INDEPENDENT CASE STUDY | M&A AND MERGER ARBITRAGE | PUBLIC INFORMATION ONLY

Union Pacific / Norfolk Southern

The first transcontinental railroad: worth the price, and a mispriced spread

M&A and merger-arbitrage assessment of Union Pacific's ~$85B acquisition of Norfolk Southern (1.0 UNP share + $88.82 cash per NSC share): deal terms, strategic rationale, standalone valuation, precedents, synergies, accretion/dilution, financing and ratings, contribution, the Surface Transportation Board (STB) review, spread and implied probability, scenarios, risks and recommendation.

Snapshot	As of close 14-Oct-2026
Deal merit (UNP holders)	**Qualified support: value-creating on management's $2.0B net synergies; break-even ~$1.1B**
Arb recommendation	**Long NSC / short 1.0 UNP, 9.5% of NAV long notional (break costs 0.5% of NAV)**
NSC / UNP close	$323.73 / $286.43
Deal value per NSC share	$375.25 (EV $100.1B; 17.7x LTM EBITDA)
Gross spread	$51.52 (15.9%); 15.2% annualised to a 31-Oct-27 close
Market-implied P(close)	25% forward basis (14% spot) vs our 55%
Net synergy NPV / premium	$19.3B / $12.6B = 1.53x
EPS accretion, years 1–3	−1.2% / +5.2% / +9.4%
Key catalysts	Comments and responsive applications 18-Nov-2026; DOJ/USDOT comments 3-Dec-2026; final briefs 28-May-2027

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Written report accompanying the 24-slide deck, the live-formula model (UNP_NSC_merger_model.xlsx) and figures.json. Not prepared for, reviewed by or affiliated with Union Pacific, Norfolk Southern, their advisors, or any employer or client. Not investment advice. Report date: October 2026.

Contents

1. Executive summary and recommendation
2. Transaction terms
3. Background and timeline
4. Strategic rationale
5. Market reaction
6. Standalone financial profiles
7. Trading comparables
8. Discounted cash flow
9. Precedent transactions
10. Valuation summary
11. Synergies
12. Value to UNP shareholders
13. Accretion / dilution
14. Financing, leverage and ratings
15. Contribution analysis and ownership
16. Regulatory analysis
17. Spread and market-implied probability
18. Scenarios, expected value and sizing
19. Risks and mitigants
20. Recommendation and decision rules

Appendix A. Key assumptions
Appendix B. Methodology and formulas
Appendix C. Sources
Appendix D. What could not be verified
Appendix E. Reproducibility

ABOUT THIS REPORT

This is an independent case study built only from public information: the Agreement and Plan of Merger (28-Jul-2025), UNP's registration statement and joint proxy (424B3, Sep-2025), the companies' 8-Ks, 10-Ks and 10-Qs, SEC XBRL data, the STB docket (FD 36873) and Federal Register, 49 U.S.C. and 49 CFR 1180, and market data.

One valuation date is used throughout: the close of Wednesday 14-Oct-2026 (UNP $286.43, NSC $323.73).

Every number matches figures.json (613 figures, each with value, unit, as-of date and source URL, or flagged as one of 28 assumptions) and the deck. Probabilities, phase-in, discount rates and sizing limits are the author's assumptions.

1. Executive summary and recommendation

25%	1.53x	+9.4%	+6.3%
Market-implied P(close), vs our 55%	Net synergy NPV / premium paid	Year-3 (2030E) adjusted EPS accretion	Hedged arb expected P&L, % of notional

Deal merit: qualified support for UNP shareholders. Arb: long NSC / short 1.0 UNP at about 9.5% of NAV long notional, sized so that a break costs 0.5% of NAV.

- **A full price for a scarce asset.** At today's UNP price the consideration is worth $375.25 per NSC share, an enterprise value of $100.1B and 17.7x NSC's LTM adjusted EBITDA. That is above every rail precedent except CP/KCS (19.5x) and 21% above our standalone DCF value of $308.94. At signing the offer was $320.00, a 22.9% premium to the $260.32 unaffected close.
- **The synergies pay for the premium, but only with revenue synergies.** Management targets $2.75B of gross EBITDA synergies ($1.75B revenue, $1.0B cost) and UP management's case uses $2.0B net of concessions. At a 9% discount rate the net case is worth $19.3B against a $12.6B premium (1.53x cover). Cost synergies alone are worth $8.8B, which does not cover it.
- **UNP holders gain modestly.** A has/gets analysis gives UNP holders $6.9B of value ($11.56 per share, +4.4%). Break-even is about $1.1B of net run-rate synergies. Adjusted EPS is −1.2%, +5.2% and +9.4% in years 1–3, in line with guidance. Leverage peaks at ~3.1x and falls to ~2.4x by the end of year 2 before buybacks.
- **Regulation is the swing factor.** This is the first merger of two Class I railroads under the STB's 2001 rules, which require applicants to show the deal enhances competition. The STB rejected the first application as incomplete, accepted the revised one, refused summary denial on 18-Sep-2026 and set comments for 18-Nov-2026 and final briefs for 28-May-2027. We assume a 31-Oct-27 close.
- **The spread prices too little chance of approval.** At $323.73, NSC trades $51.52 (15.9%) below the deal value. Against an effective break value of $315.52 (including the $2.5B reverse fee), that implies a 25% chance of closing. A long NSC / short 1.0 UNP position makes $51.24 per NSC share if the deal closes and loses $17.08 if it breaks (3.0:1). It breaks even at 25%; at our 55% the expected gain is $20.50 (6.3% of notional).

DECISION RULES IN ONE LINE EACH

Deal merit: support while expected STB conditions leave net synergies above ~$1.1B and UNP keeps an "A" category rating.

Arb entry: 9.5% of NAV long NSC, short 1.0 UNP per NSC share. **Add:** a hearing order or DOJ/USDOT comments (3-Dec-2026) without broad remedies.

Cut: responsive applications seeking broad trackage rights, a UNP statement that conditions are unacceptable, or a schedule pushing the decision into 2028. **Take profit:** NSC above ~$345 with no news (implied P above ~50%).

2. Transaction terms

UNP and NSC signed the Agreement and Plan of Merger on 28-Jul-2025 and announced it on 29-Jul-2025. Each NSC share converts into 1.0 UNP share plus $88.82 in cash. With UNP at its $231.18 unaffected close (16-Jul-2025) that was worth $320.00 per NSC share, 72% in stock. UNP has since risen to $286.43, so the consideration is now worth $375.25 (76% stock).

Table 1. Key terms of the merger agreement

Term	Detail
Consideration	1.0 UNP share + $88.82 cash per NSC share (fixed exchange ratio; no collar)
Value per NSC share	$320.00 at signing (+22.9% vs $260.32 unaffected; 25% premium to the 30-day VWAP); $375.25 today (+44.1%)
Size	Equity $72.1B / EV $85.0B at signing; equity $84.6B / EV $100.1B today
Shares and ownership	225.4M UNP shares issued or reserved; NSC holders own ~27.5% of the combined company (company: ~27%)
Reverse termination fee	$2.5B ($11.13/NSC share) payable by UNP if the End Date passes without STB approval or a final order blocks the deal (s.7.3(b))
Company termination fee	$2.5B payable by NSC on a change of recommendation or an alternative transaction (s.7.3(a))
Conditions	STB approval without a Materially Burdensome Regulatory Condition (MBRC); Mexican antitrust (CNA) approval; shareholder votes (obtained 14-Nov-2025, ~99% for). No financing condition. No voting trust
Regulatory efforts	Reasonable best efforts, including divestitures and conditions, short of an MBRC (s.6.3)
End Date	28-Jan-2028, extended automatically for STB information orders or tolling (471 days from the valuation date)
Governance	Combined company named Union Pacific, headquartered in Omaha (Atlanta remains a core location); Jim Vena CEO

Source: Agreement and Plan of Merger 28-Jul-2025 (Ex. 2.1 to UNP 8-K) s.2.1, 6.3, 7.1, 7.3; joint press release and investor presentation 29-Jul-2025; 424B3; vote 8-Ks 14-Nov-2025. Model sheet Deal.

Table 2. Sources and uses of cash ($M)

Uses	$M	Sources	$M
Cash consideration ($88.82 x NSC shares)	20,020	UNP cash built before closing (assumption)	5,000
Financing and other costs (S-4)	190	New acquisition debt	15,210
Total cash uses	**20,210**	**Total cash sources**	**20,210**
Memo: UNP stock issued to NSC holders, at today's price	64,561	Memo: S-4 assumed debt rate / MS transaction debt	5.0% / 20,300

Source: 424B3 (unaudited pro forma note 6; Morgan Stanley pro forma analysis); model sheet Financing. The ~$5B pre-close cash build (buybacks paused) is an assumption.

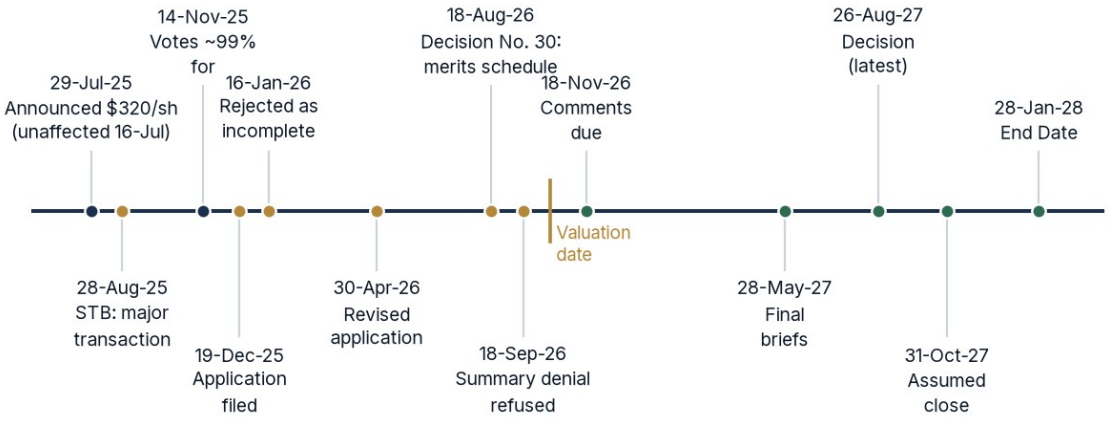
WHAT THE TERMS MEAN

- **The fixed ratio makes the stock leg hedgeable.** An arbitrageur shorts exactly 1.0 UNP per NSC share; the $88.82 cash leg is fixed, so the dollar spread is independent of UNP's price but the percentage spread is not.
- **The $2.5B reverse fee is a real cushion.** It adds $11.13 to the NSC break value if the STB denies the deal or it fails to close by the End Date, and it signals UNP's confidence in the regulatory path.

- **The MBRC carve-out is UNP's option to walk.** If the STB attaches conditions UNP considers materially burdensome, UNP need not close. The fee is then still payable if the End Date passes, which is our scenario C.

3. Background and timeline

Figure 1. Fifteen months in: merits review began 18-Aug-2026; decision due by about Aug-2027



Source: STB Docket FD 36873 decisions; Federal Register FR Doc. 2026-17024; UNP/NSC 8-Ks; 424B3. Assumed close is this study's assumption.

Table 3. Deal and regulatory chronology (dates after the valuation date are scheduled, not certain)

Date	Event	Source
16-Jul-2025	Unaffected date: NSC $260.32, UNP $231.18	Yahoo Finance; 424B3
28/29-Jul-2025	Merger agreement signed and announced at $320 per NSC share (~$85B EV)	8-Ks, press release
28-Aug-2025	STB classifies the transaction as major	STB FD 36873
14-Nov-2025	Both shareholder votes pass (~99% of votes cast for)	8-Ks
19-Dec-2025	Merger application filed (~7,000 pages)	8-Ks; STB
16-Jan-2026	STB rejects the application as incomplete	STB decision
30-Apr-2026	Revised application filed	8-Ks; STB
28-May-2026	Revised application accepted (held in abeyance pending schedule)	STB decision
18-Aug-2026	Decision No. 30 adopts the procedural schedule; merits review begins	STB; FR Doc. 2026-17024
18-Sep-2026	Motions for summary denial (BNSF, CSX, shipper coalition) denied	STB decision
30-Sep / 6-Oct-2026	Notice-of-intent deadline extended; procedural decision	STB decisions
14-Oct-2026	Valuation date: NSC $323.73, UNP $286.43; spread $51.52	Yahoo Finance
18-Nov-2026	Comments and responsive applications due	Decision No. 30
3-Dec-2026	DOJ and USDOT comments due	Decision No. 30
16-Feb / 29-Mar-2027	Responses and rebuttal; rebuttal on responsive applications	Decision No. 30
28-May-2027	Final briefs; record closes (hearing date to be set)	Decision No. 30
~26-Aug-2027	Final decision due (within 90 days of the record closing)	49 U.S.C. 11325(b)
31-Oct-27	Assumed closing (decision effective ~30 days after)	Assumption
28-Jan-2028	End Date (auto-extends for STB information orders or tolling)	Merger agreement

4. Strategic rationale

The merger would create the first single-line railroad from the Pacific to the Atlantic. UNP runs west of the Mississippi and NSC east of it. Today coast-to-coast freight is handed between railroads at Chicago, Memphis, St. Louis or New Orleans, which adds dwell time and cost and makes rail less competitive with long-haul trucking.

Table 4. The two networks (2024, company-reported)

2024	Union Pacific	Norfolk Southern	Combined
Revenue	$24.3B	$12.1B	$36.4B
EBITDA	$12.5B	$5.5B	$18.0B
Operating ratio	59.9%	66.4%	62.1%
Route miles	32,880	19,200	>50,000
Employees	32,400	19,600	~52,000
Footprint	West	East	43 states, ~100 ports

Source: UNP/NSC investor presentation 29-Jul-2025 (pro forma 2024 figures). Model sheet Financials.

THE APPLICANTS' CASE

- About 2.1M truckloads a year converted to rail and ~$3.5B of annual shipper savings (revised application).
- New single-line routes that remove interchange delays at the Mississippi gateways.
- About 1,200 net new union jobs pledged and $2.1B of incremental capital; $133M a year of capital synergies.

OUR ASSESSMENT

- **Real logic.** An end-to-end combination has few 2-to-1 overlaps, and single-line service can compete with trucks on transit time for long-haul intermodal and carload freight.
- **Defensive value.** Once UNP and NSC combine, BNSF and CSX face pressure to respond. The 2001 rules require the STB to weigh these "cumulative impacts and crossover effects", which is both a risk to approval and part of the strategic case for moving first.
- **Unproven revenue synergies.** About 64% of the $2.75B gross synergies are revenue synergies. Rail revenue-synergy claims have a mixed record, and STB conditions (gateway commitments, trackage rights) can pass part of them to shippers.
- **Integration risk.** UP/SP (1996–97) and the Conrail split (1999) both caused service crises. The STB now requires a Service Assurance Plan and weighs transition risk explicitly.

5. Market reaction

Figure 2. Since the unaffected date NSC is up 24%, in line with UNP (24%) and behind CSX (45%)



Source: Yahoo Finance daily closes, rebased to 1.0 on 16-Jul-2025. CPKC and CN are NYSE US$ lines.

Table 5. Price change since the unaffected date (16-Jul-2025)

Stock	Unaffected	14-Oct-2026	Change
NSC	$260.32	$323.73	+24.4%
UNP	$231.18	$286.43	+23.9%
CSX	$33.26	$48.28	+45.2%
CPKC (US$)	$80.85	$86.12	+6.5%
CN (US$)	$102.88	$119.85	+16.5%
S&P 500	6,264	7,719	+23.2%
Peer basket (CSX, CPKC, CN; equal weight)			**+22.7%**

Source: Yahoo Finance; model sheets Arb (peer drift) and SpreadHistory.

UNP fell on the announcement, as the market read the price as full, and has since tracked the group and the S&P 500. CSX has re-rated on consolidation speculation; because our first break-value method drifts NSC's unaffected price with the peer basket, that rally inflates it (Section 17). The 10-year Treasury yield rose from 4.46% to 5.19%, raising discount rates for both companies.

6. Standalone financial profiles

Table 6. LTM to 30-Jun-2026 ($M unless noted)

LTM 30-Jun-2026	UNP	NSC
Revenue	25,410	12,540
Adjusted EBITDA	12,719	5,651
EBITDA margin	50.1%	45.1%
Operating ratio (NSC adjusted)	60.0%	66.2%

LTM 30-Jun-2026	UNP	NSC
Adjusted diluted EPS	$12.27	$12.68
Interest expense	1,285	786
Net debt (30-Jun-2026)	28,713	15,547
Net debt / EBITDA	2.26x	2.75x
EV / LTM EBITDA (market)	15.6x	15.6x*
P / LTM adjusted EPS	23.3x	25.5x*

Source: UNP and NSC 10-K 2025, 10-Q Q2-2026 and earnings releases; SEC XBRL company facts. NSC adjusted figures add back company non-GAAP items. *NSC trades on the deal terms.

Table 7. UP management projections in the 424B3 ($B; EPS in $)

	2026	2027	2028	2029	2030	2031
UNP revenue	25.2	26.1	27.1	28.0	29.1	30.1
UNP EBITDA	13.1	13.7	14.2	14.8	15.4	16.0
UNP capex	3.5	3.6	3.7	3.9	4.0	4.1
UNP EPS	12.57	13.52	14.46	15.50	16.65	17.84
NSC revenue	12.9	13.4	14.0	14.5	15.0	15.6
NSC EBITDA	6.2	6.7	7.1	7.5	7.8	8.0
NSC capex	2.2	2.2	2.2	2.3	2.3	2.4
NSC EPS	14.05	15.72	17.33	19.11	20.86	22.47

Source: 424B3, “Certain Unaudited Prospective Financial Information” (UP management case for both companies, prepared mid-2025).

LTM EBITDA is 2.9% short of the 2026 plan at UNP and 8.9% short at NSC. The plan lifts NSC’s EBITDA margin from ~48% to ~51%, ambitious against an LTM 45% margin and a 66% adjusted operating ratio. We therefore haircut NSC plan EBITDA and earnings by 6% throughout (assumption).

7. Trading comparables

Figure 3. Class I rails trade at 14.7x–17.1x LTM EBITDA; the deal values NSC at 17.7x



Source: SEC XBRL (10-K 2025 and 10-Q Q2-2026; CN FY2025 40-F); Yahoo Finance closes 14-Oct-2026; USD/CAD 1.4213.

Table 8. Trading multiples at the valuation date

Company	EV ($M)	EV / EBITDA	P / E	EBITDA margin
UNP	198,874	15.6x	23.3x	50.1%
NSC (deal-affected)	88,259	15.6x	25.5x	45.1%
CSX	106,911	16.2x	27.9x	45.5%
CPKC	93,142	17.1x	28.5x	50.0%
CN (FY2025)	88,314	14.7x	22.5x	49.3%
BNSF (private; at UNP multiple)	176,905	15.6x	27.0x	46.1%
Peer median (CSX, CPKC, CN)		**16.2x**	**27.9x**	

Source: As above. EBITDA = operating income + D&A (UNP and NSC: company adjusted). BNSF from BNSF Railway LLC filings (revenue $24,533M, EBITDA $11,314M LTM). Model sheet Comps.

NSC has historically traded at a discount to the group; we apply a 6.2% discount (assumption, from its unaffected multiple relative to UNP). Peer-median EV/EBITDA less that discount gives **$310.04** per NSC share; peer-median P/E less the discount gives $331.93; the peer low-to-high range is $275.80–$359.09. BNSF has no market price; valued at UNP's multiple it would be worth about $177B of EV, a reference point for what the remaining western rival is worth.

8. Discounted cash flow

We value both companies with an unlevered DCF of the UP management projections (NSC haircut 6%), mid-year discounting from the valuation date and a terminal value at 14.5× 2031 EBITDA. The cost of equity is the 10-year Treasury (5.19%) plus beta 1.0 x a 4.25% equity risk premium = 9.44%; the pre-tax cost of debt is 5.9% (23.5% tax).

Table 9. DCF summary ($M unless noted)

	UNP	NSC
WACC	8.69%	8.52%
PV of FCF, Q4-2026 to 2031	33,913	14,283
PV of terminal value	150,259	71,204
Enterprise value	184,172	85,487
Less net debt (NSC also less $550M Eastern Ohio liability)	28,713	16,097
Equity value	155,459	69,390
Value per share	**$261.68**	**$308.94**
vs share price	−8.6%	−4.6%
Terminal value share of EV	82%	83%
Implied perpetual growth	4.7%	4.9%
Gordon cross-check at 3% growth	$183.07	$196.15

Source: 424B3 projections; model sheets WACC, DCF_U, DCF_N, DCF_SUM. Advisor DCF ranges ex-synergies: Morgan Stanley $274–342, Wells Fargo $270–350 per NSC share.

Table 10. NSC value per share: WACC vs exit multiple (green: at or above the $323.73 price)

WACC Δ \ exit multiple	13.0x	14.0x	14.5x	15.0x	16.0x
−1.0%	$292	$315	$326	$338	$361
−0.5%	$284	$306	$317	$329	$351
+0.0% (base)	$276	$298	$309	$320	$342
+0.5%	$269	$290	$301	$311	$333
+1.0%	$261	$282	$293	$303	$324

Table 11. UNP value per share: WACC vs exit multiple (green: at or above the $286.43 price)

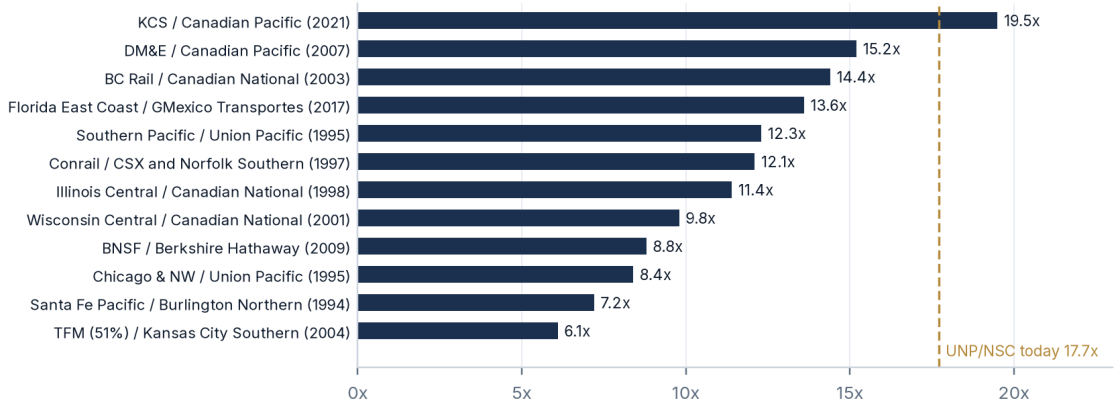
WACC Δ \ exit multiple	13.0x	14.0x	14.5x	15.0x	16.0x
−1.0%	$248	$266	$276	$285	$303
−0.5%	$242	$260	$268	$277	$295
+0.0% (base)	$236	$253	$262	$270	$288
+0.5%	$230	$247	$255	$264	$281
+1.0%	$224	$240	$249	$257	$274

Source: Model sheet DCF_SUM.

Both companies trade above our DCF values: UNP's price implies an exit multiple of about 15.9x, above our 14.5x. Rail valuations rest on terminal multiples staying near today's levels. For the merger question what matters is the relative result: the deal pays 21% more than NSC's standalone DCF value, and synergies must fill that gap.

9. Precedent transactions

Figure 4. At 17.7x LTM EBITDA, the deal sits above every rail precedent except CP/KCS



Source: 424B3, Opinion of Wells Fargo Securities (selected transactions, TEV / LTM EBITDA). Morgan Stanley referenced 13.0–16.0x.

Table 12. NSC value at precedent multiples (LTM adjusted EBITDA $5,651M)

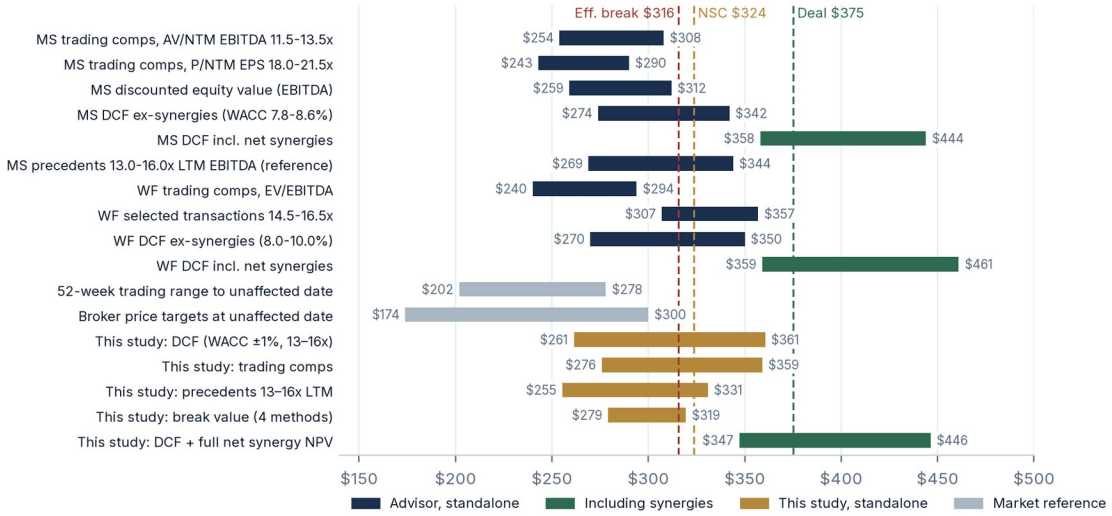
Multiple	$/NSC share
Median of 12 deals (11.75x)	$223.96
13.0x (Morgan Stanley low)	$255.40
16.0x (Morgan Stanley high)	$330.88
19.5x (CP/KCS, 2021)	$418.94
Deal value today (17.7x)	**$375.25**

Source: Model sheet Precedents.

- The 12-deal median is 11.75x and the post-2000 mean 12.5x. At signing the price was 14.0x NTM EBITDA.
- The 1994–2004 deals were struck when rail operating ratios were far higher than today's ~60–66%, so their multiples understate what a scarce, high-margin Class I network commands.
- CP/KCS is the closest comparator: a scarce end-to-end network with a competing bidder (CN). BNSF (2009) was bought near the cycle trough, at 8.8x.
- Scarcity value has risen as the Class I group shrank to six; after this deal there would be five.

10. Valuation summary

Figure 5. Standalone methods centre on $270–340 per NSC share; only values that include synergies reach the $375 deal value



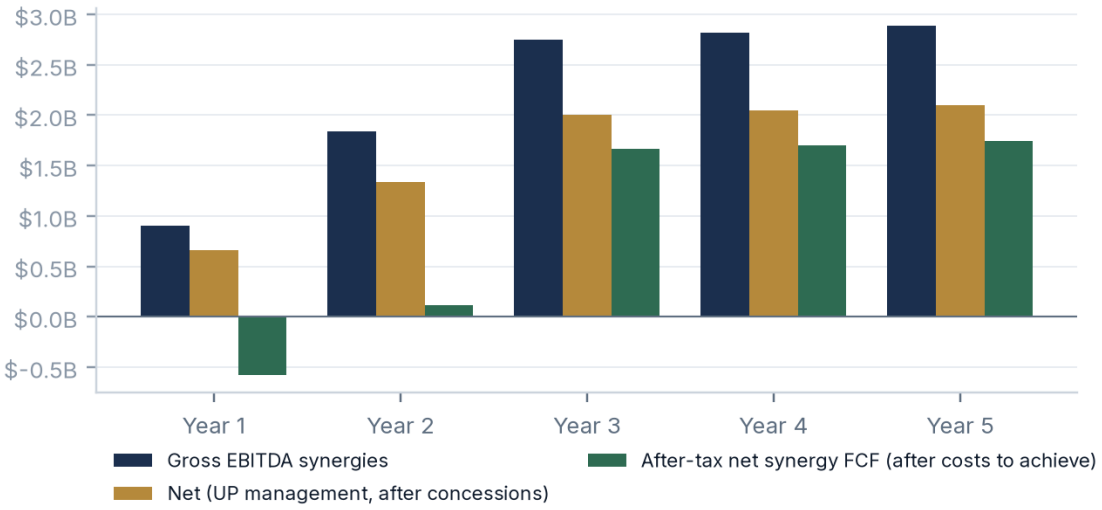
Source: 424B3 (Morgan Stanley and Wells Fargo opinions, 52-week range and broker targets to 16-Jul-2025); this study: model sheets DCF_SUM, Comps, Precedents, Arb, Football.

The advisor ranges (mid-2025) and ours (at the valuation date) agree: NSC's standalone value lies roughly between $255 and $360, and the NSC price of $323.73 sits in the upper half of that range because it embeds a probability of the deal closing. Only the synergy-inclusive DCFs ($347–$446 in our case) bracket the $375 deal value. In short, UNP is paying for the synergies up front.

11. Synergies

Management targets **$2.75B of annual EBITDA synergies** by the end of year 3: $1.75B of revenue synergies and $1.0B of cost synergies, with $170M of operating cost and $2.0B of capital to achieve them. The 424B3 also shows UP management's **$2.0B net** case, after illustrative regulatory concessions. We phase synergies 33% / 67% / 100% over years 1–3, grow them 2.5% a year thereafter, tax them at 23.5% and discount at 9% (combined WACC plus an execution premium). All four are assumptions.

Figure 6. Synergy phase-in: run-rate by year 3; after-tax cash flow turns positive in year 2



Source: 424B3; investor presentation 29-Jul-2025; model sheet Synergies.

Table 13. NPV of synergies vs premium paid ($M)

Measure	$M	x premium
Gross synergy NPV ($2.75B run-rate)	26,521	2.11x
Net synergy NPV ($2.0B, base)	**19,277**	**1.53x**
Cost synergies only ($1.0B)	8,781	0.70x
Premium today (deal value vs peer-drifted unaffected NSC)	12,572	1.00x
Premium at signing ($320 vs $260.32)	13,452	
Company claim (">$30B of value creation")	30,000	

Source: Model sheet Synergies. Premium today = (deal value – $260.32 x peer drift) x NSC shares.

- **Break-even:** $1.36B of net run-rate synergies covers today's premium ($1.45B at signing), leaving $1.39B of the gross figure for concessions and slippage.
- **Each $100M of net run-rate synergies** is worth about $1.05B of NPV.
- **Dependence on revenue:** revenue synergies are 64% of the gross. Cost synergies alone cover 0.70x of the premium, so the deal case depends on traffic actually shifting from trucks and interline routes.

12. Value to UNP shareholders

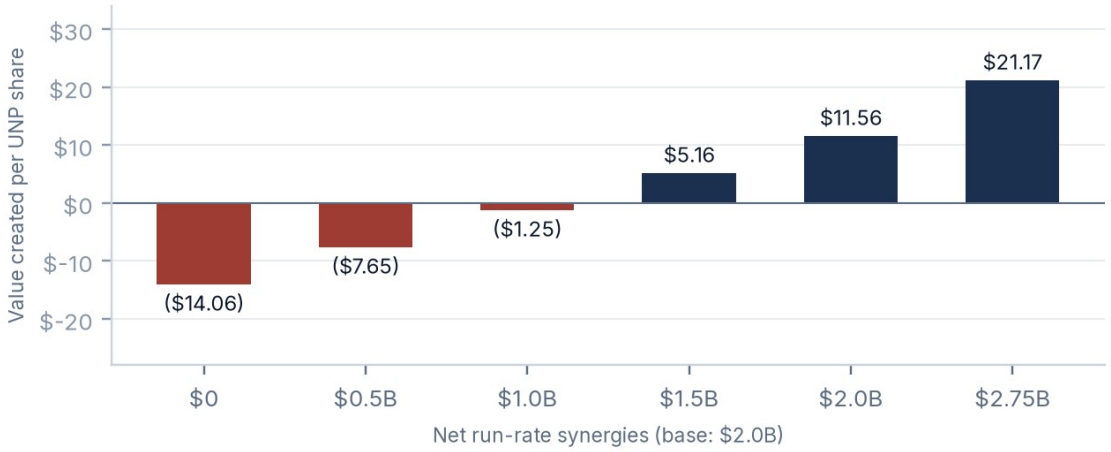
A has/gets analysis compares what UNP shareholders own today (100% of standalone UNP) with what they will own (72.5% of the combined company after paying the cash). Standalone values are our DCFs.

Table 14. Has / gets ($M)

	Value
UNP standalone equity (DCF)	155,459
+ NSC standalone equity (DCF)	69,390
+ Net synergy NPV	19,277
– Cash paid and costs	(20,210)
= Pro forma equity	**223,916**
x UNP holders' share	72.5%
= UNP holders get	**162,327**
Value created (gets – has)	**6,869**
Per UNP share	$11.56
As % of UNP standalone value	+4.4%
NSC holders receive per share (DCF basis)	$362.06

Source: Model sheet Synergies (has/gets block). Cash = $88.82 x NSC shares + $190M of costs.

Figure 7. Value created per UNP share by net run-rate synergies: break-even ~$1.1B



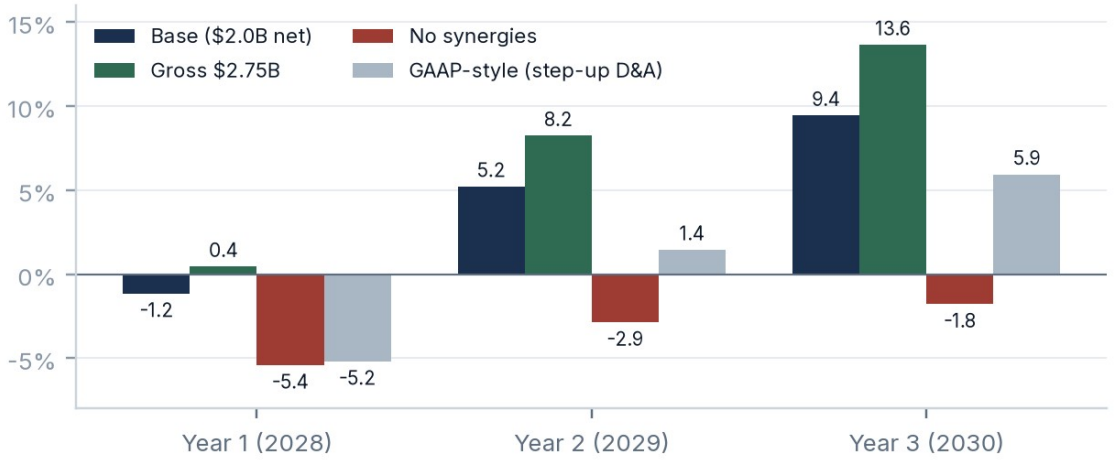
Source: Model sheet Synergies (hgs / hgsp rows).

With no synergies UNP holders would lose $8.4B, because NSC is bought 21% above its DCF value. Value turns positive at about $1.1B of net synergies and reaches $21.17 per share at the full $2.75B. Our verdict is positive but conditional: it depends on execution and on what the STB extracts.

13. Accretion / dilution

We build pro forma adjusted EPS (excluding purchase-accounting amortisation, as the companies guide) for the first three full years after a 31-Oct-27 close. Inputs: UP management EPS projections for both companies, NSC earnings haircut 6%, net synergies phased as above, after-tax costs to achieve, $15.2B of new debt at 5.75% (assumption), lost interest on cash used and 225.4M new shares, with share counts held flat.

Figure 8. Adjusted EPS: −1.2% in year 1, +5.2% in year 2 and +9.4% in year 3



Source: 424B3 projections; investor presentation 29-Jul-2025 (guidance: accretive early in year 2, high single digits in year 3+); model sheet ProForma.

Table 15. Pro forma EPS build ($M unless noted)

	2028	2029	2030
UNP standalone net income	8,589	9,207	9,890
NSC net income (haircut)	3,573	3,956	4,335
Net synergies after tax	505	1,025	1,530
Cost to achieve after tax	(130)	0	0
Interest on new debt after tax	(669)	(669)	(669)
Lost interest on cash used	(156)	(156)	(156)
Pro forma net income	**11,712**	**13,362**	**14,930**
Pro forma shares (M)	819.4	819.4	819.4
Pro forma EPS	**$14.29**	**$16.31**	**$18.22**
UNP standalone EPS	$14.46	$15.50	$16.65
Accretion / (dilution)	**−1.2%**	**+5.2%**	**+9.4%**
No synergies	−5.4%	−2.9%	−1.8%
Gross $2.75B synergies	+0.4%	+8.2%	+13.6%
GAAP-style (with step-up D&A)	−5.2%	+1.4%	+5.9%
Pre-tax synergies for EPS-neutral	838	475	317

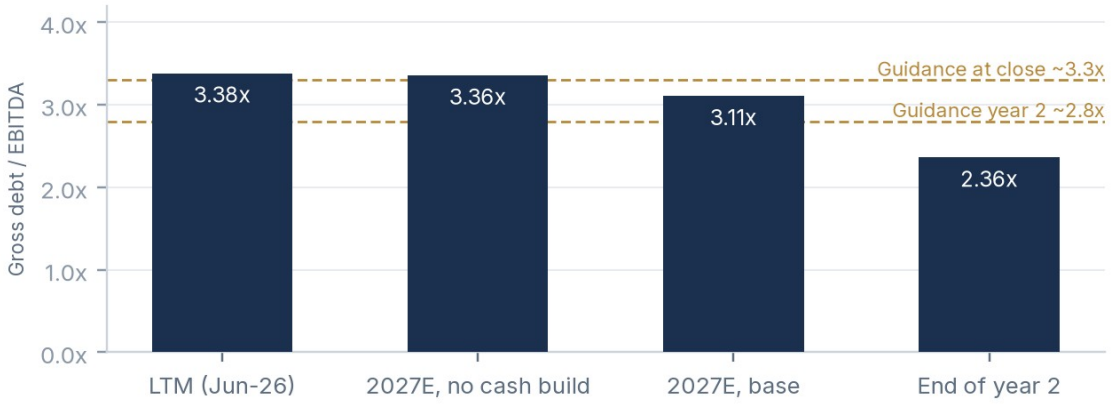
Source: Model sheet ProForma. GAAP-style line adds an illustrative $25B PP&E step-up depreciated over 40 years (assumption; the S-4 purchase price allocation is preliminary).

Without synergies the deal is dilutive in every year (−1.8% in year 3): NSC's earnings yield at the deal price is below UNP's after-tax cost of the new debt and shares. Synergies of about 475M pre-tax make year 2 EPS-neutral, well below the year-2 phase-in of the net case. Accretion is a weaker test of value than the has/gets above, but it confirms that the guidance is achievable on the companies' own numbers.

14. Financing, leverage and ratings

The cash component ($20.0B) and costs are funded with new debt and cash. UNP has committed to keep an "A" category rating, paused buybacks until year 2 and kept its dividend. We assume a ~$5B pre-close cash build, leaving **$15.2B of new debt** (Morgan Stanley assumed $20.3B of transaction debt; the S-4 pro formas assume 5.0%).

Figure 9. Pro forma gross leverage peaks at ~3.4x on LTM EBITDA and falls to ~2.4x by the end of year 2 before buybacks



Source: Model sheet Financing; guidance from investor presentation 29-Jul-2025.

Table 16. Pro forma credit profile ($M)

Measure	Value
UNP + NSC debt (30-Jun-2026)	46,943
+ New acquisition debt	15,210
Pro forma gross debt	**62,153**
Pro forma LTM EBITDA / 2027E EBITDA (no synergies)	18,370 / 19,998
Gross debt / EBITDA: LTM / 2027E / end of year 2	3.38x / 3.11x / 2.36x
Net debt / LTM EBITDA	3.24x
FCF after dividends, year 1 / year 2	4,423 / 5,919
EBITDA / interest (2027E)	6.8x
Guidance: at close / year 2 / FCF by year 3 / buybacks by year 3	~3.3x / ~2.8x / ~$12B / $10B+ a year

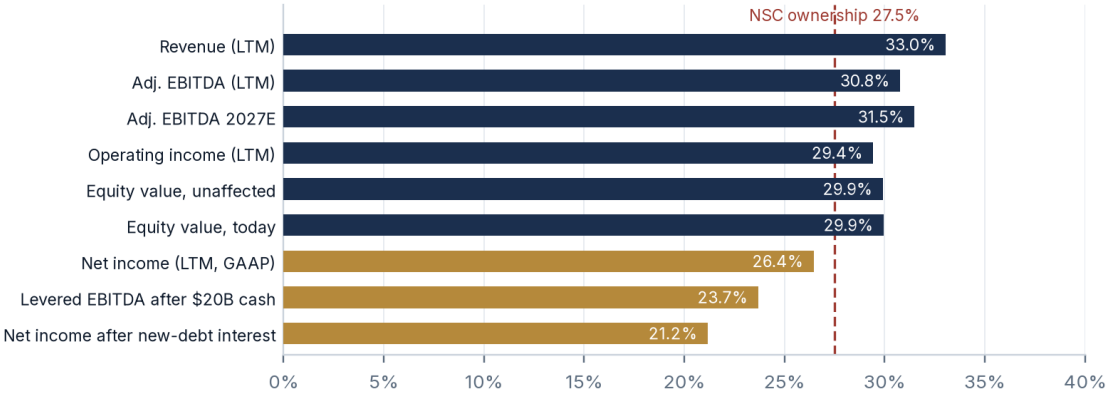
Source: UNP and NSC 10-Q Q2-2026 balance sheets; investor presentation 29-Jul-2025; model sheet Financing.

RATINGS

- **UNP:** A3 / A- / A- (Moody's / S&P / Fitch; Feb-2025 FWP). Fitch placed UNP on Rating Watch Positive on 29-Jul-2025 and maintained it on 15-Jul-2026.
- **NSC:** S&P outlook positive; Moody's Baa1 on review for upgrade (secondary source; not verified in a primary rating-agency document).
- **Our read:** at ~3.1x–3.4x gross leverage, holding the "A" category requires the deleveraging path guided by management; the timing of the year-2 buyback restart is the swing factor. Financing is not a closing condition, and UNP's access to investment-grade markets is not in doubt.

15. Contribution analysis and ownership

Figure 10. NSC contributes ~31% of EBITDA for 27.5% of the shares, plus $20B of cash



Source: LTM to 30-Jun-2026 from company filings; 2027E from 424B3 (NSC haircut); model sheet Contribution.

On unlevered measures NSC contributes more than its 27.5% ownership: 33.0% of revenue, 30.8% of LTM EBITDA and 31.5% of 2027E EBITDA. But NSC holders also receive $20.0B of cash. Charging them for that cash, NSC's levered EBITDA contribution falls to 23.7% and its net income contribution after new-debt interest to 21.2%, both below 27.5%. The gap between what NSC contributes on a levered basis and what its holders receive (shares plus cash) is the control premium. Because the ratio is fixed, NSC holders share in UNP's price moves until closing.

16. Regulatory analysis

THE LEGAL TEST

A merger of two Class I railroads requires STB approval under 49 U.S.C. 11323–11325. The Board must approve a transaction that is consistent with the public interest (11324(c)) after weighing the statutory factors in 11324(b). Since 2001, its Major Rail Consolidation Procedures (49 CFR 1180.1, adopted in EP 582 (Sub-No. 1)) set a higher bar for Class I combinations.

Table 17. What the Board must find

Element	Standard
Public interest (11324(c))	Approve if consistent with the public interest; broad power to impose conditions
Statutory factors (11324(b))	Adequacy of transportation; effect of including other carriers; fixed charges; employee interests; effect on rail competition
2001 policy (1180.1(c))	"Substantial and demonstrable" public benefits must outweigh anticompetitive effects, service risk and harm to essential services
Enhanced competition (1180.1(d))	Applicants "should propose conditions that would not simply preserve but also enhance competition"
Crossover effects (1180.1(i))	Applicants must address the cumulative impact of likely further Class I consolidation
Service and safety (1180.1(f), (h))	Service Assurance Plan with benchmarks; Safety Integration Plan with the FRA
Oversight (1180.1(g))	At least 5 years of formal oversight; the Board can add conditions
Timing (11325(b))	Evidence closes within 1 year of the notice; final decision within 90 days after that

Source: 49 U.S.C. 11321–11328; 49 CFR 1180.1 (66 FR 32583, 15-Jun-2001); eCFR.

WHERE THE REVIEW STANDS

The STB rejected the first application (19-Dec-2025) as incomplete on 16-Jan-2026 and accepted the revised application (30-Apr-2026) on 28-May-2026. Decision No. 30 (18-Aug-2026) set the merits schedule. BNSF, CSX and a shipper coalition (ACC, AFPM, ACD, NITL, TFI) asked the Board to deny the application summarily; on 18-Sep-2026 the Board refused, describing the case as one of first impression that needs a full record. Comments and responsive applications are due 18-Nov-2026, DOJ and USDOT comments 3-Dec-2026, and final briefs 28-May-2027. A hearing date is still to be set.

LIKELY CONDITIONS

- Commitments to keep the Chicago, Memphis, St. Louis and New Orleans gateways open on commercially reasonable terms, with rate and routing protections for interline traffic.
- Trackage or haulage rights where shippers would lose a competitive option, and possibly responsive applications by BNSF or CSX for access.
- Service Assurance Plan benchmarks, a Safety Integration Plan, and extended oversight (CPKC received seven years).
- New York Dock labour protection and environmental mitigation.

Our base case is approval with significant but tolerable conditions that consume part of the $0.75B gap between gross and net synergies. The contract requires reasonable best efforts short of a Materially Burdensome Regulatory Condition; if the STB goes beyond that, UNP can walk and the $2.5B fee becomes payable at the End Date (scenario C).

THE CPKC PRECEDENT

Table 18. CPKC (2023) vs UNP/NSC

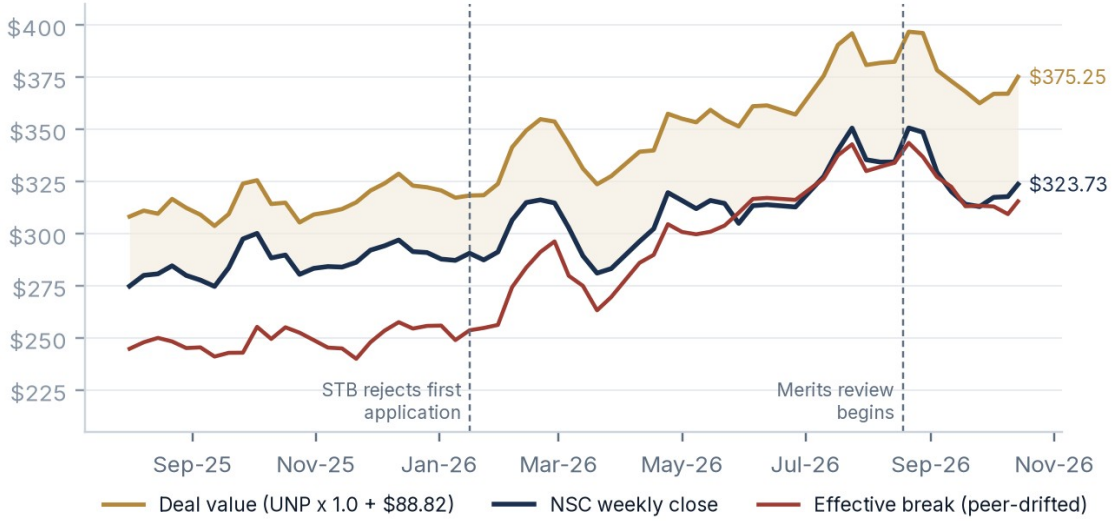
	CP / KCS	UNP / NSC
Rules applied	Pre-2001 (KCS waiver)	2001 rules (enhance competition)
Type	End-to-end, three countries	End-to-end, US
Size (EV at signing)	~$31B	~$85B
Voting trust	Yes (Dec-2021)	No
Application to decision	Oct-2021 to Mar-2023 (~17 months)	Apr-2026 to ~Aug-2027 (~16 months)
Opposition	CN (rival bidder), some shippers, Metra	BNSF, CSX, shipper coalition
Outcome	Approved with conditions; 7-year oversight	Pending
Class I railroads after	6	5

Source: STB FD 36500 decision (15-Mar-2023, effective 14-Apr-2023); STB FD 36873 decisions. CPKC dates per the STB decision summary.

Read-across: CPKC shows the Board will approve an end-to-end Class I combination with heavy conditions and long oversight. But CPKC was reviewed under the old rules, used a voting trust to protect its sellers, and left six Class I railroads. UNP/NSC faces the higher 2001 bar and would leave five, which is why we put approval at 55% rather than the high probabilities typical of large strategic deals.

17. Spread and market-implied probability

Figure 11. The spread is $51.52 (15.9%); it widened after the January 2026 rejection



Source: Yahoo Finance weekly (Friday) closes 1-Aug-2025 to 14-Oct-2026; model sheet SpreadHistory.

Table 19. Spread at the valuation date

Measure	Value
Deal value (UNP x 1.0 + $88.82)	$375.25
NSC close	$323.73
Gross spread	**$51.52 / 15.9%**
Forward spread (carry and dividends to close)	$49.65
Annualised (simple)	15.2%
Over the 13-week T-bill (4.08%)	11.1%
Days to assumed close	382

Source: Model sheet Arb.

BREAK VALUE

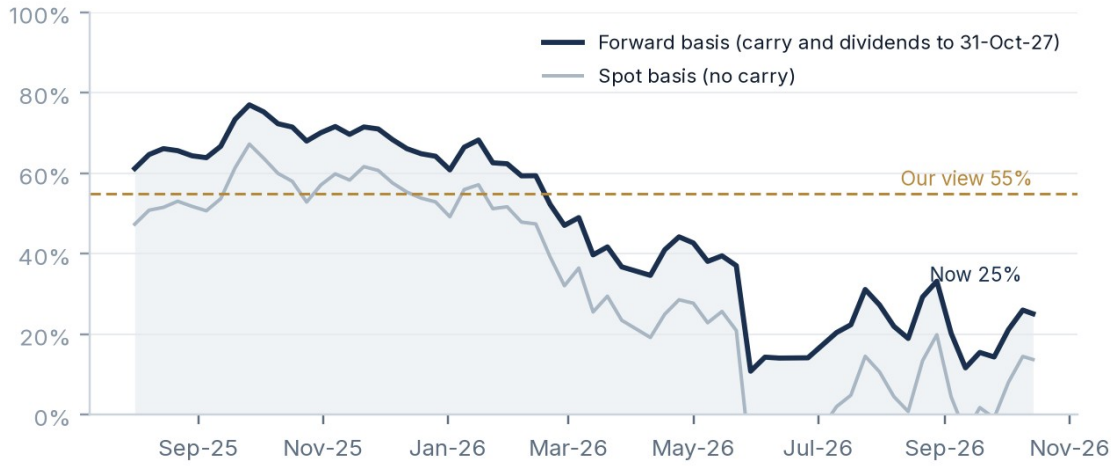
The implied probability depends on what NSC would trade at if the deal failed. We use four methods and average them, then add the $2.5B reverse fee, which NSC holders receive in a regulatory break.

Table 20. Break value and implied probability

Method	$/NSC share	Implied P
M1 NSC unaffected x peer drift (+22.7%)	$319.48	3%
M2 Peer median EV/EBITDA less NSC discount	$310.04	18%
M3 NSC standalone DCF	$308.94	20%
M4 Unaffected NSC/UNP multiple ratio (0.892) x UNP today	$279.11	46%
Base break (average)	**$304.39**	
+ Reverse termination fee per share	$11.13	
Effective break	**$315.52**	**25%**
Spot basis (no carry or dividends)		14%

Source: Model sheet Arb. Forward basis: carry at the 13-week T-bill and dividends on both sides to 31-Oct-27.

Figure 12. The market-implied chance of closing fell from ~60–75% in late 2025 to 25% today



Source: Model sheet SpreadHistory. The history uses the fixed 31-Oct-2027 close date, which overstates the horizon for 2025 dates. The spot series is negative (shown at zero) in mid-2026, when NSC traded at or below the peer-drifted break.

M1 is inflated by CSX's takeover-speculation rally, and M4 (the relative multiple applied to today's UNP price) is the cleanest measure. At the low end of the range ($279.11) the implied probability rises to 46%; at the high end ($319.48) it falls to 3%. Under any method the market price embeds a materially lower chance of approval than our 55%.

18. Scenarios, expected value and sizing

Table 21. Scenario analysis (per NSC share; probabilities are assumptions)

	Outcome	Prob.	Payoff	PV	Return
A	Approved with tolerable conditions; closes 31-Oct-27	47%	$380.65	$365.03	+17.6%
B	Approved after delay; closes 30-Apr-28	8%	$383.35	$360.35	+18.4%
C	Approved with a burdensome condition; UNP walks and pays $2.5B	5%	$320.92	$307.75	−0.9%
D	STB denies (or deal withdrawn) by 30-Sep-27; $2.5B paid	40%	$320.92	$308.80	−0.9%
	Probability-weighted (unhedged long NSC)	100%	$353.99	$339.30	+9.3%

Source: Model sheet Scenarios. Payoffs per NSC share include dividends to resolution. PV at the T-bill rate.

Why 55%. For approval: large end-to-end and parallel combinations have been approved with conditions (UP/SP 1996, Conrail 1998, CPKC 2023); the Board refused summary denial; the parties have strong incentives to offer remedies; and UNP has a $2.5B fee at stake. Against: this is the first case under the 2001 enhance-competition standard, opposition from two Class I railroads and organised shippers, the rejected first application, and the crossover question of a five-railroad industry.

THE HEDGED POSITION

Long one NSC share and short 1.0 UNP share isolates the deal outcome from UNP's price. If the deal closes the position earns the spread plus the dividend difference: **$51.24**. If it breaks, NSC falls to the effective break and we assume UNP rises 3% (relief that the deal is off): **($17.08)**. The position breaks even at a 25% probability of closing; at our 55% its expected value is $20.50 per NSC share, 6.3% of notional. Unhedged, the expected excess return over T-bills is +4.8%.

Table 22. Hedged expected P&L, % of NSC notional: P(close) vs shift in the effective break ($/share)

P(close) \ break shift	−$40	−$20	+$0	+$10
30%	−7.6%	−3.3%	+1.1%	+3.2%
40%	−4.2%	−0.5%	+3.2%	+5.0%
50%	−0.9%	+2.2%	+5.3%	+6.8%
55% (base)	+0.8%	+3.6%	+6.3%	+7.7%
60%	+2.4%	+4.9%	+7.4%	+8.6%
70%	+5.8%	+7.6%	+9.5%	+10.4%

Source: Model sheet Scenarios (eg grid).

SIZING

Because the downside is a binary regulatory outcome, we size on a loss budget rather than on expected return: a 0.5% NAV loss in a break (assumption) divided by the 5.3% loss per unit of notional gives **9.5% of NAV long NSC notional**, with an equal UNP short. A close adds about 1.5% to NAV. If the break value proves lower than modelled, M4's $279.11 still leaves the trade at +$9.12 per share.

19. Risks and mitigants

Risk	Likelihood	Impact	Mitigant
STB denies, or conditions trigger a walk (MBRC)	Medium-high	Hedged arb: ($17.08)/sh (−5.3% of notional)	Size to a 0.5% NAV loss. The $2.5B fee ($11.13/sh) cushions a regulatory break.
Break value lower than modelled (sector de-rates, CSX premium fades)	Medium	Each $10 lower costs ~1.4% of expected return	M4 gives $279; at that break the trade still earns +$9.12/sh.
Delay beyond Aug-2027 (hearing, remand, appeal)	Medium	Lower annualised return	End Date auto-extends for STB delays; scenario B prices a six-month slip; carry is largely matched long and short.
Revenue synergies fall short; concessions larger	Medium	UNP holders: value turns negative below ~$1.1B net	Cost synergies ($1.0B) are more controllable; track STB conditions against the $0.75B gross-to-net cushion.
Integration and service disruption (UP/SP precedent)	Medium	Earnings and STB oversight risk	Service Assurance Plan, Safety Integration Plan, 5+ years of oversight, staged cut-over.
Leverage and rating pressure (~3.1x–3.4x)	Low-medium	Higher funding cost; buybacks delayed	No financing condition; pre-close cash build; buybacks paused; “A” commitment.
Rival response (CSX/BNSF combination or responsive applications)	Low-medium	Broader conditions; longer review	Crossover effects must be addressed under 1180.1(i); the Board refused to deny summarily.
Borrow cost or squeeze on the UNP short	Low	Hedge slippage	UNP is a liquid large-cap; the 1.0 ratio is fixed, so the hedge stays exact to closing.

Source: Merger agreement s.6.3, 7.1, 7.3; 49 CFR 1180.1; STB decisions in FD 36873; model sheets Arb, Scenarios, Synergies, Financing.

20. Recommendation and decision rules

DEAL MERIT FOR UNP SHAREHOLDERS: QUALIFIED SUPPORT

- Value created: $6.9B ($11.56 per share, +4.4%) on $2.0B of net synergies; synergies cover the premium 1.53x.
- EPS: −1.2% / +5.2% / +9.4% in years 1–3, consistent with guidance.
- But the price is full (17.7x LTM EBITDA today) and cost synergies alone do not cover it. Break-even is about $1.1B of net synergies.
- Watch: the conditions the STB attaches, evidence for revenue synergies in the record, and the leverage path to ~2.8x.

MERGER ARBITRAGE: LONG NSC / SHORT 1.0 UNP

- Market-implied P(close) 25% vs our 55%; breakeven 25%.
- Payoff $51.24 / ($17.08) per NSC share (3.0:1); expected 6.3% of notional over ~1 year.
- Size: 9.5% of NAV long notional, so a break costs 0.5% of NAV and a close adds ~1.5%.

WHAT WOULD CHANGE OUR MIND

Deal merit: STB conditions that cut net synergies below ~$1.1B, evidence that revenue synergies are overstated, or a downgrade out of the A category.

Arb, negative: responsive applications seeking broad trackage rights that DOJ/USDOT support; a schedule that pushes the decision into 2028; a UNP statement that conditions are unacceptable; a CSX/BNSF counter-deal.

Arb, positive (add): a hearing order or DOJ/USDOT comments without broad remedies. **Take profit:** NSC above ~$345 with no news (implied P above ~50%).

Appendix A. Key assumptions

Every input not taken from a filing, a regulator or market data is an assumption. All 28 are listed in the Inputs sheet and in figures.json with source "assumption".

Input	Value	Description
tax	23.5%	Cash tax rate on EBIT and synergies
beta	1.0x	Equity beta (both rails)
erp	4.2%	Equity risk premium
kd	5.9%	Pre-tax cost of debt (A-/BBB+ 10-year ~ Treasury + 70bp)
tv_mult	14.5x	Terminal EV / EBITDA multiple (base)
g_tv	3.0%	Perpetual growth cross-check
u_da_pct	9.9%	UNP D&A as % of revenue (LTM 2,513 / 25,410)
n_da_pct	11.3%	NSC D&A as % of revenue (LTM 1,411 / 12,540)
n_hair	6.0%	Haircut to UP-management NSC EBITDA (NSC tracking below plan)
stub	21.0%	Fraction of 2026 cash flow remaining after valuation date
close_date	31-Oct-27	Assumed closing date (base): STB decision <=90 days after record close, effective +30 days
close_late	30-Apr-28	Assumed closing date (delayed case)
break_date	30-Sep-27	Assumed resolution date if the STB denies
new_rate	5.8%	Coupon on new acquisition debt
cash_build	$5,000M	Cash accumulated by UNP before closing to reduce new debt
ph1	33.0%	Synergy phase-in year 1
ph2	67.0%	Synergy phase-in year 2
ph3	100.0%	Synergy phase-in year 3+
syn_g	2.5%	Synergy growth after year 3
syn_wacc	9.0%	Discount rate for synergies
ppa_step	$25,000M	Illustrative PP&E step-up (purchase accounting)
ppa_life	40	Remaining life of step-up
p_A	47.0%	P(approved with manageable conditions, closes on base date)
p_B	8.0%	P(approved after delay / remand, closes late)
p_C	5.0%	P(approved with Materially Burdensome Regulatory Condition, UNP walks, pays RTF)
u_brk	3.0%	UNP price move if the deal breaks (hedged arb short leg)
nav_budget	0.5%	Loss budget per position (NAV)

Source: figures.json; model sheet Inputs. The valuation date (14-Oct-2026) is also recorded as an input.

Appendix B. Methodology and formulas

- **Deal value:** DV = 1.0 x P(UNP) + $88.82. Gross spread = DV − P(NSC).
- **Implied probability (forward basis):** p = (F(NSC) − B_e) / (F(DV) − B_e), where F(·) carries each price to the assumed close at the 13-week T-bill, net of dividends, and B_e = average break value + reverse fee per share. Spot basis uses prices directly.

- **Peer drift:** M1 and the history scale NSC's unaffected price by the equal-weighted change in CSX, CPKC and CN since 16-Jul-2025.
- **DCF:** unlevered FCF = EBITDA − tax on EBIT − capex (ΔNWC ignored); mid-year discounting from the valuation date (stub 0.21 of 2026); terminal value = 14.5× 2031 EBITDA; WACC from market-value weights.
- **Synergy NPV:** run-rate x phase-in, grown 2.5% after year 3, taxed at 23.5%, less after-tax costs to achieve, discounted at 9% with a terminal value; valued to today by discounting from the assumed close.
- **Premium today:** (DV − $260.32 x peer drift) x NSC shares, so it excludes the market move NSC would have had anyway.
- **Has / gets:** gets = UNP holders' share x (UNP DCF + NSC DCF + net synergy NPV − cash and costs); value created = gets − UNP DCF.
- **Accretion:** pro forma EPS = (UNP NI + NSC NI x (1 − haircut) + after-tax synergies − after-tax costs − after-tax interest on new debt − lost interest on cash) / (UNP shares + 225.4M).
- **Hedged P&L:** close = DV − P(NSC) + dividend difference; break = B_e − P(NSC) − (UNP rise on break) x P(UNP) + dividend difference. Breakeven p = −break / (close − break). Size = loss budget / |break loss %|.

Appendix C. Sources

Primary documents (SEC EDGAR unless stated), statute, regulation and the STB:

Agreement and Plan of Merger, 28-Jul-2025 (Ex. 2.1 to UNP 8-K)
https://www.sec.gov/Archives/edgar/data/100885/000119312525168150/d51641dex21.htm

Joint press release and investor presentation, 29-Jul-2025 (UNP 8-K Ex. 99.1 / 99.2)
https://www.sec.gov/Archives/edgar/data/100885/000119312525167154/d64537dex992.htm

UNP Form S-4 / joint proxy statement-prospectus (424B3), Sep-2025
https://www.sec.gov/Archives/edgar/data/100885/000119312525226560/d908896d424b3.htm

UNP Form 10-K 2025
https://www.sec.gov/Archives/edgar/data/100885/000010088526000037/unp-20251231.htm

UNP Form 10-Q Q2-2026
https://www.sec.gov/Archives/edgar/data/100885/000010088526000250/unp-20260630.htm

UNP Q2-2026 earnings release (8-K Ex. 99.1)
https://www.sec.gov/Archives/edgar/data/100885/000010088526000249/a2026-07×238xkex991earning.htm

NSC Form 10-Q Q2-2026
https://www.sec.gov/Archives/edgar/data/702165/000162828026049326/nsc-20260630.htm

NSC Q2-2026 earnings release and non-GAAP reconciliation (8-K Ex. 99.1/99.2)
https://www.sec.gov/Archives/edgar/data/702165/000119312526313393/nsc-ex99_2.htm

SEC XBRL company facts: UNP, NSC, CSX, CPKC, CN
https://data.sec.gov/api/xbrl/companyfacts/CIK0000100885.json (and CIK0000702165, 0000277948, 0000016875, 0000016868)

BNSF Railway LLC filings (XBRL company facts)
https://data.sec.gov/api/xbrl/companyfacts/CIK0000934612.json

STB Docket FD 36873, Decision No. 30 (Federal Register, 20-Aug-2026)
https://www.federalregister.gov/documents/2026/08/20/2026-17024/union-pacific-corporation-and-union-pacific-railroad-company-control-norfolk-southern-corporation

STB major railroad mergers page (FD 36873 decisions and filings)
https://www.stb.gov/resources/major-railroad-mergers/

49 CFR 1180.1, General policy statement for merger or control of at least two Class I railroads
https://www.ecfr.gov/current/title-49/subtitle-B/chapter-X/part-1180/subpart-A/section-1180.1

49 U.S.C. 11324 (consolidation, merger and acquisition of control: conditions of approval)
https://www.law.cornell.edu/uscode/text/49/11324

Market data: Yahoo Finance daily closes (UNP, NSC, CSX, CP, CNI, ^GSPC, ^TNX, ^IRX, CAD=X)
https://query1.finance.yahoo.com/v8/finance/chart/UNP

Secondary sources (not confirmed in primary documents):

Fitch Ratings rating action commentaries on Union Pacific (29-Jul-2025, 15-Jul-2026)
fitchratings.com

NSC Moody's / S&P rating status, as reported by secondary sources
Not verified in a rating-agency document

Appendix D. What could not be verified

- NSC credit ratings and outlooks (Moody's Baa1 on review for upgrade; S&P positive outlook) come from secondary sources.
- CN multiples use FY2025 data (no 2026 XBRL for a 40-F filer). BNSF EBITDA is operating income plus D&A from BNSF Railway LLC filings, not a company-defined EBITDA.
- NSC LTM adjusted EBITDA adds back company-defined non-GAAP items (merger costs, restructuring, Eastern Ohio net recoveries).
- The closing date, scenario probabilities, synergy phase-in and discount rate, NSC haircut, debt coupon and sizing limits are the author's assumptions (Appendix A). The STB hearing date is not set.
- End Date extension mechanics and the scope of a Materially Burdensome Regulatory Condition are read from the agreement; how they would apply in practice could differ.
- The size of eventual STB concessions, and whether UP management's $2.0B net synergy case (prepared mid-2025) is still current.
- CPKC application, voting-trust and decision dates come from the STB decision summary, not a full re-read of the record.
- The history of market-implied probabilities uses a fixed 31-Oct-2027 close date for every week, which overstates the horizon for 2025 dates.

Appendix E. Reproducibility

All figures flow from one Python model to the workbook, the deck, this report and figures.json, so they cannot drift.

File	Role
model/model.py	Single source of truth; writes model_output.json
model/UNP_NSC_merger_model.xlsx	Live-formula workbook (Inputs, 15 model sheets, SpreadHistory); reconciled by check.py (718 values, 0 mismatches)
figures.json	613 figures with value, unit, as-of date and source URL, formula/cell, or "assumption"
deck/UNP_NSC_merger_deck.pdf	24-slide deck
report/build_charts.py, build_report.py, build.sh	This report: charts (matplotlib), docx (python-docx), PDF (LibreOffice)

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