

# City of Lewisville's Energy Consumption Reduction

## Strategies to Support Sustainability in City Operations

### Summary

The City of Lewisville is a suburban community located in North Central Texas. It's proximity between the cities of Dallas and Fort Worth makes it a popular destination to live. Since the 1980's, Lewisville's population has experienced rapid growth. It is now home to approximately 100,000 residents. This rapid growth has led city leaders to pursue energy conservation strategies that will achieve a sustainable community.

In July 2014, Lewisville adopted a strategic plan, the Lewisville 2025 Plan. The strategic plan guides the development of Lewisville up until 2025 which provides a foundation of themes, priorities and actions that support the city's policies and goals. During the development of the plan, nine citywide priorities were identified in visioning workshops throughout the community. One of those nine priorities is sustainability. Supported by this document, the Lewisville 2025, city staff are continuously taking steps to promote energy conservation through energy policies and actions.

This case study examines initiatives undertaken by Lewisville in the past five years in order to obtain a sustainable future and address energy consumption including:

- switching to an alternative fuel vehicle fleet
- adopting a green building standard, and
- adopting other energy consumption reduction measures

## Alternative Fuel Vehicle Fleet

In 2014, the Lewisville Resource & Efficiency Assessment study determined that the city's fleet was a major contributor of harmful emissions by producing 34% of the city's emissions. In 2016, the City of Lewisville began using electric vehicles (EV) to reduce its impact on the environment. EV's are currently used by sanitarians, environmental control services, and neighborhood service operators throughout the city. The motivation for switching from gas to electric was fueled by factory rebates, maintenance cost savings, fuel savings and the city's sustainability goals. Currently, Lewisville



Image 1- City of Lewisville alternative fuel cars

operates eight all-electric vehicles, 14 hybrids vehicles, three propane mowers and two propane forklifts. The EV fleet has driven approximately 61,000 miles and has saved the City of Lewisville approximately \$1,020 annually in maintenance and repair costs. The City of Lewisville has also seen cost reductions in fuel usage. For example, driving 39,979 miles in an F-150 truck normally cost the city on average \$8,327.62 in gas. Charging one of Lewisville's Nissan Leaf vehicles for the same number of miles driven only cost the city \$839.55. Using the Nissan Leaf, Lewisville saved a total of \$5,820.45. In addition to its alternative fuel vehicles, fleet has implemented other energy reducing policies and programs related to fleet such as: idling restrictions, air pollution alert procedures, bike patrols, fleet materials recycling for tires and fluids, and a Clean Fleet Policy registered with North Central Texas Council of Governments (NCTCOG).

## Green Built Texas

The city adopted the 2015 Energy Conservation and 2015 Residential Codes. In 2019, Lewisville's Office of Sustainability made strides in achieving a sustainable future for the city by requiring all new one and two-family dwellings, including townhouses, to follow protocol outlined in the Green Built Texas 3.0 Version. To accomplish the sustainability goals identified in the Lewisville 2025 Plan, Lewisville's Office of Sustainability began looking to incorporate green building codes that would be accepted by the developers/builders community. Green Built Texas, a residential green building standard developed by the Dallas Builders Association, was selected because the standard was an accepted practice among builders and developers in the Dallas-Fort Worth area. The protocol provided guidance to builders in constructing quality housing in Texas by utilizing Texas specific construction protocols. These protocols address water efficiency, indoor air quality, energy efficiency, durability and moisture management, and homeowner education. A key step in the adoption process was to have input from stakeholders; namely, Lewisville's building codes staff and the private development community. When the Green Built Texas protocol was presented to Lewisville's City Council, the Office of Sustainability team was able to show there was a precedence and acceptance for the Green Built Texas protocol. In addition, adoption of the protocol did not incur any additional allocations for city resources or staff hours. Resources were not needed because new homes built under the protocol are inspected and verified by a third party.

After the Green Built Texas protocol was adopted, Lewisville's sustainability staff applied a two-part approach to implement the new ordinance. First, internal building and permit staff are educated and trained on the new ordinance. Second, sustainability staff conducted outreach presentations for builders/developers in the community. Another crucial step in the adoption of the protocol was having internal stakeholders included in the process on what was realistic. In addition to having front-line staff who were competent in the Green Built Texas protocol, the president of the Dallas Builders Association answered questions. These actions ensured that the Green Built Texas protocol was well received by Lewisville staff, city council, leadership team, and the builder/developer community. Adoption of the Green Built Texas protocol was a smooth and pleasant experience for the City of Lewisville. Sustainability staff believes that the adoption of the standard will move Lewisville towards a sustainable future.

### **Other Energy Consumption Reduction Measures**

To meet the sustainability goal in the Lewisville 2025 plan, several energy efficient projects have either been completed or are in progress. The City of Lewisville's Facilities Maintenance Division is responsible for obtaining condition assessments as well as working with Texas New Mexico Power (TNMP) and CLEARResult's on energy efficiency incentives and rebates. City projects are selected based on the aging of the equipment and roofs, and condition assessment of roofs and equipment by a professional company. Projects are funded through action step budget request every fiscal year.

Eighty percent of the City's roofs have been restored using a cool roof treatment. The newly installed cool roofs reflect the heat and keep the building cool. The goal is to complete remaining buildings by 2025. The city has received more than \$4,000 in rebate/incentives for roof energy efficiency since 2014.

In addition, several city building facilities and parking lots have received light emitting diode (LED) retrofits. These areas include the Lewisville Public Library, the Annex Parking lot and the City Hall parking lot. Thirty-year-old HVAC units, including air chillers and air handling units, have been replaced with energy efficient units in the Annex, Fred Herring Building and in the Children's Library. Other building automation systems have been installed in the MCL Grand Theater, City Hall, the Fred Herring Building, the Library and the Annex.

As a result of Lewisville's initiatives, the city has saved \$1,176,871 in utility costs. Lewisville hopes to achieve a 3.8 million kWh reduction in energy consumption due to retrofit projects. The City also has a goal of reducing overall energy consumption by 4.8 million kWh by 2025. In order to achieve this goal, the City will continue to identify projects and policies that result in energy savings. There has been a significant reduction in material/cost needed for preventative maintenance (PM) and repairs, and a reduction in CO2. The City has received more than \$40,000 in rebates/incentives from Texas-New Mexico Power (TNMP) and CLEARResult's, an energy programs and demand-side management strategies provider. The return on investments (ROI) made at the city came quicker than expected. According to city staff, an important lesson learned was that support from city leadership is instrumental in ensuring energy efficiency projects/policies are implemented.

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## Sources

*City of Lewisville Staff Interviews*

*Big Moves – Sustainability Document*

*Lewisville 2025 Plan*

*City Hall Roof Restoration Report*

*Lewisville 2025 Sustainability Project*

