produce lower emissions offerings/facilities.

Corporate Targets and Pledges

Companies set commitments to **reduce** supply chain **Scope 3 footprint** independently and through global initiatives.

SUSTAINABLE STEEL BUYERS PLATFORM

NET-ZERO STEEL · ECONIQ · NET-ZERO STEEL

XCarb™

USS

SDI

First Movers Coalition

CLIMATE GROUP STEELZERO

Sustainable Steel Buyers Platform

SUSTAINABLE STEEL BUYERS PLATFORM

RMI Procurement Platform to accelerate Investment case for Near-Zero Emissions Steel

Identify transaction parties' needs

Bring together **Buyers** looking for near-zero emissions steel offtake to deliver on corporate targets

Microsoft

nextracker

Trammell Crow Company

Invenergy

Facilitate Procurement Process

Request for Information (RFI): Test feasibility for the market to supply low-emissions steel.

Request for Proposal (RFP): Buyers issue a detailed specification of requirements (using information from the RFI responses)

Develop clean supply

Buyers-led RFP that outlines required volumes, delivery timelines, contract duration, and emissions performance for delivery in NA.

Producer selected based on satisfying RFP requirements.

First Movers Coalition

FMC Steel challenge and RMI SSBP complementarity to lead to procurement opportunities

Steel

Challenge: Broad intake of potential suppliers, buyers and enabling technologies for Green Steel

Supplier Database: Lists successful challenge participants

Procurement Opportunity: Most promising suppliers

Near-Zero Steel 2030 Challenge

FMC supplier database outlines high potential producers

North America-based RMI RFP process and future RFPs in other geographies

Two-Stage Approach

Request for Information

Designed as an initial test of the feasibility for the market to supply low-emissions steel.

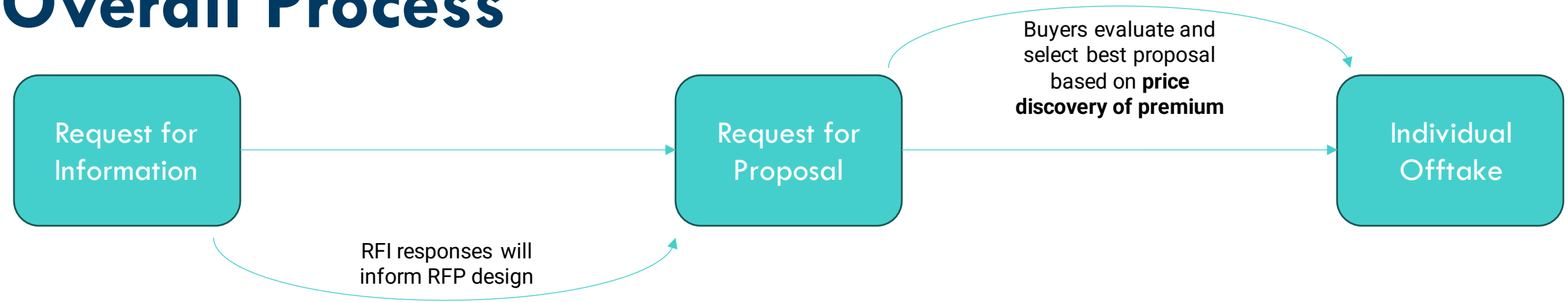
Producers to provide non-binding information of feasible **volumes,** preferred **contract length,** potential **production pathways** and certification options which would be needed in an RFP to support an investment decision.

Request for Proposal

Buyers issue a detailed specification of requirements (using information from the RFI responses) including details on required volumes**, delivery timelines** and **emissions performance.**

Producers provide response to satisfy the requirements at the **lowest cost.**

Overall Process

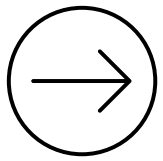
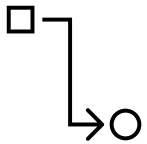
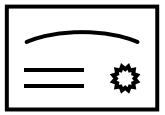


RFI **issued to producers** to seek input on how the RFP should be designed and what **support is needed** to establish new low-emissions steel supply.

RFP issued to producers with volume, timeline and **emissions requirements** to a **common benchmark** point (e.g., crude steel, DRI/HBI, etc.). Producers respond with required green premium to meet requirements.

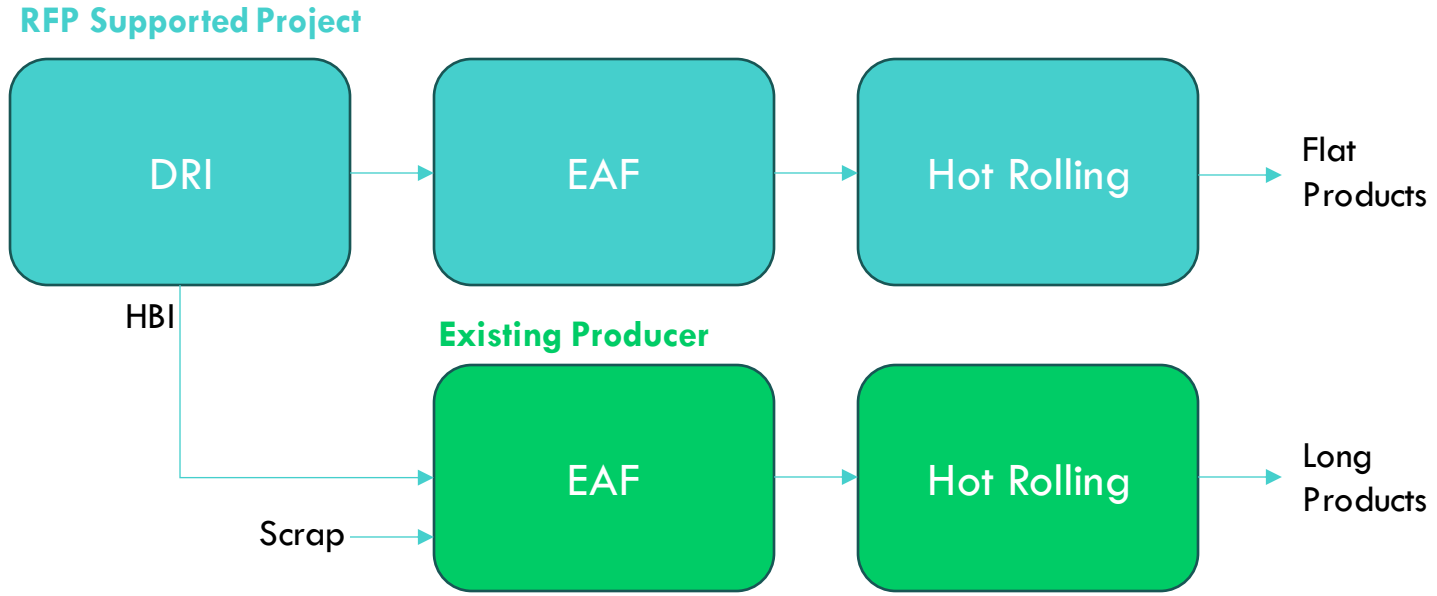
Buyers individually establish offtake with selected proposal for **specific product requirements** (e.g., HRC, plate, etc.) and specifications.

Potential Contracting Models

	Buyer's Construct	Challenges & Requirements
 **Direct Offtake**	Direct purchase by a user of steel (e.g., automotive).	Limits supply options
 **Offtake & Free Issue**	Direct purchase by a company and free issue to suppliers (e.g., construction).	Requires supply chain tracing and product matching and/or 3rd party warehousing etc.
 **Book and Claim**	Decoupling of emissions attributes from physical supply.	Requires registry/tracking infrastructure and buy-in for claims

Purchasers understand the need to reduce primary emissions even in purchasing from scrap-based EAFs

- Some purchasers currently using mostly scrap-based steel are unsure how to handle **conflicting standards** (Responsible Steel & GSCC)
- **Sliding scale** (scrap %) may not align with purchasers needing to achieve absolute **scope 3 targets** given that improved grades can result in higher emissions.
- All purchasers recognized that even for scrap-based steel they would still have a **dependence** on **high emissions primary** material upstream as scrap-based EAF producers use a portion of primary inputs.

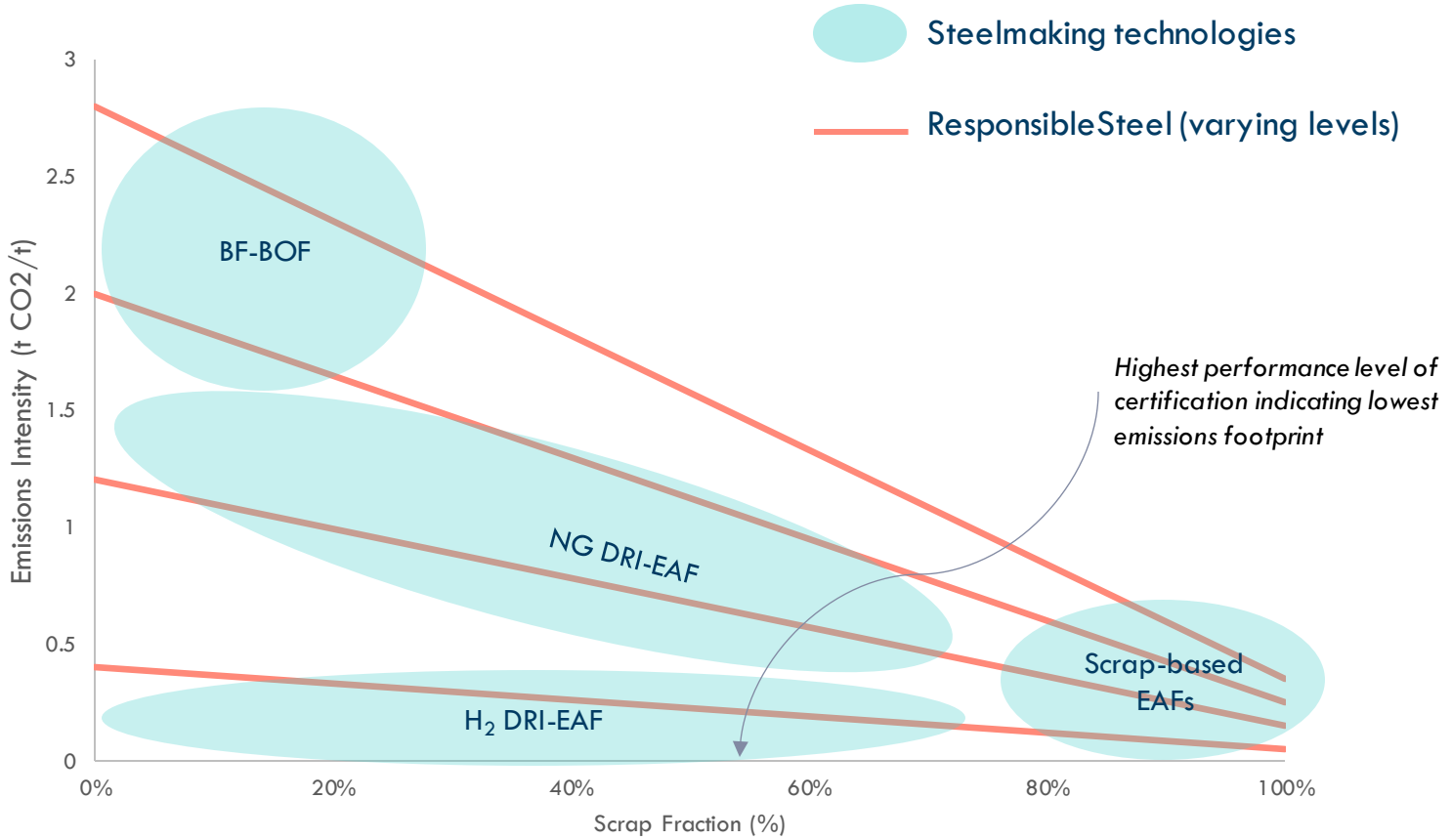


Potential solution is for the RFP to request projects which can deliver multiple products i.e., near-zero emissions steel direct to flat purchasers in addition to near-zero HBI to existing EAFs producing long products (supplied to eventual RFP issuing buyer).

How will buyers define sustainable NZE steel?

- Few (ResponsibleSteel, SBTi, and the IEA) provide a numerical target for the tons of CO_2 emitted per ton of steel produced
- The IEA has defined NZES as 0.05 to 0.4 tons of CO_2 per ton of steel, depending on the ratio of scrap used
- Additional sustainability criteria may also be included to emissions intensity

SSBP North America RFP will be a buyer led decision on criteria definition – aligning with a quantitative threshold that can be verified.

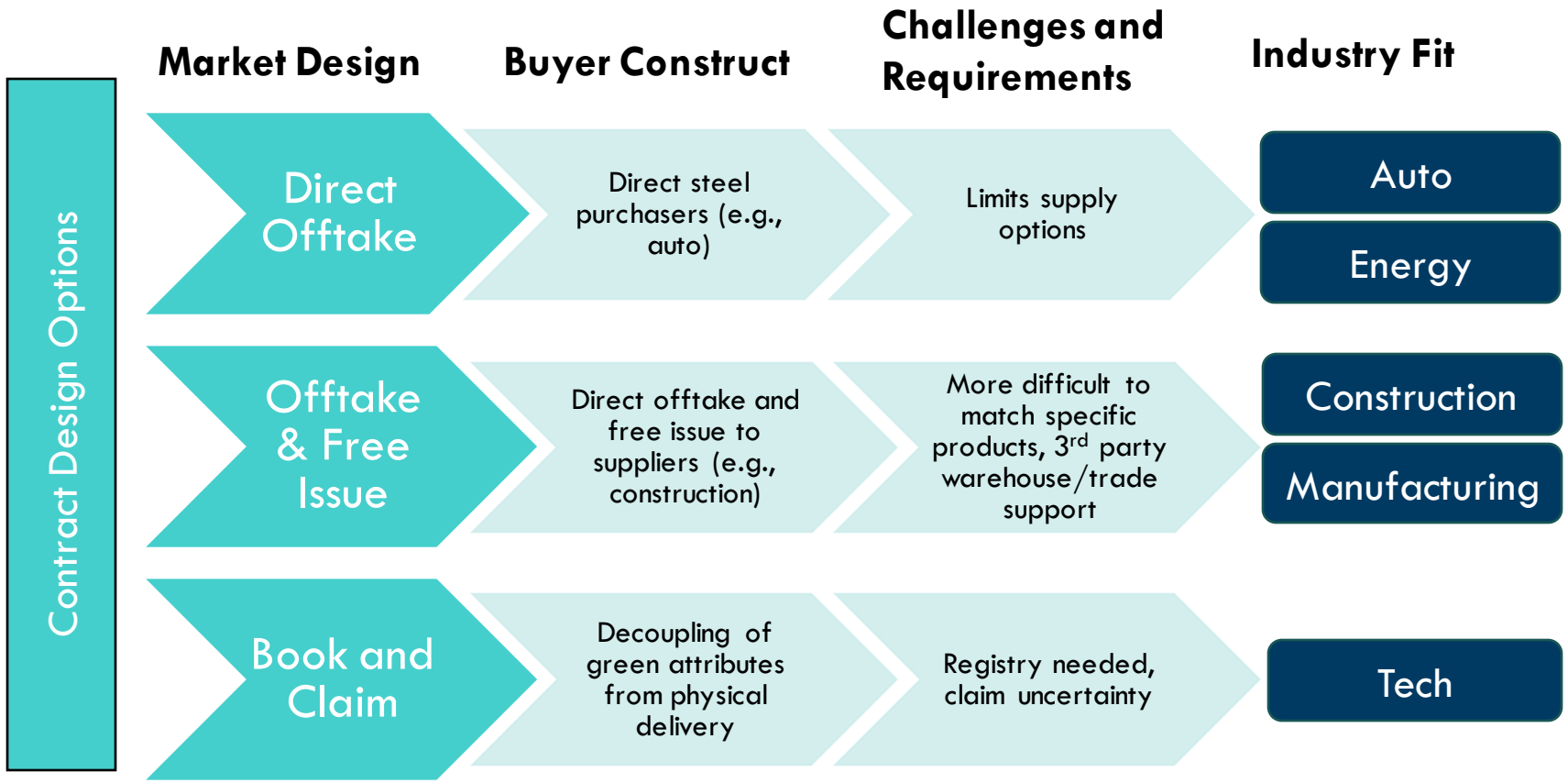


Illustrative RS thresholds adapted by RMI

Procurement and Contract Design

Evaluation of market design to capture largest pool of buyers in a procurement effort in the 2023-2024 procurement effort

- Leverage RMI's prior experience to drive new market adoption
  - SABA – Sustainable Aviation Fuel
  - CEBA – Renewable power
  - Maritime Shipping B&C
  - MiQ for natural gas
- Typical RFP project period 6 months
- Established proposal data collection tools and evaluation criteria methodology



Request for Information

Producers can respond now to the RFI

The RFI intends to collect producer input on **key questions and contract parameters** that would inform a subsequent request-for-proposal (RFP):

1. Product

- **Definition of near-zero steel** (i.e. Responsible Steel Level 4, FMC)
- **Products available at spec** (i.e. HBI/pig iron, crude steel slabs/billets, sheet and coil, plate, long products)

2. Contractual structure

- **Contracting process**
- **Product model** (selling different products to individual buyers)
- **Purchasing model** (aggregated purchase agreement vs. separate smaller volume contracts)
- **Minimum contracting length** required from Buyers to support desired investment
- **Other relevant terms** (i.e. location of delivery terms, ex-works, free on board (FOB), Cost, Insurance, and Freight (CIF))

3. Pricing structure

- **Preferred pricing structure** (pricing index benchmark) and **premium variation** (fixed premium price, priced with fixed escalator, tied to commodity price such as NG)
- **Input costs** (IO, pellet, NG, coking coal) and **other costs** (shipping, insurance, etc.) to be defined during RFP

RFI Data Consolidation & Development of RFP

4. Supply capability

- **Project maturity** (i.e. stage of development, number of expected projects)
- **Minimum contracted volume** and relevant factors (i.e. plant size, technology type, contract type, # of buyers)

5. Project development

- **Lead time** to project construction, production, and delivery
- **External fiscal support** (i.e. public funding types and level of support)
- **Proposed technology pathway** (retrofit or greenfield, NG-DRI+CCS or H2 DRI)

6. Compliance

- **Emissions disclosure,**
- **Environmental assessment,** and
- **Company policies**

7. Evaluation criteria

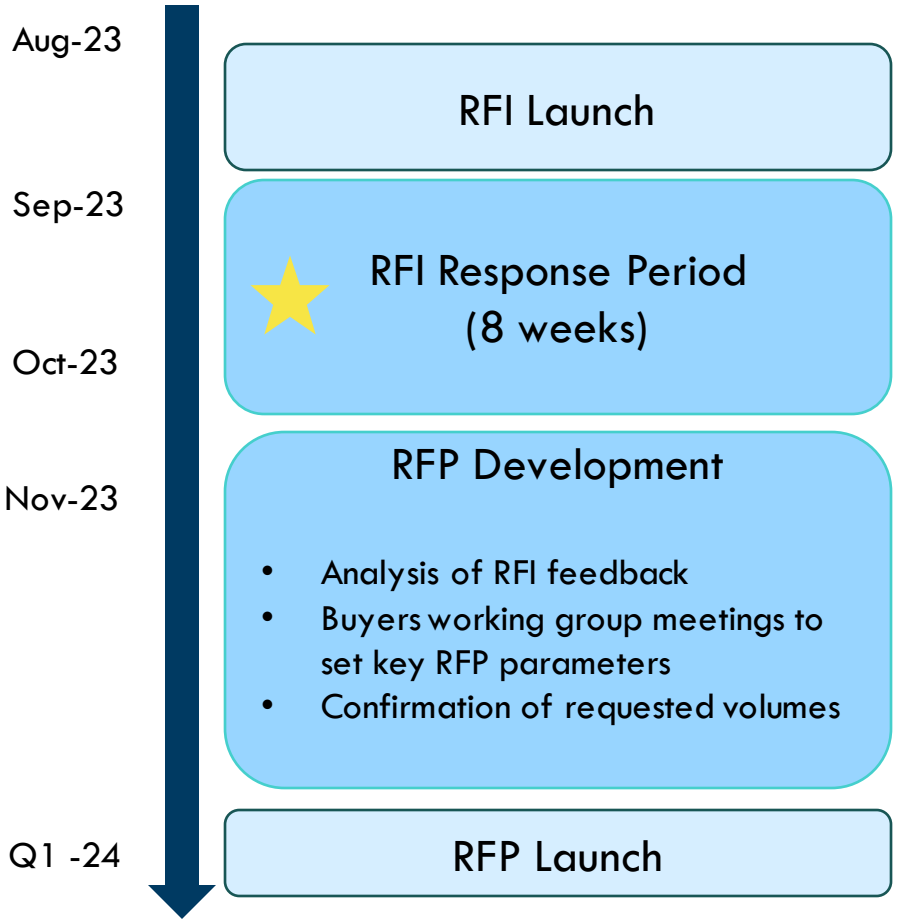
- **Conformity with emissions thresholds,**
- **Contract flexibility** (multiple products and offtake commitment terms),
- **Ability to deliver** (business health and proposed execution model), and
- **Cost**

The RFP will be developed utilizing insights gained from RFI:

RFI responses will be consolidated into summary statistics and themes to be discussed with the Buyer's group

RFI response material discussed with Buyer's group and any publicly available insights **will not be attributed to individual respondents**

Next Steps and Areas to Participate



Interested **Producers** to deliver to North America **invited to respond to the RFI** which closes on 25th November.

Climate ambitious **Buyers** invited to join the SSBP group.

Throughout the process RMI will convene and provide technical evaluation with thought partners.

RMI – Energy. Transformed.