



2017 SUSTAINABILITY REPORT

STRIDES IN STEWARDSHIP



Norfolk Southern's commitment to be a good steward of resources drives operating performance that benefits the planet, commerce, and people. See how in this report.

PROGRESS

NORFOLK SOUTHERN IS CREATING LONG-TERM BUSINESS VALUE BY FOLLOWING A STRATEGY BUILT ON FOUR PILLARS OF STRENGTH: SAFETY, SERVICE, STEWARDSHIP OF RESOURCES, AND GROWTH.

PROSPERITY

DELIVERING RELIABLE AND CONSISTENT CUSTOMER-FOCUSED SERVICE IS KEY TO NORFOLK SOUTHERN'S BUSINESS STRATEGY AND SUCCESS.

PEOPLE

NORFOLK SOUTHERN'S NO. 1 PRIORITY IS KEEPING EMPLOYEES SAFE IN THE WORKPLACE AND ENSURING SAFE OPERATIONS IN THE COMMUNITIES THE RAILROAD SERVES.

PLANET

NORFOLK SOUTHERN INTEGRATES SUSTAINABLE BUSINESS PRACTICES INTO DAILY OPERATIONS TO INCREASE EFFICIENCIES, REDUCE OPERATING COSTS, AND IMPROVE ENVIRONMENTAL PERFORMANCE.



NORFOLK SOUTHERN'S BUSINESS STRATEGY IS BUILT ON FOUR PILLARS OF STRENGTH: SAFETY, SERVICE, STEWARDSHIP OF RESOURCES, AND GROWTH.

With ongoing enhancement of business operations, including improved network and operating efficiencies, Norfolk Southern continues to advance sustainable freight transportation.

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A message from the CEO

Thank you for visiting Norfolk Southern's 2017 Sustainability Report, "Strides in Stewardship."



Sharing this report with key stakeholders – employees, customers, shareholders, communities, and suppliers – reflects the railroad's commitment to be a responsible corporate steward of the essential resources that make our business possible. We are excited about the challenges met and progress made during the past year, as you can read about in this report.

Norfolk Southern began a formal sustainability program 10 years ago, recognizing the value inherent in achieving balance between business practices and the world in which we operate. In the decade since, we have reinforced efforts to operate in environmentally responsible ways. Today, sustainability is an integral part of the railroad's daily operations and long-term business strategy.

In late 2015, Norfolk Southern adopted a strategic plan built on four pillars fundamental to our approach to corporate social responsibility. These pillars – safety, service, stewardship of resources, and growth – provide a balanced approach for enhancing safety of operations, improving customer service, ensuring the wise use of resources, and creating long-term business value.

As we efficiently transport the products that keep local, state, and the U.S. economies moving, Norfolk Southern strives to be a leader in safety, service, fuel and energy conservation, and emissions reduction. In 2016, against tough economic conditions for the entire rail industry, we recorded significant accomplishments in sustainability.

We achieved all-time records for operating ratio and locomotive fuel efficiency. We reduced greenhouse gas emissions to the lowest levels since 2010, lowering both absolute emissions and intensity of emissions per revenue ton-mile of freight moved. We restored network performance to near-record levels, which improved the fluidity of train traffic and allowed us to streamline and make more effective use of our locomotive and rail car fleet.

We continued to advance the company's innovative locomotive modernization program that recycles older locomotives into like-new models, helping communities reduce transportation-related diesel emissions while revitalizing the locomotive fleet.

Above all else, our obligation as a corporate steward is to ensure the safety of employees and the communities we serve. As part of that commitment, we introduced an Operation Awareness & Response train. The OAR train provides classroom and hands-on training for local emergency responders across our network on railroad operations and safe response to potential rail incidents. Our employees, key to the railroad's success, are engaged in a safety program that makes safety personal and is focused on identifying and reducing risks.

Norfolk Southern has made many strides over the past decade in our quest to achieve industry leadership in corporate responsibility – and it's a long-term commitment as that journey continues. As a railroad that has been part of the American landscape for more than 185 years, we appreciate the enormity of that responsibility. We are dedicated to sustainable business practices that generate benefits for today's generation, and we will embrace the opportunities and challenges ahead to sustain those benefits for generations to come.



James A. Squires
Chairman, President and CEO

2016 performance highlights

Advancing sustainable transportation

Norfolk Southern's commitment to be a good steward of resources drives operating performance that benefits the planet, commerce, and people.

PROSPERITY: ECONOMIC PERFORMANCE

- » Achieved a record operating ratio of 68.9 percent.
- » Improved network efficiency to near record levels, including a 9 percent increase in train speed and 7 percent reduction in the average time rail cars dwell in terminals compared with 2015.
- » Assisted 71 industries in locating or expanding their business along NS rail lines, representing customer investment of nearly \$4 billion, more than 4,600 new customer jobs, and more than 50,000 carloads of rail business annually.
- » Awarded the first NS Supplier Sustainability Award to recognize suppliers that demonstrate commitment to sustainable business practices.
- » Awarded nearly \$7.3 million in Norfolk Southern Foundation grants to communities in support of education, health and human services, arts and culture, and the environment.

PEOPLE: SOCIAL PERFORMANCE

- » Held the company's second Lead It Safety Summit, providing training and workshops for employee leaders of local Safety and Service Committees to enhance safety efforts on the front lines of operations.
- » Provided training for all operations employees on how to identify and reduce safety risks in the workplace.
- » Reduced for the second consecutive year the number of train accidents involving derailments.
- » Continued strides in hiring women, part of the company's strategy to increase its talent pool and workforce diversity.
- » Contributed more than 1,600 hours of employee volunteer service as part of the company's formal Thoroughbred Volunteer program.
- » Debuted a safety train to provide training for local emergency personnel on safe response to potential rail incidents.

PLANET: ENVIRONMENTAL PERFORMANCE

- » Achieved record locomotive fuel efficiency, saving approximately 7.4 million gallons of diesel fuel and avoiding 250,840 metric tons of greenhouse gas emissions.
- » Assembled more than 30 low-emission Eco locomotives at Juniata Locomotive Shop between 2015 and early 2017, combining NS' innovative locomotive modernization program with public-private partnerships to help communities reduce transportation-related diesel emissions.
- » Launched a new program to upgrade the locomotive fleet by converting 1990s locomotives from DC to AC traction power, enhancing their pulling power, reliability, and overall fuel efficiency.
- » Reduced overall greenhouse gas emissions to the lowest levels since 2010, cutting emissions intensity by nearly 2 percent compared with 2015.
- » Reduced electricity use as measured in kilowatt hours by more than 9 percent from 2015, reflecting systemwide energy-efficiency initiatives undertaken over the past five years.



NS' core sustainability issues

This report covers topics that Norfolk Southern considers the company's most significant environmental, economic, and social impacts. These core sustainability issues are key to the company's long-term success and are relevant to employees, customers, investors, and the communities the railroad serves.

The aim is to provide stakeholders with information about Norfolk Southern's management approach to achieving a healthy balance between its business imperatives and its environmental and social commitments.

Following are issues that Norfolk Southern considers central to its sustainability efforts:

PLANET	PROSPERITY	PEOPLE
<ul style="list-style-type: none">» Locomotive fuel efficiency» Diesel emissions reduction» Environmental partnerships» Energy-efficient operations	<ul style="list-style-type: none">» Customer-focused service» Network operating efficiencies» Long-term value creation» Corporate integrity	<ul style="list-style-type: none">» Workplace safety» Safe operations in communities» Diverse and inclusive workforce» Support of communities NS serves

Committed to good governance

As a transportation industry leader, Norfolk Southern is committed to good corporate governance in the workplace, the marketplace, and the communities where the company operates.

The company holds its board of directors, senior managers, and employees to the highest standards of ethical behavior. The company's Thoroughbred Code of Ethics and SPIRIT values – safety, performance, integrity, respect, innovation, and teamwork – provide the foundation for business conduct and relationships with shareholders, customers, co-workers, suppliers, competitors, and other stakeholders.

Guided by these core principles, NS creates long-term economic, environmental, and social value that benefits the company and its stakeholders.



For more information on governance, visit [Norfolk Southern's corporate website](#) for details on:

Board of Directors

Risk Management

Thoroughbred Code of Ethics

Governance Documents

Norfolk Southern Foundation, corporate, and business grants in 2016

NS corporate and Good Government Fund political contributions

NS corporate contributions to trade organizations in 2016

Third-party GHG emissions review

Norfolk Southern's disclosure of greenhouse gas emissions reflects the company's commitment to assess and reduce the environmental impacts of business operations. NS engaged auditing firm KPMG LLP to review the railroad's GHG emissions data.

Read KPMG's review letter and NS' 2016 GHG emissions report.

More information about Norfolk Southern's carbon footprint and efforts to reduce emissions is in this report's **Planet** section.

» ABOUT THIS REPORT

This is Norfolk Southern Corporation's 10th annual sustainability report. The report provides information on the company's primary environmental, economic, and social impacts during 2016 and early 2017. The report is intended to help stakeholders assess NS' commitment to corporate social responsibility.

Norfolk Southern's reporting is informed by the Global Reporting Initiative's G4 Core Level guidelines.

» LET US KNOW WHAT YOU THINK

Norfolk Southern Corporation, a publicly traded enterprise (NYSE: NSC) headquartered in Norfolk, Va., welcomes stakeholder feedback on this report. Comments and questions may be emailed to footprints@nscorp.com.

DELIVERING RELIABLE AND CONSISTENT CUSTOMER-FOCUSED SERVICE IS KEY TO NORFOLK SOUTHERN'S BUSINESS STRATEGY AND SUCCESS.

Norfolk Southern delivers widespread economic benefits, from serving the freight transportation needs of U.S. businesses and industries to helping communities grow and prosper.

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PROSPERITY



Strategic plan drives NS' economic performance

Norfolk Southern's strategic plan encompasses the company's economic stewardship. The plan is a blueprint to streamline operations, enhance customer service, and create long-term shareholder value. In 2016, NS delivered on its first-year commitments and is on target to meet 2020 goals by operating a faster, lower cost, and more profitable railroad.

NS achieved an all-time best operating ratio, drove productivity savings of \$250 million, and increased net income by 7 percent. NS increased profitability even as a sluggish industrial economy and weak commodity prices resulted in a decline in business volumes and revenue.

The key takeaway:

NS achieved high levels of service while streamlining operations and reducing expenses, demonstrating that excellent service does not need to cost more to deliver.

DELIVERING ON NS' STRATEGIC PLAN

Three key metrics	2016 performance	2020 goal
Operating ratio	68.9% (record)	< 65%
Productivity savings	\$250 million	> \$650 million
Earnings Per Share	10%▲	Double-digit annual compounded growth rate

At NS, it's all about the customer

As a freight rail transportation company, Norfolk Southern's daily goal is to provide shippers with consistent, reliable, and available service. In 2016, working hand in hand with customers, NS launched a series of initiatives to enhance service delivery, customer engagement, and ease of doing business with the railroad.



Across all markets, NS' goal is to meet the unique business needs of individual customers, increasing the value the railroad adds to their supply chains.

Following are highlights of customer-focused initiatives underway:

» SERVICE-DELIVERY METRICS

NS has introduced service-delivery metrics more closely aligned to how customers define service excellence. The metrics, shared with employees and customers, are based on customer feedback. They include measuring such things as shipment consistency for NS' merchandise customers and container availability at terminals for intermodal customers.

» UPDATED WEB-BASED CUSTOMER PORTAL

NS is updating its web-based customer portal, AccessNS, to enhance customer communications. The e-business platform will offer a modern, easy-to-navigate interface featuring a graphical dashboard of commonly used functions and near real-time shipment information. The upgrade will include a mobile app for customers on the go.

» DISTRIBUTION IMPROVEMENT SOFTWARE

NS is developing computer software to improve distribution of empty rail cars to help customers better manage business across their supply chains. The new Thoroughbred Equipment Asset Management System – TEAMS – uses advanced algorithms to allocate distribution of rail cars based on supply, demand, and priority. In addition, an equipment strategy team is working on a plan to create a more homogenous car fleet that offers more flexibility for customers and NS.

» UNIFIED INTERNAL COMMUNICATIONS SYSTEM

NS is creating a unified internal communications system to provide customers with "one-stop shopping" to help them address shipping issues. With this enterprise tool, employees involved in customer contacts – including marketing and sales, operations service and support, and revenue accounting – will have fingertip access to track customer issues and what NS is doing across departments to resolve them.

Delivering the goods in 2016

In 2016, Norfolk Southern achieved significant gains in network performance metrics. These improvements contributed to a faster, more fluid network. Improving the flow of network traffic enhances the reliability and consistency of NS' service, both important to customers.

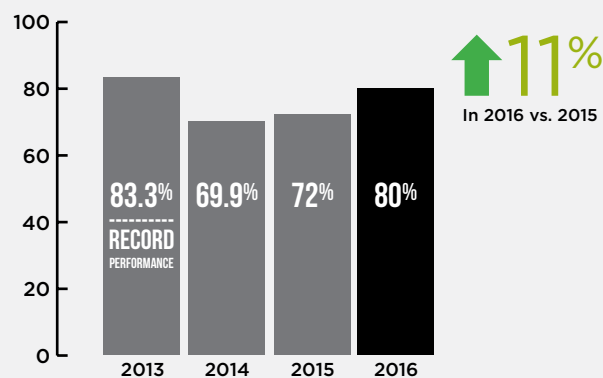
Two factors drove network improvements: a right-sized train and engine crew workforce and improved reliability of the locomotive fleet.

To ensure it has the right number of train crews, NS has established optimum hiring levels across the network based on an analysis of past traffic volumes. In core locations, NS maintains a minimum floor of train and engine employees needed to handle volume increases without disruption in service levels.

To improve locomotive reliability, NS is buying new locomotives – 50 in 2016 and another 50 in 2017 – and is modernizing older models into like-new units. That includes a plan to convert 1990s-model locomotives from DC to AC traction power, which will enhance reliability, pulling power, and fuel efficiency at less than half the cost of buying new models.

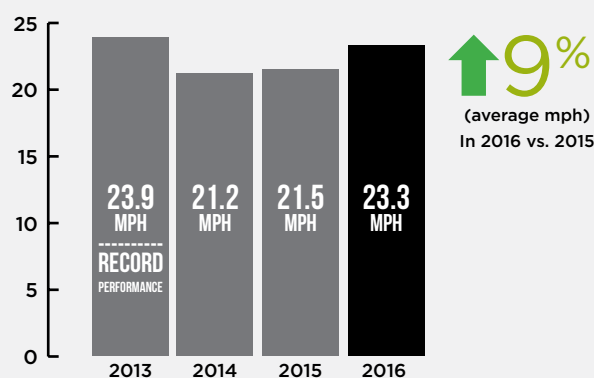


COMPOSITE SERVICE



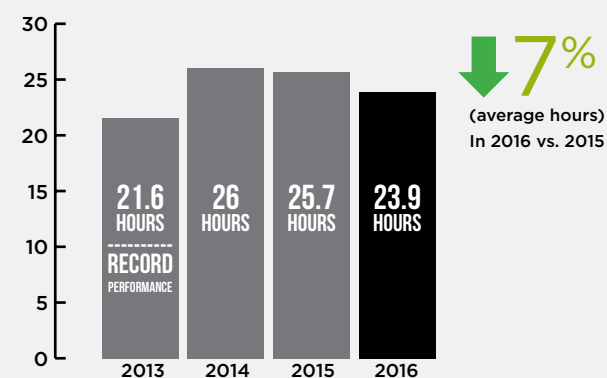
Similar to an airline itinerary, all NS shipments have a trip plan. The composite service metric combines three measures: the percentage of trains arriving at destination as scheduled; the percentage of customer carload pickups and setouts executed as scheduled; and the percentage of carloads making scheduled connections for delivery to customers.

TRAIN SPEED



Train speed is a measure of how smoothly and efficiently trains move across the network. A high-velocity network enables the railroad to move more freight with fewer locomotives and rail cars and add network capacity. This means NS can improve delivery times while reducing operating costs.

TERMINAL DWELL TIME



Dwell time measures how long a rail car remains in a terminal before departing on an outbound train. The shorter the time, the better.

For the economy, NS delivers widespread benefits

Norfolk Southern's business operations generate positive economic benefits that ripple throughout local and state economies. With tracks that connect shippers to domestic and global markets, NS is an economic engine, helping businesses and communities grow and prosper.

In 2016, Norfolk Southern:

» FUNDED

an employee payroll of more than \$2.1 billion and disbursed a combined \$5.4 billion in taxes, purchases, and other payments throughout 22 states and the District of Columbia.

» ASSISTED 71 INDUSTRIES

in locating or expanding their businesses along its rail lines. That economic development represented customer investment of nearly \$4 billion, more than 4,600 new customer jobs, and more than 50,000 additional carloads of rail traffic annually.

» INVESTED \$1.9 BILLION

in capital projects, including rail, crossties, locomotives, freight cars, and facilities that improved rail infrastructure critical to the nation's economy and generated spinoff economic benefits across the NS supply chain.



NORFOLK SOUTHERN'S 2016 ECONOMIC FOOTPRINT (\$ in thousands)

State	Total Number Of Employees Paid (A)	Total Payroll (A)	Total Taxes, Purchases & Other Payments (B,C)	Miles Of Road Operated 12/31/2016	Industry Investment in Facilities on NS Network	New Customer Jobs	Additional Customer Carloads
ALABAMA	1,725	\$111,748	\$80,731	1,304	\$1,047,000	1,250	3,900
DELAWARE	116	7,156	8,343	78			
DISTRICT OF COLUMBIA	7	579	15,621	13			
FLORIDA	203	11,550	97,102	148			
GEORGIA	4,885	337,805	421,276	1,705	11,000	15	12,790
ILLINOIS	1,558	100,016	1,253,119	1,256	4,924	19	2,007
INDIANA	2,564	169,645	97,332	1,441	1,181,105	1,170	7,921
IOWA	14	770	8,749	43			
KENTUCKY	1,152	71,443	105,645	429	18,462	2	116
LOUISIANA	79	4,620	8,386	76			
MARYLAND	155	8,969	45,358	233			
MICHIGAN	758	51,716	46,606	487	13,300	15	250
MISSISSIPPI	256	16,285	21,409	211	50,000	150	7,200
MISSOURI	601	38,364	143,678	409	110,000	190	2,069

(A) Employment based on W-2's state of residence.

(B) Taxes include state income, property, sales and use, franchise, and other miscellaneous taxes.

(C) Total purchases includes capital items, rolling stock, joint facility, employee claims, legal fees, and other payments.

NORFOLK SOUTHERN'S 2016 ECONOMIC FOOTPRINT (\$ in thousands)

State	Total Number Of Employees Paid (A)	Total Payroll (A)	Total Taxes, Purchases & Other Payments (B,C)	Miles Of Road Operated 12/31/2016	Industry Investment in Facilities on NS Network	New Customer Jobs	Additional Customer Carloads
NEW JERSEY	213	\$12,861	\$80,937	931			
NEW YORK	521	32,285	145,941	890			
NORTH CAROLINA	1,280	81,462	317,884	1,189	\$15,183	24	16,473
OHIO	3,980	248,506	562,603	2,021	1,444,750	414	4,660
PENNSYLVANIA	4,920	307,026	931,451	2,402	288	6	212
SOUTH CAROLINA	733	48,244	51,580	762	70,036	115	4,870
TENNESSEE	1,763	111,018	112,059	829	9,516	44	84
VIRGINIA	4,162	301,776	203,638	1,990	2,322	44	2,289
WEST VIRGINIA	885	55,992	38,477	618	251	9	826
ALL OTHER	72	4,267	628,608	4			

(A) Employment based on W-2's state of residence.

(B) Taxes include state income, property, sales and use, franchise, and other miscellaneous taxes.

(C) Total purchases includes capital items, rolling stock, joint facility, employee claims, legal fees, and other payments.



Helping customers grow and communities prosper

Norfolk Southern's Industrial Development group plays a key role in facilitating business growth, a pillar of the railroad's strategic plan.

In pursuit of new freight rail business, the group has three primary goals: To partner with communities to identify industrial sites for rail-served companies; to cultivate connections through outreach to local and state economic development officials and industry representatives; and to effectively manage industry site-selection projects.

To help market development sites, the group has enhanced its capabilities through use of new geographic information system technology. With the GIS tools, the group can quickly create site drawings with 3D renderings and animation that realistically convey the look and feel of how rail could serve a new or expanding industry.

With its Prime Site Initiative, NS collaborates with states and other entities to certify sites as rail ready, with utilities and other amenities already installed or planned. This designation assures prospective customers that NS has reviewed the site and can provide efficient rail service.



JASON REINER
assistant vice president
industrial development

"The important things to our communities are jobs and investment. What rail access does for them is attract business and industry. There's good evidence that rail-served projects provide stable, good-paying jobs."

NS FINANCIAL VALUE (Numbers in millions, except per-share amounts)

	2014	2015	2016
Railway operating revenues	\$11,624	\$10,511	\$9,888
Income from railway operations	\$3,575	\$2,884	\$3,074
Net income	\$2,000	\$1,556	\$1,668
Dividends per share	\$2.22	\$2.36	\$2.36
Dividend payout ratio (as % of net income)	34%	46%	42%
Stockholders' equity	\$12,408	\$12,188	\$12,409
Operating ratio	69.2%	72.6%	68.9%
Debt-to-total-capitalization ratio	42%	45.3%	45.4%

NS helps Subaru expand in Indiana

In 2016, a Subaru auto plant expansion in Lafayette, Ind., showcases how Norfolk Southern helps customers grow their business.

Newspaper headlines told the public story: Subaru of Indiana Automotive invested around \$400 million with plans to add more than 1,000 jobs to manufacture its Impreza model at the Lafayette facility – Subaru’s only U.S. plant. The plant also assembles Legacy and Outback models.

Behind the headlines, Norfolk Southern was helping to make that happen. NS’ industrial development group prepared conceptual drawings and preliminary engineering designs for rail tracks the automaker wanted to install on the plant property. The designs showed where the tracks could be placed to ensure the most efficient service from NS – the only railroad with direct access to the plant.

“That gave them a blueprint to work from for their detailed construction plans,” said Dayne Tate, industrial development manager. “We helped them visualize how they could expand their tracks and tried to point them in the right direction from the get go.”

At the same time, NS invested in infrastructure improvements at its Lafayette rail yard, located adjacent to the auto plant. To facilitate switching of bilevel and trilevel autorack rail cars, NS added more than two miles of track sidings and installed new turnouts on existing tracks. The yard upgrades added significant rail capacity and flexibility to support Subaru’s daily shipping needs.

“Subaru is a very good customer for Norfolk Southern,” said Brandon Smith, an NS trainmaster. “Not only did NS benefit from the expansion, but the town of Lafayette and the state of Indiana have seen benefits. It’s created jobs for a lot of people.”

Since the expansion, NS has helped Subaru move into additional U.S. markets on the railroad’s network, said Mike Williams, account manager with NS’ auto and supply chain group.

“With these enhancements and mutual investments,” Williams said, “NS is well-positioned to continue to grow with Subaru.”



Capital investments strengthen the franchise

To support growth and enhance safety and service, Norfolk Southern in 2016 reinvested about 19 cents of every \$1 in operating revenue into capital projects.

With its capital budget, NS has four priorities:

- » **Maintain or buy new assets, including rail and track infrastructure, locomotives, and freight cars.**
- » **Ensure consistent, reliable customer service.**
- » **Enhance operational efficiencies and productivity.**
- » **Foster growth in targeted markets.**

These investments strengthen NS' competitive position in the marketplace and generate significant benefits as they filter through local economies. The expenditures are income for NS suppliers and their employees, generate tax revenue for local and state governments, and support job growth and economic development.

2016 CAPITAL INVESTMENTS \$1.9 BILLION

POSITIVE TRAIN CONTROL: \$265 MILLION / 14%

Installed PTC technology on locomotives and for wayside communications and signals systems.

TECHNOLOGY AND OTHER: \$87 MILLION / 5%

Installed LEADER train-handling technology on locomotives, network storage capacity, computer hardware, and small-dollar projects for each division.

FACILITIES/TERMINALS: \$155 MILLION / 8%

Facility expansions and renovations, yard improvements, and environmental protection projects.

INFRASTRUCTURE: \$47 MILLION / 2%

Improvements to support growth, track sidings and connections for added capacity and operational efficiencies, and switch and signal upgrades.

MAINTENANCE OF WAY: \$880 MILLION / 46%

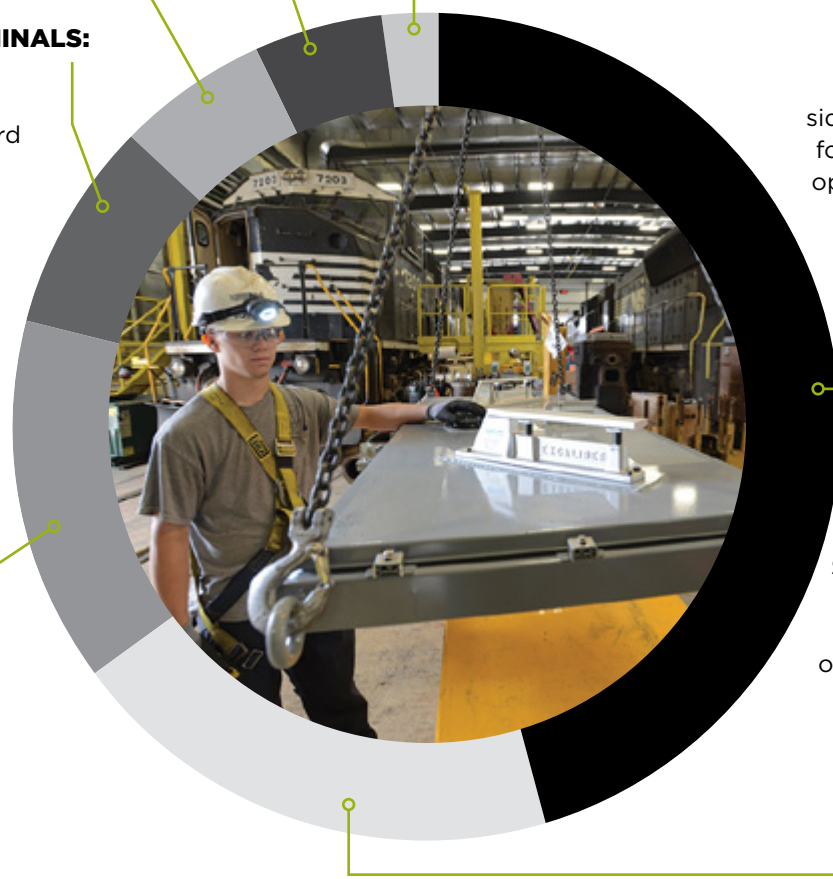
Installed 518 track miles of rail, ballast on 4,984 miles, and 2.3 million crossties.

FREIGHT CARS: \$121 MILLION / 6%

Acquisitions to handle existing traffic and volume growth.

LOCOMOTIVES: \$366 MILLION / 19%

New units, locomotive emissions kits, rebuilds, and DC-to-AC traction motor conversions.



2016 RAILWAY OPERATING REVENUES BY MARKET TOTAL: \$9.9 BILLION

(Numbers are rounded)



Contributing to a sustainable value chain

Norfolk Southern plays a vital role in the nation's transportation supply chain, helping shippers move their goods safely and efficiently to market. Critical to the railroad's value chain are the thousands of businesses that supply the goods and services NS needs for successful operations, from rolling stock to steel rail.

In 2016, NS contributed to the livelihood of over 6,500 suppliers with more than \$3.3 billion in purchases. Five large companies accounted for more than \$703 million of the railroad's total spend, or about 21 percent. They included two companies that supply locomotive diesel fuel, two companies that manufacture locomotives and locomotive material and technologies, and a technology company that develops track communications and signals technologies, including wayside signals being installed for positive train control.

NS spent more than \$207 million with minority-owned companies, including those owned by women, blacks, Asian Americans, Hispanic

Americans, Native Americans, and businesses that are small, disadvantaged, or located in areas of high unemployment, as designated by the U.S. Department of Labor. Since 2011, NS has expanded its minority supplier base by more than 300 percent, to 289 suppliers from 68.

Overall, NS' spending on goods and services declined about 18 percent in 2016, reflecting disciplined cost-control amid a sluggish industrial economy. NS' spending with minority suppliers dropped 13 percent.

Supporting suppliers with shared values



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.

NS' 2016 SUPPLY CHAIN BY THE NUMBERS

Approved suppliers	6,555
Minority suppliers	289
Spend with minority vendors	\$207.1 million
Total spend	\$3.31 billion

SUPPLIER PURCHASES BY CATEGORY

Materials and equipment	\$1.4 billion
Services	\$1.2 billion
Diesel fuel	\$640.1 million
Equipment leases	\$36.6 million

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 engineless "slugs" that add emissions-free pulling power.

With focus on rail transport, NS subsidiaries earn EPA recognition

Norfolk Southern subsidiaries share the railroad's commitment to provide efficient, productive, and sustainable freight transportation for customers.

In 2017, 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. Trains are four times more fuel-efficient on average than trucks, reducing GHG emissions by 75 percent per ton-mile of freight.



NS helps make communities stronger

Norfolk Southern supports the health and well-being of communities the railroad serves. One way the company demonstrates that commitment is through the Norfolk Southern Foundation, NS' corporate giving arm.

In 2016, the Foundation awarded nearly \$7.3 million to communities to support education, health and human services, arts and culture, and the environment. Combined with corporate grants, matching gifts, and business-related programs, NS gave \$11 million to organizations such as food banks, museums, libraries, symphonies, theatres, local police and fire departments, conservationists, and business and economic development groups.

The Foundation sponsors a local grant program that enables each NS operating division to recommend up to \$30,000 in annual contributions to nonprofit groups across the system. In 2016, the divisions gave \$331,250 to groups such as volunteer fire departments, rescue squads, police departments, human services organizations, and educational institutions.



Through a matching gift program, the Foundation matched 1,138 employee and retiree gifts to 458 educational, arts, cultural, and environmental organizations. Business donations supported memberships and sponsorships that included the U.S. Chamber of Commerce, the American Coalition for Clean Coal Energy, Operation Lifesaver, and the National Association of Manufacturers.

NS also provided funding to charitable organizations through its Good Government Fund matching contributions initiative.

2016 NS PHILANTHROPY SCORECARD

NS Foundation	\$7.28 Million
Foundation Grants	471
Combined Foundation, Corporate, Matching, Business Giving	\$11 Million
Community Relations	\$3,019,850
United Way	\$1,759,850
Other Health and Human Services	\$1,260,000
Business and Economic Development	\$2,025,786
Culture and Arts	\$1,415,940
Education	\$1,044,655
GGF Matching Contributions	\$901,407
Civic and Community	\$499,766
Environment	\$323,000
NS Foundation Matching Gifts	\$1,778,678
Education (231 institutions)	\$1,081,120
Culture/Arts (202 organizations)	\$673,784
Environment (25 organizations)	\$23,774

NS support adds up

Since its inception in 1983, the Foundation has awarded nearly \$160 million in cash awards and matching grants to thousands of charitable organizations across NS' system, including \$35.6 million in the last five years.

SAFETY IS A CORE VALUE AND STRATEGIC PILLAR OF NORFOLK SOUTHERN'S LONG-TERM SUCCESS.

Norfolk Southern is committed to safe rail operations, engaging with employees and communities to ensure that everyone goes home safely to family and friends at the end of the day. The company offers meaningful careers, supports diversity and inclusion, and encourages employees to give back to the towns and cities where they work and live.

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PEOPLE





EMPLOYEE SAFETY: NORFOLK SOUTHERN'S NO. 1 PRIORITY AS A STEWARD OF RESOURCES IS EMPLOYEE SAFETY.

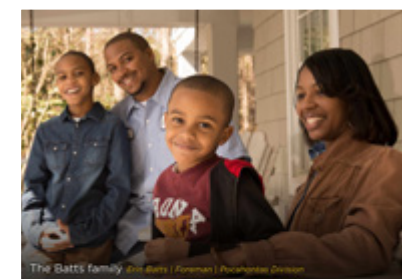
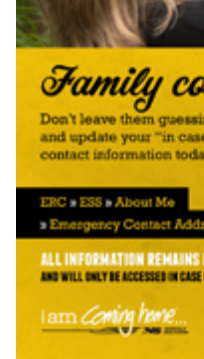
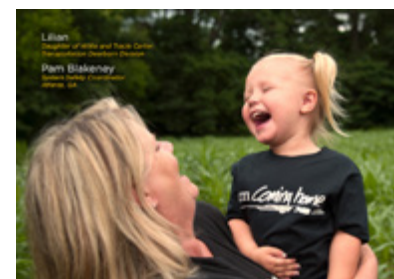
NS provides training, safety rules, and many other tools and resources to fulfill the railroad's safety vision statement: "We get home safe. Every day. No job is so important and no service is so urgent that we cannot take the time to perform our work safely."

Engaging employees drives the safety process

In 2016, NS held its second Lead It Safety Summit for employee leaders of local safety and service committees. The summit included workshops and training to help them be more effective in promoting safety on the front lines of operations.

Engaging employees is key at NS: Safety and service committee members systemwide conduct workplace safety check-ups and meetings to discuss safety concerns with co-workers. All employees are required to conduct job safety briefings before undertaking work tasks. Operations supervisors recognize employees on the spot to reinforce safe behaviors and rule compliance, which is the backbone of the company's safety process.

NS makes safety personal, recognizing that it's important not only to employees but to their families and loved ones. The company's "i am Coming Home" safety brand, rolled out two years ago, reminds employees daily that safety at NS means coming home at the end of each work day.



NS EMPLOYEE WORKPLACE INJURIES

	2014	2015	2016
Reportable injuries	350	303	335
Employees who lost work days due to injury	241	187	242
Reportable injury ratio per 200,000 employee-hours	1.22	1.05	1.28
Work-related fatalities	0	1	2

U.S. TRANSPORTATION INDUSTRY INJURY RATIO PER 200,000 EMPLOYEE-HOURS

Industry sector	2013	2014	2015 (latest year available)
Air transportation	7.5	7.5	6.2
Truck transportation	4.6	4.5	4.3
Water transportation	2.5	2.3	2.0
Rail transportation	2.0	2.0	2.0
Norfolk Southern	1.17	1.22	1.05

Rail: safest freight transport

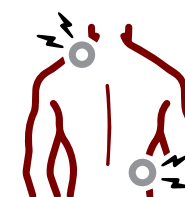
Norfolk Southern's commitment to the safety of its employees, customers, and communities contributes to the rail industry's safety-leading performance in U.S. transportation. Railroads consistently have the lowest employee injury ratio among all transportation sectors.

Workplace injuries increase in 2016

In 2016 – following a year of significant safety improvement – NS experienced an increase in injuries, with 242 employees losing work days due to a reportable injury, a 29 percent increase over 2015. Tragically, two employees died in workplace injuries. A terminal trainmaster in New Orleans died after being struck by a train. A carman in St. Louis, Mo., died after being struck by machinery as he was preparing to unload a flatbed trailer. NS fully investigates injuries and fatalities as part of ongoing efforts to enhance safety. NS' goal is zero incidents, zero injuries.



2016 top reportable injury



Strains: 120
36% of total

Training focuses on reducing risks

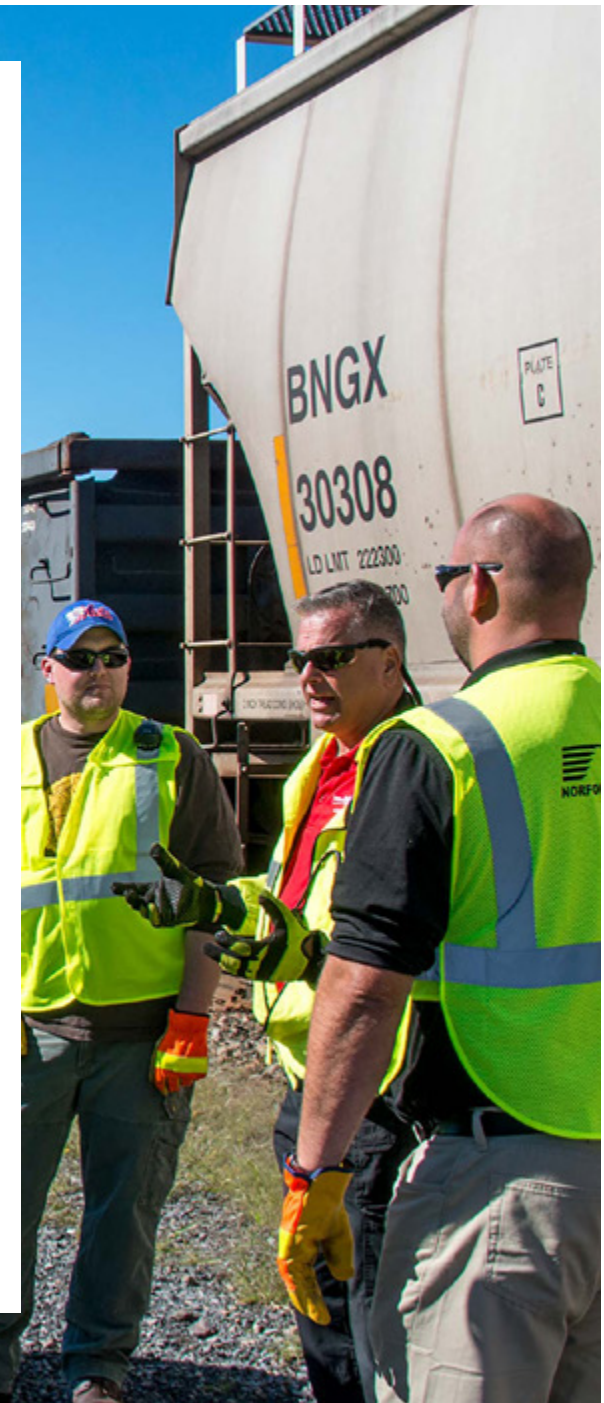
Work in railroad operations, including on and around moving trains, uneven terrain, and heavy machinery, poses daily risks. Over the past two years, NS has trained operations employees on how to identify and reduce workplace risks through a safety technique called “Pause, Process, and Proceed.”



Before starting a job task, employees are trained to always pause to assess risks; process what they see to choose a safe course of action; and then proceed in the safest possible way.

In 2017, NS rolled out a peer-to-peer communications tool called “Tell Me.” It’s based on the premise that safety risks can be reduced when employees give each other permission to speak up and say, “Tell me if you see me doing something risky” — such as taking shortcuts, failing to wear personal protection equipment, or ignoring safety rules.

Tell Me complements “i am Coming Home” and supports the company’s behavior-based safety program, which emphasizes positive recognition of safe behavior and coaching to ensure everyone understands and complies with safety rules.





COMMUNITY SAFETY

A partner in safe rail operations

Norfolk Southern recognizes that safety is good business. Along with workplace safety, NS' highest obligation is to operate safely in communities the railroad serves – places where NS employees also live and work. NS partners with customers, communities, and other stakeholders to continuously improve safe rail operations.

Following are examples of how NS advanced community safety in 2016:

- » Debuted a hazardous material safety train. NS hazmat experts trained 1,926 firefighters, police, and emergency responders in 18 cities across 13 states about rail operations and safe response to potential hazmat incidents. The mobile training lab, a multimillion-dollar investment, features a dedicated locomotive, two box cars converted to classrooms, three tank cars, and two flat cars with tank containers and multiple valve arrangements to simulate hazmat leaks. In 2017, the train is visiting 23 cities.

- » Launched www.joinNSOAR.com, a website designed to strengthen relationships with first responders and provide resources in support of safe rail operations. The website and safety train are part of NS' Operation Awareness & Response program, or OAR, to connect emergency first responders in NS communities with information and training resources.
- » Trained 5,573 first responders in 18 states on how to prepare for and safely respond to hazmat incidents. NS conducted more than 1,400 hours of training as part of its voluntary participation in the national Transportation Community Awareness and Emergency Response outreach program, or TRANSCAER.



- » Sponsored 40 emergency responders at a total cost of \$125,000 to attend a three-day "crude-by-rail" course at the rail industry's Security and Emergency Response Training Center in Pueblo, Colo. Additionally, NS provided about \$38,400 to sponsor 12 emergency responders to attend the 2016 Tank Car Emergency Response course.
- » Through the Norfolk Southern Foundation, NS' charitable giving arm, the railroad donated 113 grants totaling \$260,250 to emergency medical service agencies and first responders in 16 states.

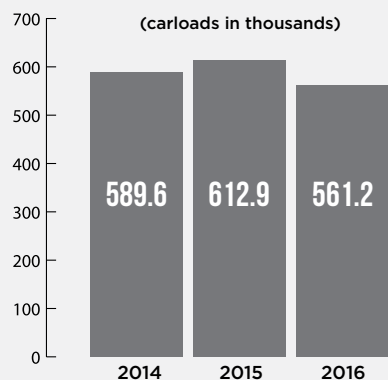
Safe America Foundation recognizes NS safety train

First responders from New York to Louisiana describe Norfolk Southern's hazmat safety train as a valuable training tool. The Safe America Foundation agrees.

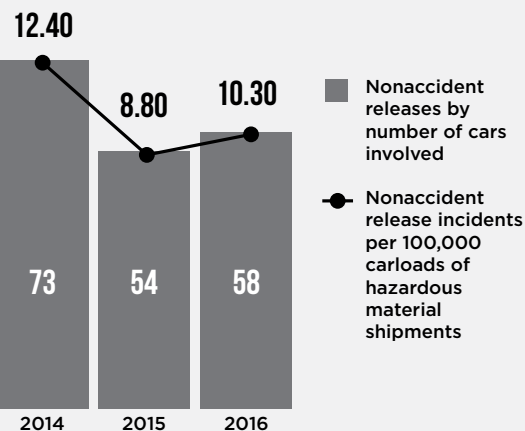
In November 2016, the foundation awarded a WorldSafe Award to NS for leadership in developing the safety train. The nonprofit, headquartered in Marietta, Ga., also recognized NS for its role in creating the AskRail mobile app, an industry safety tool that provides more than 13,000 emergency responder subscribers with immediate access to accurate, timely information about the type of hazmat a rail car is carrying.

Moving safely by rail - 2016

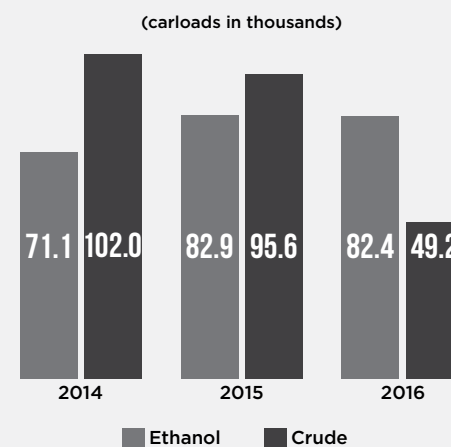
CARLOADS OF REGULATED HAZARDOUS MATERIAL TRANSPORTED



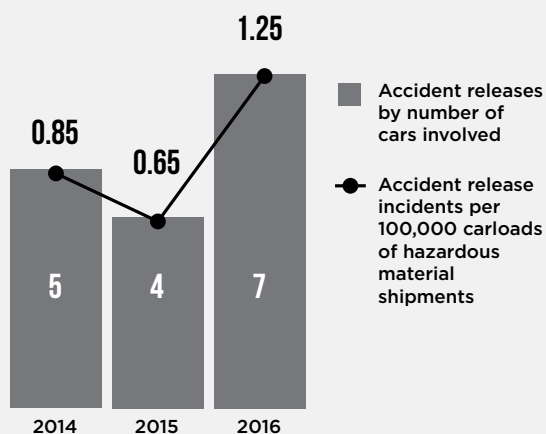
HAZMAT NONACCIDENT RELEASES



NS CARLOADS OF ETHANOL AND CRUDE OIL BY RAIL

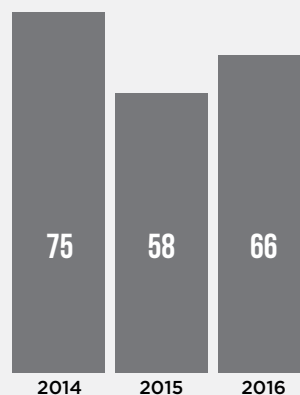


HAZMAT ACCIDENT RELEASES



TOTAL REPORTABLE HAZMAT INCIDENTS

» Includes accident and nonaccident releases
 » 99.9999876% carloads moved without incident





NS earns TRANSCAER recognition

In 2016, for the 17th time and 15th consecutive year, NS earned a National Achievement Award from TRANSCAER for its voluntary efforts promoting safe transport of hazmat. The award recognizes exceptional achievement in support of first responders in communities served by NS.

A decline in train accidents in 2016

Norfolk Southern continued making progress on efforts to prevent train accidents across its system. In 2016, NS reported 178 train accidents, a 16 percent decline from 2015 and a 22 percent drop vs. 2014. The majority of 2016 train accidents involved derailments, with more than 60 percent occurring at NS operating facilities.

An ongoing focus on accident prevention among operations employees in transportation, mechanical, and engineering has been a key factor in the positive downward trend of train accidents. Both the number and frequency of accidents have declined.

NS TRAIN ACCIDENTS			
	2014	2015	2016
Total number	228	213	178
Incidents per million train miles	2.38	2.21	1.97

Source: Federal Railroad Administration. (Does not include highway-rail or trespasser incidents.)

Seven cars released hazmat in rail accidents in 2016

In 2016, Norfolk Southern demonstrated its commitment to safely and efficiently transport federally regulated hazardous materials to market. NS’ goal is zero releases during transport. For the year, the number of releases remained small relative to the more than 560,200 carloads of hazmat transported.

Across NS’ 22-state territory, seven rail cars involved in six separate accidents released hazmat product. No injuries or long-term environmental impacts resulted. In all cases, NS environmental management employees partnered with regulatory authorities and contractors to secure, clean, and remediate spill sites.

For the year, NS reported a 14 percent increase in reportable accident and nonaccident releases of hazardous materials. The rise followed a year in which NS had achieved a nearly 23 percent decline in reportable incidents. As a common carrier, NS, like other U.S. railroads, is obligated to offer transportation of hazardous materials, which are vital commercial products used daily by businesses and households.

- Following is a snapshot of 2016 accident releases:**
- » In January, an NS contractor at the company’s Maple Heights, Ohio, intermodal facility dropped a container while moving it with a crane, causing about 150 gallons of polyaluminum hydroxyl chlorosulfate to leak. This liquid is used to treat water, including industrial factory waste and sewage water.
 - » In February, a train entering NS’ Brosnan Yard in Macon, Ga., struck a cut of cars in the receiving tracks, resulting in a derailment that caused a hopper car to leak approximately 2 pounds of sodium chlorate. This solid material is used to bleach wood pulp in the manufacture of white paper products.
 - » In February, a train derailment in Cincinnati, Ohio, damaged an outlet valve on a tank car transporting ethanol, causing it to release a small amount of vapor. Ethanol has many uses, including as a solvent in manufacturing and as a fuel and gasoline additive.
 - » In March, a train derailment in Ripley, N.Y., damaged two tank cars transporting ethanol, causing them to leak about 1,660 gallons of ethanol.
 - » In November, at NS’ Canton, Ohio, yard, a misaligned car coupler breached the shell of a tank car, causing it to leak about 27,500 gallons of tripropylene. This liquid is used mainly as a chemical building block in the production of polyurethane foam.
 - » In December, as NS pulled rail cars from a customer’s yard in Roxanna, Ill., six cars derailed, causing damage to a tank car that leaked approximately one gallon of spent sulfuric acid. Uses of this liquid include production of fertilizers and the manufacture of chemicals, synthetic detergents, dyes, and pigments.

Recognizing safe customer practices

Tank cars that move hazmat on Norfolk Southern trains are owned by customers, who are responsible for maintaining them. To recognize customer safety practices, NS annually awards its Thoroughbred Chemical Safety Award to manufacturers and plants that ship at least 1,000 carloads over the railroad without a single incident for the year.

Fifty-five customers that safely shipped 208,503 carloads of chemical products over the railroad in 2016 received the award.

Chemical customers who did not qualify for the award experienced at least one “nonaccident” release or other incident. In 2016, 58 tanks cars moving over NS leaked small amounts of hazmat in nonaccident releases – incidents not caused by derailment, collision, or other rail-related accident. Most nonaccident releases that occur during transit – including loading and unloading while in railroad possession – are associated with issues such as loose or faulty tank car valves and caps.

Norfolk Southern voluntarily participates in the American Chemistry Council’s Responsible Care Partner Program, meeting strict standards to identify, reduce, and manage process risks from the environmental, health, safety, and security perspectives.

HIGHWAY-RAIL GRADE CROSSING INCIDENTS

	2014	2015	2016
# of highway-rail incidents	373	328	314
# of train miles (millions)	96	96	90.5
Incidents per million train miles	3.9	3.4	3.5

TRESPASSER INCIDENTS (not at grade crossings)

	2014*	2015*	2016*
Injuries	67	60	70
Fatalities	85	98	86
Total	152	158	156
Incidents per million train miles	1.31	1.30	1.47

* Updates numbers from previous reports, only including incidents not at grade crossings

Community safety:

A focus on crossings and trespassing



Unsafe motorist behavior at highway-rail grade crossings and people who trespass on railroad tracks are two of Norfolk Southern’s biggest community safety challenges.

In 2016, NS experienced a 4 percent drop in incidents involving vehicles at highway-rail grade crossings. While the total number was down, the incidents per million train miles increased slightly. Five states accounted for 57 percent of 314 grade-crossing incidents. Georgia reported the most, at 47, followed by Indiana, with 46. The other three were Ohio, Pennsylvania, and South Carolina.

Trespasser incidents that resulted in injuries or fatalities followed the same trend as grade-crossing incidents – a slight decline in number but an increase of incidents per million train miles. Overall, 156 people trespassing on railroad property were injured or killed by a passing train.



Norfolk Southern's grade crossing safety group monitors approximately 27,000 public and private highway-rail grade crossings across 22 states. A community safety focus is working with local and state officials on gaining support to close crossings. In 2016, the group launched a program aimed at closing private crossings to reduce potential incidents in those areas.

NS also partners with Operation Lifesaver, a national nonprofit whose mission is to prevent collisions, injuries, and fatalities on and around railroad tracks and at grade crossings. More than 30 NS volunteers certified by Operation Lifesaver give community presentations about motor vehicle safety at grade crossings and the dangers of trespassing on railroad property.

Every year, NS police conduct programs in local communities to discourage trespassing on tracks. The two-day events include a day of sharing information with local law enforcement, media, and businesses located near NS tracks. The following day is spent patrolling tracks through the community to monitor for trespassers.

A fundamental message is that walking on or around railroad tracks is illegal except at designated crossings. In 2016, NS police arrested more than 670 people and issued warnings to nearly 11,000 people for trespassing on tracks and railroad property.

Norfolk Southern's workforce profile

A majority of employees at Norfolk Southern are covered by collective bargaining agreements that establish things such as wages, health and welfare, and work scheduling. At the end of 2016, 83 percent of employees were represented by a total of 13 trade unions.

These unionized craft employees include locomotive engineers and conductors; locomotive machinists, electricians, pipefitters, boilermakers, and firemen and oilers; freight car repairers; track and bridge maintenance workers; train dispatchers; and communications and signals electronic specialists and maintainers.



WORKFORCE COMPOSITION

As of 12/31/2016

AGREEMENT (UNIONIZED) WORKFORCE

Female	1,079	5%
Male	21,692	95%
Total	22,774	100%

Under 30	3,467	15%
30 to 50	13,593	60%
over 50	5,714	25%
Total	22,774	100%

White	19,364	85%
Black or African American	2,846	13%
Other	564	2%
Total	22,774	100%

NONAGREEMENT WORKFORCE

Female	973	21%
Male	3,759	79%
Total	4,733	100%

Under 30	706	15%
30 to 50	2,715	57%
over 50	1,312	28%
Total	4,733	100%

White	3,621	76%
Black or African American	890	19%
Other	222	5%
Total	4,733	100%

SENIOR MANAGEMENT

Female	3	13%
Male	21	87%
Total	24	100%

Under 30	0	0
30 to 50	4	17%
Over 50	20	83%
Total	24	100%

White	22	92%
Black or African American	1	4%
Other	1	4%
Total	24	100%

2016 NEW HIRES

Agreement	379	55%
Nonagreement*	312	45%
Total	691	100%

* Includes NS subsidiaries Thoroughbred Direct Intermodal Services and TransWorks.

Female	128	19%
Male	563	81%
Total	691	100%

Under 30	408	59%
30 to 50	253	37%
Over 50	30	4%
Total	691	100%

White	467	68%
Black or African American	175	25%
Other	49	7%
Total	691	100%

EMPLOYEES WHO LEFT IN 2016

Note: Includes employees who were discharged, left due to disability or reduced workforce, resigned, and retired.

Agreement	2,365	81%
Nonagreement	557	19%
Total	2,922	100%

Female	249	9%
Male	2,673	91%
Total	2,922	100%

Under 30	595	20%
30 to 50	1,122	39%
Over 50	1,205	41%
Total	2,922	100%

White	2,359	81%
Black or African American	485	16%
Other	78	3%
Total	2,922	100%

CONDUCTOR TRAINEES HIRED

	2014	2015	2016
Female	93	152	26
Male	1,225	1,919	306
Total	1,318	2,071	332
% Female	7.1%	7.3%	7.8%

MANAGEMENT TRAINEES HIRED

	2014	2015	2016
Female	38	48	44
Male	105	121	149
Total	143	169	193
% Female	27%	28%	23%

NS effort to recruit women continues as strategic focus

Over the past several years, Norfolk Southern has stepped up recruitment of women for operations jobs. The effort is part of the company's strategy to increase its talent pool and the diversity of experience and views in the workplace, which have become increasingly important to business success in today's global business market.

Overall, hiring in 2016 was down because of economic conditions and reduced business volumes. However, the percentage of women hired remained steady, accounting for 19 percent of all new employees.



Committed to hiring veterans

Norfolk Southern actively recruits military veterans, who make the railroad a stronger company with their diverse skills, backgrounds, and perspective. Currently, NS employs over 3,500 veterans - about 13 percent of the workforce - who run trains, maintain track, work in shops, and serve in management jobs in NS' Norfolk and Atlanta corporate office towers.

In 2016, for the 10th year, NS was among 210 companies named to the 2017 Military Friendly® Employers list by Victory Media, a veteran-owned publisher of magazines such as G.I. Jobs and Military Spouse.

To help veterans and military spouses find rail industry jobs, NS supports the federal "Joining Forces" initiative and the U.S. Chamber of Commerce Foundation's "Hiring Our Heroes" program. Veterans can search an **NS website** for rail employment using their military job titles. NS' VeteraNS employee resource group offers networking and support for veterans and their families.



Thoroughbred Volunteers support communities

Whether collecting school supplies for disadvantaged children, stocking thousands of pounds of canned goods at food banks, or cheering on Special Olympians, Norfolk Southern employees help improve the quality of life in their communities.

During 2016, Thoroughbred Volunteers, the railroad's formal employee volunteer program, contributed more than 1,600 hours of service to organizations in key locations across the network. The beneficiaries included the Georgia Special Olympics, the Foodbank of Southeastern Virginia, the Atlanta Community Food Bank, REACH (Reading Enriches All Children), the Susan G. Komen organization, the Leukemia & Lymphoma Society, the Greenville, S.C., Humane Society, Girls on the Run, the United Way of South Hampton Roads, and Paint Your Heart Out Hampton Roads.

Thoroughbred Volunteer chapters currently exist in Norfolk and Roanoke, Va., Atlanta, Harrisburg, Pa., and Greenville, S.C.

Norfolk: Volunteers assisted an elderly home owner by painting, replacing a back deck, repairing porch railings and windows, and planting flowers as part of Paint Your Heart Out day. Other events saw volunteers sorting more than 6,000 bags of food for the Foodbank of Southeastern Virginia; collecting debris littering the Chesapeake Bay;

preparing 400 bags of food for the Foodbank's mobile pantry for delivery to areas with limited access to grocery stores; and reading to children living in shelters.

Atlanta: Volunteers helped register and coach athletes in the Georgia Special Olympics Summer Games; read with elementary school students; delivered meals to homebound residents; and collected more than 700 pairs of new and gently used socks for the homeless. During Hands On Atlanta Day, Thoroughbred volunteers helped Atlanta's conservation efforts by building a new path and clearing invasive brush and vines at Blue Heron Nature Preserve. They also watered and mulched trees in the West End area of the city.

Harrisburg: Volunteers helped spruce up the 210-acre Wildwood Park preserve, coached girls running in The Girls on the Run 5K, and participated in the Humane Society of Harrisburg's 5K Run/Walk for the Animals.

Greenville: Volunteers collected school supplies for disadvantaged students and raised funds for the local humane society, the Leukemia/Lymphoma Society, and the Susan G. Komen organization.



NS volunteers build community through shelter reading program

From reciting Dr. Seuss tongue twisters to recounting the swashbuckling adventures of pirates, Norfolk Southern employees help instill a love of reading in children living in shelters in southeastern Virginia.

Every month, NS volunteers in Norfolk and surrounding cities fan out in pairs to 11 shelters for the homeless and victims of domestic violence. Once there, these Thoroughbred Volunteers spend an hour or so reading aloud to children ages two through teens. These sessions are part of NS' long-term partnership with REACH - Reading Enriches All Children, a nonprofit that serves communities in Hampton Roads, Va., where NS is headquartered.

The REACH literacy program gives children in abusive or homeless situations opportunities to listen to stories and make crafts. "They're just kids who want someone to talk to and read with them," said Chris Luebbers, NS group manager intermodal yield, who began volunteering with REACH seven years ago and now serves as treasurer for the organization's board of directors.



Chris Luebbers, left, and Kinsha Swain are dedicated Thoroughbred Volunteers

At the end of reading sessions, each child is invited to select two new books. "They run to the bookcase and are very eager to pick out something and take with them," Luebbers said, noting that many families come to the shelters with few, if any, possessions. "Having a book gives them a sense of pride and ownership."

Kinsha Swain, NS assistant corporate secretary and co-chair of the Thoroughbred Volunteer Council in Norfolk, began volunteering with REACH several years ago. It soon became one of her favorite volunteer activities. "We're helping children improve their literacy skills," she said, adding that she was surprised to discover that some of the children were reading far below their grade levels. "This program is definitely needed in the community."

As part of NS' support, the Norfolk Southern Foundation, the company's charitable giving arm, has awarded grants to REACH. The partnership with REACH, Luebbers said, demonstrates the value NS places on giving back to communities where employees live and work.

"It's easy for a company to put money out there into the community, but to really back up that commitment with the actions of employees really goes to the strength of our culture at NS," Luebbers said. "The support the Norfolk Southern Foundation gives REACH is essential in order for it to accomplish its mission."

Helen Hart, NS general solicitor, is president of the REACH board of directors.

NS' contributions are vital to REACH's continued growth, said Lori Miller, who retired in June 2017 as executive director of REACH. "The Norfolk Southern Foundation is a tremendous help, and our volunteer support means everything," Miller said. "We couldn't do what we do without our volunteers."

STEWARDSHIP OF RESOURCES IS A PILLAR OF NORFOLK SOUTHERN'S STRATEGIC PLAN.

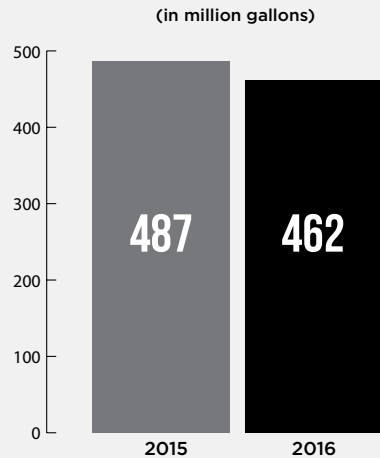
Norfolk Southern integrates sustainable business practices into daily operations to increase efficiencies, reduce operating costs, and improve environmental performance.

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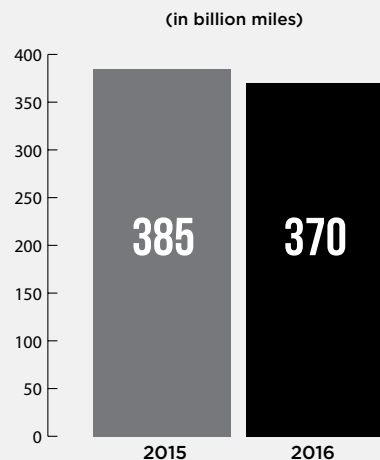


Locomotive fuel efficiency

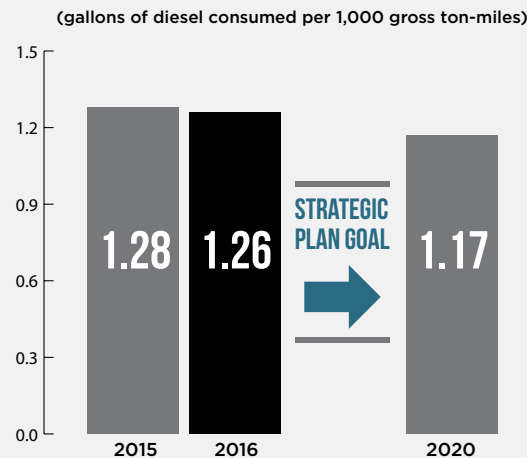
DIESEL FUEL USE



GROSS TON-MILES



RECORD FUEL EFFICIENCY



DIESEL FUEL EFFICIENCY SAVINGS:

7.4 MILLION
gallons



EMISSIONS AVOIDED:

250,840 metric
tons CO₂



NS makes steady gains in fuel efficiency



Norfolk Southern achieved record locomotive fuel efficiency in 2016, improving fuel economy by nearly 1.6 percent per 1,000 gross ton-miles of fleet operations over 2015. For the year, NS trains moved about 370 billion gross ton-miles, including in freight revenue service, operations work, and yard switching activity. NS locomotives consumed 1.26 gallons of diesel fuel per 1,000 gross ton-miles, down from 1.28 in 2015.

Overall, the company reduced locomotive diesel fuel use by 24.7 million gallons, a 5 percent drop vs. 2015. While reduced business volumes accounted for much of the drop, NS saved approximately 7.4 million gallons through improved fuel efficiency. In addition to improving bottom-line performance, NS' efficiency efforts benefitted the environment. NS' overall fuel-use reduction lowered carbon emissions by an estimated 250,840 metric tons – equal to removing nearly 53,000 passenger vehicles from the highway for a year.

A strategic approach to reduce fuel use, emissions, and costs

Norfolk Southern's goal to reduce fuel use is good for business and the environment. In 2016, NS spent nearly \$700 million on locomotive diesel – more than 10 percent of expenses. As a result, fuel consumption – tied to emissions and operating costs – is important for everyone at NS, from engineers-in-training to board members.

NS takes a multi-faceted approach to reducing fuel consumption, including advanced technologies, improved operating practices, and locomotive modernization programs.

Following are key efforts:



LOCOMOTIVE ENERGY-MANAGEMENT TECHNOLOGIES:



NS helped pioneer LEADER train-handling technology with an industry partner. The GPS-based system monitors a train's operating conditions to determine ideal throttle speed and dynamic braking to achieve maximum fuel efficiency. Locomotive engineers operate LEADER using an onboard computer touch-screen. In 2016, NS expanded its train-handling arsenal to include Trip Optimizer, another onboard energy management system used across the rail industry. By early 2017, NS had either LEADER or Trip Optimizer installed on 72 percent of its road locomotive fleet.



HORSEPOWER PER TON:



Known by train crews as HPT, Horsepower Per Ton is a powerful operating tool to achieve improved fuel efficiency. For every road trip, HPT gives locomotive engineers guidance on maximum horsepower to use based on train type, tonnage, and line segment. Engineers operating a train with three locomotives, for example, use HPT to determine the number of engines needed for each trip segment. At times, only one might be needed. HPT improves locomotive efficiency and saves fuel, reducing emissions and costs. NS rolled out this train operations program in early 2016.



LOCOMOTIVE MODERNIZATION:



In the ultimate rail industry recycling program, NS Mechanical Department employees convert older locomotives into like-new models at less than half the cost of buying new units. That includes the Eco locomotive, a 1980s-model yard switcher that NS has modernized and equipped with a new low-emissions engine while reusing most of the locomotive. Between late 2015 and early 2017, NS' Juniata Locomotive Shop turned out 32 Eco units, funded partly by federal grants that help states and localities reduce transportation-related emissions. Through these public-private partnerships, NS now operates Eco locomotives at rail yards in Atlanta, Chicago, Pittsburgh, Pa., and Macon, Ga.

NS also has launched a program to convert 1990s-model road locomotives from DC traction power to AC power. Replacing DC traction motors with more advanced AC technology improves reliability and tractive effort, enabling NS to reduce the number of locomotives needed on certain trains from three DC units to two AC units. NS saves fuel and costs because fewer locomotives are required.



REDUCED ENGINE IDLING:



NS has policies and programs in place, including employee training and monitoring, to reduce unnecessary idling of locomotives. In 2015, NS introduced a custom-made plug-in engine heater system now being used to reduce emissions in rail yards in and around Atlanta, Chicago, Kansas City, Mo., and across Ohio. The heater system allows NS to turn off locomotives in winter months without worry of engines freezing. The engines are kept warm and the batteries charged, reducing startup time.

NS energy scorecard

2016	437.1 million kilowatt hours
2015	482.3 million kilowatt hours*

**9.4%
REDUCTION**
In electricity use



*Updates kwh data reported in NS' 2016 sustainability report

NS energy initiatives good for business and the planet

Norfolk Southern has an ongoing program to upgrade facilities with more energy-efficient technologies – for good reason. In 2016, energy consumed to heat, cool, and light railroad facilities exceeded \$63 million in costs and accounted for more than 4 percent of NS' greenhouse gas emissions – second only to locomotives.

From installing LED lighting and advanced environmental controls in shops and offices to replacing heating systems in yard facilities, NS pursues opportunities to reduce energy use and emissions in ways that are profitable and good for the environment.

Over the past five years, NS' energy services group has led projects to outfit more than 100 railroad facilities with longer-lasting and more energy-efficient lighting and HVAC systems. The estimated

annual expense savings and environmental benefits are considerable: \$4.9 million in reduced energy and maintenance costs; 51 million fewer kilowatt hours of electricity use; and nearly 36,000 metric tons of reduced GHG emissions.

Key energy-efficiency projects in 2016

Given the progress Norfolk Southern has achieved in energy-efficiency upgrades over the past several years, the company scaled back investments in 2016 to assess results and plan for the future.

Key projects for the year included heating system upgrades at two locomotive shops on NS' Northern Region, at Elkhart, Ind., and Enola, Pa. The other significant project was installation of a combined heat and power generator at Juniata Locomotive Shop at Altoona, Pa., part of a \$53-million energy conversion project at NS' largest locomotive shop. Together, the projects are expected to generate total annual savings of \$1.05 million with an average payback period of 3.3 years.

The projects at Elkhart and Enola replaced oil-based heating systems with more efficient and cleaner-burning natural gas systems. At Altoona, the combined heat and power generator reduces the shop's operating costs, increases energy efficiency, and supports resiliency. The generator, powered by natural gas, produces enough electricity to carry the shop complex's base power load, reducing reliance on the regional utility. A heat recovery steam generator unit collects engine exhaust from the combined heat and power unit to produce steam used to clean shop equipment and for other work processes.

As part of the Juniata energy-conversion project, NS in 2015 replaced three 1950s coal-fired boilers with natural gas, reducing the shop's carbon emissions by more than half.

NS' land stewardship: Good for business

Norfolk Southern is an industry leader in conservation capitalism – a sustainable business approach that conserves the environment while generating economic benefits.

NS has extended the practice to operations outside of its core business of moving freight. A prime example is the railroad's Brosnan Forest, a unique 14,405-acre woodlands preserve in coastal South Carolina. Purchased in the 1830s by a predecessor railroad to harvest timber for crossties, NS hosts customers and company planning sessions at a small conference facility there. NS manages a rare longleaf pine ecosystem in the Forest that houses endangered red-cockaded woodpeckers. At the same time, NS creates business opportunities from carbon offset credits, wetlands credits, and selective harvesting of timber from the property.

The result: A desirable shift to a sustainable, ecological preserve with little or no net cost to the company and the potential to profit from it.

In early 2017, NS completed a Forest project to restore 290 acres of historic wetlands for use as a commercial wetlands mitigation bank. While creating wildlife habitat and restoring natural water flow, the "bank" will generate nearly 800 credits that can be sold to offset wetlands impacted by development within a seven-county area in the state's Lowcountry. The area eligible for the credits includes undeveloped land around the Interstate 26 and Interstate 95

interchange and other prime properties that could be suitable for rail-served industries.

NS is working with local economic development agencies to support growth opportunities the wetlands bank offers. "We see this as providing a service for them and for the industries they are trying to attract," said Josh Raglin, general manager of facilities at the Forest.

Since launching a carbon credit offset project in 2010, NS has earned more than 300,000 carbon credits from the Forest. About 200,000 of the credits have been purchased by a carbon brokerage group conducting business in California's carbon cap-and-trade market.



Josh Raglin, left, general manager facilities, and Joel Wells, manager Forest, helped establish a wetlands mitigation bank at NS' Brosnan Forest.

Going green with Trees and Trains

In its most ambitious carbon mitigation project, NS in 2015 completed a five-year partnership with GreenTrees, a reforestation program, to reforest 10,000 acres in the Mississippi Delta – an area long-served by the railroad. NS invested \$5.6 million to plant more than 6 million trees, generating income

for landowners who agreed to restore marginally productive farm fields to native hardwoods and cottonwoods.

Over 15 years, the trees will generate more than 1.1 million metric tons of carbon credits. NS has options to either use the credits to offset its own business-related carbon emissions or to sell the credits on carbon markets and recoup its investment in the project.

Either way, NS is positioned to benefit should concerns over climate change lead to government regulations aimed at capping or reducing carbon emissions. To date, California is the only U.S. state to establish a mandatory greenhouse gas cap-and-trade program, but more states could follow. In neighboring Canada, Quebec has established a cap-and-trade regime and Ontario is implementing a program.

“There’s going to be more demand for these carbon credits,” Raglin said, adding that NS’ carbon conservation program puts the railroad ahead of the curve. “It’s good for business, it’s good for the environment, and it provides a service that industries will increasingly need.”

NS WASTE SCORECARD 2016

SUMMARY*	TONS
Waste generated	416,461
Waste diverted	343,366
Waste to landfill	72,952
% total waste diverted from landfill	82%
RCRA hazardous waste**	143

MATERIALS REUSED OR RECYCLED	TONS
Crossties for energy	198,100
Mixed scrap metal and steel	91,848
Crossties for landscaping	30,384
Crossties reused internally	16,809
Recovered oil and grease	5,161
Recycled trash, cardboard, wood	797
BATTERY RECYCLING	
Lead acid	109
Other (GNB absolyte & zinc)	79
Nickel-cadmium	59
Locomotive	15
OTHER RECOVERED MATERIALS	
Fluorescent light bulbs	4.5
Solvent recovery/paint recycle	0.16

* NS hired an independent consultant to collect and quality-check waste stream data.

** Resource Conservation and Recovery Act wastes are managed by NS according to applicable federal and state laws.

NS diverts more waste into recycling and reuse

In 2016, Norfolk Southern recycled or reused 82 percent of its waste stream generated at office, yard, shop, and field facilities in 2016, keeping it out of landfills. That’s an increase from 76 percent in 2015, mainly because NS diverted more steel toward recycling and reuse, including recovered rail, rail cars, and scrap locomotives.

The bulk of materials diverted were industrial waste from railroad operations, including scrap steel and metal, used oil and grease, crossties, and batteries.

Based on business operations and market conditions, NS’ waste composition and diversion rate can vary from year to year – unrelated to efforts to increase recycling. In 2016, for example, NS sold 92,000 tons of steel for recycling or reuse, up from 80,400 tons. The increase, however, was due primarily to market conditions. When the price for steel dropped in fall 2015, NS stored its steel scrap until prices began recovering in 2016. Because landfill diversion is assessed by weight, the additional tonnage weighed favorably on NS’ recycling percentage.

Recycling of cardboard, wood, and other recyclable trash such as bottles, paper, and cans from more than 600 railroad facilities declined by nearly 29

percent, to about 800 tons from approximately 1,120 tons in 2015. An NS vendor under contract to collect and dispose of trash from NS facilities systemwide reported recycling about 4 percent of the more than 19,000 tons of waste collected.

Aiming for leaner and greener

With plans to lower costs and increase recycling, NS in early 2017 hired a new waste vendor to manage trash collection over the next five years. NS' initial target under the new contract is to recycle at least 10 percent of recyclables such as cardboard, cans, and bottles. Doing so will lower NS' landfill costs, potentially create revenue opportunities, and benefit the environment.

Waste to energy

In 2016, NS began sending 100 percent of trash collected from the company's McKinnon Building headquarters to a regional energy-from-waste facility that collects waste from municipalities and businesses to generate clean, renewable electricity for a local utility. With the shift, NS lowered its costs of trash disposal while supporting its commitment to sustainable environmental practices.

NS Lowers Greenhouse Gas Emissions

In 2016, Norfolk Southern reduced absolute emissions of greenhouse gases and also lowered the intensity of GHG emissions as measured by revenue ton-miles of freight moved.

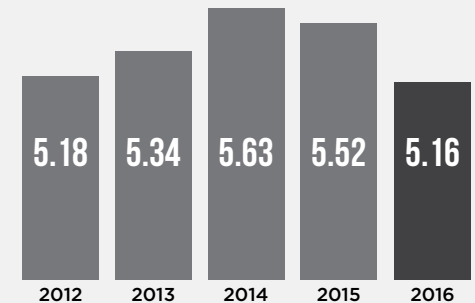
The GHG intensity reduction is attributed largely to ongoing locomotive **fuel-efficiency strategies**. Lower business volumes, resulting in reduced use of locomotive diesel fuel, was a major contributor to lowering absolute emissions.

NS reduced absolute emissions by 6.5 percent in 2016 vs. 2015. NS reduced its intensity of GHG emissions by nearly 2 percent, to 27.09 grams of carbon dioxide from 27.59 grams of carbon dioxide per revenue ton-mile of freight.

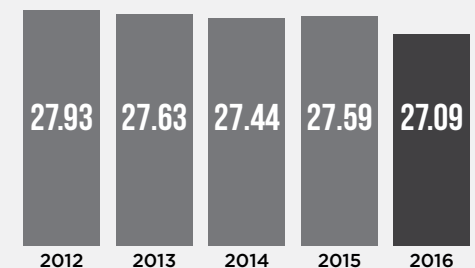
Since 2010, NS has reduced GHG emissions by 9.7 percent per revenue ton-mile of freight moved.



TOTAL SCOPE 1 AND SCOPE 2 CARBON DIOXIDE EQUIVALENTS: (million metric tons)

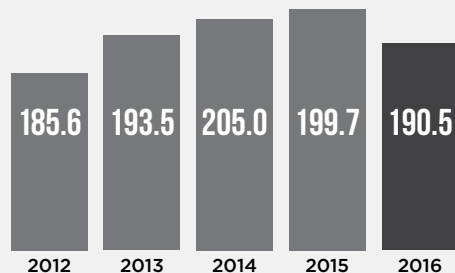


PER REVENUE TON MILE: (grams)



TOTAL REVENUE TON-MILES OF FREIGHT:

(in billions)



NS 2016 EMISSIONS

(CO₂ equivalents in metric tons)

	SCOPE 1	SCOPE 2
CO ₂	4,927,038	234,425
CH ₄	10,598	110
N ₂ O	32,523	989

NS 2016 EMISSIONS BY SOURCE IN CO₂ EQUIVALENTS

