2024

CLIMATE TRANSITION PLAN

EXECUTIVE SUMMARY

DECEMBER 28, 2023

NORFOLK SOUTHERN

STATEMENT FROM THE CHIEF SUSTAINABILITY OFFICER

To our fellow stakeholders,

I am pleased to introduce Norfolk Southern's inaugural Climate Transition Plan (CTP), another milestone in our longstanding commitment to environmental stewardship and sustainability. Rail is the most sustainable way to move freight over land. As one of the nation's leading freight railroads, we understand the critical role we play in reducing supply chain emissions and fostering a transition to a low-carbon economy. We remain focused on building a better planet, a brighter future for our employees and our communities, and partnering with our customers to achieve their sustainability goals.

Acknowledging climate-related risks and opportunities, our CTP identifies three key performance indicators (KPIs) as decarbonization levers, essential to achieving our current science-based target of reducing GHG emissions intensity 42% by 2034. These include a 13% improvement in locomotive fuel efficiency by 2027, a commitment to increasing renewable energy usage to 30% by 2030, and 20% consumption of low carbon fuels by 2034.

This report outlines our journey toward a more sustainable future and underscores our commitment to making a positive impact on our communities. Thank you for your continued partnership as we work together toward a low-carbon, resilient world for future generations.

Josh Raglin
Chief Sustainability Officer

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INTRODUCTION

INTRODUCTION

At Norfolk Southern (NS), we are reducing the environmental impact of our operations. Our approach is rooted in our values and understanding of current climate science and scientific evidence regarding greenhouse gas (GHG) emissions. We all want cleaner air and a better planet for ourselves and future generations, and this responsibility inspires us to integrate sustainability into our daily operations. As a leading provider of freight-rail service – the safest, most sustainable mode of surface transportation – we are committed to doing our part to reduce our carbon emissions, including setting a science-based target consistent with the Paris Agreement on climate change, pursuing innovative solutions, while providing our customers with energy-efficient service.

Our CTP further demonstrates our commitment and plan for action. NS is playing a role in the transition to a low-carbon economy and several of our initiatives are helping us meet our science-based target. A CTP is necessary because of the evolving market and regulatory landscape. To develop this report, we conducted a maturity assessment based on the CDP technical guidance on Climate Transition Plans[1] and The Assessing low-Carbon Transition (ACT)[2] guidance.

As part of our CTP, we will continue adopting new technologies and innovating operating practices to further improve the fuel economy of our locomotive fleet, which accounts for roughly 90% of our scope 1 and 2 GHG emissions. We are also developing short-term and long-term goals coupled with an action plan to achieve our ambitious targets, which will drive our future activities to mitigate our GHG emissions and reflect the alignment of our business strategy with the goals of the Paris Agreement.

NS also publishes a voluntary annual report highlighting our accomplishments in integrating sustainable business practices into daily operations, which is available here.

[1] https://cdn.cdp.net/cdp-production/cms/guidance_docs/pdfs/000/003/101/original/CDP_technical_note_-_Climate_transition_plans.pdf?1643994309

[2] https://actinitiative.org/

GOVERNANCE

GOVERNANCE

We are actively developing governance processes for our CTP, including approval, oversight, and accountability, drawing on our existing framework for sustainability and climate change risk oversight set forth below. These processes will capture our climate-related capabilities and scenarios and address our transition risks directly. Climate-related risks and opportunities impact our governance and business decisions, and this CTP is an important piece of our overall strategy. Our current transition planning effort consists of a "well-below 2°C" temperature and current policy scenarios so we will focus the executive summary on this temperature scenario. The Nationally Determined Contributions (NDCs) scenario analysis details can be found in the full CTP.

Independent Board Chair Amy Miles and President and CEO Alan Shaw

BOARD-LEVEL OVERSIGHT AND EXPERTISE

Our board of directors is ultimately responsible for monitoring the primary operational, compliance, financial and strategic risks facing the company, including oversight of the company's corresponding Enterprise Risk Management (ERM) program.

The board has further delegated oversight of the company's sustainability and climate change risks and issues to the Governance and Nominating Committee, including oversight of related policies, emerging issues, annual and long-term goals, and our ESG Report.

As a result, the Governance and Nominating Committee periodically reviews, along with management and our Chief Sustainability Officer, the company's climate risk and sustainability initiatives. The chair of the Governance and Nominating Committee in turn provides reports to our board of directors on the issues addressed and decisions made by the Committee. As a result, our board of directors is able to provide climate-related oversight, including reviewing and guiding risk-management policies and strategy and monitoring progress towards our climate change, energy, and environmental policy targets.

In terms of expertise, our board includes nine total members (60% overall) who possess experience in environmental or safety matters, including two new directors who were appointed in July 2023. One of our new directors, Francesca DeBiase, has held sustainability and supply chain leadership roles for nearly 15 years, including having previously served as the Chief Sustainability Officer for McDonald's Corporation. In addition, we encourage and support our board members to enhance their expertise on climate-related issues through periodic educational and other opportunities.

MANAGEMENT-LEVEL OVERSIGHT

The company has also designated a Chief Sustainability Officer with over 15 years of experience to lead and oversee the company's overall sustainability initiatives, being the first Class I railroad to do so back in 2007. Our Chief Sustainability Officer reports to our Executive Vice President and Chief Transformation Officer, who in turn reports to our Chief Executive Officer and ultimately, our board of directors.

Our Chief Sustainability Officer is responsible for advancing strategies to integrate sustainability practices into our daily operations to achieve efficiencies, generate revenue, and reduce impacts. This position has the authority, influence, and resources to act on climate-related risks and opportunities in alignment with our corporate strategy.

The company also recently established an ESG Council, comprised of leaders from across the organization who meet on a periodic basis to review and direct the company's ESG-related activities, issues, and disclosures in conjunction with the company's Chief Sustainability Officer.

GHG ACCOUNTING & VERIFICATION

GHG ACCOUNTING & VERIFICATION

Our GHG Inventory for the year 2022 (ending December 31st, 2022), can be seen as below:

TABLE 1 | 2022 GHG INVENTORY FINDINGS

Source of GHG Emissions	Scope	CO_2 Emissions	N_2O Emissions	CH_4 Emissions	Total Emissions	Total GHG Emissions
		metric tons $CO_{2\text{-}eq}$	*metric tons $CO_{2\text{-}eq}$*	*metric tons $CO_{2\text{-}eq}$*	*metric tons $CO_{2\text{-}eq}$*	*Scopes 1, 2, and 3*
Mobile Off-Road Combustion Sources (Locomotives and Aircrafts)	1	3,826,074	29,054	7,489	3,862,617	54.4%
Locomotive Biodiesel	1	31,467	10	11.65	31,488	0.5%
Mobile On-Road Vehicle Fleet	1	83,147	404	28	83,579	1.2%
Stationary Combustion Sources	1	180,169	394	174	180,736	2.5%
Refrigerant Losses	1				35	0.0%
Oil/Water Separators (OWS) – Methane Emissions	1				691	0.0%
Purchased Electricity (Market-Based)	2				150,491	2.1%
Purchased Goods and Services	3				400,830	5.6%
Capital Goods	3				1,289,401	18.2%
Fuel-and-Energy-Related Activities (WTT)	3				956,554	13.5%
Upstream Transportation and Distribution	3	175	1.4	0.04	177	0.0%
Waste generated in operations	3				55,125	0.8%
Business Travel	3	13,910	107.3	9.1	14,027	0.2%

Employee commuting	3	76,202	508	49	76,758	1.1%
Upstream leased assets	3	653.9	1.9	1.1	657	0.0%
				Total Scope 1*	4,127,658 metric tons $CO_{2\text{-eq}}$	
				Total Scope 2	150,491 metric tons $CO_{2\text{-eq}}$	
				Total Scope 3	2,793,527 metric tons $CO_{2\text{-eq}}$	
				Total Scope 1+2+3	7,103,165 metric tons $CO_{2\text{-eq}}$	
				Total Scope 1+2	4,278,149 metric tons $CO_{2\text{-eq}}$	
				Emissions Intensity (Scope 1+2) / MGTM	12.61 metric tons $CO_{2\text{-eq}}$ per million gross ton miles	

*Scope 1 emissions exclude 31,488 metric tons of direct CO_{2e} emissions from the use of biofuels (biodiesel). | Notes: CH_4 = methane; CO_2 = carbon dioxide; $CO_{2\text{-eq}}$ = carbon dioxide equivalent; N_2O = nitrous oxide

We have our GHG inventory verified under limited assurance from an independent registered public accounting firm and will continue to do so in the future to maintain transparency and credibility. For more details, please see our verification statement.

SCENARIO ANALYSIS

SCENARIO ANALYSIS

In early 2023, we assessed risks and opportunities related to transitioning to a low-carbon economy per the Task Force on Climate-Related Financial Disclosure (TCFD) framework. These risks include current and emerging regulations, legal exposure, transition to a low-emission technology, market changes, and reputational risks. Additionally, we identified opportunities from the transition, which include, but are not limited to, benefits from shifts in customer demand for low-carbon transportation, the transition to low-carbon emissions operations and services, and participation in carbon markets. NS pursued a top down transition risk and opportunity analysis that engaged a cross-section of internal stakeholders that understand the impact a transition risk or opportunity would have on our organization and our vulnerability or readiness to each risk or opportunity, respectively, given our business continuity plans and existing management methods. This process has supported and led to the development of this CTP.

We conducted a company-wide, qualitative transition scenario analysis using the Network for Greening the Financial Sector (NGFS) Disorderly: Delayed Transition and Hot House World: Nationally Determined Contributions (NDCs)[3] to evaluate the impacts of emerging regulations and inform our climate-related strategy. The Delayed Transition scenario assumes annual emissions do not decrease until 2030, and strong policies are needed to limit warming to below 2 degrees – CO_2 removal is limited. The NDCs scenario includes all pledged policies but not yet implemented policy measures. Regarding the boundary of the assessment, the climate sensitivity workshops evaluated climate-related risks for our value chain, however, our substantive risks focused on our operations due to our ability to reduce vulnerability through business continuity planning. More information on the scenario assumptions can be found in the full CTP.

DEFINITION OF SUBSTANTIVE RISK

The NS Enterprise Risk Council utilizes the ERM function to identify and define risks which may have a substantive effect on our operations. Risks are evaluated based on quantitative and qualitative factors of impact, likelihood, and management effectiveness. The impact is a measure of potential effect(s) a risk will have on the organization and considers financial, operational, reputational, legal and/or technological implications of a risk event. Likelihood evaluates the frequency or probability of a risk event occurring. Risks that NS determines to carry high exposures to our strategic objectives are designated as "enterprise risks" and may require additional management actions and monitoring to prepare for, prevent or respond to a risk event.

[3] https://www.ngfs.net/ngfs-scenarios-portal/

SCOPE OF TESTING

TABLE 2 | PRIORITIZED TRANSITION RISKS & OPPORTUNITIES

Transition Risk / Opportunity		Definition	TCFD Risk / Opportunity Category
1	Policy risk	Legal risks associated with mandates and regulations for raw/synthetic materials and/or products	Policy and legal risk
2	Legal risk	Increase in climate-related legal disputes and/or violations	Policy and legal risk
3	Market and Technology risk	Reduced availability of key raw/synthetic materials	Market and reputation risks
4	Energy Source opportunities	Carbon market participation and cost avoidance from transition to low carbon emission operations, services, and meeting our climate targets	Resource efficiency and energy sources opportunities
5	Customer Market opportunities	Strategic advantage over competitors to access new markets & anticipated use/prioritization of public-sector incentives	Products and services and market opportunities

TABLE 3 | SCENARIO ANALYSIS TIME HORIZONS

Time Horizon	Definitions
Short-term	2025-2030
Medium-term	2031-2040
Long-term	2041-2050

SCENARIO ANALYSIS FINDINGS

Our company must be adequately prepared for the operational shock of a potential national transportation decarbonization rule. However, our climate risk assessment highlighted several existing factors that may mitigate the severity of such an event. We are integrating climate risks and their associated mitigating activities into relevant ERM risk categories, which embed climate risk into our strategic risks and enable monitoring of risk mitigating activities. As we expand the scope of these analyses, we will continue to evaluate the costs and benefits of more aggressive decarbonization goals and the capital investments necessary to stand by our commitment to reduce our impact on the climate.

TABLE 4 | TRANSITION RISK & OPPORTUNITY ANALYSIS FINDINGS

Delayed Transition				
Risk / Opportunity	Impact	Likelihood	Speed of Onset / Time Horizon	Vulnerability / Readiness
Policy	Major	Likely	Medium-term (2031-2040)	Moderate – High
Legal	Moderate	Likely	Medium-term (2031-2040)	Moderate
Market & Technology	Major	Likely	Medium-term (2031-2040)	Moderate – High
Energy Source	Prosperous	Likely	Medium-term (2031-2040)	Moderate – High
Customer Market	Moderate	Possible	Medium-term (2031-2040)	Moderate
NDCs				
Risk / Opportunity	Impact	Likelihood	Speed of Onset / Time Horizon	Vulnerability
Policy	Minor	Unlikely	Short-term (up to 2030)	Low
Legal	Minor	Unlikely	Short-term (up to 2030)	Low
Market & Technology	Minor	Unlikely	Short-term (up to 2030)	Low – Moderate
Energy Source	Major	Almost Certain	Short-term (up to 2030)	High
Customer Market	Major	Likely	Short-term (up to 2030)	Moderate – High

Further information regarding these risks, opportunities, and findings is set forth below in the following tables:

TABLE 5 | SCENARIO ANALYSIS FINDINGS FOR TRANSITION RISKS

Delayed Transition NGFS Scenario – Explanation of Results & Potential Impacts					
Policy Risks					
Context	**Impact**	**Likelihood**	**Timescale**	**Vulnerability**	**ERM Mapping**
This scenario assumes a high variation in regional policy and delayed policy start. Disorderly Delayed Transition assumes that policy uncertainty leads to a higher investment premium that lasts for two years, 2030-2031.	Major – a sudden increase in demand for low-emission high efficiency transportation in 2030 would result in an increased investment premium for compliant locomotives. Due to the nature of fleet replacement lifecycle and limited production capacity, NS could accrue substantial fines to continue operations and considerable losses associated with ROI-C for locomotives replaced before 25-year lifecycle. This would be likened to high annual penalties to railroads associated with CARB-like policies for additional operational territories.	Likely	Medium term (2031-2040)	Moderate-High – the risk is adequately managed through current mitigating factors; however, potential impacts that consider existing mitigating factors would still be major. Existing Mitigating Activities – • Fuel Efficiencies/Emissions project • Emissions reduction intensity target • Fleet modernizations	Operations – • Equipment functionality • Asset availability • Service planning • Purchasing Compliance – • Regulatory Change • Regulatory Compliance • Regulatory Reporting

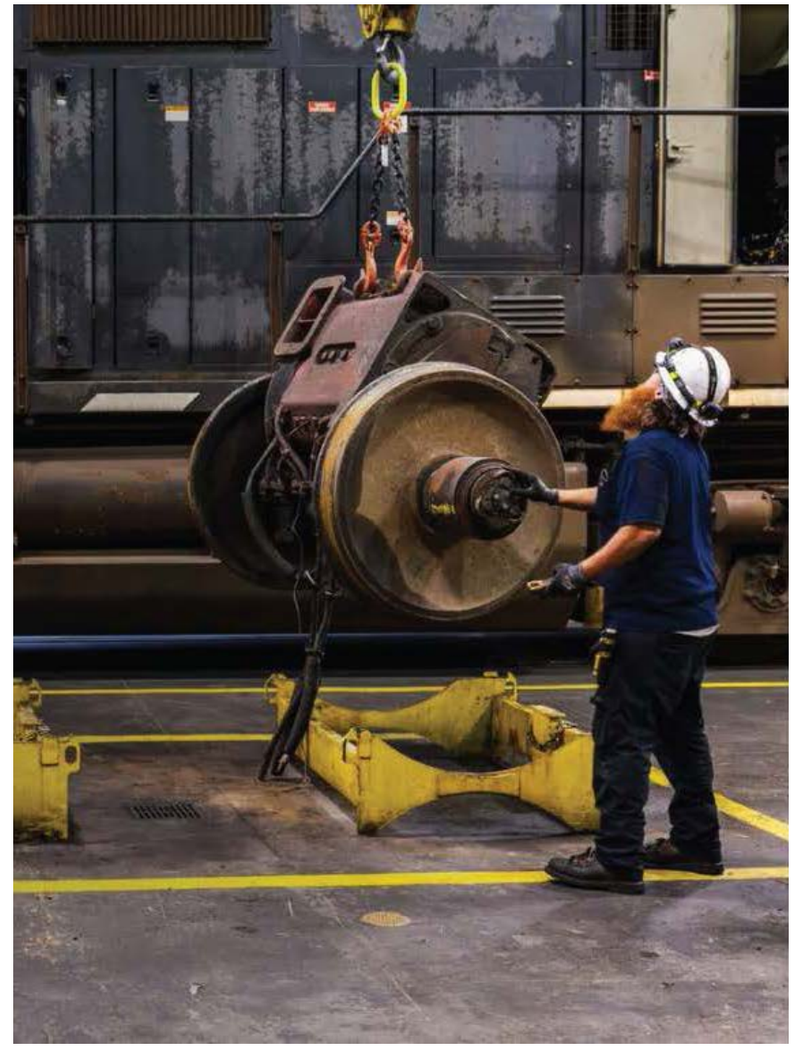
Legal Risks					
Context	Impact	Likelihood	Timescale	Vulnerability	ERM Mapping
Disorderly Delayed Transition assumes that policy uncertainty leads to a higher investment premium that lasts for two years, 2030-2031. Current regulations such as the proposed SEC climate disclosure rule will increase in rigor and transparency, resulting in higher disclosure risks. In parallel with Federal ESG Disclosure requirements, Raters & Rankers will require leaders to increase transparency and demonstrate leadership in annual reports. Likewise, insurance premiums will rise for carbon intensive sectors, including transportation.	Moderate – NS' currently ranks in the leadership category in various Raters & Rankers. However, increased disclosure requirements associated with a regulatory and market demand for ESG data may result in NS ranking lower due to emission intensity and sustainability goals.	Possible	Medium term (2031-2040)	Moderate – current SEC climate disclosure rule readiness is moderate due to maturity of climate-related governance at NS. Raters & Rankers will increase in leadership criteria, which will push NS out of leadership. Additionally, an increase in shareholder expectations will result in more dispute momentum that NS will have to react to unless proactive measures are implemented. Existing Mitigating Activities – • Proactively scrutinizing ESG reporting and regulatory developments – involving the legal team in reviews of ESG disclosure. • Incorporating external assurance and internal audit throughout the GHG inventory processes to improve transparency and efficacy. • Actively monitoring ESG-related financial impacts associated with brand reputation risk and potentially negative shareholder reactions.	Compliance – • Regulatory Change • Regulatory Compliance • Regulatory Reporting Strategic – • ESG Target and Progress • ESG Disclosure Requirements Financial – • Insurance

Market & Technology Risks					
Context	Impact	Likelihood	Timescale	Vulnerability	ERM Mapping
This scenario assumes a high variation in regional policy and delayed policy start. Disorderly Delayed Transition assumes that policy uncertainty leads to a higher investment premium that lasts for two years, 2030-2031. Assumption is that suppliers would be able to provide zero emission locomotives and there will be a significant increase in demand for low-carbon fuels. Slow to fast changes in demand for low emission technology are a higher risk in a delayed transition.	Major – given NS's current decarbonization efforts, customer and stakeholder expectations for decarbonization will be moderate to major depending on if transportation emissions are included in the customer's decarbonization efforts. High likelihood of imbalanced supply and demand for low/zero carbon alternatives and traditional fossil fuels as well as price volatility given rapid increase in demand and underinvestment in production.	Likely	Medium term (2031-2040)	Moderate-High – current management methods do not adequately address the readiness required to comply with a sudden shift in decarbonization policy. Additional risk management and monitoring needed relating to supplier integration within supply chain, particularly relating to energy and fuel. Existing Mitigating Activities – • Modernizing more than 100 locomotives each year since 2016 • Outfitting over 90% of road locomotives with energy-management technologies • Adding distributed power systems to more locomotives • Conserving more than 2.6 million gallons of fuel annually • Expanding use of low-carbon fuel blends to lower NS carbon intensity	Operational – • Asset Availability • Inventory Management • Purchasing Strategic – • ESG Target and Progress • Disruption Compliance – • Regulatory Change • Regulatory Compliance

As the results immediately above indicate, climate-related policies and regulations, legal disputes and / or violations, and market and technology risks could impact NS' operations, compliance, and strategy. The potential financial impacts and potential costs associated with these three risks include:

TABLE 6 | POTENTIAL CLIMATE-RELATED RISK FINANCIAL IMPACTS & COSTS

	Policy	Legal	Market
Potential Financial Impacts	Write-offs or early retirement of existing assets – Decreased asset value or asset useful life leading to write-offs, asset impairment, or early retirement of existing assets	Increased costs due to fines or fees associated with noncompliance	Capital investment for zero emission locomotives and charging infrastructure
	Passing fuel costs to customers and carbon price fluctuations could affect market competitiveness	Access to capital issues	Operational costs of energy, insurance, maintenance
	Compliance costs		Increased passthrough costs to customers from increase in operational expenditures
	Increased capital expenditures		
	Increased indirect (operating) costs	Higher investment premiums	
Potential Costs	Higher investment premiums	Higher investment premiums	Higher investment premiums
	Substantial fines	Higher disclosure risks	Higher risk due to a slow to fast change in demand for low-emission technology
	Losses associated with the return on investment for locomotives	Higher insurance premiums for carbon-intensive sectors, including transportation	
		Increased transparency and leadership expectations from Raters & Rankers	



More information on each transition risk in the NDC scenario can be found in the full CTP.

INSIGHTS

The insights gained from our climate scenario analysis have been instrumental in shaping our CTP in the following ways:

- **Risk Mitigation Strategies:** We identified transition risks that could impact our business and developed strategies to mitigate them. These strategies include diversifying our service offerings, investing in sustainable technologies, and closely monitoring regulatory developments.

- **Opportunity Assessment:** Beyond risk mitigation, the analysis highlighted potential opportunities in the transition to a low-carbon economy. These opportunities include expanding into low carbon fuel markets, improving energy efficiency, and developing innovative sustainable products and services.

- **Scenario-Based Decision-Making:** Our CTP now incorporates scenario-based decision-making. We have outlined specific actions driven by the outcomes of the climate scenarios, including Key Performance Indicators (KPIs) development mapped to our Risk Register and aligned with ERM governance.

- **Reporting and Disclosure:** We commit to transparently disclosing our climate transition efforts to stakeholders, aligning with global reporting standards such as the TCFD. This commitment enhances our accountability and builds trust among investors and customers.

Incorporating climate scenario analysis focused on transition risk into our CTP has been transformative. It has enabled us to proactively address climate-related challenges, seize emerging opportunities, and position ourselves with our industry leaders in sustainability. We anticipate that our commitment to an adaptive and resilient strategy will drive long-term value and contribute to a more sustainable and climate-resilient future for all.

More information on our process for identifying climate-related risks and opportunities can be found in the full CTP.

TARGETS

TARGETS

To demonstrate our commitment, we established a science-based target in 2021 to reduce our scope 1 and 2 greenhouse gas emissions intensity 42% by 2034 from a 2019 base year. As locomotive fuel accounts for over 90% of our scope 1 and 2 GHG emissions, engaging with suppliers and investing in our locomotive fleet have been a primary focus. Our implementation of innovative technologies, sustainable operating practices, and locomotive modernizations are key to our efforts to achieve our sustainability goals. As part of our 2015 strategic plan, we set a fuel-efficiency goal targeting an 8.6% improvement by 2020. We exceeded that goal, achieving a 9.4% improvement, resulting in savings of more than 130 million gallons of diesel fuel and avoiding approximately 1.3 million metric tons of emissions. We achieved an additional efficiency of 4.3% by 2022 and recently set an aggressive target to improve 13% by 2027.

NET ZERO

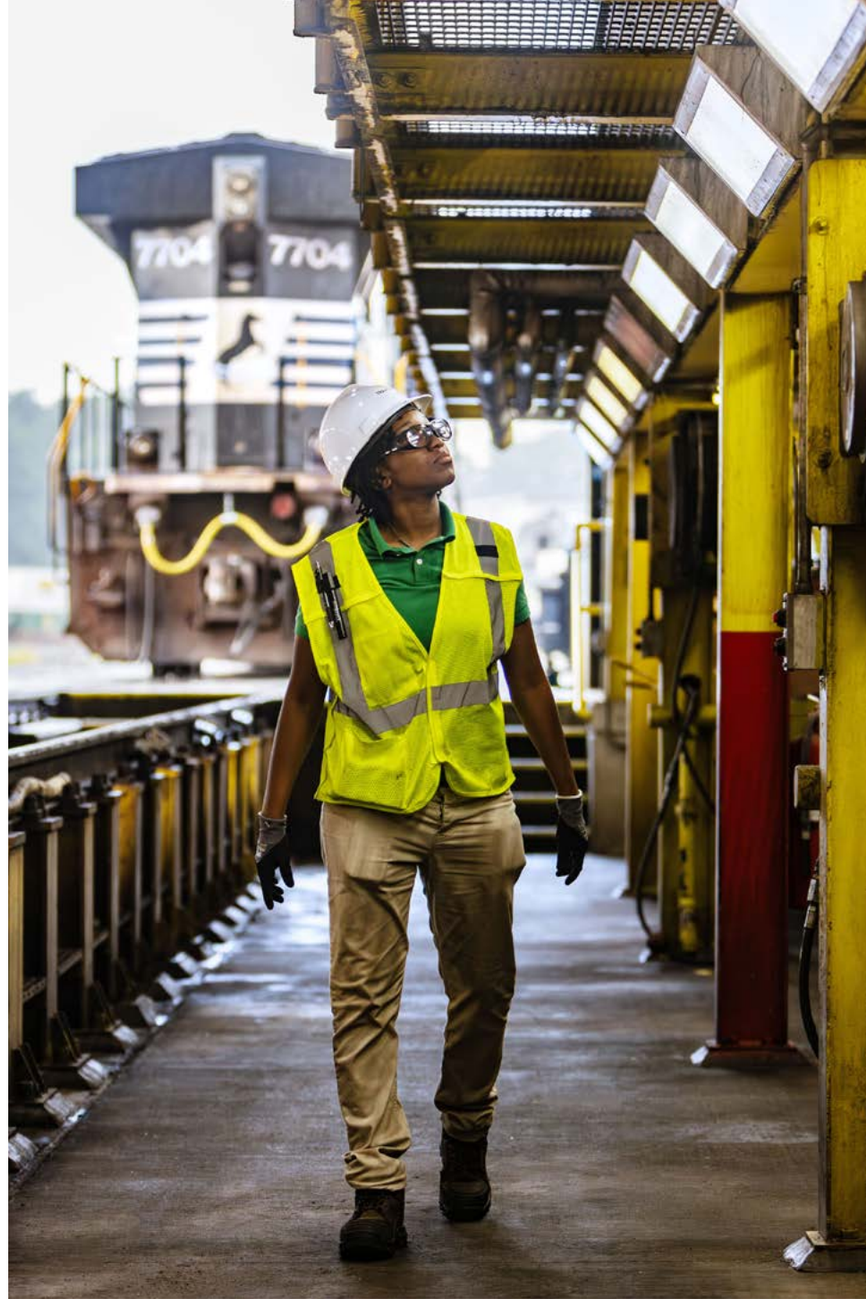
At NS, we prioritize integrity and honor our commitments while championing sustainability in our operations. We acknowledge the significance of net-zero targets in pursuing a sustainable future. However, our current decision not to commit to a net-zero target is rooted in a conscientious feasibility evaluation.

The road to achieving net-zero emissions demands significant technological advancements and industry-wide innovation. We are wholeheartedly dedicated to embracing advances that reduce emissions and actively participating in sustainability efforts. However, our stance remains that a concrete commitment to a net-zero target must align with the availability of mature tools and technologies to ensure a realistic path toward a net-zero future without overpromising or compromising feasibility.

NS has committed to a well-below 2°C Science-Based Target initiative (SBTi)-approved target, and we are actively assessing how to advance and align our Key Performance Indicators (KPIs) with a 1.5°C SBTi target. Our commitment to sustainability has a considerable influence on our strategy in operations, products, services, supply chain, value chain, and investments in research and development.

Climate-related risks and opportunities significantly influence our strategy. We are committed to proactively addressing these factors and leveraging opportunities to transition towards more sustainable and environmentally friendly practices. We understand the importance of transparency and responsibility in addressing climate change and are committed to continuous improvement and evaluating feasible advancements that align with tangible technological innovations and industry advancements.

We value ongoing dialogues with stakeholders and remain dedicated to continual progress. Our commitment to sustainability is a continuous journey, and we remain open to further discussions regarding our sustainability goals and the steps we are taking to achieve them.



STRATEGY

STRATEGY

We are committed to reaching our targets and plan to consistently track and assess our progress. At NS, our strategy has been influenced by climate-related risks and opportunities. More specifically, climate-related risks and opportunities have influenced our strategy in operations, products and services, the supply chain and value chain, and our investment in R&D.

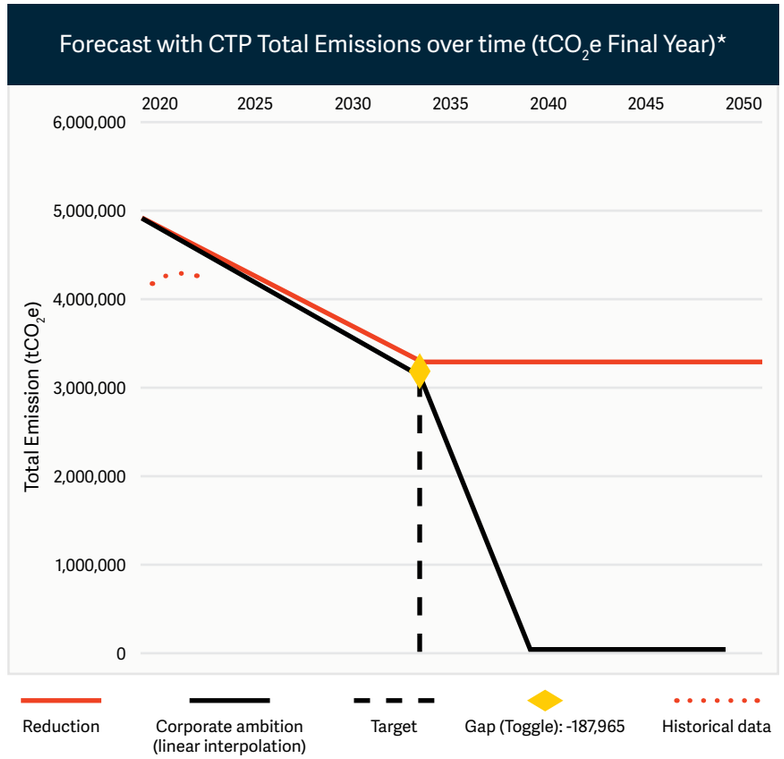
Our Transition Scenario Analysis established three significant KPIs as decarbonization levers to inform our transition strategy (Figure A). These KPIs are essential for us to achieve our science-based target reducing GHG emissions intensity 42% by 2034.

We modeled our three significant emissions reduction levers out to year 2034 (Figure B). These levers are predicted to get us very close to our 2034 target but with a slight gap. We feel that the other reduction levers listed in Tables 7 and 8 should close this gap.

FIGURE A | EMISSIONS REDUCTION LEVERS

Fuel Efficiency	Biofuels	Renewable Energy
Target: 13%	***Target: 20%***	***Target: 30%***
• 13% Improvement in locomotive fuel efficiency by 2027 relative to a 2023 baseline • Extended on a linear basis (3.25% per year) to 2034	• Piloting high bio-fuel blends and renewable diesel • 7% of biofuel blend in fuel use by 2027 • Extended to 20% biofuel blend in fuel use by 2034	• Increasing NS' renewable energy utility usage to 30% by 2030

FIGURE B | MODELING THE THREE PRIMARY LEVERS



As a leading railroad transportation company, NS has undergone substantial transformations in response to climate-related risks. The company has strategically integrated innovative approaches, partnerships, and operational changes to mitigate risks and harness opportunities associated with climate change.

Addressing Physical Risks and Infrastructure Investments
Identifying physical risks has prompted us to revolutionize our safety practices. The development and implementation of machine-vision-enabled inspection programs stands as a prime example. By deploying AI-powered technology in safety inspection processes, we can proactively identify defects, ensure timely repairs, and minimize operational disruptions. Mobility initiatives using internet-enabled devices have further streamlined field operations, enhancing safety and efficiency.

Impact of Transition Risks on Supply Chain and Innovation
In response to transition risks, we are committed to supply chain diversification and product innovation. Through circularity efforts, such as using 100% recycled wheelsets and high-strength steel mill gondolas, we have increased cargo capacity while reducing environmental impact. Notably, the extensive recycling of rail and retired IT assets has significantly contributed to waste reduction and resource conservation.

Strategies to Mitigate Climate-Related Risks
NS actively mitigates climate-related risks through several key strategies. The company offsets a portion of its electricity consumption with renewable energy sources and Green-e certificate agreements. The adoption of green building practices, as seen in our LEED Gold-certified corporate headquarters, underscores this commitment to sustainable operations. Moreover, we have incorporated climate risks into our ERM framework, including positions on risk working groups, and created specialized roles focusing on fuel efficiency and sustainability.

Partnerships and Collaborations for Addressing Climate Risks
NS' collaborations reflect our commitment to sustainability and innovation. Partnerships such as the Scout Motors Electric Vehicle Plant in South Carolina, the Biofuel Initiative in Louisiana, and the Fairwinds Landing project in Virginia showcase our company's commitment to supporting green transitions in various industries.

Leveraging Climate-Related Opportunities for Competitive Advantage
We actively leverage climate-related opportunities to maintain our competitive edge. We invest in sustainable technologies, products, and services such as a carbon calculator, customer rail emission reports, and sustainability partner awards. Market expansion strategies are aligned with climate-conscious consumers through initiatives like the automotive supplier survey, demonstrating a commitment to meet evolving consumer preferences.

Commitment to Continuous Improvement
NS remains committed to continuous improvement in managing climate risks and opportunities. We prioritize innovation, sustainability, and customer-centric approaches, ensuring an ongoing effort to adapt to the evolving landscape of climate change.

In conclusion, NS' initiatives demonstrate our proactive approach to climate risk management, sustainability, and innovative partnerships, positioning the company as a leader in leveraging climate-related opportunities while mitigating associated risks.

TABLE 7 | ACTION PLAN – EMISSIONS REDUCTION INITIATIVES

Project Name	Emissions Impact	Time Frame	Responsible Business Unit	KPIs / SMART Goal
Scope 1 – Direct Emissions from Combustion				
Locomotive Fuel Efficiency				
DC to AC Locomotive Modernizations	High impact	Short-term (< 5 years)	Network Operations	80% of road fleet converted from DC to AC traction by 2027; continue modernizing over 100 locomotives per year with over 1,000 units expected by the end of 2025; these recent overhauls can improve fuel efficiency up to 25% per unit
Fuel Efficiency	High impact	Short-term (< 5 years)	Network Operations & Accounting	13% improvement in locomotive fuel efficiency by 2027 relative to a 2023 baseline
Low Carbon Fuels				
Increase Blend of Low-Carbon Fuels	High impact	Short-term (< 5 years)	Purchasing	7% of low-carbon fuels consumed by 2027 and to 20% by 2034
Other Equipment				
Intermodal Crane Replacements	Low impact	Short-term (< 5 years)	Assets & Optimization	55 overhead diesel cranes replaced by 2034 with hybrid and/or fully electric units
Vehicle Fleet Telematics	Low impact	Short-term (< 5 years)	Engineering & Vehicle Fleet	Increase average vehicle MPGs 10% by 2027 relative to a 2023 baseline
Scope 2 – Purchased Electricity Emissions				
Solar & Renewables				
30 X 30 Renewable Energy Goal	Low impact	Short-term (< 5 years)	Facility Services	Increase and/or offset renewable energy utility usage to 30% by 2030

NS is making progress on locomotive fuel efficiency through locomotive modernizations, upgrades to Tier 3 and 4 yard and local locomotives through Public-Private Partnerships (P3), network optimization, rail and wheel wear reduction, distributed power, increasing rail cargo capacity, rail equipment aerodynamic improvements, ATO development, locomotive idling monitoring, and energy management initiatives.

In addition to fuel efficiency, we are pursuing initiatives in low-carbon fuels through fuel supplier engagement, OEM/local supplier engagement, collaboration with AAR and other railroads, sector partnerships/ engagement, government legislation and advocacy policy, and tracking biofuel/low-carbon fuel consumption.

Operational equipment contributes to our scope 1 emissions, and we are also making progress on reducing scope 2 emissions by working on initiatives to address emission sources from the built environment. Additional scope 1 and 2 initiatives include:

TABLE 8 | EMISSION REDUCITON LEVERS

Scope 1 Emissions Reduction Initiatives	Scope 2 Emissions Reduction Initiatives
Intermodal yard of the future: increase capacity and efficiencies	Submetering
Opportunities to replace other intermodal lift equipment	Third-party energy audits
Stop gate elimination	Measure efficiency of current buildings
Appointment system	HVAC system upgrades
Telematics to reduce idling and monitor efficiency of vehicles	Lighting system upgrades – LED lighting
Stack optimization	Dedicated AFE funding
OPCT – work order management	Dedicated regional managers for building maintenance
Low emission lift trucks	Remedy software upgrades
Electric hostlers	Shadow carbon price for energy projects
EV trucks for first mile/last mile	Incorporate solar in new buildings or when roof systems are upgraded
Status on vehicle fuel efficiency projects	Design standards for new buildings
Deployment of electric vehicles	Consolidate buildings; retire older structures
Expanded EV charging stations for employees	Potential external – electricity consumption in facilities
Driving behavior scores	Purchase Renewable Energy Credits
Digital reporting (ELD, compliance)	Power purchase agreements & VPPA agreements
Reuse/re-harvest vehicle fleet components	Solar projects
Fleet replacement to reduce vehicle age	Green-e certificates

OPPORTUNITIES

OPPORTUNITIES

Climate opportunities are the actions taken and efforts made to mitigate and adapt to climate change. Opportunities can include resource efficiencies and cost savings, the adoption of low-emission energy sources, the development of new products and services, access to new markets, and building resilience along the supply chain.[4] This section aims to provide additional insight into the prioritized opportunities we identified and outline our process for maximizing climate-related opportunities.

[4] https://www.epa.gov/climateleadership/climate-risks-and-opportunities-defined

TABLE 9 | SCENARIO ANALYSIS FINDINGS FOR OPPORTUNITIES

Delayed Transition NGFS Scenario – Explanation of Results & Potential Impacts					
Energy Source Opportunity					
Context	**Impact**	**Likelihood**	**Timescale**	**Readiness**	**ERM Mapping**
This scenario assumes a high variation in regional policy and delayed policy start. Disorderly Delayed Transition assumes that policy uncertainty leads to a higher investment premium that lasts for two years, 2030-2031. Low to medium use of carbon dioxide removal (CDR) technologies. Delayed carbon price with a rapid increase in 2031 as a policy response.	Prosperous – significant potential cost avoidance if NS meets its emission reduction targets due to potential high carbon price projections under this scenario estimated at $20.15 million peaking at $1,338 million in 2050.	Likely	Medium term (2031-2040)	Moderate-High – the cost avoidance is a high-level estimation assuming a 1% YOY organic growth rate. NS target is intensity-based, so further evaluation of cost avoidance and emission reduction measures would be needed to evaluate this in more detail. Regardless, NS is strategically positioned to increase market-share due to the nature of locomotive based transportation in a decarbonizing economy and its decarbonization target with assumed 2.4% YOY reduction until 2034. Existing Mitigating Activities – • Investing in carbon offset projects such as the Trees to Trains program, which would be a market differentiator in both scenarios • SBT of a 42% reduction in Scope 1 and 2 GHG emissions intensity by 2034 • Modernizing >100 locomotives each year since 2015 • Outfitting locomotives with energy-management technologies • Adding distributed power systems to locomotives • Identifying and eliminating hours of idling and conserving fuel • Using biofuel and renewable blends • Incentivizing companies to relocate along their lines with a site selection group and external stakeholder education	Strategic – • ESG Target and Progress • Innovation • Strategic Initiatives • External Industry Operational – • Service Planning • Inventory Management

Customer Market Opportunities					
Context	Impact	Likelihood	Timescale	Readiness	ERM Mapping
This scenario assumes a high variation in regional policy and delayed policy start. Disorderly Delayed Transition assumes that policy uncertainty leads to a higher investment premium that lasts for two years, 2030-2031.	Moderate – the sudden increase in decarbonization needs in 2030-2031 will result in demand increases for NS services as well as an increase in availability for P3 (public-private partnership) projects. Rail transport is three to seven times more efficient than trucking, resulting in a dramatic shift in transportation needs to the rail sector. However, investment in zero emission technology up to 2030 will be essential to replace oil and gas dependency in the current fleet and avoid surge pricing of zero emission technology.	Possible	Medium term (2031-2040)	Moderate – NS is a leader in P3 with a committed team ensuring project and financial success for all parties involved. NS is well positioned due to its strong P3 project management team and stakeholder engagement. However, a delayed transition would require NS to invest in zero emission technology before 2030. Existing Mitigating Activities – • NS has a history of P3 success • NS Carbon Calculator • Carbon credits	Operational – • Service Planning • Inventory Management Strategic – • Disruption • External Competitor

Energy source and customer market opportunities exist for our company and would impact our ESG target and progress, service resilience, and disruptive technology strategy. The potential financial impacts and benefits associated with these two opportunities include the following:

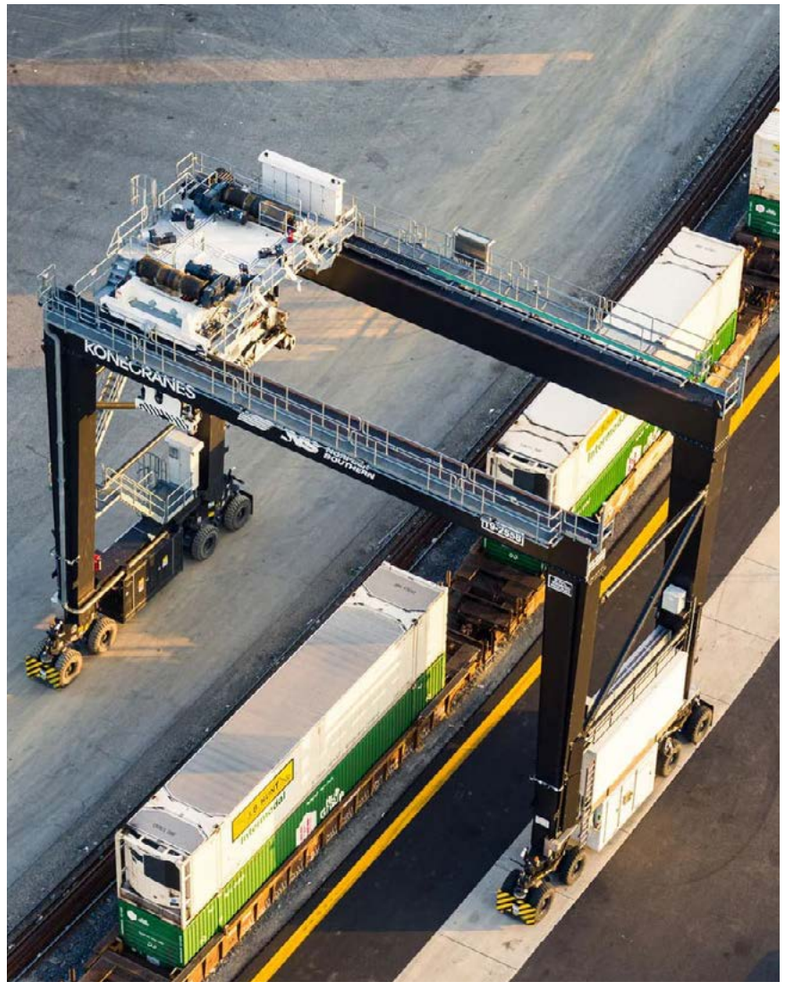
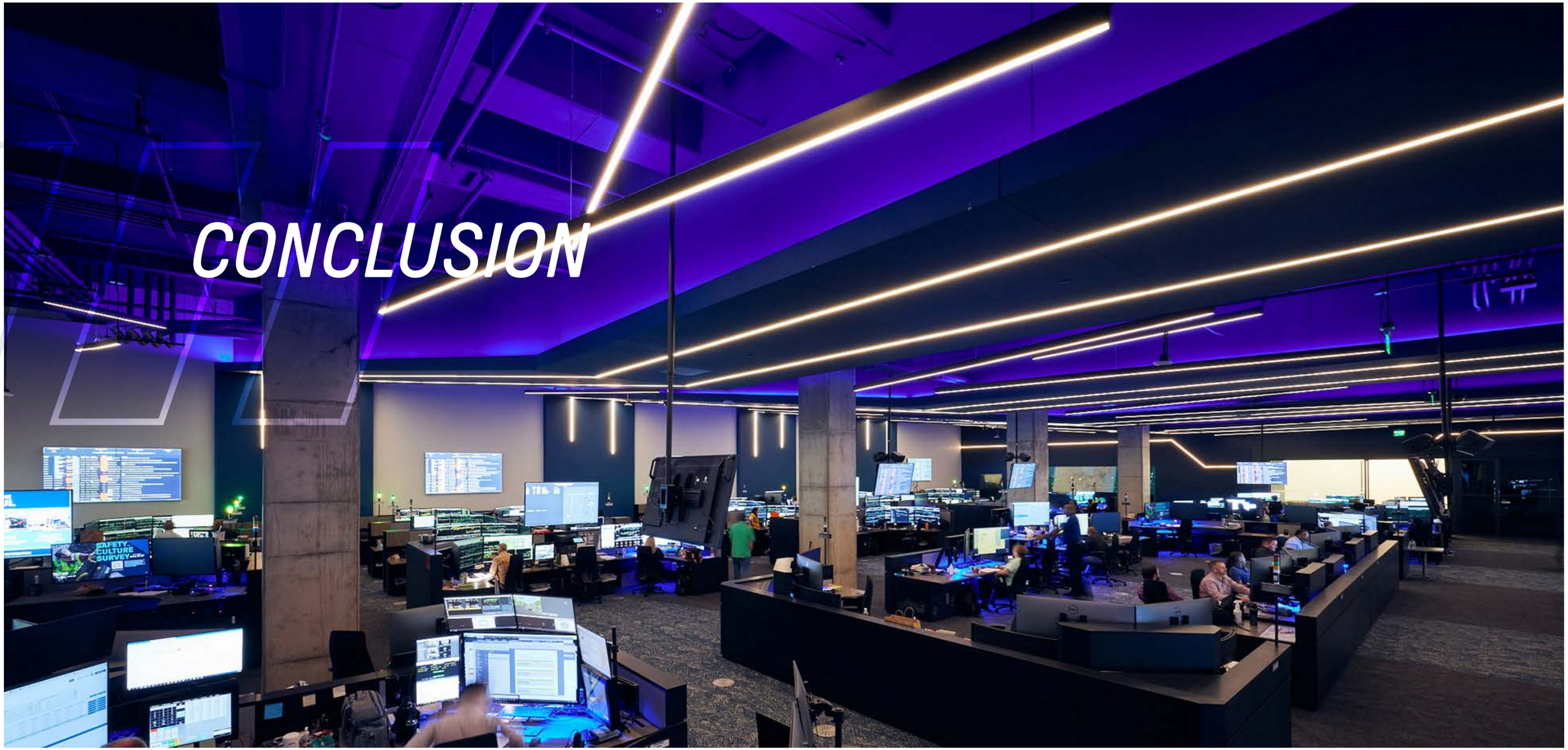


TABLE 10 | POTENTIAL CLIMATE-RELATED RISK FINANCIAL IMPACTS & BENEFITS

Energy Source	Customer Market
Reduced operating costs	Increased revenue through demand for lower emissions products and services
Reduced exposure to fossil fuel price fluctuations	Competitive position to reflect shifting consumer preferences
Reduced exposure to GHG emissions; therefore, less sensitivity to changes in the cost of carbon	Increased diversification of financial assets (e.g., expanded infrastructure)
Increased access to capital from investors favoring low-emission producers	Increased multi-stakeholder and P3 engagements marketing and market share, leading to positive reputational impacts
Expansion of low- and zero-emission services	Expansion of products and incentives for clients and customers to transition to the low carbon economy
Asset diversification (e.g., purchase of new technologies and assets fueled by renewables)	Expansion of sustainable and zero-emission value chain strategy, including presenting options on technology investments, climate policy engagement, and sustainable business models

CONCLUSION



CONCLUSION

The NS Board of Directors, Chair, President and CEO, and other executive management members are paying close attention to, and evaluating and preparing for, future climate-related risks and opportunities. We are confident in our current effort to assess, manage, and mitigate these risks.

We are committed to creating a more sustainable world, a brighter future for our employees and the communities we serve, meeting our shareholder expectations, and helping our customers achieve their goals. To achieve these outcomes, NS is investing in various low-carbon innovations and technologies and working with our suppliers and customers to help bring downstream and upstream emission reduction. Through a combination of electrification, energy-efficient technologies, and renewable energy sources, we aim to drastically reduce our carbon footprint and contribute to the global effort to combat climate change. Our CTP not only aligns with our corporate responsibility but also ensures the longevity and resilience of our operations in a rapidly changing world. As we embark on this journey, we recognize the importance of collaboration, innovation, and continuous improvement. By implementing this CTP, we not only pave the way for a greener and cleaner rail industry but also inspire positive change within our organization and beyond. This CTP is part of our concrete action plan to achieve this goal. Finally, we are committed to reviewing and updating this transition plan every 2-5 years for continuous relevancy and efficacy. Any material changes to our decarbonization targets would result in an updated transition plan.

We are proud of the progress and achievement we have made thus far. However, we continue to seek and launch low-carbon initiatives that should enable us to move closer to our goals. Hence, we plan to take proactive measures to continue to help our customers reduce their transportation emissions by up to 90% through rail. Over the next seven years, we are focusing on expanding our services to enhance our ability to meet an increase in customer demands as we transition to a low-carbon economy.

NS will continue to monitor the evolving policy and regulatory landscape as we prepare to manage the impacts of those changes. We have identified potential financial and legal impacts related to compliance with impending climate-related regulations, and thus, we will focus on implementing strategies to address and mitigate these risks. We value our integrity and are dedicated to honoring our commitments.

Categories	Addressed by NS	Credible Transition Plan Elements	ISSB	U.S. SEC	EFRAG (ESRS)/ CSRD	UKTPT	TCFD	ACT	GFANZ	CBI	TPI
Governance	☑	Board-level oversight									
	☑	Board expertise on climate-related issues									
	☑	Executive management accountability and feedback mechanisms									
	☑	Executive incentives linked to climate performance indicators									
Scenario Analysis	☑	Details of scenario analysis									
Risks & Opportunities	☑	Process for identifying climate-related risks and opportunities									
	☑	Climate-related risks – risk potential financial impact and response strategy									
	☑	Climate-related opportunities – opportunities, potential financial impact and response strategy									
		Existence of a 1.5C world aligned transition plan with business strategy and shareholder feedback									

Strategy to achieve net zero	☑	Link between identified (and potential) climate-related risks, opportunities and company strategy	
Financial Planning		Financial planning details associated with a 1.5C world	
	☑	Low-carbon products or services	
Targets	☑	Emission reduction targets – absolute and intensity	
		Net-zero targets	
	☑	Other climate-related targets	
Scope 1-3 accounting with verification	☑	Comprehensive and third-party verified emission accounting	
Policy Engagement	☑	Alignment of public policy engagement with climate ambition and strategy	
Value chain engagement	☑	Low-carbon initiatives – direct operations	
	☑	Value chain engagement	

*Please note that NS is pursuing completion of each of the credible transition plan elements above and this CTP will be updated every 2-5 years to reflect progress.

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