

# STRATEGIC RESOURCES

CREATING A NORTH AMERICAN IRON  
METALLICS & VANADIUM PRODUCER





Forward-looking statements relate to future events or the anticipated performance of the Company and reflect management's expectations or beliefs regarding such future events and anticipated performance. In certain cases, forward-looking statements can be identified by the use of words such as "plans", "expects", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "believes", or variations of such words and phrases or statements that certain actions, events or results "may", "could", "would", "might" or "will be taken", "occur" or "be achieved", or the negative of these words or comparable terminology. By their very nature forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual performance of the Company to be materially different from any anticipated performance expressed or implied by the forward-looking statements.

Important factors that could cause actual results to differ from these forward-looking statements include risks related to failure to define mineral resources, converting estimated mineral resources to reserves, the grade and recovery of ore which is mined varying from estimates, future prices of vanadium and other commodities, capital and operating costs varying significantly from estimates, political risks arising from operating in Finland and Peru, uncertainties relating to the availability and costs and availability of financing needed in the future, changes in equity markets, inflation, changes in exchange rates, fluctuations in commodity prices, delays in the development of projects, conclusions of economic evaluations, changes in project parameters as plans continue to be refined, uninsured risks and other risks involved in the mineral exploration and development industry.

Although the Company has attempted to identify important factors that could cause actual performance to differ materially from that described in forward-looking statements, there may be other factors that cause its performance not to be as anticipated. There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements. These forward-looking statements are made as of the date of this presentation and the Company does not intend, and does not assume any obligation, to update these forward-looking statements.

†Qualified Persons ("QP") as defined by National Instrument 43-101 (NI 43-101)

## BLACKROCK PROJECT

Claude Bisaillon P.Geo.	SGS Geostat	Geology and Mineral Resource Estimation
Isabelle Leblanc, P.Eng.	BBA Inc	Mineral reserve estimation, mine planning, mining infrastructure
Andre Allaire, P.Eng.	BBA Inc	Processing, Surface infrastructure, estimate integration, financial model, overall NI 43-101 integration
Nathalie Fortin, P.Eng.	WSP	Environmental
Nicolas Skiadas, P.Eng.	Journeaux Associates	Tailings and Water management

## MUSTAVAARA PROJECT

Ville-Matti Seppä, EurGeol.	European Federation of Geologist	Mustavaara mineral resource
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## CORPORATE DISCLOSURE

Adrian Karolko, P.Geo.	Has verified the data and information disclosed in this presentation
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High purity pig iron that supports the transition to electric arc furnaces and greener steel

Made with renewable carbon free power



Critical metal by-products supporting stronger lighter transportation and long-life grid scale batteries



Two large-scale long-life assets and a unique metallurgical facility in the portfolio



BlackRock: C\$1.9B NPV<sub>8%</sub>  
First quartile on cost curve

Doesn't account for BlackRock's 2<sup>nd</sup> open pit or Mustavaara mine



Fully-permitted for construction of the BlackRock mine site and metallurgical facility in Québec

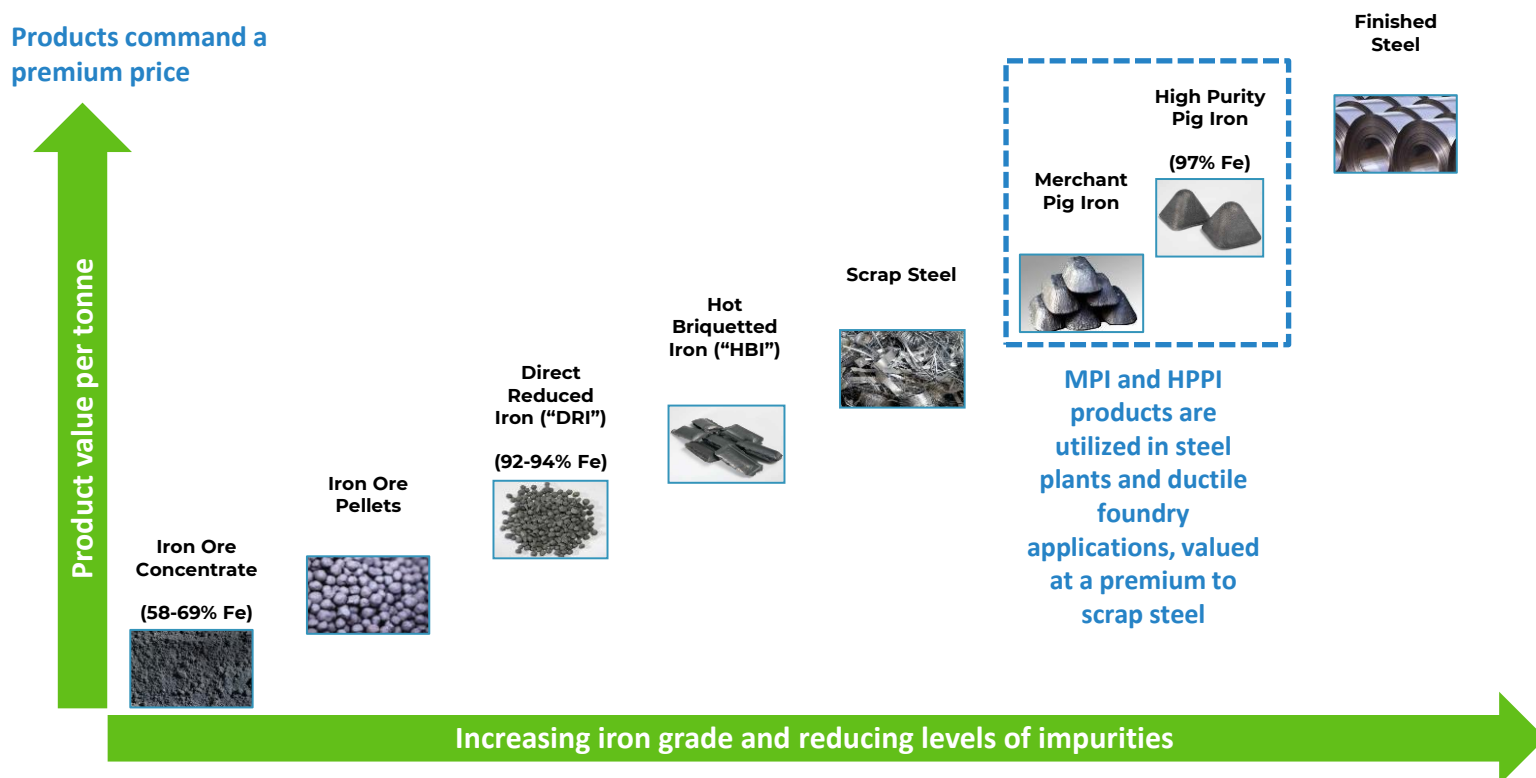


Government of Québec significant financial sponsorship + related infrastructure + additional support from Orion

# BlackRock's Products are High Value Steel Inputs



- BlackRock will produce high purity pig iron (HPPI)
- Critical supply for steel and foundry producer's energy transition/decarbonization plans
- Enables circular recycling economy – constraints with amount of high-quality scrap availability
- Pig iron and nodular iron makes the transition to electric arc furnaces sustainable





Steel produced by EAF steelmakers in the U.S. has a carbon intensity that is ~75% lower than traditional blast furnace steelmakers <sup>(1)</sup>

The Government of Canada has invested \$870M<sup>(2)</sup> to fund the transition from Blast Furnaces to Electric Arc Furnaces (“EAF’s”) for steel making

Blast Furnaces use ~25% scrap steel in their recipe + many types of iron inputs

EAF’s use ~75% of scrap in their metallic iron recipe to make steel

Leads to scarcity of prime scrap

BlackRock will produce high-purity pig iron

Pig iron in high demand as USA, Japan & EU go fully electric

Residuals contaminants in scrap supply

#1 spec is Rio Tinto’s Sorel metal Pig Iron also out of Quebec

Disrupts supply/material flows across steel supply chain

Solution is:  
Pig iron  
HBI/DRI

BlackRock product quality expected to be equal or better quality than Sorel

EAF’s will be 50% of global steel by 2050 vs. 30% today

~1B tons of steel per year

(1) 2022 CRU Group study released by Steel Manufacturers Association

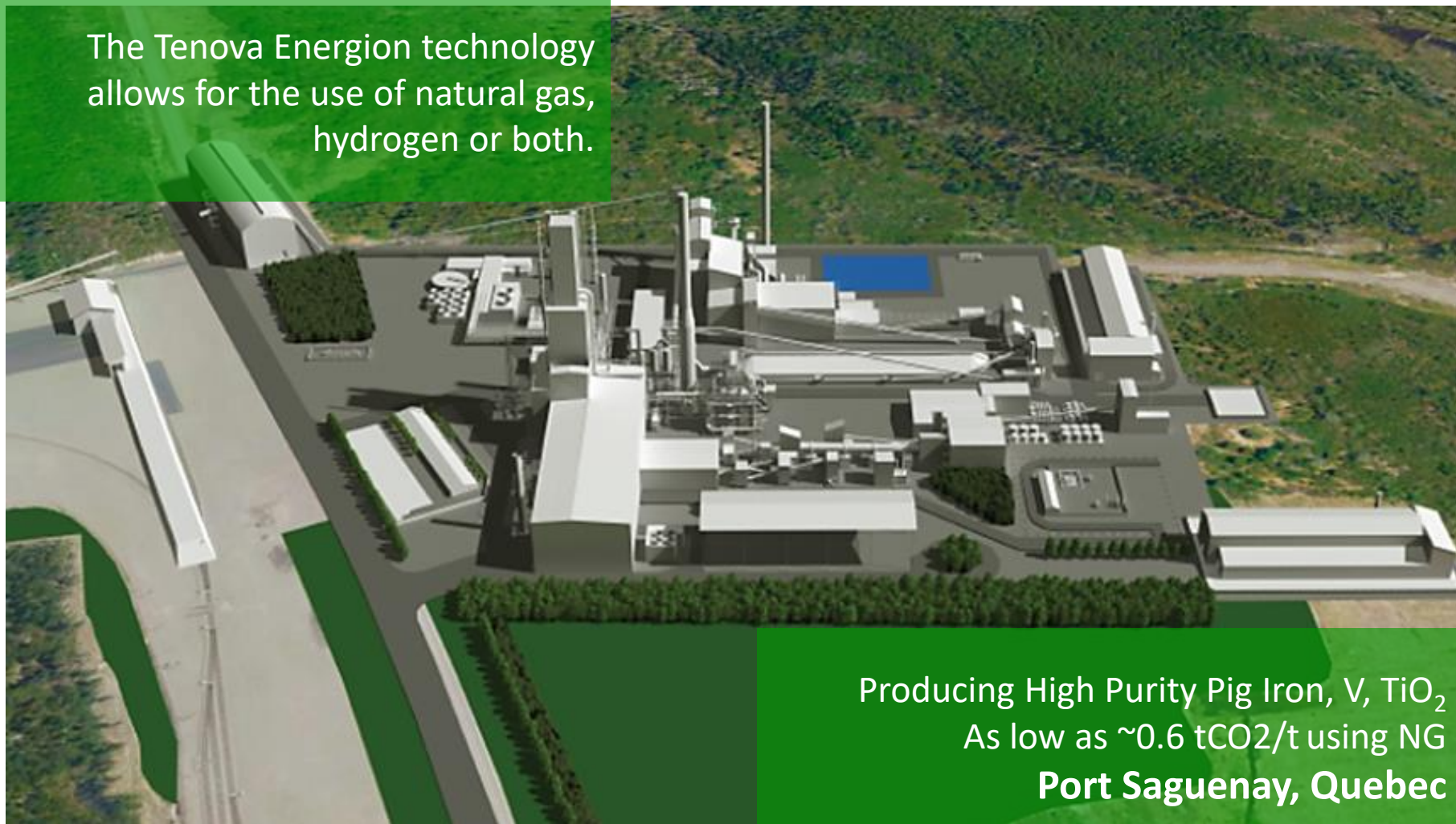
(2) \$420M for Algoma Steel, \$400 million for ArcelorMittal Dofasco and \$49.9-million for Stelco



# The Greenest Pig Iron Plant in the World



The Tenova Enerzion technology allows for the use of natural gas, hydrogen or both.



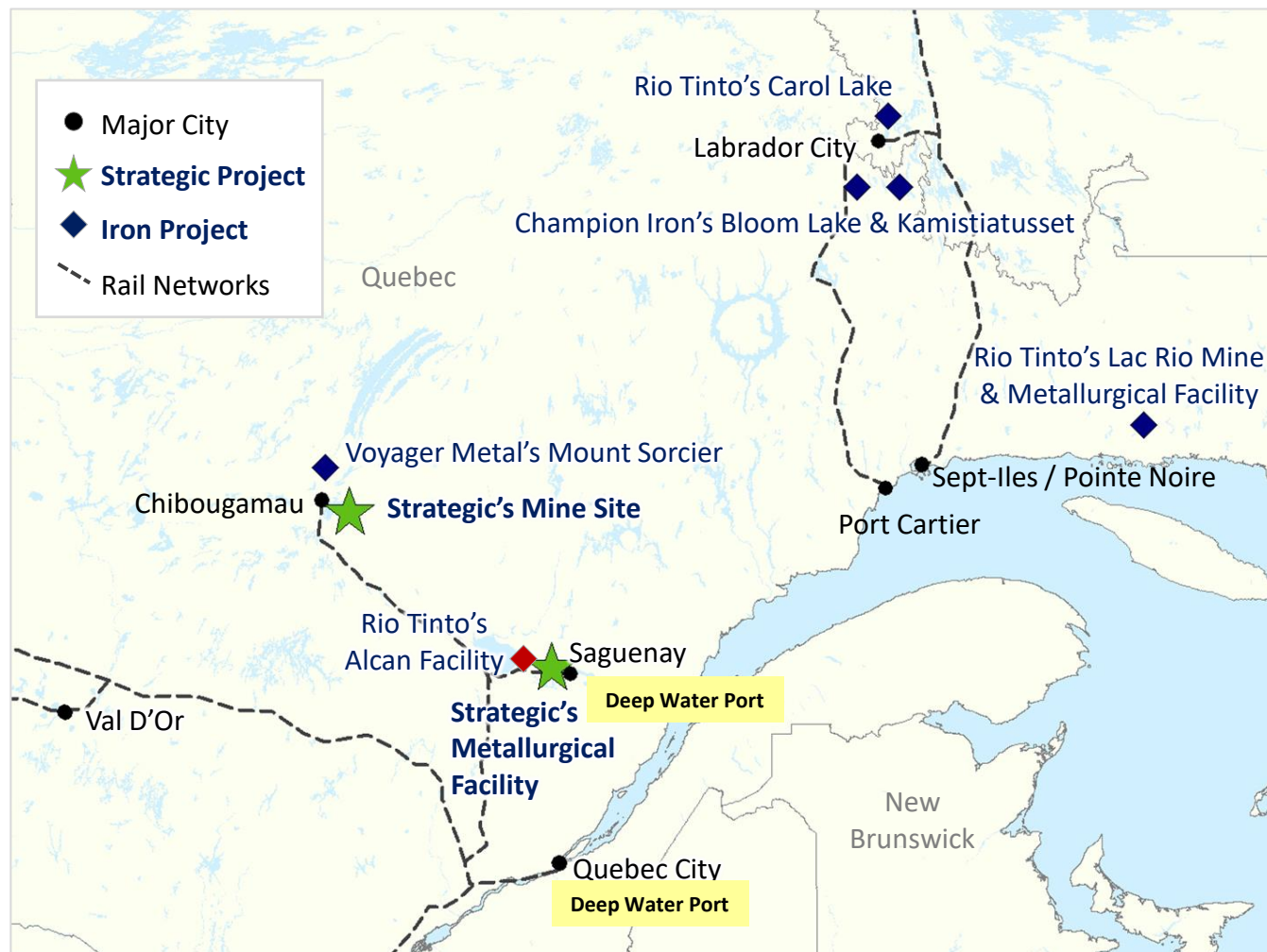
Producing High Purity Pig Iron, V,  $\text{TiO}_2$   
As low as  $\sim 0.6 \text{ tCO}_2/\text{t}$  using NG  
**Port Saguenay, Quebec**

Source: Tenova

# The Northern Québec Iron Landscape



- Québec will be a focal point for the high-grade iron concentrate and high-grade iron metallic products that will drive the green steel transition
- Strategic's mine and metallurgical facility is close to existing mines, infrastructure and ports that are already servicing the steel value chain
- Strategic's iron product is expected to be the same quality as Rio Tinto's Québec based Sorel metal; currently the gold standard of iron metallic products



# How is Strategic Comparable to Champion?



CHAMPION IRON 

**STRATEGIC**  
RESOURCES

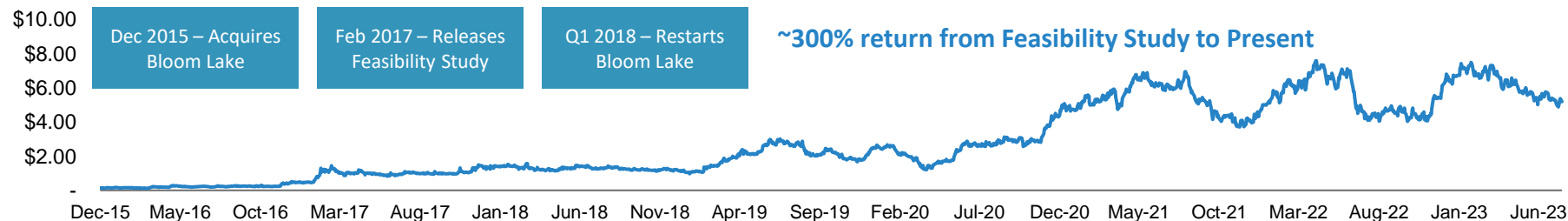
## Ability to Produce Products

Iron ore concentrate	✓	✓
Iron ore pellets	Permitting	✓
Direct reduced iron (metallic iron)	X	✓
Critical metal by-products	X	✓

## Financial Metrics

Market Capitalization (C\$)	\$2,780M	\$91M
Annual Revenue (C\$)	\$1,395M (2023 YE)	\$811M (Avg. from Feas.)
Quebec Government Support	8.4% Equity Holder / Loan provider	41% Equity Holder / Substantial Future Project Funding

## Champion Share Price History





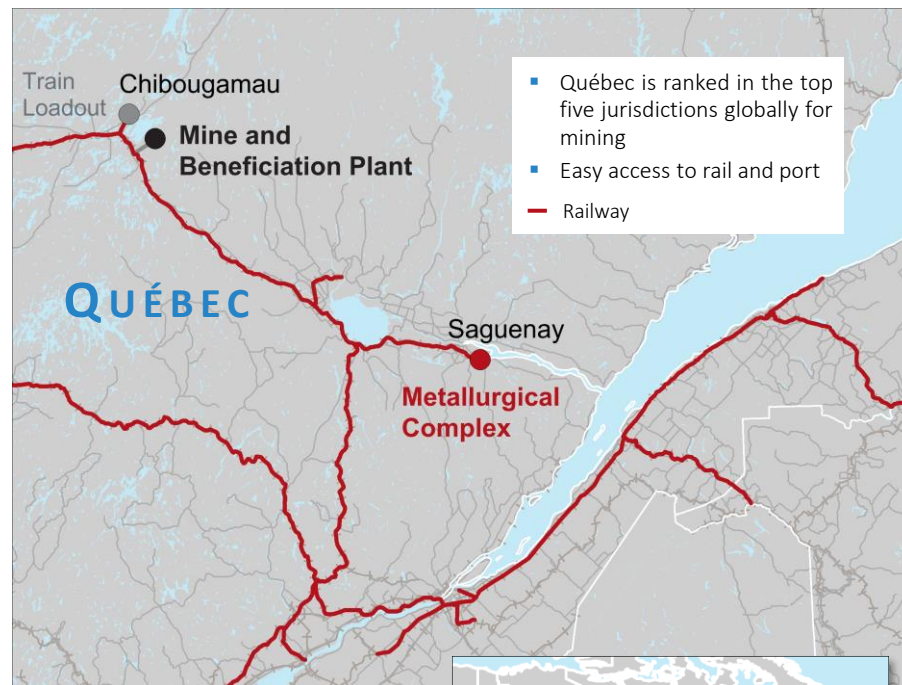
# A Unique Fully Permitted Multi-Metal Project



## BLACKROCK PROJECT OVERVIEW

- Multi-metallic ferroalloy project located in Québec
  - Project with an integrated mine and concentrator in Chibougamau with metallurgical facility at Port Saguenay
  - Targeting production of merchant pig iron (“MPI”), vanadium and titanium
- Low-cost supplier to the North American market for Vanadium & high purity merchant pig iron, a critical ingredient for electric arc furnaces (“EAF”) to dilute impurities in scrap steel
- Advantaged infrastructure access for rail, road, port and electricity
- Strong project sponsors, community and provincial support
- Major international engineering and technical partners
- Environmental permitting at the mine already secured
- Geology well understood & Metallurgy already pilot tested

## STRATEGICALLY LOCATED IN MINING FRIENDLY JURISDICTION



## PRODUCT PORTFOLIO – PHASE 1 – SUBSTANTIAL POTENTIAL FOR PROJECT EXPANSION



**Iron**



Producing an average of 526 kt MPI per year over the project life



**Vanadium**



Producing an average of 4.4 kt FeV<sub>80</sub> per year over the project life



**Titanium**



Producing an average of 118 kt Ti slag per year over the project life



# Generational Resource with Exploration Upside

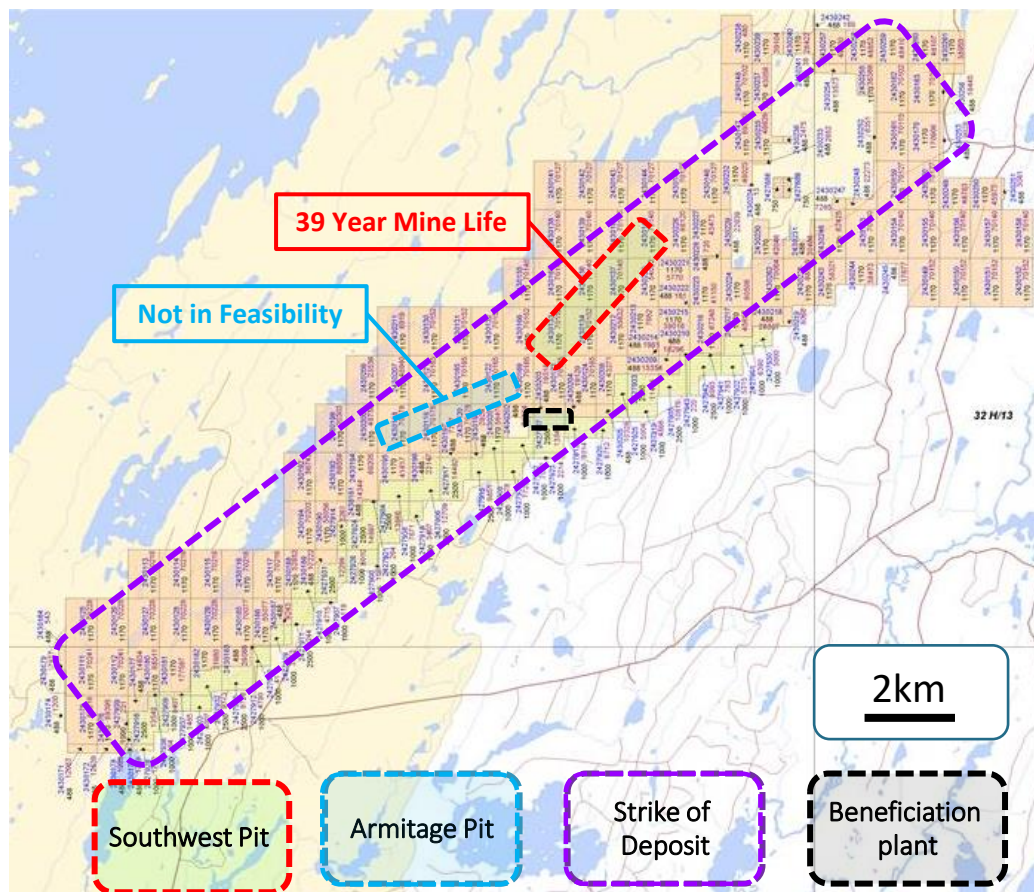


## SUMMARY RESERVES AND RESOURCES (MT)

Proven & Probable	Southwest Deposit	Armitage Deposit	Total
Contained $\text{Fe}_2\text{O}_3$ (Iron Oxide)	51.4	-	51.4
Contained $\text{V}_2\text{O}_5$ (Vanadium Pentoxide)	0.6	-	0.6
Contained $\text{TiO}_2$ (Titanium Dioxide)	9.8	-	9.8

Measured & Indicated	Southwest Deposit	Armitage Deposit	Total
Contained $\text{Fe}_2\text{O}_3$ (Iron Oxide)	75.0	63.8	138.6
Contained $\text{V}_2\text{O}_5$ (Vanadium Pentoxide)	0.9	0.7	1.6
Contained $\text{TiO}_2$ (Titanium Dioxide)	14.4	12.3	26.7

## PIT & BENEFICIATION PLANT LAYOUT



20 km strike length provides scope for substantial resource growth



## INFRASTRUCTURE HIGHLIGHTS

### Port and power agreements signed

- Deep water, four season, federally owned Port of Saguenay is underutilized
- Low-cost energy supply to metallurgical complex
  - Electrical substations and main power lines nearby
  - Hydro Québec agreement for mine site and metallurgical plant - green hydro-electric power
  - Energir will provide natural gas to metallurgical complex from its local main pipeline

### Site and rail access in place

- Existing road access to site
- 25 km trucking distance to rail load out point

**Industrial site qualified for Québec maritime strategy funding**

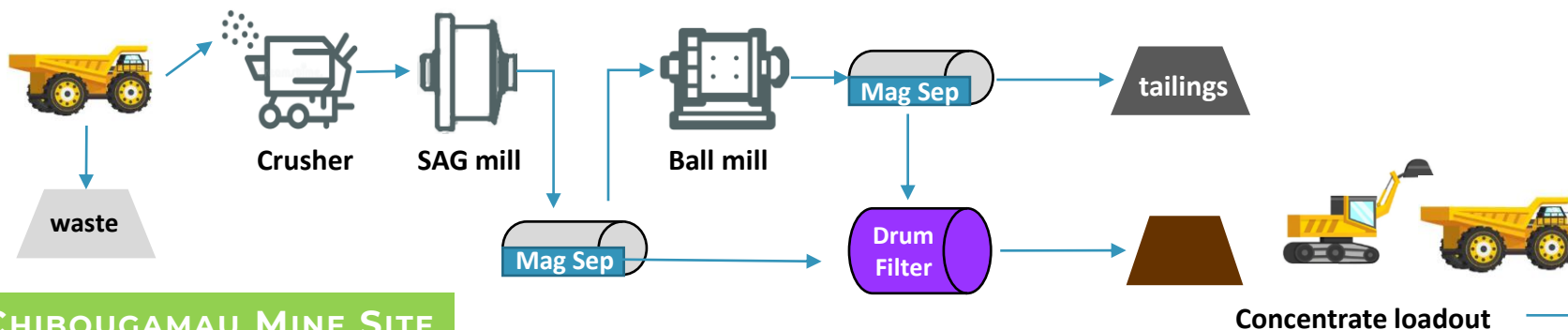


Port of Saguenay

Provincial and federal entities working towards building significant infrastructure to support BlackRock



# Integrated Mine, Mill & Metallurgical Plant

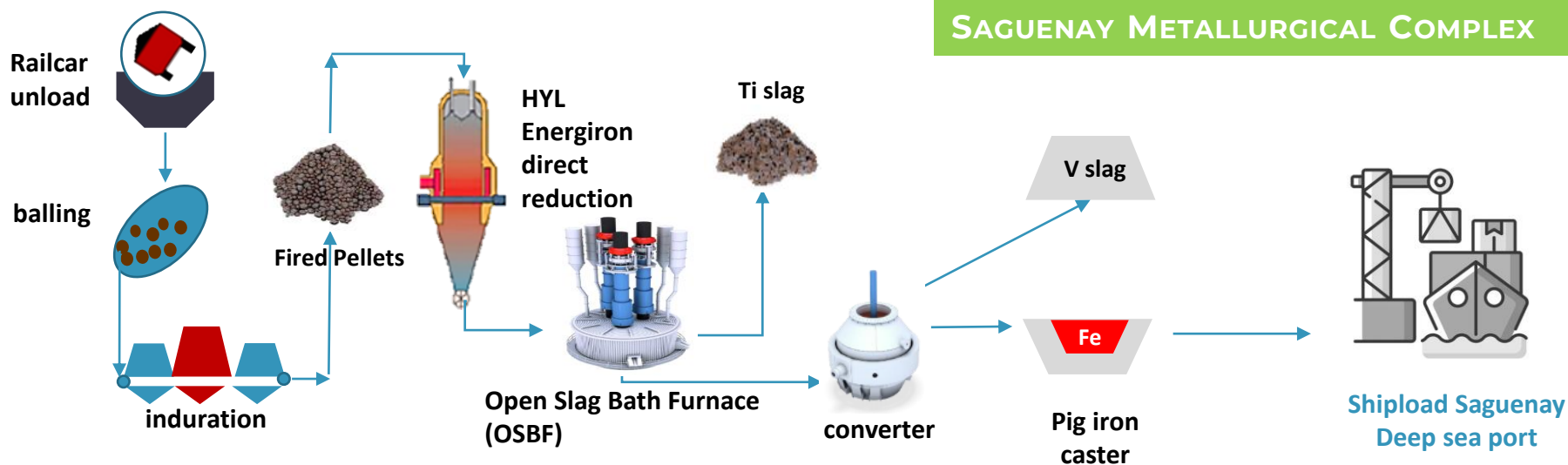


## CHIBOUGAMAU MINE SITE

Rail 400km  
to Saguenay



Trucking 25km to  
Chibougamau 3<sup>rd</sup> party  
train loadout



## SAGUENAY METALLURGICAL COMPLEX

# BlackRock Feasibility Summary (Nov 2022)



## BlackRock Project – Feasibility Summary

<b>Mine Life</b>	39 years
<b>After-Tax NPV8%</b>	\$1,932
<b>After-Tax IRR (%)</b>	18.2%
<b>Initial Capital</b>	\$1,471

Avg. LOM

<b>Production (kt)</b>	
<i>FeV<sub>80</sub></i> (toll processed)	4.4
<i>Ti Slag</i>	118
<i>MPI</i>	526

### Commodity prices (C\$/t FOB)

<i>FeV<sub>80</sub></i>	\$49,771
<i>Ti Slag</i>	\$395
<i>MPI</i>	\$1,018

### Revenue (C\$/M/yr)

<i>FeV<sub>80</sub></i>	\$217
<i>Ti Slag</i> <sup>1</sup>	\$57
<i>MPI</i>	\$537

### Operating costs (C\$/M/yr)

<i>FeV<sub>80</sub></i>	\$77
<i>Ti Slag</i> <sup>1</sup>	\$7
<i>MPI</i>	\$216

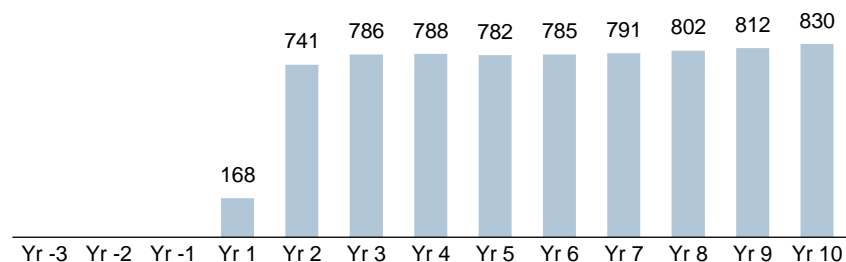
### Key Metrics (C\$/M)

Revenue	\$811
EBITDA	\$478
After-Tax Cash Flow	\$343

<sup>1</sup> Includes alloy metal strip.

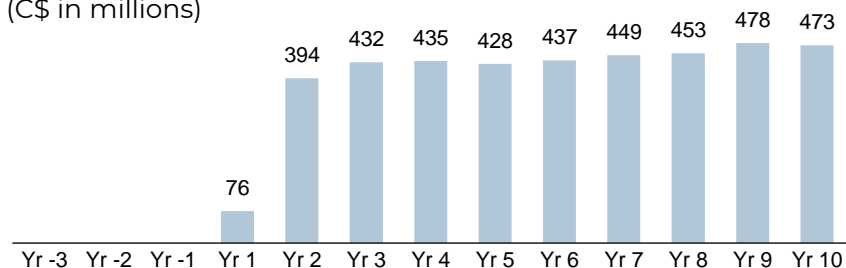
## BlackRock Revenue – First 10 Years

(C\$ in millions)



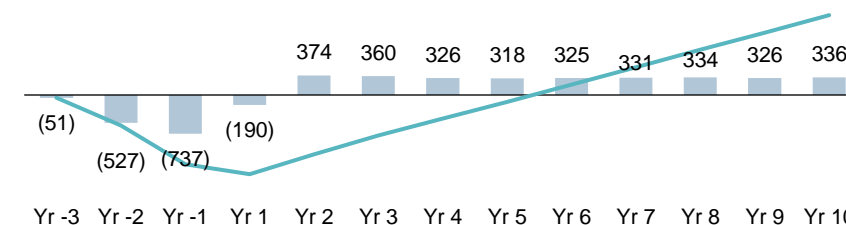
## BlackRock EBITDA – First 10 Years

(C\$ in millions)



## BlackRock After-tax Cash Flow – First 10 Years

(C\$ in millions)

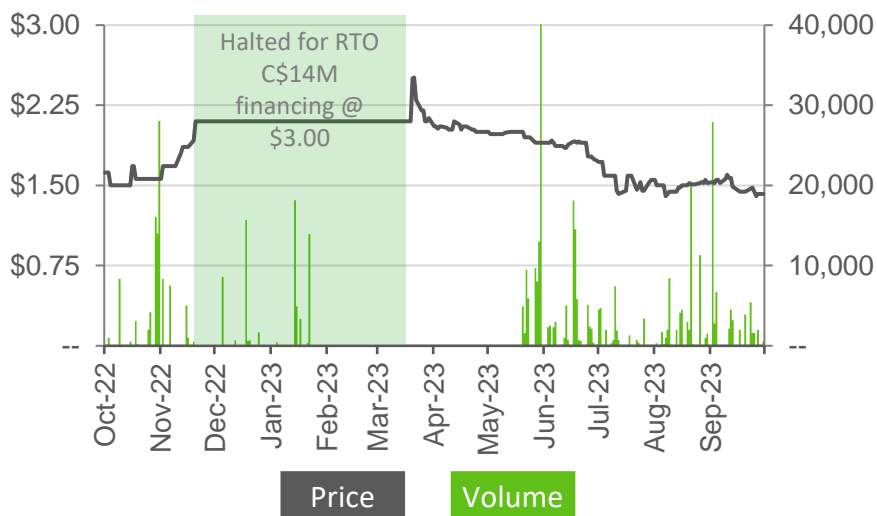




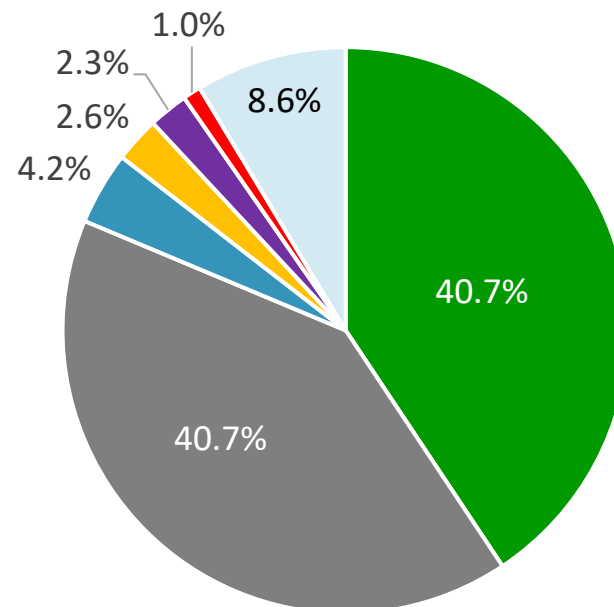
# Capital Structure and Shareholders



Capital Structure	Shares (M)
Basic Shares Outstanding	59.0
Options Outstanding	3.3
Deferred Stock Units	1.1
<b>Fully Diluted Shares Outstanding</b>	<b>63.5</b>
<b>Share Price (Oct 24, 2023)</b>	<b>\$1.42</b>
<b>Basic Market Cap.</b>	<b>C\$84M</b>
<b>Cash (June 30, 2023)</b>	<b>C\$6.6M</b>
<b>Restricted Investments (June 30, 2023)</b>	<b>C\$10.6M</b>



## Existing Shareholders

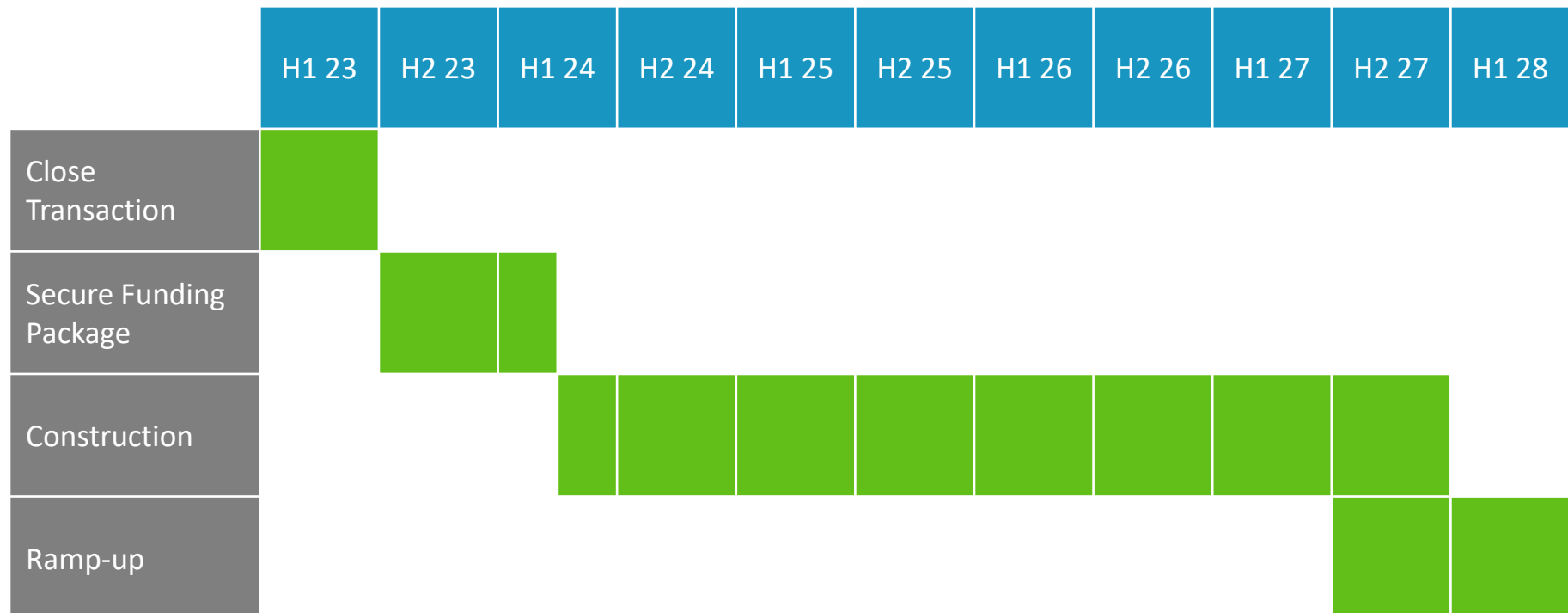


- Orion
- Investissement Québec
- Ross Beaty and Lumina Group
- Cree (Indigenous Group)
- Aurion Resources
- Management and Board
- Other



- Strategic will work to secure a construction funding package consisting of debt, equity and off-take financing during the course of 2023
  - Government of Québec significant financial sponsorship + related infrastructure + additional support from Orion towards the C\$1.5B initial capital
  - Applying to Strategic Innovation Fund (SIF), a Federal Government program for 10% of initial capital

## ILLUSTRATIVE CONSTRUCTION TIMELINE:





## FERROVANADIUM PROCESSING

- Feasibility study contemplates toll processing vanadium slag with an off-taker
- Potential to construct and produce FeV80 and vanadium chemicals (incl. vanadium electrolyte for batteries) at the metallurgical plant at the Port of Saguenay

## ILMENITE CIRCUIT

- Build an ilmenite beneficiation plant at the mine to produce ilmenite, then high-grade titanium feedstock
- Smelting the feedstock would produce high-grade titanium slag with pig iron as a by-product (toll or with a new furnace)

## DOUBLING PRODUCTION

- Potential to increase the mining rate at the mine site and increase throughput at the metallurgical plant
  - Current met. plant capacity for ~25% expansion
- Second pit not considered in the Feasibility study, but could double the reserve tonnage

## FINLAND INTEGRATION

- Potential to build a concentrator at Mustavaara and ship concentrate to Québec
- Mustavaara concentrate has a similar iron and titanium spec., with higher vanadium grades



1

## Premium Critical Specialty Metals

- Positioned to be a global supplier of vanadium, high purity pig iron and titanium products
- Produces premium specialty metals which are central to the green materials transition and command a premium price
- Positive outlook for products and prices due to strong demand and structural supply issues

2

## World-Class Projects

- The long-life, polymetallic BlackRock project has compelling economics supported by a feasibility study completed by industry leading firms
- The project has a first quartile cost position across all products driven by superior geology, proven technologies and advantaged infrastructure
- Mustavaara is a PEA-stage project that previously produced vanadium and iron

3

## Tier I Jurisdictions

- BlackRock is a high-grade deposit located in Québec – a mining friendly, low-risk jurisdiction
- Excellent location with access and existing infrastructure including road, rail, port, low-cost power, and abundant labour and water
- Capacity on CN Rail line and deep seaports at Saguenay have capacity and year-round access
- Mustavaara is located in Finland – a stable, resource-friendly country that is being tasked by the EU to increase its production of critical metals

4

## Strong Local Support

- Strong local and provincial support with strategic stakeholders
- The BlackRock Mining Project is located in the James Bay Territory and Metallurgical Plant is located at the deep sea-port of Saguenay and significant financial sponsored from the Government of Quebec
- Agreements in place with local First Nations, Hydro Quebec, Energir, Port & local municipalities



## 5 Seasoned Leadership

- Leadership team working together to advance the project since 2015 with First Nations (IBAs), local municipal leaders, Port Saguenay, Hydro-Quebec & Energir
- Construction/Project team Quebec-based industry veterans (Progesys, BBA and Tetra-tech)
- International & local industry relationships with strategic iron, steel and vanadium companies well developed
- Enhanced by existing project development team at Strategic Resources

## 6 Reduced Funding Risk

- Existing cash positions the Company to secure a larger construction funding package
- Substantial work complete on construction funding package (debt, offtake and equity)
- Large supportive shareholders that intend to provide additional funding as part of a construction financing package

## 7 Organic Growth Potential

- Ilmenite processing that would add additional feedstock market potential with value addition to additional pig iron and chloride grade titanium slag
- Doubling throughput capacity at the Blackrock mine site
- Adding ferrovanadium production to metallurgical facility (permitted)
- Integrating high grade vanadium titaniferous magnetite concentrate from Mustavaara in Finland

## 8 Best-in-Class Sustainability Benefits

- Pig iron is a critical component of electric arc furnace steel production; much less CO2 than conventional blast furnace steel production; vanadium is used to strengthen steel which reduces overall emissions from the steelmaking process
- The BlackRock project also benefits from hydroelectric power and near zero metallurgical waste due to internal recycling
- Direct reduction technology provide path to H2 “clean iron” production with near zero CO2 footprint





# Appendix



Key Management	Education	Experience
<b>Sean Cleary</b> Chairman & CEO	MBA	<ul style="list-style-type: none"> <li>25+ years mining finance, capital markets, merchant banking and board level experience</li> <li>Company builder - co-founder of BlackRock Metals, People Corporation, Pinnacle Steel, Caratax Ltd and involved in numerous early-stage development companies</li> </ul>
<b>Scott Hicks</b> EVP Corporate Development Director	HBA Commerce	<ul style="list-style-type: none"> <li>Former investment banker with RBC Capital Markets and BMO Capital Markets</li> <li>Former CEO Strategic Resources</li> <li>Director at Atacama Copper</li> <li>Currently VP Corporate Development and Communications of Lumina Gold / Luminex Resources</li> </ul>
<b>Dan Nir</b> Chief Financial Officer	HBA, MBA	<ul style="list-style-type: none"> <li>20 years investment banking and corporate development experience executing M&amp;A and capital markets transactions</li> <li>Executive at BlackRock Metals for ten years where he arranged financing for the company from exploration through Full Feasibility and Permitting</li> </ul>
<b>Daniel Dutton</b> Vice-President, Metallurgical & Technical	Metallurgical & Chemical Engineering	<ul style="list-style-type: none"> <li>Working on the BlackRock Project for 5 years and he has 25+ years in mining, vanadium, titanium, iron and steel industry with Highveld Steel &amp; Vanadium / Vanchem Plant with Anglo American, Evraz and Duferco</li> <li>Developed numerous patents in titanium extraction with low grade titanium slags and participated in the design, manufacturing and commercial deployment of Vanadium Flow Redox Batteries</li> </ul>
<b>Alex Meterissian</b> Vice-President, ESG & Communications	M.Sc. Pol. Science	<ul style="list-style-type: none"> <li>10+ years of governmental affairs consulting experience. Working on the BlackRock file since 2014</li> <li>Instrumental in achieving Environmental Permits for the BlackRock Project, he also manages governmental &amp; First Nations affairs, relations with local communities and media communications</li> </ul>
<b>Michael Lam</b> Vice-President, Finance	CPA, CA	<ul style="list-style-type: none"> <li>25+ years of experience in accounting and finance</li> <li>Previously with Big 4 Accounting Firm, he has provided finance/accounting services to Canadian public companies for past ten years</li> <li>Consulting to the BlackRock Project for over 10 years</li> </ul>
<b>Jukka Pitkääjärvi</b> Vice-President, Geology	M.Sc. Geology & Mineralogy	<ul style="list-style-type: none"> <li>25+ years of experience as a geologist and geophysicist</li> <li>Extensive experience in developing mines and mills in the vanadium and iron industry</li> <li>Former CEO of Ferrovan Oy in Finland</li> </ul>



Board of Directors	Education	Experience
<b>Sean Cleary</b> Chairman & CEO	MBA	<ul style="list-style-type: none"> <li>25+ years mining finance, capital markets, merchant banking and board level experience</li> <li>Company builder - co-founder of BlackRock Metals, People Corporation, Pinnacle Steel, Caratax Ltd and involved in numerous early-stage development companies</li> </ul>
<b>Scott Hicks</b> Director	HBA Commerce	<ul style="list-style-type: none"> <li>Former investment banker with RBC Capital Markets and BMO Capital Markets</li> <li>Former CEO Strategic Resources</li> <li>Director at Atacama Copper</li> <li>Currently VP Corporate Development and Communications of Lumina Gold / Luminex Resources</li> </ul>
<b>Kurt Wasserman</b> Director	B.S. Economics	<ul style="list-style-type: none"> <li>Investment manager at Orion Resource Partners</li> <li>Former investment banker with Rothschild &amp; Co in Metals &amp; Mining</li> </ul>
<b>Amyot Choquette</b> Director	B.A.A	<ul style="list-style-type: none"> <li>Senior Director, Investments, at Ressources Québec, a division of Investissement Québec</li> <li>Previously with Société Générale de Financement du Québec, where he carried out investments and financings in the mining and forest products industries</li> </ul>
<b>Mark Serdan</b> Director	B.Comm, CPA, CA	<ul style="list-style-type: none"> <li>20+ years of mining experience and currently the CFO at Aurion Resources.</li> <li>Portfolio Manager for ~15 years at BMO AM and UBS Global AM</li> <li>Previously worked 5 years at BMO Nesbitt Burns in Investment Banking and research.</li> </ul>
<b>Michael Moore</b> Director	B.Sc., P. Geo	<ul style="list-style-type: none"> <li>25 years of field work and project management experience working on gold-copper deposits, nickel-PGM deposits, manto-type carbonate replacement base metals, low sulphidation epithermal gold systems and uranium and tungsten mineralization</li> </ul>
<b>Victor Flores</b> Observer	B.S. Geology, M.Sc.	<ul style="list-style-type: none"> <li>Director of Strategic Projects at Orion Resource Partners</li> <li>Previously with Paulson &amp; Co., a leading NY-based hedge fund, where he was one of the Partners responsible for the firm's gold investments</li> </ul>
<b>Fabrice Consalvo</b> Observer	M.Eng., MBA	<ul style="list-style-type: none"> <li>Director, Energy &amp; Transport Electrification at Ressources Québec, a division of IQ</li> <li>Spent 20 years with Areva Group starting out as a design engineer and growing to assume roles in strategic planning, operational performance and business development</li> </ul>



## MERCHANT AND HIGH PURITY PIG IRON

- Merchant pig iron is a semi-finished steel derived from the smelting of iron concentrate
- Critical feedstock for electric arc green steel producers and ductile foundry applications to upgrade iron content of scrap
- Utilized in all aspects of every day life – buildings, bridges, cars, aviation, construction
- **High purity pig iron (“HPPI”) is a superior quality, premium priced pig iron**



## Key points for HPPI and BlackRock’s positioning :

1. **China & Russia represent ~85% of supply**
2. **Critical feedstock supply needed for electric arc furnaces**
3. **Will fuel energy transition and electric steel for North America**
4. **Required for government policy of decarbonizing the steel industry**
5. **BlackRock metallurgical facility designed to use clean hydrogen for pig iron production, which would make it the lowest GHG pig iron**
6. **Scrap steel supply is not pure enough and HPPI is required**
7. **The HPPI alone covers BlackRock’s operating cash costs**
8. **Quebec is already a producer of high purity pig iron via Rio Tinto**

**Average production 526 ktpa MPI; ~66% life of mine revenues**

# Merchant Pig Iron Market Overview



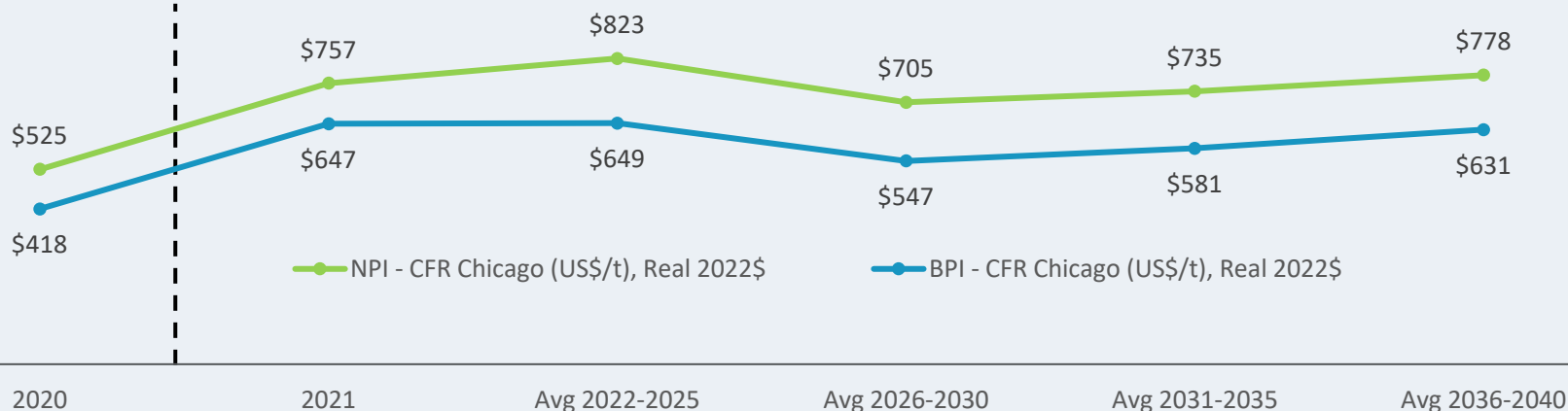
## Primary MPI Uses

- Merchant Pig Iron (“MPI”) is a raw material or semi-finished steel derived from the smelting of iron concentrate
- Used as a metallic feedstock alongside scrap iron in electric arc furnaces (“EAF”) to generate crude and finished steel products
- BlackRock’s MPI product qualifies as a premium Merchant Pig Iron product (known as “Super-high-grade T-two NPI”) due to its low phosphorus and manganese content, which allows it to command a high price from foundries who face limited input substitution options

## Supply and Demand

- The main exporters of MPI to NA and European markets are Russia, Ukraine and Brazil
- There are specialist NPI producers in Canada, Norway and South Africa
- The Russian and Ukrainian producers operate large blast furnaces using coke as the main reductant, and the Brazilian industry operates small blast furnaces using charcoal
- U.S. supply of NPI currently is almost exclusively sourced from Brazil – providing BlackRock a distinct geographic opportunity to provide reliable, cost-effective supply
- The use of scrap in EAF steelmaking inherently allows for impurities, which tend to reduce the performance of the finished steel
- As a result, certain finished steel products require that EAFs supplement their scrap with metallics such as MPI to impact higher purity
- Merchant pig iron has a higher metallization than HBI and also requires less energy to melt in the furnace
- MPI has a higher chemical energy, requires fewer carbon additions to the melt and it improves overall productivity and reduces charging time

## Nodular Pig Iron (“NPI”) and Basic Pig Iron (“BPI”) Price Forecast (US\$/t)



Source: Market study commissioned for 2022 BlackRock Feasibility Study.





## VANADIUM

### Key points for vanadium and BlackRock's positioning:

- Vanadium is a **key strengthening agent** in construction steel
- Large OEMs utilizing vanadium in high strength low alloy steel in a shift to **stronger, but lighter cars**
- Next generation batteries like **vanadium redox flow batteries** offer long duration and greater power output

■ Mild Steel  
■ High Strength Steel  
■ Extra High Strength Steel  
■ Ultra High Strength Steel



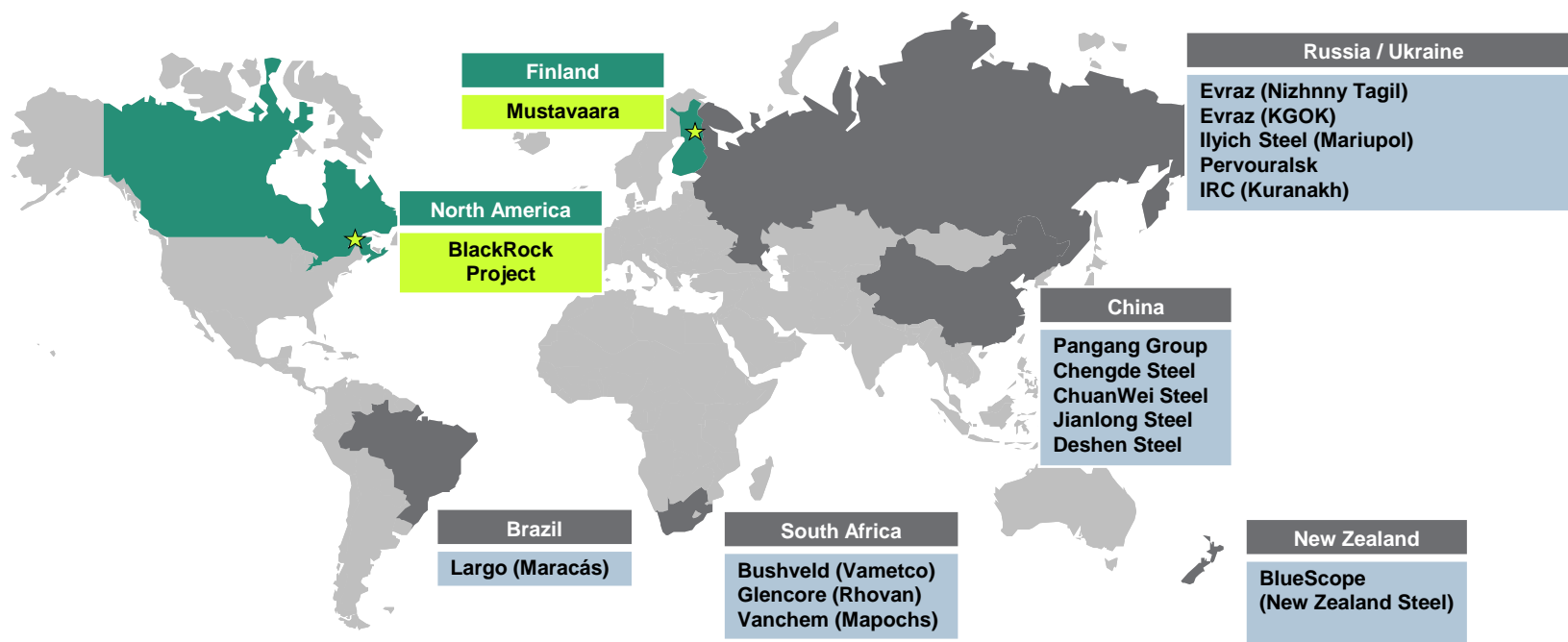
1. China & Russia represent ~80% global production
2. Solid base level demand as ferroalloy & aluminum alloy
3. Enhanced demand from energy transition & deep energy storage
4. Consumption to dramatically increase due to VRFB deployment over next decade
5. No existing primary resource vanadium producing mines in North America
6. Permitted BlackRock Project is the only near term North American producer
7. Listed as a “Critical Metal” by governments

Average LOM production 4.4 ktpa FeV<sub>80</sub>; ~27% life of mine revenues



- Over 70% of the world's vanadium is derived from co-product steel slag
- Majority of deposits have lower grades and higher contaminants than Strategic's deposits
- Majority of existing merchant pig iron production comes from Russia, Ukraine and Brazil; Canada and Finland are widely considered to be preferred green mining jurisdictions

## Vanadium Mines and Smelters



# Vanadium Market Overview

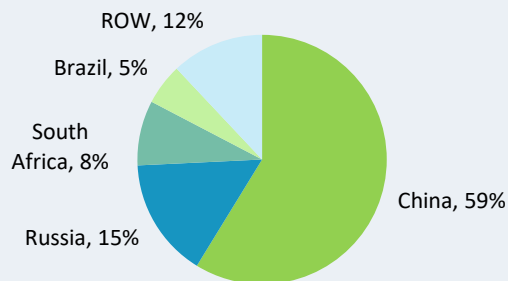


## Primary Vanadium Uses

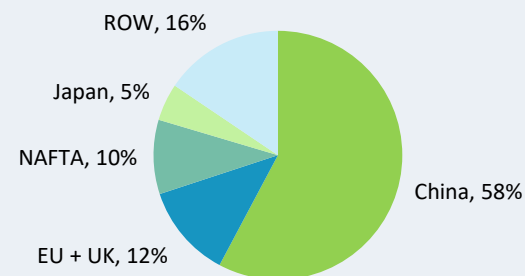
- **Steel (93% of demand):** Production of high-strength, low-alloy steel and other high-performance steel
- **Chemical and Aerospace (6%):** Creating titanium alloys for the aerospace end market and as an oxidation catalyst in pollution control and chemical production processes
- **Batteries (1%):** Grid and portable energy storage applications

## Supply and Demand (2022E)

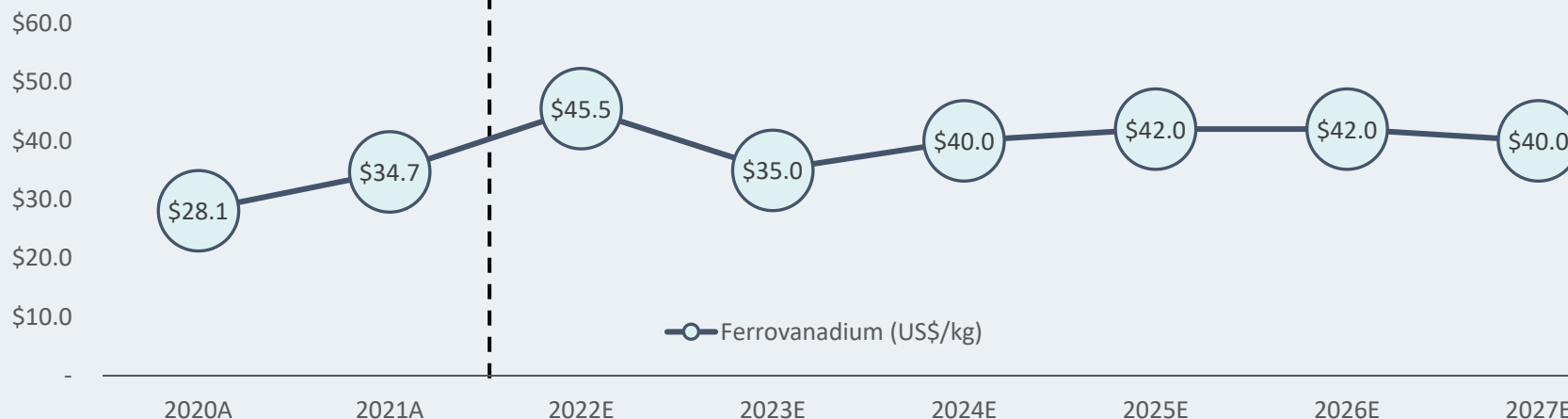
- **88% of raw material supply comes from:** China, Russia, South Africa and Brazil



- **70% of demand comes from:** China, the EU and the UK



## Ferrovanadium Price Forecast (US\$/kg)



Source: Wood Mackenzie (Supply and Demand) and BMO Capital Markets (Forecast)



## TITANIUM

- Titanium dioxide (“TiO<sub>2</sub>”) will be produced as a by-product
- Majority of TiO<sub>2</sub> is **used as a feedstock for pigment (paints and coatings)**
- TiO<sub>2</sub> is considered a quality-of-life product – **as disposable income rises, so does TiO<sub>2</sub> consumption**



## Key points for titanium and BlackRock's positioning :

1. Long term growth forecasted for titanium demand
2. Russia is supplying a significant portion of US titanium
3. Numerous aerospace and military applications
4. Long term demand as ferroalloy & aluminum alloy
5. Additional demand from pigment & coatings
6. Quebec is already a producer of world class titanium feedstocks via Rio Tinto
7. Listed as a “Critical Metal” by governments

Average production 118 ktpa Ti slag; ~6% life of mine revenues



2013

- Applied for a mining lease from the Ministère des Ressources naturelles du Québec and the Canadian Agency for Environmental Evaluation held public hearings
- Granted provincial Global Certificate of Authorization for the production of magnetite concentrate containing vanadium at the mine site

2017

- Metallurgical Plant Impact Study submitted

2019

- Granted modified provincial Global Certificate of Authorization for the production of magnetite concentrate containing vanadium at the mine site
- Permit was modified to reduce tonnage of concentrate produced to match requirements of metallurgical plant
- Granted permit for the metallurgical plant
- Full project, mine site and metallurgical facility are shovel ready

**Mine site and metallurgical facility have received all required construction permits**



# Exceptional Project Stakeholders at BlackRock



Local	<ul style="list-style-type: none"> <li>Agreement with First Nations provides support and social acceptability</li> <li>The Cree Nation are experienced partners, commercially advanced and a well-funded First Nations group</li> </ul>
	<ul style="list-style-type: none"> <li>20-year government program to develop the mining resource in Québec</li> <li>BlackRock's project is one of a very few that meet all criteria for government support</li> </ul>
Logistics	<ul style="list-style-type: none"> <li>Federally owned, deep water port at Saguenay, Québec</li> <li>Long term lease for Metallurgical Plant and Agreement to use the port for storage and shipping year round</li> <li>Connected to rail, power and natural gas (Potential Hydrogen Hub in Quebec)</li> </ul>
Engineering	<ul style="list-style-type: none"> <li>Independent Canadian consulting engineering firm with extensive experience in Québec and abroad</li> <li>BBA 43-101 feasibility study for mine, concentrator and metallurgical plant (along with Tetra Tech and WSP)</li> </ul>
	<ul style="list-style-type: none"> <li>Global fully integrated provider of consulting and engineering services with strong local presence in the Province of Québec</li> <li>Will work with BBA on the balance of metallurgical plant engineering</li> </ul>
	<ul style="list-style-type: none"> <li>Worldwide supplier of advanced technologies, products and engineering services for the metals, mining and minerals industries</li> <li>Worked with BBA on feasibility study on transformation / processing of vanadium titanium magnetite</li> </ul>

**Additionally, BlackRock Metals is in discussions on potential offtake agreements with multiple established global traders**

# Best-in-Class Sustainability Benefits



## HIGH PURITY PIG IRON

Critical component to EAF green steel production

As scrap usage increases and scrap quality erodes, high purity pig iron demand increases

By 2050, **steel use is projected to increase by ~20%** to meet needs of population

To meet IEA's Sustainable Development Scenario, the **combined global market share of scrap-based EAFs and induction furnaces needs to reach +28% by 2030**

**>50% CO<sub>2</sub> reduction** vs. conventional BOF steel

BlackRock ensures **end-to-end North American supply chain solution**

## VANADIUM

Vanadium alloying agent makes steel stronger and better

Vanadium used to strengthen steel rebar avoids 26 Mt CO<sub>2</sub> globally

Substantial upside with increased grid-level storage demand for VRFB installations, which have advantages over other electro-chemical battery types for long duration energy storage at scale

>4,500 GWh total demand for batteries from stationary storage and electric transport sectors by 2040

>US\$600 billion investment over next 20 years on energy storage

Battery demand for vanadium +30% CAGR over next ~10 years

## OTHER SUSTAINABILITY BENEFITS

**Hydroelectric power source**

**Leveraging existing infrastructure networks**

**Displacing more carbon intensive raw-material supply**

**Strong local stakeholder support, including from First Nations**

**Near zero metallurgical waste due to internal recycling**

Sources: World Steel Association and IEA



## Technology Share

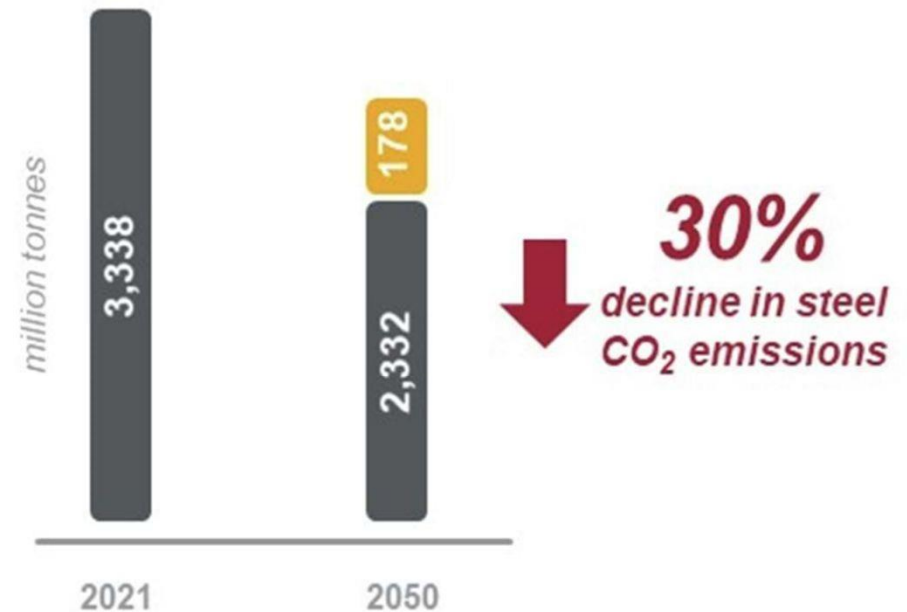
■ EAF ■ BOF



Inner Pie: 2021  
Outer Pie: 2050  
Steel production in Mt

## Carbon Emissions (MtCO<sub>2</sub>e)

■ Emissions ■ Carbon Capture Utiliation Storage (CCUS)



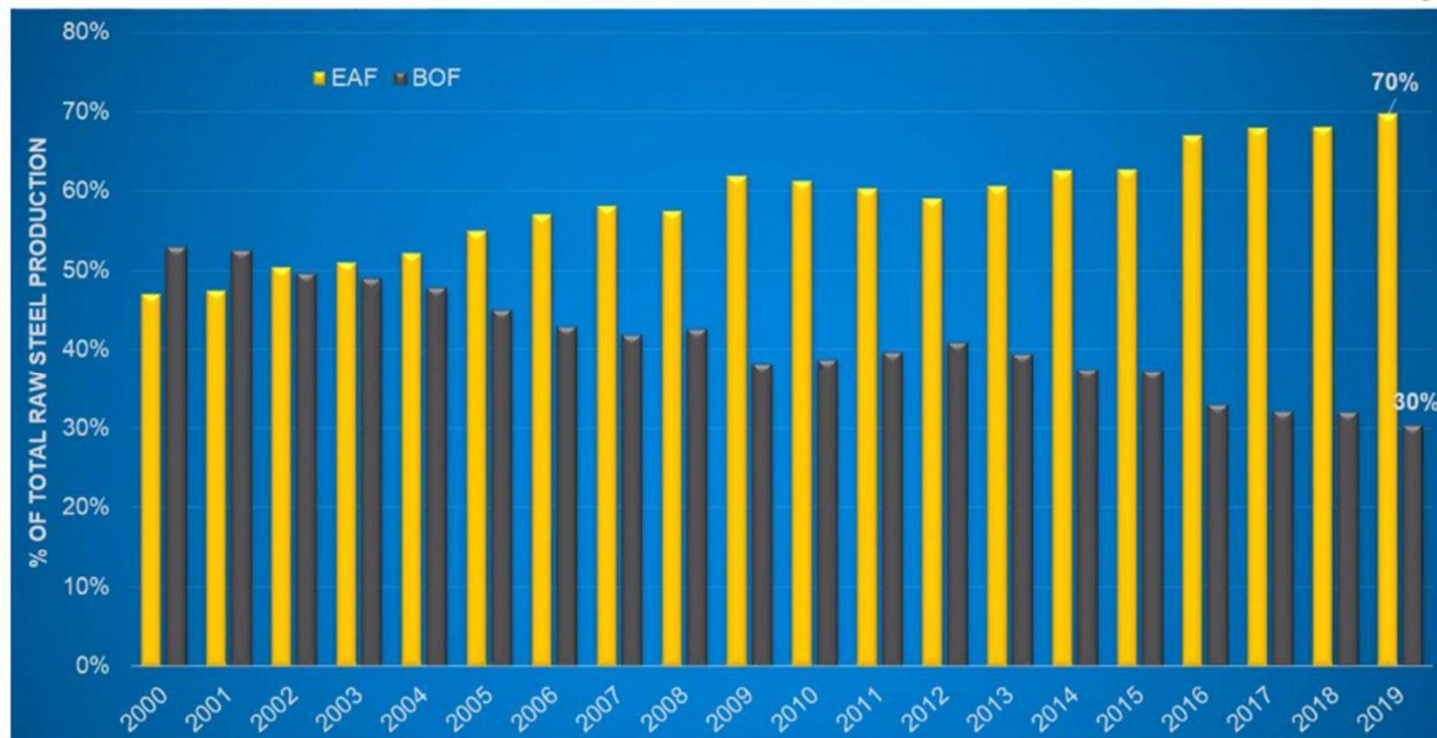
EAF will account for ~50% of global steel production by 2050, up from 30% today

Source: Wood Mackenzie

# US EAF Share over the Last 20 Years



- US produces 90 million tons of steel per year (70% Electric Furnace)
- The last 30 million tons of steel in USA will convert to electric which impacts demand on
  - Scrap steel (+20 million tons)
  - DRI, HBI & Pig Iron (+10 million tons)



Over the Past 20 years Electric Grew from 45% to 70% in the United States



FLSmidth is a leading full-flowsheet technology supplier for copper, gold, nickel, zinc and lithium mining. Products range from crushing, screening, conveying, separation, pumps and tailing to digital solutions for process performance. Its equipment is designed to provide up to decades of productive capacity.

## Metso:Outotec

Metso Outotec's traveling grate pelletizing plant is the industry's leading induration technology for iron ore pellet production for a wide range of plant capacities. Based on over 60 years' experience and world-class R&D, the process produces uniform pellets and ensures high performance and quality, with low investment and operating costs, as well as decreased energy consumption and emissions. Globally, they have delivered more than 65 plants for a wide range of ore types. The traveling grate indurating process is responsible for two thirds of the world's installed pelletizing capacity.



Tenova partner with their stakeholders to design and develop technological solutions for metal processing that cut costs, save energy, decarbonize production processes and reduce environmental impact. From Direct Reduction Iron to Electrical Arc Furnaces, from reheating and heat treatment furnaces to cold mills, processing lines and roll grinders, they offer premium solutions that are the result of responsible, reliable, environmentally-friendly innovation. Tenova's efforts starts even earlier, further up the value chain, with global mining, bulk material handling and mineral processing technologies and services provided under the brands TAKRAF and DELKOR. Incorporating hydrometallurgy, pyrometallurgy and port facilities, they are helping find the way in a new era for metals.



Key technology provider of the converter technology to produce the necessary vanadium slag feedstock from the vanadium contained hot metal produced from Strategic Resources OSBF. Primetals Technologies is a leader in the steelmaking sector in terms of reliability and economy as a result of the industries increased demands placed on product quality, plant productivity and availability.





- Drilling program with associated Davis Tube magnetic separation testing
- Bulk Sample Processing
  - 400kg bulk sample test campaign conducted by Corem, produced 120kg Concentrate
- Concentrate Testing
  - Pelletizing test at Corem
  - Direct Reduction tests at Ternium Monterrey
  - Smelting (HPPI & TiO<sub>2</sub> slag production) test at Mintek
  - Vanadium slag production testing at Mintek
  - Vanadium recovery from slag testing (roasting, leaching, precipitation and FeV production) at Mintek
- Process Design Development
  - FLSmidth
  - Metso-Outotec
  - Tenova USA
  - Industrial Economy
  - Pyromet South Africa (Vanadium)
  - BBA
  - Tetrattech
  - Danieli
  - Tenova USA
  - Primetals



VTM pellets



Ferrovanadium



HPPI



DRI

# Hydrogen Makes it Possible to Address Major Challenges



## One molecule, multiple uses :

- ✓ A molecule used in various industrial processes, including refining, chemicals, electronics, etc.

## But it can also be used:

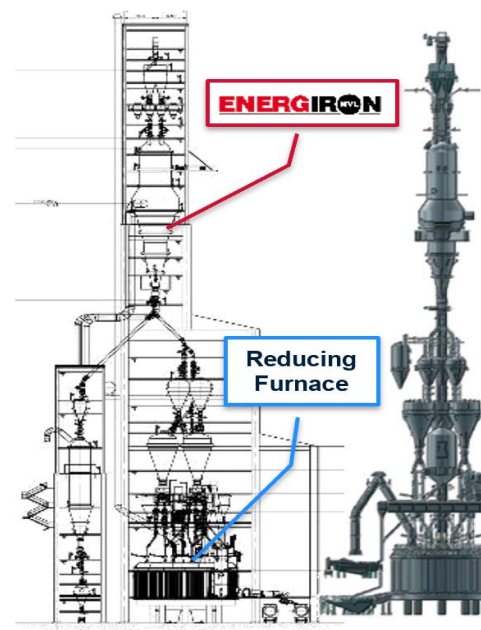
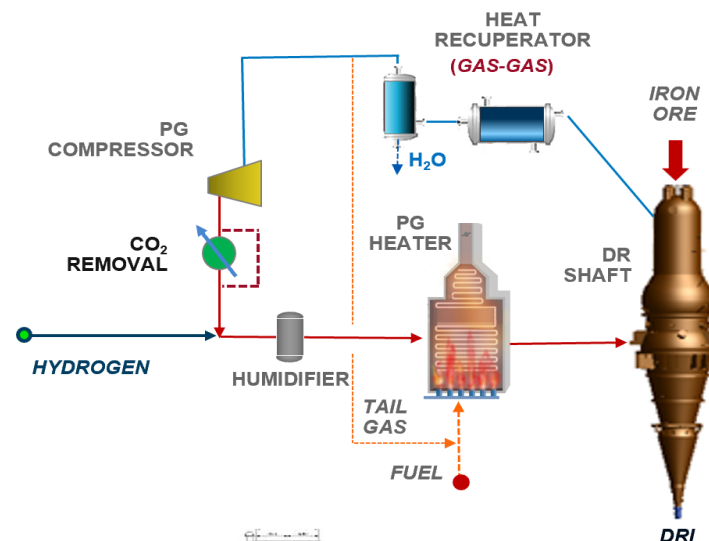
- ✓ As a feedstock to decarbonize industry
- ✓ As an energy carrier for industry and clean mobility

## A solution for a better future Hydrogen plays a role in:

- ✓ Fighting against climate change
- ✓ Tackling the energy transition
- ✓ Reshaping industry
- ✓ Deploying clean mobility

## Tenova shown experience with Hydrogen use:

- ✓ Experience in ENERGIRON plants with reformer using in excess of 70% H<sub>2</sub>
- ✓ Scheme natively fitted for direct use of H<sub>2</sub>
- ✓ Completion of pilot plant tests with ~90% H<sub>2</sub> since 1990's
- ✓ Extensive experience and operation with Process Gas heaters and gas sealing valves design, specifically with high percentages of H<sub>2</sub>





## OSBF

### *Open Slag Bath Furnace*

- Process sealed from surrounding atmosphere  
→ **Reducing** environment
- Large bath surface area  
→ Lower power density
- Long term vessel and lining philosophy
- Distributed & **continuous** material feed
- **Continuous** “power on”
- Simple secondary power factor correction
- Suspended self-baking Söderberg electrodes
- Tapping of hot metal

## EAF

### *Electric Arc Furnace*



- Open to atmosphere  
→ **Oxidizing** environment
- Smaller bath surface area  
→ Higher power density
- Short term vessel and lining philosophy
- Concentrated & **intermittent** feed of materials
- **Intermittent** “power on” / batch operation
- High network feedback depending on operation
- Graphite electrodes and electrode arms
- Tapping of steel

#### Other facts on OSBF :

1. The perfect solution for melting high carbon DRI to produce hot metal.
2. Developed for vanadium titaniferous magnetite iron ores (VTM). Been in operation for the last ~50 years (New Zealand Steel and Highveld Steel and Vanadium)
3. “Green Metallics”: Reduction can be fully based on green H<sub>2</sub>; heating fully electrified
4. Flexible ore basis - Utilization of multiple iron ore qualities (low to high-grades)
5. Higher iron yields due to higher superheat in the metal and less iron entrapment in the slag.
6. Power utilization factors in excess of 98%.
7. Vanadium recovery increased from 70% to over 85%.
8. Lower electrode consumption



## Southwest NI 43-101 Mineral Reserve Estimate

Category	Tonnes (Mt)	In Situ Grade (%)			In Situ Contained (Mt)		
		V <sub>2</sub> O <sub>5</sub>	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	V <sub>2</sub> O <sub>5</sub>	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>
Proven	123.9	0.46	40.2	7.7	0.57	49.8	9.5
Probable	3.9	0.42	40.3	8.1	0.02	1.6	0.3
<b>Total Reserves</b>	<b>127.8</b>	<b>0.46</b>	<b>40.2</b>	<b>7.8</b>	<b>0.59</b>	<b>51.4</b>	<b>9.8</b>

## Southwest and Armitage NI 43-101 Mineral Resource Estimate

Category	Tonnes (Mt)	In Situ Grade (%)			In Situ Contained (Mt)		
		V <sub>2</sub> O <sub>5</sub>	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	V <sub>2</sub> O <sub>5</sub>	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>
Measured	287.2	0.45	39.0	7.5	1.3	112.0	21.5
Indicated	68.3	0.44	39.0	7.6	0.3	26.6	5.2
<b>Total M&amp;I</b>	<b>355.5</b>	<b>0.44</b>	<b>39.0</b>	<b>7.5</b>	<b>1.6</b>	<b>138.6</b>	<b>26.7</b>
<b>Inferred</b>	<b>73.3</b>	<b>0.44</b>	<b>39.7</b>	<b>7.9</b>	<b>0.3</b>	<b>29.1</b>	<b>5.8</b>

Note: See Appendix for Reserve and Resources notes.





1. Resources are defined at a minimum cut-off of 10% Satmagan. Due to the necessary rounding of estimates, the rounded totals may slightly differ from the sum of rounded individual estimates.
2. The Mineral Resource estimate was completed by Michel Dagbert, Eng. (OIQ #45944) from SGS Canada, an independent Qualified Person as defined in NI 43-101.
3. The effective date of the Mineral Reserve estimate is October 2022
4. The Mineral Reserves were estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Standards for Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council in May 2014.
5. Qualified Person: The Mineral Reserve statement was prepared by Isabelle Leblanc (OIQ #144395) of BBA, an “independent qualified person”, as that term is defined by National Instrument 43-101.
6. Open pit Mineral Reserves have been estimated using a 0.29 net revenue factor apply on High Purity Pig Iron (HPPI) price of 670 CAD/t of product, a Ferrovandium (FeV) price of 54,341CAD/t of product, a foreign exchange rate of CAD1.33 to USD1.00.
7. Open pit reserves have been estimated using a cut-off grade of 10% Diluted Satmagan.
8. The life of mine strip ratio is 2.2.
9. Reserves are derived from the Satmagan Resources Statement (127.8Mt of resources in the Measured and Indicated categories at a cut-off grade of 10%) prepared by Michel Dagbert (OIQ #45944) of SGS Geostat. BlackRock exploration program in the Chibougamau Municipality is being supervised by Charles Perry, P.Geo., and Pierre O'Dowd, P.Geo., both Qualified Persons, as defined by National Instrument 43-101. Mineral Resources are inclusive of Mineral Reserves.
10. The reference point for the Mineral Reserves is the crusher feed.
11. Expected % V2O5 in concentrate and % metallurgical weight recovery are based on Davis Tube Analysis (DTA) metallurgical test work.
12. BBA is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political, marketing or other relevant issue that could materially affect the Mineral Reserves estimate.





## TIER 1 COUNTRY

- Finland - stable government with growing economy
- EU looking to Finland to supply growing critical metal requirements



## ESG

- Brownfields site with prior disturbance
- Access to carbon free hydro and nuclear power

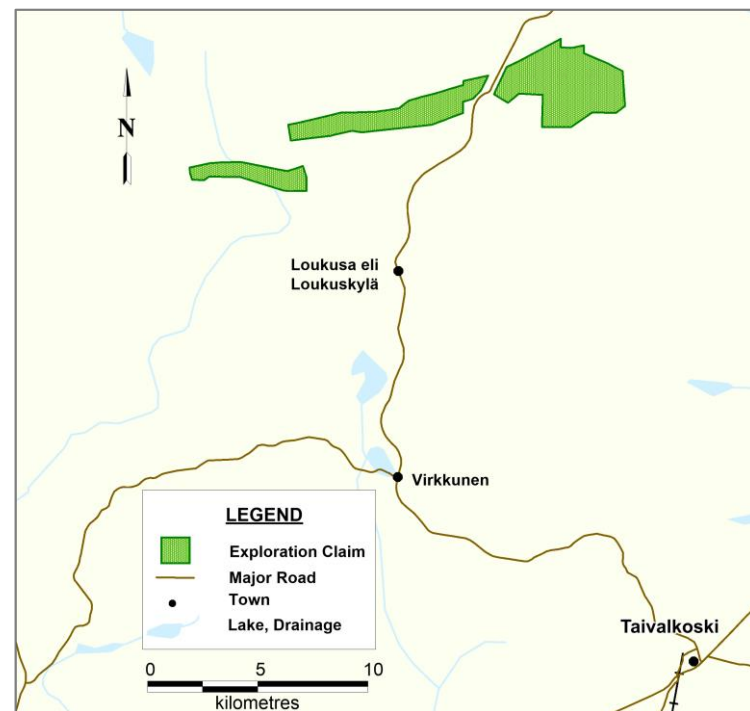


## REDUCED RISK

- Past producer of V205 and pig iron
- Metallurgy that works with proven ability to upgrade material to concentrate
- Consistent, well understood mineralization



- Mustavaara is located in north-central Finland, approximately 179 km northwest of Oulu and 650 km north of Helsinki
- Access to the property is provided by paved highways and a gravel road to the property
- Consists of three reservations totalling ~2,650 ha
- Approximately 10,000 metres of drilling over 73 holes has been completed on the property
- Previously mined by the Finnish state company Rautaruukki Oy between 1976 and 1985
  - Mustavaara and the nearby Otanmäki deposit accounted for ~10% of world vanadium production
- Historic mining reached a max depth of 50 metres along a 1,000 metre corridor before ceasing due to low metal prices of ~US\$1.50/lb  $V_2O_5$
- Remaining NI 43-101 compliant M&I resource totaling 104 Mt @ 15.4% magnetite and 0.90% vanadium in concentrate
- Vanadium-rich magnetite zones located along an 18 km long magnetic anomaly – *Large scale potential along strike*
  - Simple magnetic separation upgrade anticipated

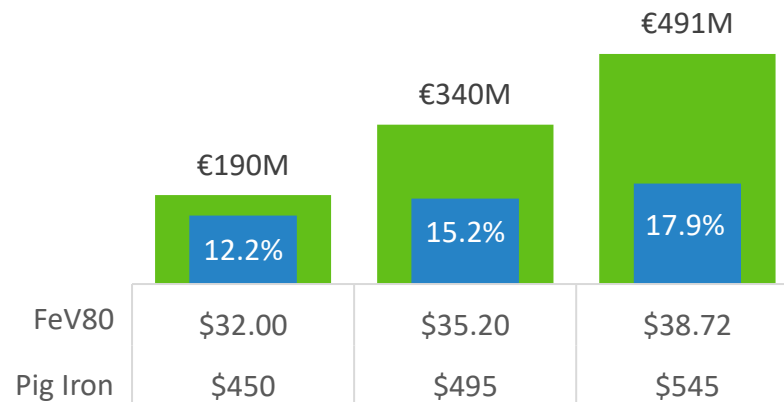




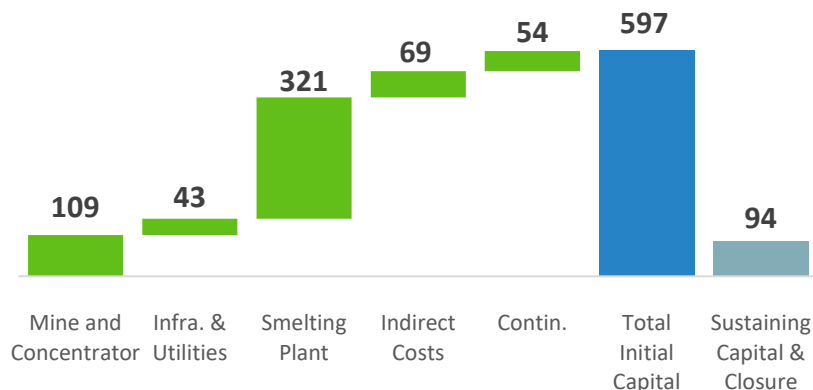
## PEA Highlights

- 20.25-year mine life
- Annual production of 4.6 kt of FeV80 & 329 kt of pig iron
- After-tax NPV (8%) and IRR of €190 million and 12.2%
- Average all-in sustaining co-product cash costs of €15.2 /kg FeV80 and €210.7/t pig iron
- LOM revenue mix of 46.7 % FeV80, 50.8 % pig iron and 2.6 % other by-products

## NPV (8%) and IRR Sensitivity

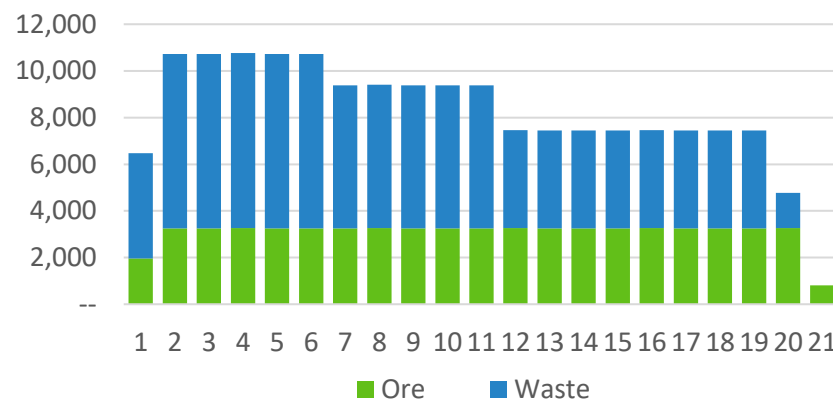


## Life of Mine Capital Costs (€M)



## Mine Plan Summary (kt)

LOM strip ratio of 1.7 to 1.0





## Mineral Resource Estimate Summary (11.0% magnetite cut-off grade)

Resource Class	Million Tonnes	Average Grade				Contained Metal		
		Magnetite (%)	VinMC <sup>(1)</sup> (%)	Ti <sup>(2)</sup> (%)	Fe <sup>(2)</sup> (%)	VinMC <sup>(1)</sup> (kt)	Ti <sup>(2)</sup> (kt)	Fe <sup>(2)</sup> (kt)
Measured	64.0	15.41	0.91	3.75	63.3	90	370	6,244
Indicated	39.7	15.27	0.88	3.53	62.8	53	214	3,805
<b>Total M&amp;I</b>	<b>103.7</b>	<b>15.36</b>	<b>0.90</b>	<b>3.67</b>	<b>63.1</b>	<b>143</b>	<b>584</b>	<b>10,049</b>
Inferred	42.2	15.11	0.92	3.75	62.3	59	239	3,971

## Sensitivity of Measured + Indicated Mineral Resource to Cut-Off Grade

Cut-Off Magnetite (%)	Million Tonnes	Average Grade				Contained Metal		
		Magnetite (%)	VinMC <sup>(1)</sup> (%)	Ti <sup>(2)</sup> (%)	Fe <sup>(2)</sup> (%)	VinMC <sup>(1)</sup> (kt)	Ti <sup>(2)</sup> (kt)	Fe <sup>(2)</sup> (kt)
8.0	107	15.17	0.9	3.64	63.2	146	593	10,281
10.0	106	15.26	0.9	3.65	63.2	146	590	10,291
<b>11.0</b>	<b>104</b>	<b>15.36</b>	<b>0.9</b>	<b>3.67</b>	<b>63.1</b>	<b>143</b>	<b>584</b>	<b>10,049</b>
12.0	95	15.71	0.9	3.72	63.0	134	555	9,394
14.0	67	16.81	0.9	3.80	62.9	102	430	7,115

Note: The mineral resource estimate has an effective date of September 14, 2020. Metal prices used: Pig Iron US\$350.00 per tonne, Ferrovandium US\$30.00 per kilogram. (1) The weight percent of vanadium retained in the magnetic fraction is reported as VinMC (Vanadium in Magnetic Concentrate) and can be correlated with magnetically recovered vanadium grades in large scale magnetic separation plants. This work has indicated that the magnetite content could be upgraded by a factor of six. (2) Ti (titanium) and Fe (iron) grades and contained metal values are stated in recovered magnetite concentrate post upgrading.



Aurora Borealis – Finland



TSX.V: **SR**

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