

South Star Battery Metals Corp.

(TSXV: STS / OTCQB: STSBF)

Leveraging Brazilian Production, Advancing U.S. Graphite Strategy

BUY

Current Price: C\$0.55

Fair Value: C\$1.91

Risk: 5

Sector: Junior Mining

[Click here for more research on the company](#)

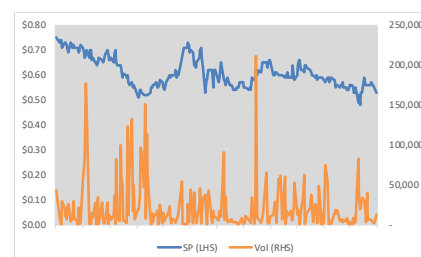
Highlights

- Since our previous report in August 2024, STS has **commenced commercial production** at its Santa Cruz graphite project (Brazil), and **completed a Preliminary Economic Assessment (PEA)** on the BamaStar graphite project (a historic producer) in Alabama.
- STS aims to establish a **vertically integrated battery-graphite plant** in the U.S., sourcing 100,000 tpy of flake graphite from its projects in Brazil and Alabama. The plant will produce 61,800 tpy of high-value products, such as battery anode materials, enough to **support graphite requirements for 1M electric vehicles per year**.
- At Santa Cruz, STS has commenced phase one production with an annual capacity of 12 Kt of flake graphite concentrates. The project is fully permitted for 50 Kt per year. We estimate that phase one production of 12 Kt/year could **generate US\$12M in revenue**. The company is anticipated to begin reporting revenue this quarter.
- The PEA on BamaStar returned robust economics, with **an AT-NPV8% of US\$1.6B, and a high AT-IRR of 27%**, using current graphite prices. Management plans to complete a Feasibility Study (FS) by 2026, and move the project to production by 2027.
- Graphite prices are down 6% YoY, amid slower EV sales growth and higher supply. We **remain optimistic about long-term prices** as the sector is anticipated to face a significant supply deficit towards the end of this decade. Note that graphite and lithium are the only two primary inputs used in all major types of batteries. We believe the U.S. has a **pressing need for domestic graphite** production, as it imports 100% of its graphite consumption, and has designated graphite as a critical mineral.
- **Key upcoming catalysts** include the potential for production ramp-up, and Q1 financials, which will report revenue for the first time.

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Equity Analyst

Price Performance (1-year)



	YTD	12M
STS	2%	-25%
TSXV	1%	9%

Company Data

52 Week Range	C\$0.48 - C\$0.75
Shares O/S	58M
Market Cap.	C\$32M
Yield (forward)	N/A
P/E (forward)	N/A
P/B	2.6x

Key Financial Data (FYE - Dec 31)

(C\$)	2024 (9M)
Cash	\$3,226,442
Working Capital	\$872,976
Mineral Assets/PP&E	\$25,281,058
Total Assets	\$29,171,951
Net Income (Loss)	-\$5,846,935
EPS	-\$0.12

*** Subsequent to Q3-2024, STS closed a \$4.2M equity financing**

***See last page for important disclosures, rating and risk definitions. All figures in C\$ unless otherwise specified.**

Portfolio Summary

Project	Location	Status
Santa Cruz	Bahia, Brazil	Producer; Aiming to expand production to 25,000 tpy by 2026
BamaStar	Alabama, U.S.	Resource-stage; Aiming to commence production by 2027

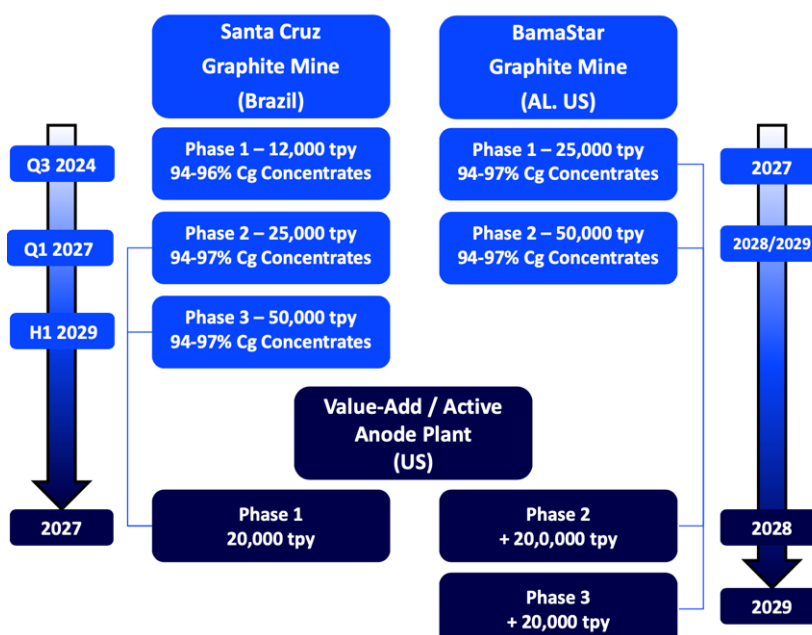
Two graphite projects in the Americas

Santa Cruz is the first new graphite producer in the Americas in over 25 years

The U.S. is a leading importer of graphite

Brazil is the fourth largest graphite producer in the world

STS aims to establish a vertically integrated battery-graphite plant in the U.S., sourcing 100,000 tpy of flake graphite from its mines in Brazil and Alabama, to produce 61,800 tpy of high-value products, such as battery anode materials



Source: Company

Santa Cruz Graphite Project, Brazil (100% ownership)

STS commenced phase one production in Q4-2024, targeting 12 Ktpa of natural flake graphite.

Located in one of the most active graphite producing regions in the world, with a track record of over 70 years of production

Located just 1.3 km from a paved highway, and 270 km from a port, with power, gas, and water within 5 km

A mid-sized/relatively low-grade resource; however, resources are shallow and open-pittable, implying relatively low OPEX

In addition, there is no need for crushing or blasting, and the strip ratio is relatively low

63% of resources are large flake; the type used for anode materials in EV batteries

As resources remain open along strike, and at depth, we believe there is potential for resource expansion; note that 95% of the project area remains untested

Project Location



Resources and Reserves

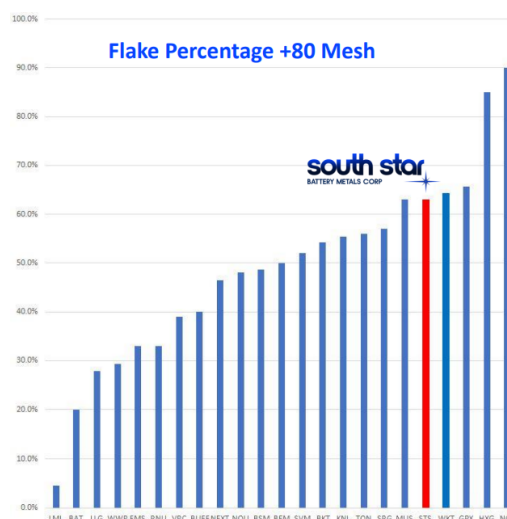
2019 Resource	Tonnage	C (%)	In-situ Graphite (t)
Measured	3,947,550	2.40%	94,740
Indicated	10,955,570	2.25%	246,500
M&I	14,903,100	2.29%	341,240
Inferred	7,911,450	2.32%	183,550
2020 Reserve	Tonnage	C (%)	In-situ Graphite (t)
Proved	3,989,635	2.49%	99,340
Probable	8,318,795	2.35%	195,490
Total	12,308,430	2.40%	294,830

Representative Santa Cruz Graphite Project Concentrates

Mesh Size (#)	Distribution	%Cg
30#	4%	95%
50#	32%	95%
80#	27%	97%
140#	17%	97%
-140#	20%	97%
Recovery 88%		

+50 mesh with 98% Cg and +99.9% Cg concentrates were also produced during testing.

63% of concentrates contained jumbo to large flakes (+30, +50 and +80 mesh).



Source: Company/FRC

A 2020 PFS, based on a 12-year mine life, returned an AT-NPV5% of US\$81M, using US\$1,287/t graphite vs the spot price of US\$1k/t for large flake graphite (93%-95% Cg)

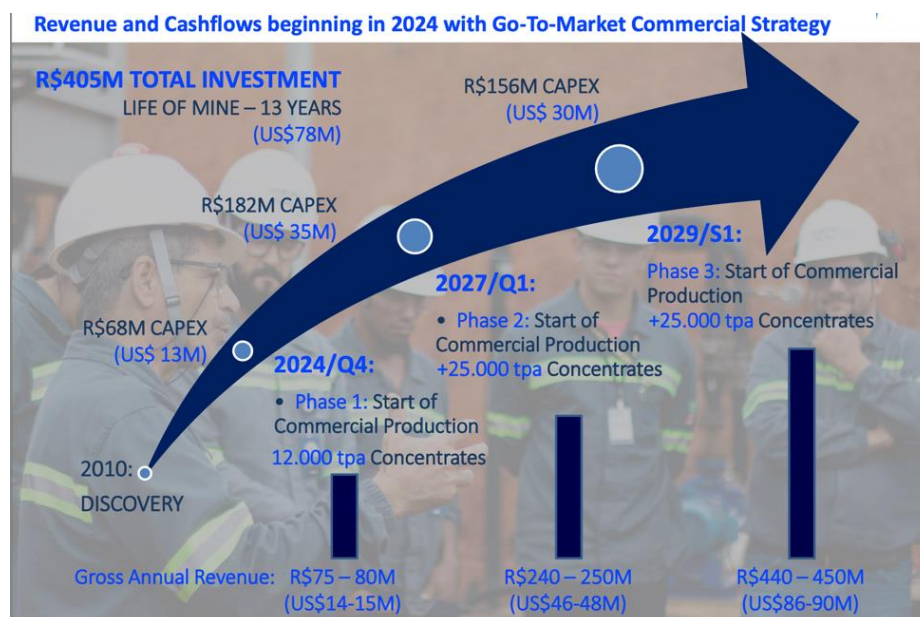
We estimate that phase one production of 12 Kt/year could generate US\$12M in revenue

We expect the company to start reporting revenue this quarter

We will provide our full-year revenue and earnings forecasts once the Q1 financials are published

	2020 PFS	Updated Plans
Mining Method	Open Pit	
Process/Metallurgy	Milling and Flotation	
Life of Mine (LOM)	12 years	
Annual Production (tonnes) - 95% C	Phase 1 (Years 1-2): 5,000 tpy, Phase 2 (Years 3-11): 25,000 tpy	Phase 1 (Years 1-2): 5,000 tpy, Phase 2 (Years 3-4): 25,000 tpy, and Phase 3 (Years 5-12): 50,000 tpy
Strip Ratio	1.60	
Recovery	82%	
Product Price (\$/t)	US\$1,287/t	
Operating Cost (\$/t)	US\$396/t	
Initial CAPEX	US\$34.5M (Phase 1: US\$7.3M / Phase 2: US\$27.2M)	US\$68-\$77M (Phase 1: US\$10M, Phase 2: US\$30-\$35M, and Phase 3: US\$28-\$32M)
AT Free Cash Flow (FCF)	US\$129M	
AT NPV5%	US\$81.2M	
AT IRR	35%	
AT Payback (years)	4	

Source: Company/FRC



Source: Company

STS is planning a 4,000-5,000 m resource expansion drill program, followed by a **feasibility study** in late 2025.

BamaStar Graphite Project, Alabama (Option to earn 75%)

Located on the
Alabama Graphite
Belt

This project includes
a past producing
graphite mine,
grading 3%-5% Cg
(medium grades)

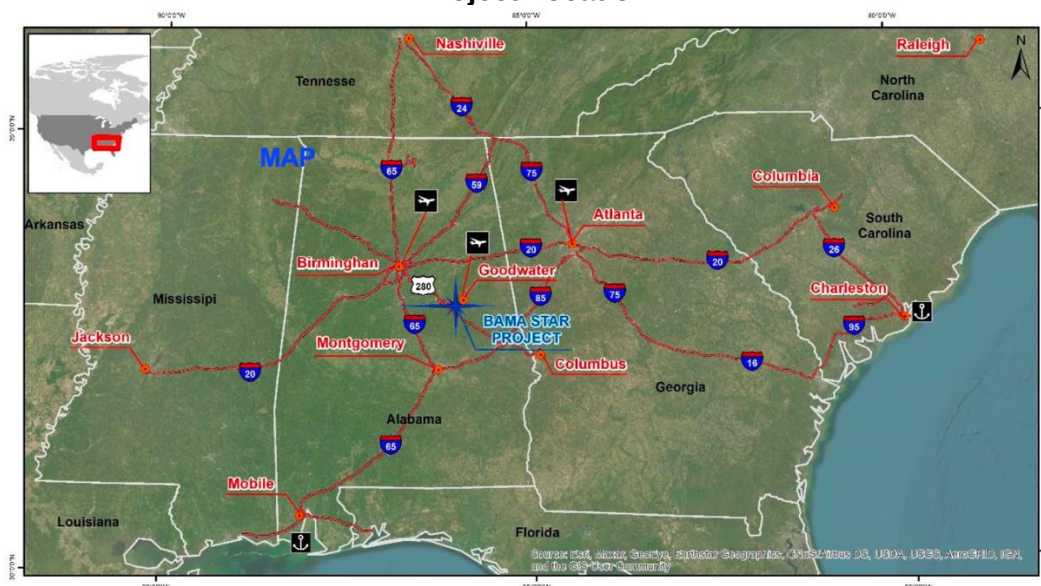
Management aims
to commence
production in 2027

Resources
increased 108% to
1.08 Mt, while the
average grade
decreased 14%

We believe the
impact of higher
tonnage more than
offsets the decline in
grades

Assuming each EV
consumes 75 kg of
graphite, STS' plant
should support 1M
EVs per year

Project Location



Source: Company

Since our previous report, STS has completed a PEA, and a resource update.

Resource Estimate

Category	Tonnes (t)	Graphitic Carbon (% Cg)	In-Situ Graphite (t)
July 2024 Resource			
Inferred	52,200,000	2.1	1,080,000
March 2023 Resource			
Inferred	22,000,000	2.4	520,000
% Change		-14%	108%

Source: Company / FRC

The PEA was based on a **vertically integrated battery-graphite plant in the U.S.**, producing 61,800 tpy of high-value products over a 19-year project life. This plant will source 50,000 tpy of concentrates from BamaStar, and 25,000 tpy from Santa Cruz, as feedstock. The project will encompass:

- A graphite mine
- A concentrate processing facility in Coosa County, Alabama
- A value-added plant in Mobile, Alabama, strategically located near a port

2024 PEA Highlights

Description	Unit	LOM
Preproduction Capex + Contingency	US\$M	365.9
Subsequent Capex + Contingency	US\$M	595.2
Sustaining and Closure + Contingency	US\$M	117.3
Average Gross Revenue	US\$M/yr	518.8
Total Gross Revenue	US\$M	9,857.2
Total Operating Costs	US\$M	2,471.7
Average LOM Operating Margin	%	72.3
Pretax Total Cashflow	US\$M	5,985.8
Total Taxes	US\$M	1,657.9
After-Tax Total Cashflow	US\$M	4,276.9
Average LOM Cashflow Margin	%	43.4
Pre-tax NPV 8%	US\$M	2,368.8
Pre-tax IRR	%	34.8
Pre-tax Payback Period	yr	4.4
After-tax NPV 8%	US\$M	1,598.3
After-tax IRR	%	27.4
After-tax Payback Period	yr	5.1

The PEA returned an AT-NPV8% of US\$1.6B, and a high AT-IRR of 27%

Product prices used in the study range from US\$800/t for fine flake, to US\$10,500/t for anode materials, consistent with current prices

Pre-Tax NPV (8%) Sensitivity Analysis					
	-10%	-5%	0%	5%	10%
CAPEX	\$2,454	\$2,411	\$2,369	\$2,326	\$2,283
OPEX	\$2,484	\$2,426	\$2,369	\$2,311	\$2,254
Recovery	\$2,358	\$2,363	\$2,369	\$2,374	\$2,379
Graphite Price	\$1,875	\$2,122	\$2,369	\$2,616	\$2,863

Discount Rate	8%	10%	12%
NPV Pre-Tax (US\$M)	2,369	1,909	1,545
NPV After-Tax (US\$M)	1,598	1,257	987

Product Pricing

Graphite Type	Selling Price USD/t	Annual Production tpy	Grade Fixed Carbon	Particle Size Mesh / Micron
Medium Flake Graphite Concentrates	\$1200	3,700	95 –97%	+150 Mesh
Fines Flake Graphite Concentrates	\$800	21,300	96 –99%	-150 Mesh
CSPG No. 1 Coated Spherical Purified Graphite (18 µm) Active Anode Material	\$9,750	10,500	≥ 99.95%	D50 = 18 µm
CSPG No. 2 Coated Spherical Purified Graphite (8 µm) Active Anode Material	\$10,500	2,100	≥ 99.95%	D50 = 8 µm
PMG No. 1 Battery-Grade Specialty Conductivity Enhancer * Ultra Fine *	\$9,300	8,000	≥ 99.95	D50 = ≤ 8 µm

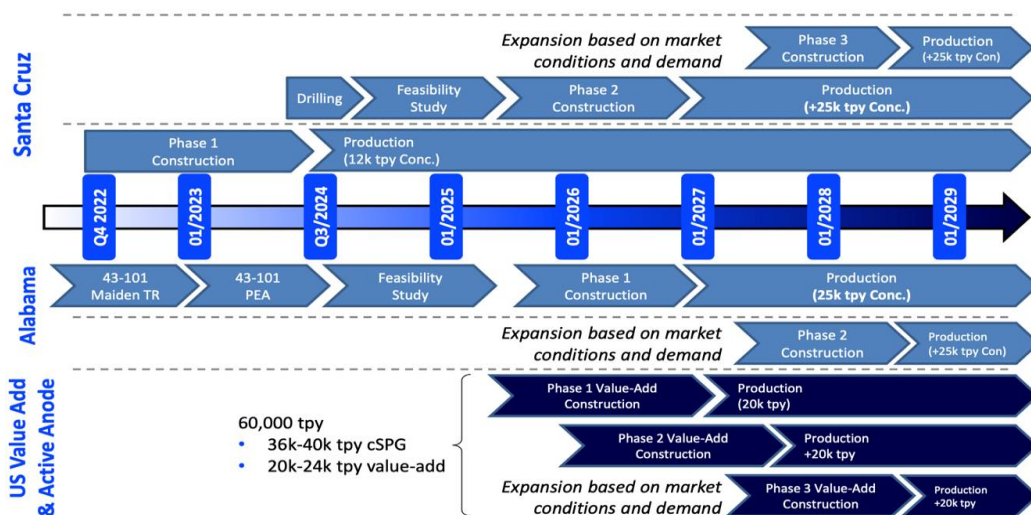
- Total Initial CAPEX: US\$961M spread over three phases
- Mine and processing plant CAPEX: US\$154M spread over two phases
- Value-add plant CAPEX: US\$807M spread over three phases

Source: Company / FRC

Management plans to complete a feasibility study by late 2026. The **U.S. Department of Defense has agreed to fund US\$3.2M** towards the study, which is estimated to cost US\$9-US\$14M over 18 months.

Upcoming Catalysts

Multiple near-term catalysts



Source: Company

Financials

Healthy balance sheet

Subsequent to Q3-2024, STS completed a \$4.2M equity financing

(in C\$) (FYE - Dec 31)	2024 (9M)
Cash	\$3,226,442
Working Capital	\$872,976
Current Ratio	1.29
Debt	-
Monthly Burn Rate (G&A)	-\$329,269
Cash Spent on Properties	-\$8,406,242
Cash from Financing Activities	\$6,776,114

Options	#	Exercise Price	Amount
Total	1,505,000	\$0.41	\$623,320
In-the-Money	1,297,000	\$0.36	\$469,400

Warrants	#	Exercise Price	Amount
Total	29,671,232	\$1.22	\$36,316,191
In-the-Money	151,179	\$0.53	\$80,125

Source: FRC / Company

FRC Valuation

DCF Valuation Summary - Santa Cruz

Production	12 Kt in 2025-2026, 25 Kt in 2027-2028, 50 Kt in 2029+
Mine Life (in years)	9
Average Product Price (US\$/t)	\$1,300
Average Operating Costs (US\$/tonne)	\$500
Capital Cost (in US\$M)	\$67
Discount Rate	10.0%
C\$:US\$	1.40
Fair Value - C\$	\$63,809,519
Number of Shares*	58,126,233
Value Per Share (C\$)	\$1.10

DCF Valuation Summary - BamaStar

Production	25 Kt in 2027-2028, 50 Kt in 2029+
Mine Life (in years)	19
Average Product Price (US\$/t)	\$1,300
Average Operating Costs (US\$/tonne)	\$500
Capital Cost (in US\$M)	\$154
Discount Rate	12.5%
C\$:US\$	1.40
Fair Value - C\$	\$43,230,376
Number of Shares*	58,126,233
Value Per Share (C\$)	\$0.74

Valuation Summary	Value	Value/Share
Santa Cruz		
- DCF	\$63,809,519	\$1.10
BamaStar		
- DCF	\$43,230,376	\$0.74
Working Capital (C\$)	\$3,875,170	\$0.07
Fair Value	\$110,915,065	\$1.91
Number of Shares*	58,126,233	
Value Per Share (C\$)	\$1.91	

Valuation Sensitivity		OPEX (US\$/t)				
		\$400	\$450	\$500	\$600	\$700
Weighted Average Graphite Price (US\$/t)	\$1,000	\$0.61	\$0.22	-\$0.17	-\$0.94	-\$1.72
	\$1,100	\$1.30	\$0.91	\$0.53	-\$0.25	-\$1.02
	\$1,200	\$1.99	\$1.60	\$1.22	\$0.44	-\$0.33
	\$1,300	\$2.68	\$2.30	\$1.91	\$1.13	\$0.36
	\$1,400	\$3.37	\$2.99	\$2.60	\$1.82	\$1.05
	\$1,500	\$4.07	\$3.68	\$3.29	\$2.52	\$1.74
	\$1,600	\$4.76	\$4.37	\$3.98	\$3.21	\$2.43

Source: FRC

We are reiterating our BUY rating, and adjusting our fair value estimate from \$1.47 to \$1.91/share. STS has made significant progress, commencing production at Santa Cruz, and delivering a robust PEA for BamaStar. The company is well-

Our DCF valuation on BamaStar (introduced in this report) is \$0.74/share

For conservatism, we have not factored in potential upside from value-added products, and have modeled the mine to produce and sell only concentrates, similar to Santa Cruz

We are not making any material changes to our valuation on Santa Cruz

Following the inclusion of our DCF valuation on BamaStar, our fair value estimate for STS has risen from \$1.47 to \$1.91/share

positioned to capitalize on the growing demand for battery-grade graphite, particularly in the U.S.

Risks

We believe the company is exposed to the following key risks (not exhaustive):

- The value of the company is **dependent on flake graphite prices**
- Projects might not be advanced to production within management's expected timeframe
- **Development**
- Permitting
- Project financing
- FOREX

*We are maintaining
our risk rating of 5
(Highly Speculative)*

Fundamental Research Corp. Equity Rating Scale:

Buy – Annual expected rate of return exceeds 12% or the expected return is commensurate with risk

Hold – Annual expected rate of return is between 5% and 12%

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Suspended or Rating N/A— Coverage and ratings suspended until more information can be obtained from the company regarding recent events.

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2 (Below Average Risk) - The company operates in an industry where the fundamentals and outlook are positive. The industry and company are relatively less sensitive to systematic risk than companies with a Risk Rating of 3. The company has a history of profitability and has demonstrated its ability to generate positive free cash flows (though current free cash flow may be negative due to capital investment). The company's capital structure is conservative with little to modest use of debt.

3 (Average Risk) - The company operates in an industry that has average sensitivity to systematic risk. The industry may be cyclical. Profits and cash flow are sensitive to economic factors although the company has demonstrated its ability to generate positive earnings and cash flow. Debt use is in line with industry averages, and coverage ratios are sufficient.

4 (Speculative) - The company has little or no history of generating earnings or cash flow. Debt use is higher. These companies may be in start-up mode or in a turnaround situation. These companies should be considered speculative.

5 (Highly Speculative) - The company has no history of generating earnings or cash flow. They may operate in a new industry with new, and unproven products. Products may be at the development stage, testing, or seeking regulatory approval. These companies may run into liquidity issues and may rely on external funding. These stocks are considered highly speculative.

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