



OPTERRA
ENERGY SERVICES

City of Arlington



"The City of Arlington is pleased to take this step in a Public-Private Partnership with OpTerra to improve our energy efficiency reflecting strong financial stewardship while also bringing economic development to the American Dream City. This partnership with OpTerra Energy Services will help make us a greener city through guaranteed savings."

Robert Cluck, Former Mayor, City of Arlington

The Opportunity

Incorporated in 1884, the City of Arlington, Texas, known as "The American Dream City," is located at the heart of the Dallas/Fort Worth/Arlington metroplex. While Arlington started as a small rural farming community, the growing city is now home to more than 365,000 residents. In an effort to become a more sustainable city, Arlington leaders worked to maximize the efficiency of existing transportation systems, reduce energy and maintenance costs, and improve streetlight reliability by converting City-owned streetlights to LED. The City operates streetlights under rate schedule 6.1.1.8 for Lighting Service within Oncor's Tariff for Retail Delivery Service.

The Partnership

Phase I

In May 2014, the City of Arlington began exploring a comprehensive energy program in partnership with OpTerra. The program was designed and developed by a Texas-based team of OpTerra engineers alongside City management, with a key focus on retrofitting 10,500 of Arlington's streetlights with LEDs. Prior to the retrofits, City streetlights consumed 20 percent of City-wide electricity and the City was paying millions to keep the lights burning and maintained. During the first phase of the LED conversion, crews retrofitted streetlights along major arterials throughout Arlington. The first phase of LED installations was completed in just six months, which resulted in a 45 percent reduction in energy use.

As a result of Phase I, a total of 10,500 streetlights have been retrofitted from the previous 150 watt, 175 watt and 200 watt High-Intensity Discharge (HID) and High Pressure Sodium (HPS) streetlights to modern, high efficiency, 70-watt LED cobra head style fixtures. The conversion has resulted in significant operation and maintenance savings due to the long life cycle of the LED fixtures. The LEDs have a rated life cycle of approximately 100,000 hours compared with HID lamps that generally have a life of less than 25,000 hours. Over the course of the 25-year life of the LED fixture, every HID fixture

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By the Numbers

- **\$18MM** in energy savings over 15 years
- A total of **11,223 LED streetlights** installed
- Energy efficiency upgrades for more than **30 buildings**
- Decreases CO₂ emissions by **2,162 metric tons** – the equivalent to removing more than **385 cars** from the road every year

The Technical Scope

Phase I

- Installed 10,500 LED streetlights in major arterials throughout the City
- Installed seven-pin receptacles with the LED streetlights for future smart city advancement
- Modernized HVAC control system with the latest automated Direct Digital Control (DDC) system
- Performed mechanical upgrades including replaced chillers, cooling towers and boilers
- Performed domestic water retrofits and installed new jail flush valves

Phase II

- Retrofitted 320 ornamental lighting fixtures with LEDs in the Entertainment District
- Retrofitted 403 streetlights with LEDs along State Highway 360 and on Interstate 30 overpasses
- Installed new LED high-mast fixtures along State Highway 420
- Retrofitted 920 interior/exterior lights with LEDs
- Installed new HVAC rooftop units

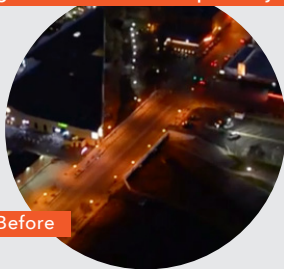
Program Timeline

- MAY 2014**
OpTerra implemented the first streetlight pilots in Arlington.
- DECEMBER 2014**
The City of Arlington signed a contract with OpTerra to implement Phase I.
- MARCH 2015**
Construction began on the largest streetlight conversion project in the southwest, retrofitting 10,500 streetlights with LEDs.
- DECEMBER 2015**
The Arlington City Council approved the financing and signed the contract to implement Phase II.
- OCTOBER 2016**
OpTerra completed construction of Phase II which included more LED streetlight retrofits and energy efficiency upgrades.
- FEBRUARY 2017**
The City and OpTerra continue to explore scopes for additional phases of work encompassing LED streetlight retrofits in Arlington's residential areas.

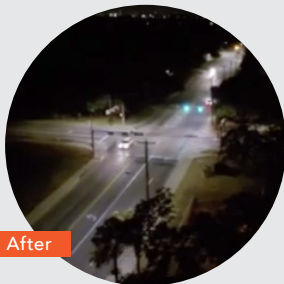
Additional Phases

The City is contemplating additional work on the remaining streetlights that have not been converted to LED including residential areas. The potential for additional streetlight retrofits is spurred on by a new tariff that supports lower LED wattages. By exploring additional work Arlington is on track to become fully lit by LED streetlighting from neighborhood to neighborhood in the near future.

Watch our video, **Lighting Up Arlington: City-Wide LED Streetlight Transformation** <http://bit.ly/2iVg84J>



Before



After

would have a lamp changed about four times. The LED conversion not only creates energy and cost savings for the City, but also standardizes the fixtures along streets to a single fixture, reducing the number of fixture types kept in inventory and improving efficiencies in maintenance.

All streetlight data is recorded in a streetlight database with pole locations and fixture information, further contributing to ease of maintenance. Additionally, OpTerra is paving the way for more connected, intelligent control of the streetlighting in the future; the seven-pin receptacles installed provide a solid foundation for smart city advancement in Arlington.

Phase I was financed with the help of a tax-exempt municipal lease, set at 2.5 percent over 15 years. As part of the investment plan, the City bundled implementation of the streetlights with energy efficiency performance upgrades in 21 City facilities, including the Ott Cribbs Public Safety Center and the Elzie Odom Recreation Center. Additionally, OpTerra replaced aging air conditioning equipment, modernized control systems, and implemented water conservation measures.

Phase II

Propelled by the success of the rapid construction of Phase I, occurring in a six-month period during off hours, the City entered into a second phase of work with OpTerra. Phase II included decorative LED streetlight retrofits in the Entertainment District, on Interstate overpasses, and along several state highways. To boost occupant comfort while saving costs, the City installed new HVAC rooftop units at several City buildings. Additionally, new LED interior and exterior lights were installed in City buildings, providing brighter, better quality light for residents and visitors.

By utilizing a performance contracting model, no upfront costs were required from the City and the energy savings that resulted from the first phase of work contributed directly to the financial feasibility of the program's second phase. OpTerra guarantees the energy savings resulting from all of the energy efficiency improvements. Phase II was also financed using a tax-exempt municipal lease, but set at 2.3 percent and over a 17-year period.

The Impact

Demonstrating a commitment to sustainability and serving as a model for other municipalities in the region, Arlington is the first major city in the Southwest to retrofit dated, HPS streetlights with contemporary, more effective, and high-performing LED fixtures. As a result of both program phases, the City is projected to generate savings of more than \$18 million over 15 years and the new LED streetlights save the City \$15,000 in maintenance costs annually.

The program has not only been a boon for the City from a financial and public safety perspective; it has also transformed Arlington into a greener city. The full program decreases the City's energy use by more than 2.5 million kilowatt hours annually - enough to power 237 homes' electricity use for one year. The City's water consumption is also reduced by more than 3,500,000 gallons every year - enough water to fill more than five Olympic-sized swimming pools.

The extensive LED streetlight installation places the City of Arlington at the forefront of leading technology and sustainability initiatives in Texas. With a higher color temperature light than the legacy yellow sodium vapor lights, the new LED fixtures also enhance pedestrian and driver safety at night. The new LED fixtures save energy, ease maintenance, and redirect utility budget costs to support other initiatives that improve the quality of life of Arlingtonians.