

EDUCATIONAL CASE STUDY 04 - LIBRARY CROSSWALK - MAY 2026

Cleveland-Cliffs Valuation

Library Crosswalk - PUBLIC

*This crosswalk maps every analytical move in the CLF case study back to the chapter in the Practitioner Library where the underlying framework is developed in full. It is a short, free-standing companion document. The CLF case is the working example of the **HALO Trade thesis** (Heavy Assets, Low Obsolescence).*

Lens	Method	Library chapter
DCF	Through-cycle EBITDA anchor	PE Guide Ch 19 + First Principles Ch 13
Comps	Cycle-aware multiple discipline	PE Guide Ch 17
SOTP	Vertical integration credit	PE Guide Ch 20
HALO	Replacement-value floor	BBG/FP Volume - HALO Trade chapter

DISCLOSURE - Phil Baratelli, principal of the Baratelli Institute, owns shares of Cleveland-Cliffs Inc. (CLF) and may buy or sell at any time without notice. He is not an employee, officer, or director of Cleveland-Cliffs. This is an educational case study, not investment advice. Built from public SEC filings.

How to read this crosswalk

The CLF Educational Case Study is built from the Practitioner Library. Each analytical move in the memo and the model connects back to a specific chapter in one of six library volumes:

Abbreviation	Title	Audience
FP	First Principles	Cross-discipline foundational frameworks
PE	PE Guide	Private equity, valuation, deal structuring
CFO	CFO Controllers' Guide	Operating finance, controls, reporting
FO	Founder / Operator Guide	Operating leadership, strategic decision-making
EPD	Engineering / Product / Design	Product, R&D, technology decisions (cross-ref only)
BBG/FP	Bloomberg / FactSet / Financial Planning	Markets, capital allocation, HALO Trade framework

Each section below cites the CLF case-study move (the question or step), the library chapter that supplies the methodology, and the specific document or page in the source filings where the underlying data lives. The CLF case study is intentionally structured around the **HALO Trade thesis** - the BBG/FP-volume framework for identifying businesses anchored in physical assets that are capital-intensive to replicate but unlikely to be obsoleted by technology.

Why this is the answer to the Seeking-Alpha-vs-Institute question. A Seeking Alpha article presents a view. An Institute case study presents a view AND the methodology AND the library chapter that supports the methodology. The reader leaves not with an opinion, but with the framework. The case study earns its way onto the shelf by being a real situation that exercises the library on something a reader could not have predicted.

Core crosswalk: DCF / Comps / SOTP / Risk

Case study move	Library reference	Source data
Executive summary: price -> through-cycle earning power -> multiple -> margin of safety	FP Ch 7 + BBG/FP HALO chapter	10-K + 10-Q + Yahoo May 22
Cyclical-business through-cycle EBITDA construction	FP Ch 7 + PE Ch 8	10-K segment data 5-yr
Balance-sheet read: net debt + pension/OPEB equity bridge	CFO Ch 4 + Ch 11	10-Q balance sheet
FCF construction: EBITDA - capex - cash tax - WC change	PE Ch 8 + CFO Ch 11	10-K cash flow stmt
WACC build: Rf + Beta x ERP; debt cost; weighted	PE Ch 19 + FP Ch 13	Yahoo + Damodaran 2026
Beta selection for cyclical names (5Y monthly)	FP Ch 13	Yahoo Finance May 22 = 2.01
Sensitivity grid: WACC x terminal g	PE Ch 19	Model XLSX 5_DCF
Trading-comp peer selection (steel pure-plays)	PE Ch 17	NUE/STLD/X/MT/RS
Cycle-aware multiple discipline at the trough	PE Ch 17 + FP Ch 7	Comps tab + EBITDA history
SOTP: steel + iron ore + DRI/HBI + processing	PE Ch 20	10-K segment footnote
Integration credit construction (vertical synergy)	BBG/FP HALO chapter	Methodology overlay
Probability weighting of bear / base / bull	FP Ch 15	Model XLSX 8_Summary
Catalyst clock: events that confirm / disconfirm thesis	BBG/FP HALO chapter + FP Ch 16	Memo Section 12
Lines in the sand: pre-committed invalidators	FP Ch 16 + CFO Ch 17	Memo Section 13
Risk inventory with mechanism + filing reference	CFO Ch 17 + FP Ch 16	10-K Item 1A
Capital structure: post-acquisition leverage cadence	CFO Ch 13	10-Q debt schedule
Acquisition history + integration accounting	PE Ch 4 + CFO Ch 13	8-Ks: AKS, AMUSA, FPT, Stelco

Extended crosswalk: SBC, LBO, NOL, HALO sections

The case study includes four deep-dive analytical sections beyond the core DCF / Comps / SOTP / Risk frame: (1) SBC vs Dilution bridge for industrials, (2) Take-Private / LBO feasibility, (3) NOL Asset Analysis with TCJA 80% cap and Sec 382 mechanics on acquired NOLs, and (4) explicit HALO Trade framework application. Each move below maps back to the library chapter that supplies the framework.

Case study move (extended sections)	Library reference	Source data
SBC P&L expense vs share-count dilution for industrials	FP Ch 11 + CFO Ch 9	10-K equity footnote
Treasury-stock method on diluted share count	CFO Ch 9	10-K diluted EPS footnote
Capital-return priority stack: debt -> capex -> M&A -> buyback	CFO Ch 13	Memo Section 6
Take-private offer construction (premium + diluted shares)	PE Guide Model 05	Model XLSX 10_LBO
Sources & uses cap stack at 6.0x through-cycle EBITDA	PE Guide Model 05	Model XLSX 10_LBO
TLB / SSN / SUN tranche pricing for cyclical industrials	PE Guide Model 05	Current credit-market reference
Sponsor IRR via exit multiple x EBITDA matrix	PE Guide Model 05	Model XLSX 10_LBO sensitivity
LBO as downside-floor sanity check on public valuation	FP Ch 14	Memo Section 8
Take-private precedent benchmarking in steel sector	PE Ch 17 + Model 05	Memo Section 8
NOL inventory build (federal / state / acquired)	PE Ch 4B	10-K Note on Income Taxes
TCJA 80% utilization cap on post-2017 federal NOLs	PE Ch 4B + CFO Ch 11	IRC Sec 172
Sec 382 trigger on acquisition (AKS, AMUSA, Stelco)	PE Ch 4B	IRC Sec 382
Sec 382 annual limitation: equity x LT tax-exempt rate	PE Ch 4B	IRS-published rate
PV of NOL shield with TCJA cap + Sec 382 modeled	FP Ch 13 + PE Ch 4B	Model XLSX 11_NOL
HALO Trade framework: Heavy Assets, Low Obsolescence criteria	BBG/FP HALO chapter	Memo Section 14
Replacement-value floor as bear-case anchor	BBG/FP HALO chapter + FP Ch 7	Industry asset data
Vertical integration credit quantification	BBG/FP HALO chapter + PE Ch 20	Pure-play multiple differential
Carbon-transition discount on blast-furnace assets	BBG/FP HALO chapter + FO Ch 12	Industry decarbonization roadmap
Tariff / policy continuity as moat extension	BBG/FP HALO chapter	Sec 232 + IRA 45X + 48C
Consolidator-without-consolidation strategic positioning	FO Ch 12	Memo Section 8

Freedom's Forge / Anduril Arsenal-1 strategic-asset framing (our framework)	BBG/FP HALO chapter + FP Ch 18	Memo Section 13 (Herman 2012 + Arsenal-1 - our extension, not company disclosure)
---	--------------------------------	---

The four highlight bands above group the rows by analytical section: blue = SBC / Capital Return; cream = LBO / Take-Private; tan = NOL / Sec 382; gold = HALO Trade. Each row points to where the framework is developed in full and to the specific source-document area that grounds the data.

The HALO Trade framework applied to CLF

The CLF case study is intentionally structured as the working example of the HALO Trade thesis - Heavy Assets, Low Obsolescence. The framework, developed in the BBG/FP volume, identifies businesses anchored in physical assets that the market cannot replicate quickly (capital intensity + permitting + regulatory + technology lock-in) but that are not at risk of being made obsolete by technology over a 25-year horizon.

HALO criterion	Library reference	How CLF case study exercises it
Replacement value of physical assets	BBG/FP HALO Section 1	Memo Section 14: \$25-35B replacement vs ~\$8.7B EV
Capital intensity of greenfield replacement	BBG/FP HALO Section 2	Permitting horizons + new-build costs in Memo Section 14
Technology obsolescence risk (low)	BBG/FP HALO Section 3	Flat-rolled steel demand persistence into 2050
Regulatory / permitting moat	BBG/FP HALO Section 4	Mining permits + EPA air permits as discussed
End-market visibility (not fashion)	BBG/FP HALO Section 5	Auto / infra / construction - cyclical but visible
Carbon-transition caveat (HALO discount)	BBG/FP HALO Section 6	BF/BOF route vs EAF/DRI/H2 transition path
Capital-allocation discipline	BBG/FP HALO Section 7 + CFO Ch 13	Post-acquisition deleveraging cadence
Customer concentration check	BBG/FP HALO Section 8	Top-3 auto OEMs ~half of revenue
Forward-looking strategic-asset framing	BBG/FP HALO Section 9 + FP Ch 18	Memo Section 17: Freedom's Forge + Arsenal-1

Why CLF is the natural HALO Trade working example

CLF is not the only HALO Trade name. Other candidates the framework points at include midstream pipelines (heavy permitting + low tech obsolescence), Class-I railroads (right-of-way moat + flat-volume cyclicity), integrated forest-products (timberland + mills), and certain industrial-gas businesses (long-term contracts + dense pipeline networks). What makes CLF the cleanest *teaching* example is the combination of (a) a publicly traded equity with full SEC disclosure, (b) clearly identifiable physical assets at the mine, mill, and processing level, (c) a cyclical-but-visible end market, and (d) a current market price (\$11.23 close May 22, 2026) that sits well below the replacement-value estimate - creating a teachable gap.

Source documents

All financial figures in the CLF Educational Case Study trace to one of the source documents below. The May 25, 2026 data refresh pulled real numbers from the FY 2025 10-K, the Q1 2026 10-Q, and the April 20, 2026 earnings presentation; live-market data (stock price, peer EV/EBITDA, HRC, WACC inputs) refreshed from Yahoo Finance + CME front-month + Grok cross-check.

Abbreviation	Document	Issuer	Date
10-K	Form 10-K for fiscal year ended December 31, 2025	Cleveland-Cliffs Inc.	Filed Feb 2026
10-Q	Form 10-Q for quarterly period ended March 31, 2026	Cleveland-Cliffs Inc.	Filed Apr 2026
SUP	First-Quarter 2026 Earnings Presentation	Cleveland-Cliffs Inc.	April 20, 2026
8-K	Acquisition 8-Ks: AKS (Mar 2020), AMUSA (Dec 2020), FPT (Nov 2021), Stelco (Nov 2024)	Cleveland-Cliffs Inc.	Event-driven
Mkt	Stock price, 52-wk range, beta, peer EV/EBITDA	Yahoo Finance + Grok	May 22-25, 2026
Cmnty	HRC spot ~\$830 / ton (late May 2026)	CME front-month	Refreshed May 25, 2026

How to use this crosswalk

Start with the case study (memo or model). When a method or framework is invoked - DCF, comps, SOTP, risk register, HALO Trade, etc. - return to this crosswalk to identify the library chapter where that framework is developed in full. The library chapter is where you go for the depth, the worked examples, and the alternative treatments. The case study is where you see the framework applied to one specific real situation.

The library is the work. The case study is the test of the work.

DISCLOSURE - Phil Baratelli, principal of the Baratelli Institute, owns shares of Cleveland-Cliffs Inc. (CLF) and may buy or sell at any time without notice. He is not an employee, officer, or director of Cleveland-Cliffs. The math drives the conclusion. The model XLSX is shipped so the reader can flex any assumption and re-derive his own answer. This is an educational case study, not investment advice. Built from public SEC filings.