

Welcome to your CDP Climate Change Questionnaire 2019

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Norfolk Southern Corporation ("Norfolk Southern" or "NS"), based in Norfolk, Virginia, U.S.A., controls a major freight railroad, Norfolk Southern Railway Company (collectively with its railroad subsidiaries, "NSR"). NSR is a common carrier by rail engaged in the transportation of raw materials, intermediate products and finished goods. NSR operates primarily in the eastern half of the U.S.A. and, via interchange with other rail carriers, provides service to and from the rest of the U.S.A.

As of December 31, 2018, NSR operated approximately 19,500 route miles of track in 22 states and the District of Columbia. The system's lines reach many individual industries, electric generating facilities, mines, distribution centers, trans-load facilities and other businesses located in smaller communities in its service area. NS also transports overseas freight through several Atlantic and Gulf Coast ports, provides comprehensive logistics services and offers the most extensive inter-modal network in the eastern half of the U.S.A.

The common stock of Norfolk Southern is listed on the New York Stock Exchange ("NYSE") under the symbol NSC.

Norfolk Southern's operations are subject to federal and state environmental laws and regulations concerning, among other things, emissions to the air; discharges to waterways or ground water supplies; handling, storage, transportation, and disposal of water and other materials; and the clean-up of hazardous material or petroleum releases. Compliance with such environmental laws is a principal objective of Norfolk Southern.

Norfolk Southern also supports and encourages voluntary efforts to conduct its business in accordance with sustainability practices that will help promote corporate success and the health of the environment. The 2018 Social Responsibility report includes data from calendar year 2017 and is available to the public at www.norfolksouthern.com. The 2019 Social Responsibility report will be available online in fall of 2019.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

Start date	End date	Indicate if you are providing emissions data for past reporting years
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Row 1	January 1, 2018	December 31, 2018	No
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C0.3

(C0.3) Select the countries/regions for which you will be supplying data.

United States of America

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

USD

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.

Financial control

C-T00.7/C-TS0.7

(C-T00.7/C-TS0.7) For which transport modes will you be providing data?

Rail

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board-level committee	NS identified core sustainability & climate issues through interviews with senior management; an Enterprise Risk Management (ERM) process; goals in NS's strategic plan developed by the CEO & senior managers, with input from our Board

	<p>of Directors; discussions with investors & customers; and feedback from community stakeholders, including elected officials.</p> <p>NS, through its ERM program and disclosure procedures, reviews and monitors sustainability and climate change risks. Our Board’s Finance & Risk Management Committee receives updates on these risks, and our management works with employees to identify, assess, and mitigate these risks and any potential emerging risks associated with sustainability and climate change.</p> <p>In 2018, the Board amended its Governance & Nominating Committee’s charter to include oversight of NS policy relating to sustainability issues, emerging sustainability issues, annual & long-term sustainability goals, and NS’s Annual Social Responsibility Report.</p>
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C1.1b

(C1.1b) Provide further details on the board’s oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – some meetings	<p>Reviewing and guiding strategy</p> <p>Reviewing and guiding major plans of action</p> <p>Reviewing and guiding risk management policies</p>	<p>Effective with the November 2018 charter amendment, sustainability is now discussed at at least two Governance and Nominating Committee meetings every year. Climate and sustainability related issues may also be scheduled topics at some additional meeting of the Board of Directors. The board provides climate-related oversight through reviewing and guiding risk management policies, reviewing and guiding strategy, and reviewing and guiding major plans of action, as it relates to climate change, energy, and environmental policy. Risks are evaluated through a thorough process that considers magnitude of potential risks as well as likelihood of occurrence. This risk evaluation process helps to inform NS risk management policies. The board of directors provides input on climate-related issues identified through interviews with senior management, the formal Enterprise Risk Management process, goals outlined in the company’s strategic plan developed by the CEO and senior managers, discussions with investors and customers, and feedback from a range of community stakeholders.</p>

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Risk committee	Both assessing and managing climate-related risks and opportunities	Less frequently than annually

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

Four committees oversee climate risk and reporting for Norfolk Southern. These four committees include management's Enterprise Risk Council, management's Environmental Policy Council, the Governance and Nominating Committee of the board of directors, and the Finance and Risk Management Committee of the board of directors. Additionally, as appropriate, the full board of directors will engage on risks deemed sufficiently significant by the Finance and Risk Management Committee.

Management's Enterprise Risk Council (ERC) oversees the company's Enterprise Risk Management Program (ERMP). The Council comprises executive leadership and the chief risk officer, who coordinate with business leaders across Norfolk Southern to assess and mitigate enterprise risks. Through this council, management provides regular updates on risk management efforts to the Finance and Risk Management Committee of the Board of Directors. To do so, the ERC identifies and prioritizes, from a company-wide perspective, the risks and opportunities that impact the enterprise. The Council interacts with business unit leaders across the company, who are best positioned to assess and manage those risks and opportunities. At an asset level, the same business unit leaders who are integral to the ERMP are tasked by their department heads to address risks and opportunities as they impact their specific department, geography, and assets. Business unit leaders manage asset risks and opportunities within their business units; their analysis of asset-level risks and opportunities feeds into their discussions with the Council about company-level risks.

The Enterprise Risk Council reports to the Finance and Risk Management Committee of the corporation's board of directors. The Finance and Risk Management committee has been chartered to oversee the management of all significant risks faced by the corporation. At its discretion, it advises on the handling of corporate risks or escalates them to be presented to, understood by, and advised by the full board of directors.

At a company level, our sustainability program is overseen by the Environmental Policy Council, a committee comprising senior management, department heads, and the corporate sustainability officer. Among other executives, our Chief Sustainability Officer is a member of the Council and provides reports regarding the sustainability program at each meeting. The council chair is appointed by and reports directly to the CEO, who chairs the company's board of directors. The council reviews best practices in corporate sustainability and examines what industry peers are doing to reduce business impacts on the environment. The council also ensures that all operations departments are aware of and contributing to the company's sustainability efforts.

Our Environmental Policy Council oversees and monitors those environmental policies and practices that are deemed necessary for us to facilitate compliance with all applicable environmental laws and regulations, giving due regard to both existing and prospective legal requirements, as well as oversee our corporate sustainability program.

Management also provides regular updates on sustainability initiatives to the Governance and Nominating Committee of the Board of Directors. This board committee ensures that the sustainability appropriately reflects the expectations of Norfolk Southern's shareholders, and reviews communications and reports to external stakeholders to ensure an appropriate level of detail and clarity.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

Yes

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Who is entitled to benefit from these incentives?

Corporate executive team

Types of incentives

Monetary reward

Activity incentivized

Efficiency target

Comment

Corporate executive team - NS's annual cash incentive is designed to compensate executives based on achievement of annual corporate performance metrics: operating income, weighted at 60%, and operating ratio, weighted at 40%. Both operating income and operating ratio are calculated using operating expenses, and fuel consumption

represented nearly \$1.1 Billion (or 11.6%) of 2018 expenses. Improvements in fuel efficiency result in improvements to its operating income and operating ratio. Improved fuel efficiency also furthers NS's 2015 goal to reduce locomotive fuel consumption by \$80 million by 2020, and NS's 2010 goal to reduce carbon emissions by 10% per revenue-ton-mile. Since locomotive fuel drives over 90% of Norfolk Southern's Scope 1 and Scope 2 emissions, NS' annual cash incentive assures that senior management focuses on reducing emissions.

Who is entitled to benefit from these incentives?

Management group

Types of incentives

Monetary reward

Activity incentivized

Other, please specify

Annual Corporate Performance Metrics

Comment

Corporate executive team and Management Group - NS's long-term incentive award is designed to promote enhancement of shareholder value and efficient utilization of corporate assets, based on: 50% after-tax return on average invested capital; and 50% total shareholder return. After-tax return on average invested capital is based upon NS's net operating profit after-tax, and so is dependent upon operating expenses, of which fuel is a significant driver. When NS improves fuel efficiency, it should result in improvements to its after-tax return on average invested capital. Improved fuel efficiency also furthers NS's 2015 goal to reduce locomotive fuel consumption by \$80 million by 2020, and NS's 2010 goal to reduce carbon emissions by 10% per revenue-ton-mile.

Who is entitled to benefit from these incentives?

All employees

Types of incentives

Monetary reward

Activity incentivized

Efficiency target

Comment

NS's annual cash incentive is designed to compensate all non-agreement (non-union) and a significant portion of our agreement (union) workforce based on achievement of annual corporate performance metrics: operating income, weighted at 60%, and operating ratio, weighted at 40%. Both operating income and operating ratio are calculated using operating expenses, and fuel consumption represented nearly \$1.1 Billion (or 11.6%) of 2018 expenses. Improvements in fuel efficiency result in improvements to its operating income and operating ratio. Improved fuel efficiency also furthers NS's 2015 goal to reduce locomotive fuel consumption by \$80 million by 2020, and NS's 2010 goal to reduce carbon emissions by 10% per revenue-ton-mile. Since locomotive fuel drives over 90% of Norfolk Southern's Scope 1 and Scope 2 emissions, NS' annual cash incentive assures that all employees have an incentive to reduce emissions.

C2. Risks and opportunities

C2.1

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

	From (years)	To (years)	Comment
Short-term	0	6	For Norfolk Southern, the short-term planning horizon encompasses the period in which tactical and operational decisions are made based on the assets already in place.
Medium-term	7	50	Norfolk Southern is a capital-intensive company. Our planning horizons are, in large part, determined by the acquisition and disposition cycles of our key assets. Most operational assets have a lifecycle that ranges from 6 years (electronic components) to 50 years (statutory limit of railcars in interline service). NS' medium-term planning horizon encompasses those years in which the majority of its operational assets, including locomotives, rail, railcars, radios, and operational electronics, will be retired and replaced.
Long-term	51	100	While the majority of Norfolk Southern assets are procured and retired within a 7-to-50 year, medium term horizon, many decisions span a significantly longer period of time. For instance, in 2016 Norfolk Southern completed the retirement and replacement of a railroad bridge in Letchworth State Park in Portageville, NY. The original bridge was 147 years old, and is replaced by a bridge that NS hopes will provide productive service for another 150 years. Numerous other operating properties have been in service for Norfolk Southern and its predecessors for 100 years or more. Hence, NS' long-term planning horizon extends 100 years or more.

C2.2

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

C2.2a

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Annually	>6 years	Norfolk Southern's Enterprise Risk Management effort is a management-led, multi-disciplinary team that is charged with canvassing all corporate functions and environmental factors to identify potential and actual risks to the company's financial and operational success. Identified potential risks are vetted by internal teams, prioritized, and gauged against the mitigating effects of existing controls and countermeasures. The Enterprise Risk Management leadership reports to the board's Finance and Risk Management Committee as a scheduled part of the agenda no less than yearly, highlighting and discussing the inherent and residual risks identified. NS identifies and assesses climate-related risks more frequently on a project by project basis.

C2.2b

(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

Norfolk Southern's processes for identifying climate-related risks is embedded in its processes for identifying risks of any type -- commercial or operational, current or future, tangible or related to reputation. Various risks and challenges are inherent to operation of rail freight transportation companies, including Norfolk Southern. A description of some of these risks follows. The company's most recent annual report on Form 10-K and subsequent quarterly reports on Form 10-Q provide more complete information about these and other risk factors, including risks posed by government regulation and legislation as well as risks associated with the transportation of hazardous materials. We have practices and policies to manage and mitigate the effects of all these potential risks.

For Norfolk Southern, the short-term planning horizon encompasses the period in which tactical and operational decisions are made based on the assets already in place.

Norfolk Southern is a capital-intensive company. Our planning horizons are, in large part, determined by the acquisition and disposition cycles of our key assets. Most operational assets have a life cycle that ranges from 6 years (electronic components) to 50 years (statutory limit of rail cars in interline service). NS' medium-term planning horizon encompasses those years in which the majority of its operational assets, including locomotives, rail, rail cars, radios, and operational electronics, will be retired and replaced.

While the majority of Norfolk Southern assets are procured and retired within a 7-to-50 year, medium term horizon, many decisions span a significantly longer period of time. For instance, in 2016 Norfolk Southern completed the retirement and replacement of a railroad bridge in Letchworth State Park in Portageville, NY. The original bridge was 147 years old, and is replaced by a bridge that NS hopes will provide productive service for another 150 years. Numerous other operating properties have been in service for Norfolk Southern and its predecessors for 100 years or more. Hence, NS' long-term planning horizon extends 100 years or more.

Norfolk Southern's Enterprise Risk Management effort is a management-led, multi-disciplinary team that is charged with canvassing all corporate functions and environmental factors to identify potential and actual risks to the company's financial and operational success. Identified potential risks are vetted by internal teams, prioritized, and gauged against the mitigating effects of existing controls and countermeasures. The Enterprise Risk Management leadership reports to the board's Finance and Risk Management Committee as a scheduled part of the agenda no less than yearly, highlighting and discussing the inherent and residual risks identified. NS identifies and assesses climate-related risks more frequently on a project by project basis.

Norfolk Southern's Enterprise Risk Management processes considers the inherent dangers in each risk as well as the palliative effects of our mitigating actions. The resultant residual risk is evaluated and prioritized based on its likelihood of occurrence and the magnitude of its impact should it occur. Items that rank highly on NS' priority list are escalated and evaluated again. If NS determines that additional mitigation actions could be productive, the risk is assigned to an internal entity that can best develop the appropriate mitigation. High priority substantive financial risks are presented to senior management and the board for discussion, advice, and monitoring.

For example, NS considers substantive financial risks such as service delays and damage to infrastructure.

C2.2c

(C2.2c) Which of the following risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	<p>In conjunction with Norfolk Southern's Enterprise Risk Management processes, Norfolk Southern considers risks associated with current regulations through our Government Relations Department. The Department has an in-depth understanding of the current regulatory landscape and is therefore well-positioned to assess and manage risks as they relate to current regulations.</p> <p>For example, NS considers the risks associated with current regulations including U.S carbon markets and taxes, locomotive emission standards, and renewable energy legislation.</p>
Emerging regulation	Relevant, always included	<p>Norfolk Southern reviews and monitors potential financial risks to NS as a result of emerging Federal and State regulations, as well as emerging carbon pricing mechanisms and include this information in our risk management process. These risks have the potential to impact NS costs for fuel and the commodity mix that we transport. Based on this information, NS assesses its current and future risk risks and associated mitigation options as a result of emerging regulations.</p> <p>In conjunction with Norfolk Southern's Enterprise Risk Management processes, Norfolk Southern considers risks associated with emerging regulations through our Government Relations Department. The Department has an in-depth understanding of the regulatory landscape, including emerging regulations, and is therefore well-positioned to assess and manage risks as they relate to emerging regulations.</p>
Technology	Relevant, always included	<p>Technology that NS relies on for its operations are subject to climate-related risks. For example, increasingly, locomotive technologies are subject to air emissions requirements. If one of our suppliers is not able to meet locomotive air emissions requirements, this could impact our operating costs and the ability of NS to operate the necessary number of locomotives to meet our business demand. NS, through its Government Relations Department, assesses risks due to current and emerging regulations that may impact our suppliers. NS advocates for balanced regulation that encourages railroad capital investment, job creation, and low costs for shippers.</p>
Legal	Relevant, sometimes included	<p>Norfolk Southern's legal services section handles research, advice, supervision, and representation for transactions affecting NS' corporate real estate holdings, industrial development, telecommunications, facilities, and operations management.</p>

Market	Relevant, always included	<p>Norfolk Southern's Enterprise Risk Management processes and team structure are defined to detect, monitor, assess, escalate, and mitigate risks in all aspects of Norfolk Southern's business whether they emanate from regulatory, technology, legal, market, reputational, or physical direct effects – or the indirect effects emanating from our upstream or downstream partners. The process considers the inherent dangers in each risk as well as the palliative effects of our mitigating actions. The resultant residual risk is evaluated and prioritized based on its likelihood of occurrence and the magnitude of its impact should it occur. Items that rank highly on NS' priority list are escalated and evaluated again. If NS determines that additional mitigation actions could be productive, the risk is assigned to an internal entity that can best develop the appropriate mitigation. High priority risks are presented to senior management and the board for discussion, advice, and monitoring.</p> <p>For example, in our risk assessment process, NS considers climate-related risks in the markets where we operate. Certain commodities that NS transports could be particularly at risk from severe weather events, as an example. As a result, this could adversely affect our business operations. Based on this information, NS assesses its current and future risks and associated mitigation options as a result of potential changes in the market.</p>
Reputation	Relevant, sometimes included	<p>Norfolk Southern's Enterprise Risk Management processes and team structure are defined to detect, monitor, assess, escalate, and mitigate risks in all aspects of Norfolk Southern's business whether they emanate from regulatory, technology, legal, market, reputational, or physical direct effects – or the indirect effects emanating from our upstream or downstream partners. The process considers the inherent dangers in each risk as well as the palliative effects of our mitigating actions. The resultant residual risk is evaluated and prioritized based on its likelihood of occurrence and the magnitude of its impact should it occur. Items that rank highly on NS' priority list are escalated and evaluated again. If NS determines that additional mitigation actions could be productive, the risk is assigned to an internal entity that can best develop the appropriate mitigation. High priority risks are presented to senior management and the board for discussion, advice, and monitoring.</p>
Acute physical	Relevant, sometimes included	<p>Norfolk Southern's Enterprise Risk Management processes and team structure are defined to detect, monitor, assess, escalate, and mitigate risks in all aspects of Norfolk Southern's business whether they emanate from regulatory, technology, legal, market, reputational, or physical direct effects – or the indirect effects emanating from our upstream or downstream partners. The process considers the</p>

		<p>inherent dangers in each risk as well as the palliative effects of our mitigating actions. The resultant residual risk is evaluated and prioritized based on its likelihood of occurrence and the magnitude of its impact should it occur. Items that rank highly on NS' priority list are escalated and evaluated again. If NS determines that additional mitigation actions could be productive, the risk is assigned to an internal entity that can best develop the appropriate mitigation. High priority risks are presented to senior management and the board for discussion, advice, and monitoring.</p> <p>Additionally, NS monitors the risk of flooding. To mitigate flood risks, for example. NS would look to do the following: Armor the roadbed; raise tract in specific areas prone to flooding; install culverts, or pipes to drain water underneath road or railway in flood-prone areas; and reinforce bridge ends to prevent a potential washout of bridge structure during floods.</p>
Chronic physical	Relevant, sometimes included	<p>Norfolk Southern's Enterprise Risk Management processes and team structure are defined to detect, monitor, assess, escalate, and mitigate risks in all aspects of Norfolk Southern's business whether they emanate from regulatory, technology, legal, market, reputational, or physical direct effects – or the indirect effects emanating from our upstream or downstream partners. The process considers the inherent dangers in each risk as well as the palliative effects of our mitigating actions. The resultant residual risk is evaluated and prioritized based on its likelihood of occurrence and the magnitude of its impact should it occur. Items that rank highly on NS' priority list are escalated and evaluated again. If NS determines that additional mitigation actions could be productive, the risk is assigned to an internal entity that can best develop the appropriate mitigation. High priority risks are presented to senior management and the board for discussion, advice, and monitoring.</p>
Upstream	Relevant, sometimes included	<p>Norfolk Southern's Enterprise Risk Management processes and team structure are defined to detect, monitor, assess, escalate, and mitigate risks in all aspects of Norfolk Southern's business whether they emanate from regulatory, technology, legal, market, reputational, or physical direct effects – or the indirect effects emanating from our upstream or downstream partners. The process considers the inherent dangers in each risk as well as the palliative effects of our mitigating actions. The resultant residual risk is evaluated and prioritized based on its likelihood of occurrence and the magnitude of its impact should it occur. Items that rank highly on NS' priority list are escalated and evaluated again. If NS determines that additional mitigation actions could be productive, the risk is assigned to an internal entity that can best develop the appropriate mitigation. High priority risks are presented to senior management and the board for</p>

		discussion, advice, and monitoring. An example of an upstream risk that NS monitors is the ability of NS to source fuel from suppliers.
Downstream	Relevant, sometimes included	Norfolk Southern’s Enterprise Risk Management processes and team structure are defined to detect, monitor, assess, escalate, and mitigate risks in all aspects of Norfolk Southern’s business whether they emanate from regulatory, technology, legal, market, reputational, or physical direct effects – or the indirect effects emanating from our upstream or downstream partners. The process considers the inherent dangers in each risk as well as the palliative effects of our mitigating actions. The resultant residual risk is evaluated and prioritized based on its likelihood of occurrence and the magnitude of its impact should it occur. Items that rank highly on NS’ priority list are escalated and evaluated again. If NS determines that additional mitigation actions could be productive, the risk is assigned to an internal entity that can best develop the appropriate mitigation. High priority risks are presented to senior management and the board for discussion, advice, and monitoring. An example of a downstream risk that NS monitors is the ability of our customers to remain competitive and therefore utilize NS’s transportation services considering climate-related issues.

C2.2d

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

Climate-related risks are surfaced and vetted by the Enterprise Risk Management committee which determines inherent risk, mitigating controls, the resultant residual risk, and the potential for additional management actions to improve Norfolk Southern's expected resilience -- operationally and financially.

For example, NS has identified certain climate-related regulations as potential risks. To manage this risk, NS has developed a progressive locomotive rebuilding program. Through its progressive locomotive rebuilding program, NS has developed a new class of low-emission Eco locomotives for rail yard service now used in Chicago, Pittsburgh, Atlanta, and Macon, Ga. These public-private partnerships tap funds available to reduce transportation-related diesel emissions. NS is helping improve air quality in these areas and meet NS’s commitments under the federal Clean Air Act, thereby mitigating their risks associated with climate-regulations.

Additionally, to mitigate flood risks, for example. NS would look to do the following: Armor the roadbed; raise tract in specific areas prone to flooding; install culverts, or pipes to drain water underneath road or railway in flood-prone areas; and reinforce bridge ends to prevent a potential washout of bridge structure during floods.

NS also considers climate-related opportunities through our annual planning cycle, such as the opportunity for the expansion of rail business given potential future regulations that might

adversely affect the trucking industry. We then capitalize on these opportunities. NS has also adopted a carbon-mitigation strategy, Trees and Trains, that turns its carbon footprint into a corporate opportunity.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Physical risk

Primary climate-related risk driver

Chronic: Changes in precipitation patterns and extreme variability in weather patterns

Type of financial impact

Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions)

Company- specific description

Norfolk Southern depends on the continuous availability of our 19,500 route miles of rail infrastructure in order to provide transportation services to our customers. Flooding caused by unusually high precipitation can render that rail infrastructure inaccessible (i.e. underwater). Customer traffic requiring that infrastructure cannot be readily processed. This can result in lost revenue (if customers find another way to ship their freight) or increased costs (as NS incurs greater expenses to send move traffic over a longer route, lease rail equipment for longer periods of time, or move excess equipment accumulating in yards waiting for delivery.

An example of this effect is the recent rising floodwaters of the Missouri River which severed our line for a month. Some traffic to and from our Kansas City terminal and interchange with Western carriers was halted. Some traffic was diverted to utilize alternative routes - albeit at extra cost. Even upon reopening, congestion at origin and

destination -- especially at our intermodal terminals -- delayed certain traffic for several additional days.

Time horizon

Current

Likelihood

Virtually certain

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Losses due to extreme weather are incurred on a car-by-car basis in incremental amounts.

Management method

Norfolk Southern employs personnel experienced in recovery from flood events, and contracts with outside firms to provide timely services to effect a fast recovery. Additionally, we invest in systems that allow dynamic handling of customer traffic through alternative routes, where possible.

Norfolk Southern takes proactive steps to reposition locomotives, rolling stock, and other equipment in order to avoid their being affected by floodwaters.

Cost of management

0

Comment

The cost of management is not known, as the management of service disruption and recovery are an integral part of our operations.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Physical risk

Primary climate-related risk driver

Chronic: Changes in precipitation patterns and extreme variability in weather patterns

Type of financial impact

Increased capital costs (e.g., damage to facilities)

Company- specific description

Floodwaters caused by extreme variations in precipitation can damage the rail infrastructure on which NS depends to transport customer traffic. These floodwaters can damage rail and ties, erode roadbed, weaken and destroy bridges, and render inoperable the electronic signaling systems on which our train operations depend.

For instance, this year's flooding of the Missouri River in May and June of this year damaged over 37.4 miles of Norfolk Southern rail infrastructure requiring capital reinvestment.

Time horizon

Current

Likelihood

More likely than not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

100,000

Potential financial impact figure – maximum (currency)

10,000,000

Explanation of financial impact figure

This broad range of capital impact is illustrative of the costs incurred in recent flooding. While the high-end of costs may appear high, they are still considered not material to the overall financial health of Norfolk Southern. As such, the specific numbers are not released to the public.

In any given year, one or more such events may occur. Some require low amounts of capital reinvestment. Others, such as this May's flooding, require significantly more.

Management method

Norfolk Southern invests to minimize the damage of future events triggered by extreme variations in precipitation. Steps taken include:

- 1) Armoring roadbeds,
- 2) raising track levels,
- 3) installing culverts, and
- 4) reinforcing bridges can cost millions more.

Cost of management

10,000

Comment

The \$10,000 management cost estimate is a low-end estimate of proactive strengthening of our rail infrastructure. Many such projects can be undertaken in a single year.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Mandates on and regulation of existing products and services

Type of financial impact

Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

Regulation to manage carbon emissions could impose increased operating costs on Norfolk Southern as we purchase carbon credits, invest in new technologies, or retire otherwise-productive assets in order to comply with the regulation.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The financial impact of regulation would be highly dependent on the specifics of the regulation.

Management method

Maintain awareness of proposed legislation to manage carbon emissions.

Cost of management

0

Comment

The cost to NS of monitoring pending legislation is de minimus.

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Market: Changing customer behavior

Type of financial impact

Reduced demand for goods and/or services due to shift in consumer preferences

Company- specific description

Legislation to manage carbon emissions could have an effect on Norfolk Southern's Coal, Crude, and Fracking businesses.

Time horizon

Medium-term

Likelihood

Unlikely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Norfolk Southern derives nearly 16% of corporate revenue from the transport of coal, plus additional amounts from the transport of crude oil. The percentage of these revenues affected by legislation is highly dependent on the specifics of that legislation.

Management method

Norfolk Southern maintains awareness of proposed and pending legislation with respect to reductions in greenhouse gas emissions.

Cost of management

0

Comment

The costs of maintaining awareness of pending legislation are de minimus.

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Shift in consumer preferences

Type of financial impact

Increased revenue through demand for lower emissions products and services

Company-specific description

Rail transport emits significantly lower amounts of greenhouse gases per ton-mile of freight transport. As such, changes in customer preferences toward less intensive modes of transport -- whether caused by THEIR customers' preferences, legislative mandates, or increased costs of other modes of transportation, can result in increased revenue opportunities for Norfolk Southern.

Time horizon

Medium-term

Likelihood

Unlikely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The increase in revenue resulting from a change in Norfolk Southern's customers' preferences is dependent on the causes of the customers' preference shift. At present, Norfolk Southern is not aware of changes in customer preferences and, therefore, cannot estimate their financial impact.

Strategy to realize opportunity

Norfolk Southern monitors legislation that could affect our customers' preferences. Additionally, our marketing teams communicate with customers on a regular basis to learn of the factors that drive their consumption of rail transport and adjusts products and services to secure extra business where possible.

Cost to realize opportunity

0

Comment

Monitoring legislation and communicating with customers about their preferences is a regular part of NS' Marketing efforts. As such, the incremental costs of monitoring the opportunities are de minimus.

C2.5

(C2.5) Describe where and how the identified risks and opportunities have impacted your business.

	Impact	Description
Products and services	We have not identified any risks or opportunities	
Supply chain and/or value chain	We have not identified any risks or opportunities	
Adaptation and mitigation activities	We have not identified any risks or opportunities	
Investment in R&D	We have not identified any risks or opportunities	
Operations	Impacted for some suppliers, facilities, or product lines	As illustrated in our Missouri River flooding example, extreme precipitation events can reduce NS' ability to provide transportation services to customers. These impacts are typically experienced by customers whose traffic must traffic through the precipitation-affected territory.
Other, please specify	We have not identified any risks or opportunities	

C2.6

(C2.6) Describe where and how the identified risks and opportunities have been factored into your financial planning process.

	Relevance	Description
Revenues	Not yet impacted	At present, Norfolk Southern is not recognizing the benefit of changing customer preferences.
Operating costs	We have not identified any risks or opportunities	
Capital expenditures / capital allocation	We have not identified any risks or opportunities	

Acquisitions and divestments	We have not identified any risks or opportunities	
Access to capital	We have not identified any risks or opportunities	
Assets	We have not identified any risks or opportunities	
Liabilities	We have not identified any risks or opportunities	
Other	We have not identified any risks or opportunities	

C3. Business Strategy

C3.1

(C3.1) Are climate-related issues integrated into your business strategy?

No

C3.1f

(C3.1f) Why are climate-related issues not integrated into your business objectives and strategy?

Norfolk Southern has not taken an official public position on the climate related aspects of and the impacts to our operations. However, we have observed increased frequency and intensity in climate events that have disrupted our operations. These events include unnamed storms that are contributing to recurrent flooding within the NS system. The areas of recurrent impacts are documented and NS is evaluating infrastructure and operational measures to mitigate climate-related impacts to our system with the goal of improving resilience and efficiency of freight movement when climate related disruptions occur.

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Intensity target

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Scope

Scope 1

% emissions in Scope

100

Targeted % reduction from base year

10

Metric

Other, please specify
Grams of CO₂e per Gross Ton Mile.

Base year

2015

Start year

2016

Normalized base year emissions covered by target (metric tons CO₂e)

5,518,738

Target year

2021

Is this a science-based target?

No, and we do not anticipate setting one in the next 2 years

% of target achieved

100

Target status

Achieved

Please explain

Norfolk Southern's intensity target is a 10% reduction in grams CO₂e per Revenue Ton Mile, using 2015 as a reference year with a target completion year of 2021. Norfolk Southern has met the 10% reduction in grams CO₂e per Revenue Ton Mile.

% change anticipated in absolute Scope 1+2 emissions

-7.11

% change anticipated in absolute Scope 3 emissions

0

C4.2

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO₂e savings.

	Number of initiatives	Total estimated annual CO ₂ e savings in metric tonnes CO ₂ e (only for rows marked *)
Under investigation	0	0
To be implemented*	0	0
Implementation commenced*	2	4,600,000
Implemented*	2	35,300,000
Not to be implemented	0	0

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative type

Energy efficiency: Processes

Description of initiative

Other, please specify
(Training on Locomotive Handling)

Estimated annual CO₂e savings (metric tonnes CO₂e)

2,300,000

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

34,000,000

Investment required (unit currency – as specified in C0.4)

0

Payback period

11-15 years

Estimated lifetime of the initiative

6-10 years

Comment

Norfolk Southern is improving techniques and training associated with locomotive assignment and handling. It is a core component of our emissions intensity reduction target, currently set reduce consumption/emissions by 10% in the period from 2016 through 2021. Using this year's statistics of 464,879,657 gallons of locomotive diesel fuel consumed at approximately \$1.50 per gallon, and assuming that half of our reduction comes through this training and technique, this would represent a \$34 million savings per year.

Initiative type

Energy efficiency: Processes

Description of initiative

Other, please specify
(LEADER and Trip Optimizer)

Estimated annual CO2e savings (metric tonnes CO2e)

33,000,000

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

34,000,000

Investment required (unit currency – as specified in C0.4)

0

Payback period

11-15 years

Estimated lifetime of the initiative

6-10 years

Comment

Norfolk Southern is installing two vendors' version of train energy management hardware and software on our locomotives. This software coaches locomotive engineers as to how to handle a train more efficiently and complements our standard training and assignment improvements, mentioned above. Energy Management is a core component of our emissions intensity reduction target, currently set reduce consumption/emissions by 10% in the period from 2016 through 2021. Using this year's statistics of 464,879,657 gallons of locomotive diesel fuel consumed @ \$1.426 per gallon, and assuming that half of our reduction comes through this training and technique, this would represent a \$34 million savings per year

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	Norfolk Southern's locomotive emissions, which comprise approximately 95% of total Scope 1 and Scope 2 emissions, are governed by EPA "Tier" regulations that limit greenhouse gas, particulate, and other emissions based on locomotive manufacture date. Norfolk Southern complies with all such EPA regulations.
Financial optimization calculations	When investments in sustainability are able to provide a sufficient financial return even without a material price on GHG emissions, Norfolk Southern will pursue that investment.
Other	Norfolk Southern partners with local governments to invest in less emissivelower emission technologies when the local entity is willing to contribute capital to compensate for an unfavorable financial investment result. A prime example of this is NS' pursuit of less emissivereduced emission locomotives through locally sponsored, federally funded CMAQ grants.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Company-wide

Description of product/Group of products

Norfolk Southern is a provider of transportation services, almost entirely by rail. As a rail carrier, our primary form of competition is truck. Rail transport is less carbon-intensive per revenue ton mile than truck transport. As a result, rail is often able to help customers avoid carbon emissions through this advantageous emission profile.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

Route-ton mile emission calculations.

% revenue from low carbon product(s) in the reporting year

0

Comment

Calculation of % low-carbon service depends heavily on assumptions regarding the ability for freight to be carried via truck, the comparison of effective rail routes vs. truck routes, and other factors. For an illustration of the advantageous emissions profile of rail and intermodal freight transport over truck, refer to Norfolk Southern's "Green Machine" calculator, available at <http://www.nscorp.com/nscorhtml/future/carbon%20footprint0407-2.html>

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1, 2015

Base year end

December 31, 2015

Base year emissions (metric tons CO₂e)

5,268,211

Comment

NS 2015 base year Scope 1 emissions were 5,268,211.

Scope 2 (location-based)

Base year start

January 1, 2015

Base year end

December 31, 2015

Base year emissions (metric tons CO₂e)

250,526

Comment

NS 2015 base year Scope 2 emissions were 250,526.

Scope 2 (market-based)

Base year start

January 1, 2015

Base year end

December 31, 2015

Base year emissions (metric tons CO₂e)

0

Comment

NS reported a Scope 2 location-based figure in 2015.

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

US EPA Climate Leaders: Indirect Emissions from Purchases/ Sales of Electricity and Steam

US EPA Climate Leaders: Direct Emissions from Stationary Combustion

US EPA Climate Leaders: Direct Emissions from Mobile Combustion Sources

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO₂e?

Reporting year

Gross global Scope 1 emissions (metric tons CO₂e)

4,930,129.64

Start date

January 1, 2018

End date

December 31, 2018

Comment

NS 2018 Scope 1 emissions were 4,930,129.64 Metric Tonnes CO₂e.

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

NS calculated Scope 2 emissions using the USEPA's eGrid. Due to the lack of information on the residual mix factors in the United States, there is no difference in Scope 2 emissions using the Location and Market-based methods.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO₂e?

Reporting year

Scope 2, location-based

196,154.62

Scope 2, market-based (if applicable)

196,154.62

Start date

January 1, 2018

End date

December 31, 2018

Comment

NS 2018 Scope 2 emissions were 196,154.621 Metric Tonnes CO₂e.

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

C6.5

(C6.5) Account for your organization's Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Not relevant, explanation provided

Explanation

Emissions for this category such as purchased diesel fuel have been included in our Scope 1 emissions calculations.

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

5,807,368.45

Emissions calculation methodology

Emissions were calculated based on the hybrid method as outlined in the GHG Protocol's Technical Guidance for Calculating Scope 3 Emissions. Locomotives are the primary capital goods acquired by Norfolk Southern Railway. Accordingly, GHG emissions and other data was requested from GE, our principal locomotive supplier. The data received from the suppliers was used to calculate Norfolk Southern's GHG emissions from capital goods. For data that was not provided by suppliers, an average numerical value was used in estimating GHG emissions. Emissions for capital goods were calculated using volumes of key purchased goods by type of material applied against applicable emission factors from the IPCC.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

50

Explanation

This year, we obtained data on locomotives supplied to Norfolk Southern from GE Transportation. GE is Norfolk Southern's primary locomotive supplier. We also obtained data from our suppliers of rails, ballasts, and ties.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Not relevant, explanation provided

Explanation

The fuel-and-energy-related activities (not included in Scope 1 or 2) for Norfolk Southern are generated by the company's upstream leased assets. As such, this data has been included in the upstream leased assets category.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

10,508.42

Emissions calculation methodology

Emissions were calculated based on the fuel-based method as outlined in the GHG Protocol's Technical Guidance for Calculating Scope 3 Emissions. Norfolk Southern requested our highest volume suppliers to report data related to transportation of their goods. This data was used to calculate emissions from upstream transportation and distribution by determining the amount of fuel consumed and applying the appropriate emission factor for that fuel.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

50

Explanation

Norfolk Southern calculated and reported emissions from the transportation and distribution of products purchased, including rails, ties, ballasts, and locomotives, in Categories 1 and 2 the reporting year between the company's tier 1 suppliers and its own operations in vehicles not owned or operated by Norfolk Southern.

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

54,904.87

Emissions calculation methodology

Activity data sources for waste generated in operations were the annual total mass of waste (short tons) and the proportion of waste being sent to the landfill, recycled, and incinerated. Emission factors were obtained from the EPA Waste Reduction Model (WARM) Version 14 (Management Practices and Background Documents, March 2016). Only end-of-life process emission factors were used from the WARM documentation.

For waste sent to the landfill, the emission factor associated with mixed municipal solid waste (MSW) material was used. For recycled waste, emissions from material recovery in preparation for recycling were assumed to have been allocated to the recycled material; therefore, the emission factor used for recycled waste was zero metric tons of carbon dioxide equivalent (MTCO_{2e})/short ton. For incinerated waste, the emission factor associated with dimensional lumber was used since only cross-ties were burned for energy. NS wastes were assumed to be composed of mixed MSW and mixed recyclables because it was difficult to determine all of the types of waste generated in operations.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

75

Explanation

Norfolk Southern has collected data related to GHG emissions from waste generated in its operations.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO_{2e}

7,767.31

Emissions calculation methodology

Emissions were calculated based on the distance-based method as outlined in the GHG Protocol's Technical Guidance for Calculating Scope 3 Emissions. Air travel miles were obtained from our travel service providers. Rental car miles were obtained from our main rental agency, Hertz. NS also, included employee reimbursed mileage.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

85

Explanation

An insignificant amount of business travel is not arranged through our corporate travel provider, accordingly this activity and related emissions are considered inconsequential and not included in the calculation.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO_{2e}

173,828.57

Emissions calculation methodology

The average commute time per state and average fuel required for round-trip commute per state are gathered from 2016 Census Bureau data. It was assumed that 1 minute of commute is equivalent to 1 mile traveled and the overall fuel source is gasoline. The total number of NS employees per state was multiplied by the fuel required for a round-trip commute daily to calculate the gallons of gasoline used per day. The totals were then multiplied by 253 days to account for work days within a year. Using the emissions factors identified by EPA, the total emissions for CO₂e was calculated.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation

This is the first year that NS has calculated our emissions from employee commuting.

Upstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

1,613.26

Emissions calculation methodology

NS leased facilities were identified per state. The electricity consumption of the facilities in each state was estimated by using a factor of 17.3 kWh for each facilities square footage. Using the emissions factors for GHG pollutants obtained from EPA's eGRID 2016, the total emissions for CO₂e was calculated. A leased facility located in Quebec, Canada was not included in the data since it is out of scope for the eGRID database.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

50

Explanation

Norfolk Southern calculated GHG emissions from upstream leased assets are that were not reported in Norfolk Southern's Scope 1 and 2 inventories. The scope of these assets is office space. All office space lease rates include utilities. Accordingly, no data is available for electricity consumption for the specific leased spaces. The assets in the calculation do include emissions from natural gas for heating the buildings where this data was available. The energy and electrical utility emissions at facilities leased by Norfolk Southern is included in the lease agreements, and is therefore not reported separately.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Explanation

This category includes emissions that occur in the reporting year from transportation and distribution of sold products in vehicles not owned or controlled by the reporting company. Norfolk Southern does not distribute sold products. As such, the emissions generated by downstream transportation and distribution are not relevant to Norfolk Southern.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Explanation

Norfolk Southern is primarily a provider of freight transportation services, not a manufacturer or vendor of products for sale. As such, the emissions generated by processing of sold products are not relevant to Norfolk Southern.

Use of sold products

Evaluation status

Not relevant, explanation provided

Explanation

This category includes emissions from the use of goods and services sold by the reporting company in the reporting year. Norfolk Southern is primarily a provider of freight transportation services, not a manufacturer or vendor of products for sale. As such, the emissions generated by use of sold products are not relevant to Norfolk Southern.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Explanation

This category includes emissions from the waste disposal and treatment of products sold by the reporting company at the end of their life. Norfolk Southern does not sell products, and thus, does not produce emissions from the waste disposal of products. As such, this category of emissions is not relevant to Norfolk Southern's operations as a rail transportation company.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Explanation

This category includes emissions from the operation of assets that are owned by the reporting company (acting as lessor) and leased to other entities in the reporting year that are not already included in Scope 1 or Scope 2. Norfolk Southern does not act as a lessor. Therefore, emissions from downstream leased assets are not relevant to Norfolk Sothern.

Franchises

Evaluation status

Not relevant, explanation provided

Explanation

Norfolk Southern does not currently own franchises. As such, the emissions generated by franchises are not relevant to Norfolk Southern.

Investments

Evaluation status

Not relevant, explanation provided

Explanation

Based on the definition of "investment" provided in the Guidance for Calculating Scope 3 emissions, this category is not relevant to Norfolk Sothern's operations. This category includes scope 3 emissions associated with NS's investments in the reporting year, not already included in scope 1 or scope 2. This category is applicable to investors and companies that provide financial services. Norfolk Sothern does not provide financial services. As such, the emissions generated by investments are not relevant to Norfolk Southern

Other (upstream)

Evaluation status

Not evaluated

Explanation

NS did not evaluate any other upstream data.

Other (downstream)

Evaluation status

Not evaluated

Explanation

NS did not evaluate any other downstream data.

C6.7

(C6.7) Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

Yes

C6.7a

(C6.7a) Provide the emissions from biologically sequestered carbon relevant to your organization in metric tons CO₂.

Row 1

Emissions from biologically sequestered carbon (metric tons CO₂)

90,245.75

Comment

NS emissions from biofuels were 90,245.758 metric tons CO₂e in 2018.

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO₂e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.00044741

Metric numerator (Gross global combined Scope 1 and 2 emissions)

5,126,284

Metric denominator

unit total revenue

Metric denominator: Unit total

11,457,713,000

Scope 2 figure used

Market-based

% change from previous year

10.41

Direction of change

Decreased

Reason for change

Norfolk Southern's emissions intensity decreased in part due to our emissions reduction activities. NS is focused on increasing the efficiency of our operations. Emissions of CO₂e per Revenue Ton Mile (RTM) decreased in 2018. CO₂e per RTM is an indicator of NS's overall organizational efficiency. Scope 2 emissions intensity decreased as the

grid included a greater mix of cleaner electric generating units, such as renewable energy in 2018, which is reflected in our intensity figure.

C-TS6.15

(C-TS6.15) What are your primary intensity (activity-based) metrics that are appropriate to your emissions from transport activities in Scope 1, 2, and 3?

Rail

Scopes used for calculation of intensities

Report Scope 1 + 2

Intensity figure

0.000025

Metric numerator: emissions in metric tons CO₂e

5,126,284

Metric denominator: unit

t.mile

Metric denominator: unit total

207,369,431,000

% change from previous year

-5.38

Please explain any exclusions in your coverage of transport emissions in selected category, and reasons for change in emissions intensity.

Norfolk Southern provides transportation services and not other revenue products. Accordingly, all of our emissions are attributed to providing rail service.

ALL

Scopes used for calculation of intensities

Report Scope 1 + 2

Intensity figure

0.000025

Metric numerator: emissions in metric tons CO₂e

5,126,284

Metric denominator: unit

t.mile

Metric denominator: unit total

207,369,431,000

% change from previous year

-5.33

Please explain any exclusions in your coverage of transport emissions in selected category, and reasons for change in emissions intensity.

Norfolk Southern provides transportation services and not other revenue products. Accordingly, all of our emissions are attributed to providing rail service.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	4,887,269.87	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	10,578.6	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	32,281.24	IPCC Fifth Assessment Report (AR5 – 100 year)

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
United States of America	4,930,129.64

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By activity

C7.3c

(C7.3c) Break down your total gross global Scope 1 emissions by business activity.

Activity	Scope 1 emissions (metric tons CO2e)
Transport services activities	4,930,129.64

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Comment
Transport services activities	4,930,129.64	All NS Scope 1 emissions can be attributed to transport services activities.

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
United States of America	196,154.62	196,154.62	414,863	0

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By facility

C7.6b

(C7.6b) Break down your total gross global Scope 2 emissions by business facility.

Facility	Scope 2 location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Florida	1,041.14	1,041.14
Iowa	91.65	91.65
New York	1,023.62	1,023.62
Delaware, Maryland, New Jersey, Pennsylvania	25,053.29	25,053.29

Michigan	2,437.76	2,437.76
Indiana, Ohio, West Virginia	62,194.05	62,194.05
Louisiana	513.37	513.37
Illinois and Missouri	24,103.36	24,103.36
Alabama, Georgia	29,923.71	29,923.71
Kentucky, Mississippi, Tennessee	15,547.47	15,547.47
North Carolina, South Carolina, Virginia	34,225.2	34,225.2

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO₂e.

	Scope 2, location-based, metric tons CO ₂ e	Scope 2, market-based (if applicable), metric tons CO ₂ e	Comment
Transport services activities	196,154.62	196,154.62	NS Scope 2 emissions for transport services activities in 2018 were 196,154.621 metric tons CO ₂ e.

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO ₂ e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	0		0	NS increased biofuel consumption when compared with biofuel consumption from 2017., however the change was not significant.

Other emissions reduction activities	130,000		2.4	NS Scope 1 and 2 emissions from 2017 to 2018 decreased in part due to emissions reduction activities.
Divestment	0		0	NS emissions change is not attributable to divestment in the reporting year.
Acquisitions	0		0	NS emissions change is not attributable to acquisitions in the reporting year.
Mergers	0		0	NS emissions change is not attributable to mergers in the reporting year.
Change in output	10,400		3	NS had a greater output in 2018 compared to 2017. Emissions when looking at the increased output increased from 2017 to 2018 as a result.
Change in methodology	32,659	Decreased	0.6	NS's modified the way that the inventory is calculated, for example, NS used updated emissions factors. NS also received more detailed information on office locations which were used in calculating Scope 2 emissions. 6) For electricity, we were averaging in 2017 based on the grid, but got actual locations and consumption in 2018. We used a market-based method this year by utilizing the USEPA eGRID regional emissions factors. Last year, location-based factors were used for electricity calculations.
Change in boundary	0		0	NS emissions change is not attributable to a change in boundary in the reporting year.
Change in physical operating conditions	53,920		1.1	A harsher winter in 2018 compared to 2017 can account for an increase in fuel consumption from 2017 to 2018.
Unidentified	0		0	No change in the reporting year.
Other	0		0	No other changes in the reporting year.

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Market-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 10% but less than or equal to 15%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	No

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	356,762.27	19,357,761.18	19,714,523.45

Consumption of purchased or acquired electricity		24,049.88	388,466.73	412,516.61
Total energy consumption		380,812.15	19,746,227.91	20,127,040.06

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	No
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Diesel

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

18,665,260.67

Comment

NS consumed 18,665,260.67 MWh of diesel fuel in the reporting year.

Fuels (excluding feedstocks)

Fuel Oil Number 2

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

319,284.15

Comment

NS consumed 319,284.15 MWh of Fuel Oil Number 2 in the reporting year.

Fuels (excluding feedstocks)

Kerosene

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

14,083.53

Comment

NS consumed 14,083.53 MWh of Kerosene in the reporting year.

Fuels (excluding feedstocks)

Natural Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

234,342.39

Comment

NS consumed 234,342.39 MWh of Natural Gas in the reporting year.

Fuels (excluding feedstocks)

Propane Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

101,556.83

Comment

NS consumed 101,556.83 MWh of Propane Gas in the reporting year.

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

23,233.61

Comment

NS consumed 23,233.61 MWh of Motor Gasoline in the reporting year.

Fuels (excluding feedstocks)

Biodiesel

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

356,762.27

Comment

NS consumed 356,762.27 MWh of Biodiesel in the reporting year.

C8.2d

(C8.2d) List the average emission factors of the fuels reported in C8.2c.

Biodiesel

Emission factor

73.84

Unit

kg CO2 per million Btu

Emission factor source

US EPA Center for Corporate Climate Leadership.

Comment

The emissions factor NS used for Biodiesel for the reporting year was 73.84 kg CO2 per million Btu.

Diesel

Emission factor

10.15

Unit

kg CO2 per gallon

Emission factor source

US EPA Center for Corporate Climate Leadership.

Comment

The emissions factor NS used for Diesel for the reporting year was 10.15 kg CO2 per gallon.

Fuel Oil Number 2

Emission factor

73.96

Unit

kg CO2 per million Btu

Emission factor source

US EPA Center for Corporate Climate Leadership.

Comment

The emissions factor NS used for Fuel Oil Number 2 for the reporting year was 73.96 kg CO2 per million Btu.

Kerosene

Emission factor

75.2

Unit

kg CO2 per million Btu

Emission factor source

US EPA Center for Corporate Climate Leadership.

Comment

The emissions factor NS used for Kerosene for the reporting year was 75.2 kg CO2 per million Btu.

Motor Gasoline

Emission factor

70.22

Unit

kg CO2 per million Btu

Emission factor source

US EPA Center for Corporate Climate Leadership.

Comment

The emissions factor NS used for Motor Gasoline for the reporting year was 70.22 kg CO₂ per million Btu.

Natural Gas

Emission factor

53.06

Unit

kg CO₂ per million Btu

Emission factor source

US EPA Center for Corporate Climate Leadership.

Comment

The emissions factor NS used for Natural Gas for the reporting year was 53.06 kg CO₂ per million Btu.

Propane Gas

Emission factor

62.87

Unit

kg CO₂ per million Btu

Emission factor source

US EPA Center for Corporate Climate Leadership.

Comment

The emissions factor NS used for Propane Gas for the reporting year was 62.87 kg CO₂ per million Btu.

C8.2f

(C8.2f) Provide details on the electricity, heat, steam and/or cooling amounts that were accounted for at a low-carbon emission factor in the market-based Scope 2 figure reported in C6.3.

Basis for applying a low-carbon emission factor

Grid mix of renewable electricity

Low-carbon technology type

Solar PV

Wind

Hydropower

Biomass (including biogas)

Other low-carbon technology, please specify

Geothermal

Region of consumption of low-carbon electricity, heat, steam or cooling

North America

MWh consumed associated with low-carbon electricity, heat, steam or cooling

24,049.88

Emission factor (in units of metric tons CO2e per MWh)

0.37

Comment

NS purchased a grid mix of renewable energy that was accounted for at a low-carbon emission factor in the market-based Scope 2 figure reported in C6.3.

C-TS8.2h

(C-TS8.2h) Provide details on the average emission factor used for all transport movements per mode that directly source energy from the grid.

Category	Emission factor unit	Average emission factor: unit value	Comment
Rail	gCO2/kWh	0	Grid-sourced electricity does not provide motive power for Norfolk Southern Transportation movements. All of our moves are diesel electric.

C-TS8.4

(C-TS8.4) Provide any efficiency metrics that are appropriate for your organization's transport products and/or services.

Activity

Rail

Metric figure

0.002275

Metric numerator

Other, please specify
Gallons

Metric denominator

Revenue-ton.mile

Metric numerator: Unit total

471,768,000

Metric denominator: Unit total

207,400,000,000

% change from last year

0.1

Please explain

The increase in gallons per revenue ton mile is a negligible increase and not material in NS's overall emissions, which decreased when considering tons of CO₂e per RTM.

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

C-TO9.3/C-TS9.3

(C-TO9.3/C-TS9.3) Provide tracking metrics for the implementation of low-carbon transport technology over the reporting year.

Activity

Rail

Metric

Fleet adoption

Technology

Other, please specify

Fuel efficient locomotives

Metric figure

10.15

Metric unit

Other, please specify

kgCO₂/gallon

Explanation

Norfolk Southern is continuously upgrading their existing fleet and is looking into developing a Norfolk Southern specific figure taking into account our progress on fleet adoption initiative.

C-TO9.6/C-TS9.6

(C-TO9.6/C-TS9.6) What is your investment in research and development (R&D), equipment, products and services and which part of it would you consider a direct investment in the low-carbon transition?

Activity

Rail

Investment start date

January 1, 2017

Investment end date

December 31, 2018

Investment area

Equipment

Technology area

Control systems

Investment maturity

Large scale commercial deployment

Investment figure

20,000,000

Low-carbon investment percentage

21-40%

Please explain

Our investment in locomotive energy management systems drive fuel efficiency, reducing the emissions rate on over 95% of our emissions. Our energy management systems are inter-related with other locomotive-based systems. As such, allocating investment dollars specifically to these systems is difficult and subjective. The investment figures relayed here are illustrative.

Activity

Rail

Investment start date

January 1, 2017

Investment end date

December 31, 2017

Investment area

Equipment

Technology area

Drivetrain

Investment maturity

Large scale commercial deployment

Investment figure

25,000,000

Low-carbon investment percentage

0-20%

Please explain

Norfolk Southern has begun to modernize locomotives that have reached expected lifespan. Rebuilt locomotives are brought to Tier 3 standards, reducing emissions. Additionally, the rebuilding of a locomotive is less carbon intensive than the purchase of a new one.

Norfolk Southern does not publish the precise cost per modernized locomotive. The investment figure provided here is conservative and illustrative.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 and/or Scope 2 emissions and attach the relevant statements.

Scope

Scope 1

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

1

 2019 KPMG Verification.pdf

Page/ section reference

1, 2, 4

Relevant standard

Attestation standards established by AICPA (AT105)

Proportion of reported emissions verified (%)

100

Scope

Scope 2 market-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

1

 2019 KPMG Verification.pdf

Page/ section reference

1, 2, 4

Relevant standard

Attestation standards established by AICPA (AT105)

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope

Scope 3- at least one applicable category

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Attach the statement

1

 2019 KPMG Verification.pdf

Page/section reference

1, 2, 4

Relevant standard

Attestation standards established by AICPA (AT105)

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

No, but we are actively considering verifying within the next two years

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

No, and we do not anticipate being regulated in the next three years

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

No, and we do not currently anticipate doing so in the next two years

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

Yes, our customers

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

1

% total procurement spend (direct and indirect)

75

% Scope 3 emissions as reported in C6.5

100

Rationale for the coverage of your engagement

Norfolk Southern seeks suppliers that demonstrate a commitment to sustainable business practices. Starting with a 2015 pilot, NS continues to survey key suppliers in its major supply chains periodically on their sustainability efforts. In 2018, Norfolk Southern sent outreach emails to 12 suppliers asking them to complete a CDP survey. 50% of the suppliers contacted completed the survey. Suppliers were asked to identify the proportion of their GHG emissions that they can attribute to business with Norfolk Southern.

Additionally, NS has supplier partnerships on innovative business solutions that assist in efforts to reduce the environmental impacts of railroad operations.

Impact of engagement, including measures of success

In 2016, NS awarded its first Supplier Sustainability Award to Progress Rail. The award recognized the locomotive maker for its partnership with NS in developing the Eco locomotive, a new class of low-emission locomotive used in yard and local service. The Eco model, part of an NS' locomotive modernization program, recycles 1980s models and equips them with a new low-emission engine built by Progress Rail's EMD division. NS couples Eco units with engine-less "slugs" that add emissions-free pulling power.

Inbound Logistics magazine named Norfolk Southern to its Green Supply Chain Partners list – companies that "demonstrate green best practices in their supply chain, logistics, and transportation operations." Editors based the selection on measurable green results, sustainability innovation, continuous improvement, and industry recognition. The magazine cited NS' Trees and Trains carbon-mitigation program and its goal to reduce greenhouse gas emissions in business operations.

Comment

Norfolk Southern is committed to sustainability by being a responsible steward of the environment and helping to protect the communities where we operate and source materials. We strive to partner with companies that hold the same ideals through their demonstration of sustainable projects and policies.

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Collaboration & innovation

Details of engagement

Other – please provide information in column 5

% of customers by number

10

% Scope 3 emissions as reported in C6.5

0

Please explain the rationale for selecting this group of customers and scope of engagement

NS conducts a customer forum outreach by senior leadership, operating personnel, and account representatives in order to reduce transportation-related carbon emissions. NS contacted approximately 10 percent of our largest customers by spend. Norfolk Southern is committed to being an industry leader in environmental responsibility. Strong sustainability practices are good for our business, the economy, and the environment, and they benefit our people, the communities and customers we serve,

and our stakeholders.

Norfolk Southern subsidiaries share the railroad’s commitment to provide efficient, productive, and sustainable freight transportation for customers. Trains are four times more fuel-efficient on average than trucks, reducing GHG emissions by 75 percent per ton-mile of freight.

Impact of engagement, including measures of success

Thoroughbred Direct Intermodal Services, a logistics provider, and Triple Crown Services, a multimodal carrier, earned a place on the U.S. Environmental Protection Agency’s first SmartWay High Performer list. The list recognizes shippers, carriers, and logistics service providers for supply chain efficiencies that help their customers reduce transportation-related greenhouse gas emissions and lower shipping costs. TDIS and TCS, who manage door-to-door freight transport services, rely heavily on rail-based solutions to reduce supply-chain emissions.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

- Direct engagement with policy makers
- Trade associations

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Energy efficiency	Support	NS directly engages policy makers and works through its primary trade association, the American Association of Railroads, to advocate for regulation and legislation that leverages the energy efficiencies inherent in rail transportation. Relevant topics include funding for the national freight network that improves commercial access to rail transportation, which is substantially more efficient than other means of ground transportation. Such improved access benefits the greater environment and communities that ground transportation travels through	Legislative solutions to minimize GHG should take into consideration the relative outputs of differing forms of transportation and encourage the cleaner and more efficient forms. Because trains are substantially more fuel efficient than trucks when transporting freight (four times more efficient), and because greenhouse gas emissions are directly related to fuel consumption, moving freight by rail instead of truck significantly reduces greenhouse gas emissions attributable to that freight.

		because it decreases fossil fuels used and emissions output, and it benefits customers and companies whose supply chain we are part of, as it provides them a carbon-efficient means of transporting their freight.	
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C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

Association of American Railroads

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The Association of American Railroads (AAR) works with elected officials and leaders in Washington, DC to advance sound public policy that supports the interests of the freight rail industry to ensure it will continue to meet America's transportation needs today and tomorrow.

America's freight railroads operate the safest, most efficient, cost-effective and environmentally sound freight transportation system in the world. AAR's position: As Congress considers legislation to limit emissions of carbon dioxide and other greenhouse gases, it should take into account the environmental friendliness of freight railroading. Climate legislation offers an opportunity for policymakers to encourage the movement of freight by environmentally-friendly rail and to spur the development of carbon capture and storage technology.

How have you influenced, or are you attempting to influence their position?

Norfolk Southern consulted with the AAR regarding the trade association's position on this issue and concurs with the current position.

Trade association

American Coalition for Clean Coal Electricity

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The American Coalition for Clean Coal Electricity (ACCCE) represents energy resource providers, utilities, and companies that transport energy commodities. The ACCCE advocates for public policies that advance environmental improvement, economic prosperity and energy security. ACCCE believes that the wise use of coal – one of America's most abundant, domestically produced energy resources – is essential to providing affordable, reliable electricity for millions of U.S. consumers and a growing domestic economy. Further, ACCCE is committed to continued and enhanced U.S. leadership in developing and deploying new, advanced clean coal technologies that protect and improve the environment.

How have you influenced, or are you attempting to influence their position?

NS's position is consistent with the ACCCE's.

Trade association

US Chamber of Commerce

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The mission of the U.S. Chamber of Commerce's Global Energy Institute is to unify policymakers, regulators, business leaders, and the American public behind a common sense energy strategy to help keep America secure, prosperous, and clean. Through policy development, education, and advocacy, the Institute is building support for meaningful energy action at the local, state, national, and international levels.

How have you influenced, or are you attempting to influence their position?

NS's position is consistent with the US Chamber of Commerce.

Trade association

National Association of Manufacturers

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

At a time when the U.S. and global economies are under extreme pressure, policymakers should look very cautiously at new government programs to expand environmental rules or impose entirely new regulatory regimes. The NAM represents the best interests of manufacturers on a variety of environmental issues, including air and water quality regulations, EPA and state environmental justice procedures, sustainability practices, hazardous waste disposal policies, chemical security and management and E-waste programs.

How have you influenced, or are you attempting to influence their position?

NS's position is consistent with the National Association of Manufacturers.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

The Enterprise Risk Council is comprised of officers who also oversee the activities of policy-influencing corporate functions, including government relations, corporate communications, and sustainability. This networked management and accountability, with senior management positioned near the top, ensures thoughtful activities that cohere to NS's central strategies.

NS's Government Relations Team seeks to educate and inform public officials about issues important to our business, and it supports public officials and candidates whose views match those of Norfolk Southern. By doing so, Norfolk Southern furthers public policy goals that are consistent with our business, values, and strategies.

To advocate our position, the Corporation relies on government relations professionals, assisted as needed by subject-matter experts. Norfolk Southern has adopted a corporate procedure that provides that only authorized employees and contract lobbyists may engage in lobbying activities, as defined by the appropriate jurisdiction, on behalf of the Corporation. In addition, the procedure requires a Corporation employee who has engaged in lobbying on behalf of the Corporation to report the time spent on such lobbying, and any associated expenses, immediately following the close of the calendar quarter in which such lobbying occurred. The procedure further requires that persons who engage in lobbying on behalf of the Corporation comply with all applicable legal requirements.

NS continues to have ongoing dialogue with regulators and policy-makers. As part of its oversight role, the Governance and Nominating Committee of the Corporation's Board of Directors reviews, at least annually, the Corporation's political contributions, including spending related to trade associations and other tax-exempt organizations so that all of NS's direct and indirect activities that influence policy are consistent with our overall strategies.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In voluntary sustainability report

Status

Underway – previous year attached

Attach the document

1

 ns-2018-social-responsibility-report.pdf

Page/Section reference

page 3, 4, 5, 19, 22, 24 and 25

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

Norfolk Southern has published corporate sustainability reports since 2008 that detail the railroad's environmental, economic, and social performance. The sustainability reports are available on Norfolk Southern's website.

C14. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C14.1

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Vice President Corporate Communications and Chief Sustainability Officer.	Chief Sustainability Officer (CSO)

SC. Supply chain module

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

SC0.1

(SC0.1) What is your company's annual revenue for the stated reporting period?

	Annual Revenue
Row 1	11,457,713,000

SC0.2

(SC0.2) Do you have an ISIN for your company that you would be willing to share with CDP?

Yes

SC0.2a

(SC0.2a) Please use the table below to share your ISIN.

	ISIN country code (2 letters)	ISIN numeric identifier and single check digit (10 numbers overall)
Row 1	US	6558441084

SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

SC1.2

(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

www.nssustainability.com

SC1.3

(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Allocation challenges	Please explain what would help you overcome these challenges
Other, please specify Other: Every type of commodity we ship has a different fuel efficiency and sometimes multiple commodities could be a part of the same train.	We would need a more robust car tracking system connected to the emissions factors for each commodity.

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

Yes

SC1.4a

(SC1.4a) Describe how you plan to develop your capabilities.

We hope to, over time develop the capacity to segment our business and determine the different fuel efficiencies of our commodities.

SC2.1

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

No

SC3.1

(SC3.1) Do you want to enroll in the 2019-2020 CDP Action Exchange initiative?

Yes

SC3.1a

(SC3.1a) Identify which member(s), if any, have motivated you to take part in Action Exchange this year.

Ford Motor Company
 General Motors Company

SC3.1b

(SC3.1b) Select the types of emissions reduction activities that your company would like support in analyzing or in implementing in the next reporting year.

- Energy efficiency: Building fabric
- Energy efficiency: Building services
- Energy efficiency: Processes
- Low-carbon energy purchase
- Low-carbon energy installation
- Process emissions reductions
- Transportation: fleet
- Transportation: use
- Behavioral change
- Waste recovery

SC3.1c

(SC3.1c) As part of Action Exchange, would you like facility level analysis?

Yes

SC3.2

(SC3.2) Is your company a participating supplier in CDP's 2018-2019 Action Exchange initiative?

No

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services?

No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	Public or Non-Public Submission	I am submitting to
I am submitting my response	Public	Customers

Please state the main reason why you are declining to respond to Investors

Request not received directly from Investors



Please confirm below

I have read and accept the applicable Terms