

## SYLVANIA Lighting Services – Manufacturing/Warehouse Retrofit Case Study

### BEFORE



### AFTER



### Case Study Overview:

- Norfolk Southern Railway
- Warehouse, exterior, yard and office lighting
- Locations: 300 locations, 600 individual buildings
- SYLVANIA lamps and ballasts used: PENTRON® High Output T5 lamps, OCTRON® FO32/XPS T8 Fluorescent lamps, QUICKTRONIC® T5 High Output PROStart ballasts, QUICKTRONIC QHE electronic ballasts, Super METALARC® Pulse Start 750W & 320W, DULUX® EL Compact Fluorescent, occupancy sensor

### Benefits:

- Demonstrates that Norfolk Southern is a good corporate citizen
- Payback on project is 2.5 years
- Estimated reduction in energy usage is 50 million kWh

## OSRAM SYLVANIA HELPS NORFOLK SOUTHERN TO ACHIEVE ENVIRONMENTAL OBJECTIVES

*Lighting Upgrade Results in Substantial Energy Savings for Transportation Leader*

### **THE SITUATION:**

Norfolk Southern Corporation, a Norfolk, Va.-based rail transportation company, endeavors to integrate key sustainability initiatives into its business practices. Operating approximately 21,000 route miles in 22 states and the District of Columbia, Norfolk Southern has sought to reduce electricity consumption from lighting and therefore reduce its carbon footprint. The company worked with SYLVANIA Lighting Services (SLS) to design, specify, and install state-of-the-art energy-efficient lighting systems throughout its system.

The installation of enhanced lighting systems is a component of Norfolk Southern's broad-based

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sustainability initiative. Other aspects of the initiative include developing public-private partnerships to improve use of the nation's rail transportation network while supporting the economy; focusing on safety to benefit employees and communities; minimizing use of natural resources; and reducing, reusing and finding alternatives for commonly used railroad materials. The company recognized the opportunity to further its sustainability goals and to achieve a number of lighting quality improvements through the application of SLS lighting solutions.

### **THE SOLUTION:**

After performing various test projects, Norfolk Southern enlisted the expertise of SLS to assess existing lighting and provide upgrade service for more than 300 address locations and more than 600 individual buildings. These included office buildings, maintenance buildings, fabrication buildings, and exterior building and yard lighting applications. Once the existing lighting systems were reviewed, Norfolk Southern and SLS worked together to develop the most effective solutions that better suited the range of applications within the railway's business, with a primary objective of ensuring safe and efficient lighting while reducing energy consumption.

The lighting upgrades began in December 2007. Approximately 100 locations have been completed to date. Developed in accordance with Norfolk Southern's sustainability goals, the extensive design strategy involved replacing the original lighting system with today's energy-efficient technology. Outdoor and warehouse lamps using HID technologies were switched to Pulse start fixtures or completely retrofitted to T5 fluorescent lamps. Older T12 fluorescent lighting technology was replaced with T8 and T5 systems. Perhaps the easiest change was the substitution of compact fluorescent lamps for standard incandescent lighting in office buildings and maintenance shops.

"Several application factors were taken into consideration when we strategically developed a wide range of lighting solutions specifically designed to provide the best energy savings and quality," said Tyler Cobb, OSRAM SYLVANIA LEAN implementation manager.

"We believe it is our responsibility to ensure we operate our facilities as efficiently as possible by reducing our carbon footprint, preventing pollution, and incorporating sustainability into our corporate culture,"

Blair Wimbush  
vice president real estate and  
corporate sustainability  
officer of Norfolk Southern

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“The wide array of SYLVANIA energy-saving products allowed us to create lighting systems that demonstrate operational excellence and minimal maintenance costs while reducing electricity consumption and the environmental footprint of Norfolk Southern’s facilities.”

A major component of the lighting retrofit was the installation of T5 fluorescent systems in the high-bay application. The T5 technology replaced the existing HID systems and is anticipated to achieve a 50 percent energy reduction.

By utilizing high performance, long-life SYLVANIA PENTRON® T5 lamps and SYLVANIA QUICKTRONIC® T5 High Output PROStart ballasts to replace standard HID lighting, SLS was able to capitalize on complete system energy-efficiency. Incandescent light bulbs were replaced with comparable DULUX EL compact fluorescent lamps to ensure efficiency in office spaces. In addition, occupancy sensors were installed to turn lights out when areas are not in use.

### **THE GREEN EFFECT:**

Sustainability was a primary goal of the retrofit program. Norfolk Southern anticipates energy savings of 50 million kWh per year, with CO2 emission reductions of approximately 76 million pounds per year. The new lighting systems are anticipated to reduce annual sulfur dioxide emissions by approximately 271,800 pounds and to reduce annual nitrogen oxide emissions by approximately 105,150 pounds. In terms of pollution reduction, the retrofit is equivalent to permanently removing 4,325 cars from the road every year. “We believe it is our responsibility to ensure we operate our facilities as efficiently as possible by reducing our carbon footprint, preventing pollution, and incorporating sustainability into our corporate culture,” said Blair Wimbush, vice president real estate and corporate sustainability officer of Norfolk Southern. “We saw the lighting upgrade as a simple answer to the growing demand for energy, and SYLVANIA was able to successfully provide us with the lighting retrofit to achieve both significant reductions in greenhouse gases and related emissions and decreases in total electrical load.”

Energy isn’t the only savings Norfolk Southern will experience. The company also expects to see a payback in 2.5 years on its initial investment in the new lighting, plus savings in annual maintenance expenses.

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Norfolk Southern's ongoing efforts to reduce its carbon footprint align with OSRAM SYLVANIA sustainability initiatives. Projects such as the lighting system upgrades demonstrate the companies' commitments to sustainable business practices. Separately, and together on this project, the two companies are promoting better business practices and a better world.

### **SUMMARY:**

<b>LOCATION:</b>	Norfolk Southern properties across the eastern U.S.
<b>PRODUCTS:</b>	PENTRON® High Output T5 lamps QUICKTRONIC® T5 High Output PROStart ballasts FO28/841/XP/SS/ECO FO17/841/XP/ECO FO32/841/XP/ECO CF23EL/TWIST CF13EL/TWIST CF65EL/TWIST FP54/841/HO/ECO MS320/PS/BU-HOR MP150/PS/MED MS750/PS/BU-HOR MH575/PS/BU SYLVANIA OCTRON® FO32/XPS T8 fluorescent lamps SYLVANIA QUICKTRONIC® QHE electronic ballasts Occupancy Sensors

### **About OSRAM SYLVANIA**

OSRAM SYLVANIA is a leader in lighting solutions and specialty products that feature innovative design and energy saving technology. The company sells products for homes, businesses and vehicles primarily under the SYLVANIA brand name, and also under the OSRAM brand. Headquartered in Danvers, Mass., OSRAM SYLVANIA is the North American operation of OSRAM GmbH, a wholly owned subsidiary of Siemens AG. For more information, visit [www.sylvania.com](http://www.sylvania.com).

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### **ABOUT SYLVANIA LIGHTING SERVICES:**

SYLVANIA LIGHTING SERVICES (SLS) is the industry leader in turnkey energy management programs for interior and exterior lighting systems as well as preventive maintenance programs. With over 35 years of experience, the company provides dedicated lighting design capabilities, the best delivery of services, access to new energy-efficient lighting products, and a computer-routed national service fleet. SLS offers customers a single point of contact for all of their lighting needs, including recycling. A subsidiary of OSRAM SYLVANIA, SLS is a national company and is headquartered in Danvers, Massachusetts. For more information, please refer to our website at: [www.sylvania.com/sls](http://www.sylvania.com/sls).

### **About Norfolk Southern Corporation**

Norfolk Southern Corporation (NYSE: NSC) is one of the nation's premier transportation companies. Its Norfolk Southern Railway subsidiary operates approximately 21,000 route miles in 22 states and the District of Columbia, serving every major container port in the eastern United States and providing superior connections to western rail carriers. Norfolk Southern operates the most extensive intermodal network in the East and is North America's largest rail carrier of metals and automotive products. For additional information, visit Norfolk Southern's Web site at [www.nscorp.com](http://www.nscorp.com).