



# New York State Department of Transportation

## An Effective LED Traffic Signal Purchasing Strategy to Save Maintenance and Energy Costs

### Project Profile

**Number of Signalized Intersections:**  
**6,000 (NYSDOT)**

**Percent of Intersections Retrofitted:**  
**35  
red and green**

**Objective:**  
**Reduce Maintenance Costs**

**Project Feature:**  
**Statewide Procurement**

**NYSERDA**

**New York Energy Smart™**  
PUBLIC SERVICE COMMISSION NYSERDA

### Setting the Stage

The New York State Department of Transportation (NYSDOT) owns more than 15,000 miles of highway in New York State — about 13 percent of the state's highways. Approximately 6,000 signalized intersections along urban, suburban, and rural stretches of highway are under NYSDOT's jurisdiction.

In 1995, with the goal of extending its relamping schedule and reducing traffic signal maintenance costs, NYSDOT began exploring options for replacing its 150-watt red incandescent traffic signals. Ecolux (now Gelcore), a manufacturer of LED traffic signals, introduced NYSDOT to the value of LED signals. With rated lives of more than 20,000 hours, the LED signals offered the reduced maintenance NYSDOT was seeking and promised to lower electricity costs as well.

For NYSDOT, LEDs were just what the doctor ordered.

### Retrofitting with LEDs

With resources from NYSDOT's traffic signal improvement fund, the agency began retrofitting signals with LEDs during routine lamp replacements and using LEDs in all new installations. NYSDOT also kicked off an LED retrofit program to accelerate the rate of lamp replacements.

Initially, NYSDOT focused on retrofitting metered intersections to take advantage of the energy savings



*Detail of a green LED signal.*

associated with the new LED signals. However, once the agency realized the tremendous maintenance savings LED signals offered, NYSDOT quickly expanded its focus to include unmetered intersections as well.

NYSDOT is replacing incandescent red and green traffic signals and pedestrian signals with LEDs. Yellow and red LEDs are being installed in beacons and flashers. In 2001, NYSDOT began replacing the yellow lamps in some signal heads with LEDs on a trial basis to evaluate their performance and the impact on maintenance costs.

### Purchasing Made Easy

Under a statewide procurement contract, ten NYSDOT regions purchase LED traffic signals. The procurement program, currently with Conservation Station, Inc., is open to all counties and municipalities in New York, allowing local governments to take advantage of the lower prices negotiated by New York State Office of General Services (NYSOGS).

Conservation Station, Inc. purchases LED signals in bulk from the manufacturer, Gelcore, and sells them to state and local governments, offering savings of up to 50 percent. Gelcore's products are compatible with NYSDOT-specified controllers and other electrical components.

To date, approximately 20 city and county governments, representing small towns with as few as 10 intersections to large counties managing thousands of signals, have taken advantage of the procurement program.

**All counties and municipalities in New York can take advantage of the lower prices on LED signals offered under the NYSOGS contract.**

## The Proof is in the Numbers

Since 1999, NYSDOT has been the largest buyer of LED signals in New York, accounting for approximately 90 percent of the 41,500 LED signals purchased across the state through the New York State Office of General Services' procurement program.

Between 1999 and February 2001, annual energy savings grew from 4.7 million kWh to almost 17 million kWh. Based on an average energy cost of \$0.10 per kWh, NYSDOT estimates its annual energy savings from the LED signals to be nearly \$1.5 million.

Over the next few years, NYSDOT expects to see significant reductions in its maintenance costs as the needs for annual relamping and emergency maintenance decrease through the use of LEDs. NYSDOT performs approximately 85 percent of its own maintenance with in-house staff, with the remainder contracted out at a rate of roughly \$1,400 per intersection per year, including \$600 for maintenance, \$270 for annual relamping, and \$530 for emergency maintenance.

NYSDOT is pleased with its decision to convert to LED traffic signals and with the performance of its LED products. "The conversion to LEDs in traffic signals is one of the greatest potentials for energy and maintenance cost savings we have available," said Guillermo Ramos, head of NYSDOT's Traffic Signal Section. "Every transportation agency in the country should seriously consider using this technology."

## For More Information

To learn more about how your municipality can take advantage of NYSOGS's procurement contract for LED traffic signals, visit the NYSOGS website at [www.ogs.state.ny.us](http://www.ogs.state.ny.us) or contact the NYSOGS purchasing coordinator at (518) 474-6717 or [customer.services@ogs.state.ny.us](mailto:customer.services@ogs.state.ny.us).

This case study was developed by the New York State Energy Research and Development Authority (NYSERDA) to inform municipalities of the energy saving opportunities offered by LEDs. NYSERDA has many programs available that can help your municipality identify energy saving improvements that will reduce your utility costs, including:

**Technical Assistance Program:** Offers cost-shared help from energy engineers and experts for technical assistance. Funds are available for Energy Feasibility

Type	Qty Replaced	Annual kWh Savings/Lamp	Total Annual kWh Savings
8" Green Ball	3,504	254	890,016
8" Red Ball	4,294	258	1,107,852
8" Yellow Ball	1,017	26	26,442
12" Green Ball	9,345	504	4,709,880
12" Red Ball	11,496	521	5,989,416
12" Yellow Ball	1,931	52	100,412
12" Red Arrow	375	334	125,250
12" Green Arrow	2,810	331	930,110
12" Yellow/Green	969	497	481,593
12" Yellow Arrow	53	165	8,745
12" Ped Hand	2,119	271	574,249
12" Hand/Man	3,285	534	1,754,190
12" Countdown	221	525	116,025
18" Hand/Man	129	1,104	142,416
<b>Total Annual kWh Savings</b>			<b>16,956,596</b>



An installation of red LED signals in the NYSDOT service area.

Studies, Energy Operations Management, and Rate Analysis.

**Standard Performance Contracting:** Offers fixed-price incentives to energy service companies (ESCOs) that install cost-effective electric energy efficiency measures.

**Smart Equipment Choices Program:** Offers financial incentives to customers for energy-efficient lighting equipment.

To learn more about these programs and others, visit the NYSERDA website at [www.nyserda.org](http://www.nyserda.org).

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**Guillermo Ramos**

**Head of NYSDOT's Traffic Signal Section**