# Energy Efficiency & Conservation Strategy

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FY2023-24

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# Executive Summary

The City of Mesquite developed this Energy Efficiency and Conservation Strategy (EECS) to define sustainability goals across the City. This is the City's first plan of its kind, and creating it helped City leaders see opportunities, identify gaps, and identify needs that can save the City money, reduce air pollution, modernize systems, and build both sustainability and resilience into City systems.

This plan was developed using the Department of Energy's Blueprint 1: Energy Planning. It lays out four long-term and one near-term data collection goal. The four key focus areas of the Energy Efficiency Conservation Strategy are:

- Reduce energy consumption
- Reduce greenhouse gas (GHG) emissions
- Implement the Electric Vehicle Fleet Plan
- Expand recycling options for Mesquite residents.

The development of this plan also identified an immediate need for a more in-depth energy audit of existing City facilities. That audit will include analyzing the city's carbon usage and GHG emissions to establish a baseline and a reduction goal.

The City of Mesquite is committed to building a legacy of stewardship and becoming a more sustainable community. The Plan provides a framework over the next three to five years for improving the health of the natural environment while improving the economy's well-being, strengthening our community, and uplifting residents

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**Sustainability Committee:**

**City Management:**
Cliff Keheley, City Manager
Raymond Rivas, Assistant City Manger
Chris Sanchez, Assistant City Manager

**Public Works:**
Curt Cassidy, P.E., CFM, Director

**Building Services:**
Rob Duff

**Solid Waste & Equipment Services:**
Tony Carson, Director
Jonathan Harrison, Manager


## 4 Key Focus Areas

**Energy Efficiency Facilities**

**Preservation of Natural Resources**

**Transportation Modernization**

**Expand Recycling Programs**

# Benefits of Energy Efficiency and Conservation

## ECONOMIC

Investing in energy-efficient upgrades allows for long-term savings and a fast return on investment. Electricity bills can be reduced, saving thousands of dollars each year, with simple changes such as better building insulation, lighting choices, new, energy-wise appliances, and so many options. The trends and market are switching to more efficient appliances and equipment that reduce energy consumption because of their lower impact on the planet and the City's budget.

The City of Mesquite has coordinated with Oncor to lead an effort to convert to LED streetlights, saving thousands of dollars.

Changing from internal combustion engines to electric vehicles will also reduce fuel costs, greenhouse gas emissions, and maintenance costs. The City will develop an Electric Vehicle Fleet Plan to replace five percent of its fleet with electric vehicles over the next five years. One additional benefit of the Plan is that it strategically places EV charging stations that can promote the usage of EVs throughout the community.

## ENVIRONMENTAL

Reducing energy usage decreases greenhouse gas emissions and increases the quality of our air, water, and other natural resources. Reducing internal combustion engine vehicle miles also has positive environmental effects, including reducing small particulates and the chemicals that create smog. These pollutants have various adverse effects on public health. Waste reduction and recycling can reduce the amount of waste going into the community landfill. Changing habits, encouraging recycling, and ending litter will reduce impacts on the community's stormwater system and promote healthy waterways.

## SOCIAL

Energy efficiency upgrades expanded recycling opportunities, and access to electric vehicle charging stations also allows the city to become more efficient, resilient, and sustainable. These efforts are the baseline from which better habits can be formed to prepare residents for the changes.

## Existing Planning Documents

The City of Mesquite has expanded its planning efforts over the last several years, including a Capital Improvement Plan, and it has also participated in regional planning efforts. The City is also assessing its resilience and will develop a plan to address the findings.

The City is developing an Electric Vehicle Fleet Plan that introduces strategies for electric vehicle additions and a road map for city efforts to broaden electric vehicle charging stations, increasing accessibility and convenience for more community members who want to switch to electric or currently use electric.

The City operates its own Commercial Solid Waste Service and will expand its recycling services, slated to begin in early Summer 2024.

## Energy and Efficiency and Conservation Strategy

The City of Mesquite developed this Energy Efficiency and Conservation Strategy using the Department of Energy's "Blueprint #1 - Energy Planning" as the outline. The Strategy is the City's first document of its kind, and the goals defined are realistic and actionable. Updating inefficient systems and targeting energy waste will be the top priorities. In addition, the city will continue to collect more substantial baseline information.

The data used to prepare this strategy included a close review of Mobile's energy bills: electricity, natural gas, and water usage. A brief analysis of the city's major facilities and equipment age was also reviewed. Additional reports and data will become available as those systems come online.

Undertaking the effort of creating the EECS provided clear evidence of the need for an energy audit to achieve energy use reduction goals – especially relative to carbon usage and emissions. A better understanding of which buildings are the largest energy consumers identifies which projects should be prioritized for upgrades and maintenance improvements.

This strategy is a living document that will be reviewed and updated annually as new information becomes available.

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# Energy Efficient Facilities

Investing in energy efficiency during new construction or for facility retrofits offers significant opportunities and benefits to the community. These benefits include energy, water, and cost savings, a shorter deferred-maintenance backlog, improved occupant comfort, and progress toward overarching energy- and greenhouse gas (GHG)- reduction goals. Facilities consist of human-made structures (i.e., buildings, streets, and utilities), and their associated processes, such as maintenance, are vital for ensuring peak performance. These physical features define the community and our experiences as places where we live, work, travel, and play. Thoughtful planning and operation of our facilities can reduce costs, conserve energy, benefit public health, and increase our quality of life.

There are three main goals for investing in energy-efficient facilities include:

**Increased Efficiency**
Advancing efficiency standards and resource conservation for buildings

**Increased Renewable Energy**
Transitioning the energy portfolio toward renewable energy

**Harmony Between the Built and Natural Environment**
Minimizing impact on natural systems

| Goal | Recommended Actions |
|---|---|
| **Increased Efficiency** | • Review and adopt building codes that promote energy efficiency<br>• Provide education and resources for homeowners to save water<br>  ○ Enroll residents in WaterSmart so they can monitor water usage via the advanced meter infrastructure<br>• Conduct building and energy assessments for City facilities<br>• Reduce energy usage at City facilities through targeted building upgrades |
| **Increase Renewable Energy** | • Adopt solar-friendly ordinances for the community<br>• Explore the expansion of renewable electricity for City operations<br>• Adopt an electric vehicle (EV) ready building code |
| **Harmony Between the Built and Natural Environment** | • Identify opportunities to install green infrastructure and other low-impact development features alongside capital improvement projects<br>• Establish grow zones (e.g., riparian strips) around creeks and educate about their importance to water quality |

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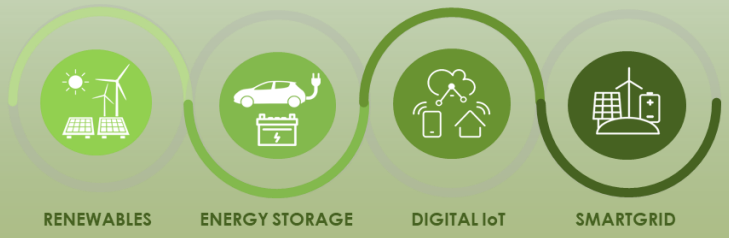
# Energy Efficient Facilities

## How the City of Mesquite will Measure Success:

- Reduced electricity and natural gas usage
- Energy use per square foot in City buildings
- Number of homes/businesses with installed solar
- Number of Oncor streetlights converted to LED

## Additional Benefits:

- Energy bill savings
- Reduced utility burden
- Improved air quality
- Greenhouse gas reduction




## Community Involvement

**Residents**
Install appliances with the Energy Star or WaterSense logo.

**Businesses**
Utilize the Property Assessed Clean Energy (PACE) program to finance building efficiency upgrades.

## Municipal Spotlight

LED light bulbs use a fraction of the energy and last significantly longer than traditional and fluorescent lights, meaning that LEDs provide considerable cost savings.

These financial and environmental benefits are why the City has retrofitted the Main Library and several Recreation Centers with LED light bulbs.

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# Preservation of Natural Resources

We are reliant on several resources to achieve an expected quality of life. However, accelerated use of these resources has polluted our air, soil, and water. Preventing unnecessary resource use can save individuals and businesses money and improve the health of our urban environment.

There are three main goals for the preservation of natural resources:

**Improved Air Quality and Reduced Emissions**
Implementing strategies for limiting the release of air pollution and greenhouse gas emissions

**Water Conservation**
Providing conservation opportunities for municipal and community water use

**Pollution & Litter Prevention**
Preventing damage to our natural resources and maintaining a beautiful community

| Goal | Recommended Actions |
|---|---|
| **Improved Air Quality and Reduced Emissions** | • Enforcement of the tree preservation ordinance to protect the existing tree canopy<br>• Conduct a baseline greenhouse gas (GHG) inventory and create a data-based target for reduction<br>• Undertake actions to reduce greenhouse gas emissions |
| **Water Conservation** | • Evaluate opportunities to reduce water consumption at City facilities<br>• Utilizing existing Advanced Metering Infrastructure to promote water conservation efforts<br>• Evaluate existing landscape ordinance and update as necessary, which promotes the planting of native and drought tolerant species |
| **Pollution & Litter Prevention** | • Coordinate with Keep Mesquite Beautiful to promote litter prevention throughout the community<br>• Explore options to reduce pollutants and litter from entering creeks and waterways.<br>• Decrease the amount of fats, oils, and grease entering the wastewater system |

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# Preservation of Natural Resources

**How the City of Mesquite will Measure Success:**

- Improved Ozone and Air Quality Indices
- Number of trees planted
- Monitor Municipal water usage
- Per capita water usage
- Amount of litter collected

**Additional Benefits:**

- Cost savings
- Improved air quality
- Greenhouse gas reduction
- Resource conservation
- Improved community appearance
- Protection of natural habitats


## Community Involvement

**Residents**

Perform annual inspections of residential sprinkler systems.

Organize neighborhood litter pickups & Participate in Keep Mesquite Beautiful Trash Bash.

**Businesses**

Utilize native and/or drought tolerant vegetation.

## Municipal Spotlight

Mesquite Recycles Day is held twice a year (May & November). Mesquite residents may drop off televisions, computers, and other electronics.

Keep Mesquite Beautiful organizes Trash Bash events twice a year (April and September), providing an opportunity for families, neighbors, and groups to get outside and participate in a community litter cleanup event.

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# Transportation Modernization

Traveling conveniently and efficiently within Mesquite and throughout the region is vital to maintaining economic strength. The dependence on personal vehicles for travel has created significant air pollution and congestion. Providing convenient, multimodal transportation alternatives and the adoption of less polluting vehicles is paramount to creating a Sustainable transportation system.

There are two main goals within Transportation Modernization:

### Reduced Single Occupancy Vehicle (SOV) Trips

Reducing the number of vehicles on the road in order to lessen traffic congestion and air pollution

### Reduced Vehicle Emissions

Reducing tailpipe emissions from the vehicles that have to be driven

| Goal | Recommended Actions |
|---|---|
| **Reduced Single Occupancy Vehicle (SOV) Trips** | • Increase the mileage of trails and sidewalks<br>  ○ Undergo Trails Master Plan update<br>• Promote carpooling for employees who are driving to the same destination<br>• Reduce employee commuting through remote work and flexible schedules |
| **Reduced Vehicle Emissions** | • Increase the number of electric vehicles operated by the City<br>• Increase the amount of publicly available charging stations |


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# Transportation Modernization

## How the City of Mesquite will Measure Success:

- Number of EVs in City fleet
- Vehicle Miles Traveled (MVT)
- Monitor Municipal water usage
- Number of publicly available charging stations
- Amount of litter collected

### Additional Benefits:

- Cost savings
- Improved air quality
- Greenhouse gas reduction
- Equitable access to EV
- charging networks

## Estimated Vehicle Fuel Consumption – Dallas County, Texas

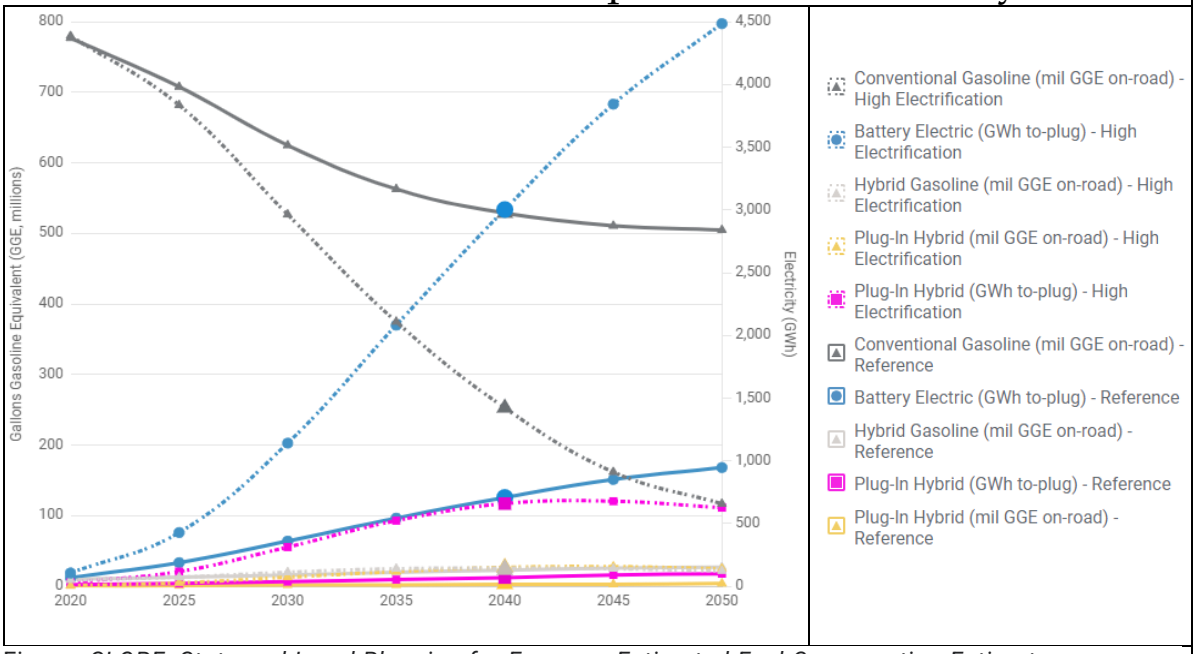


Figure: *SLOPE: State and Local Planning for Energy – Estimated Fuel Consumption Estimates*

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# Expand Recycling Programs

The residential waste collected in FY2022-23 for Mesquite was 111,584 tons of waste. The City averages a set-out rate of 33%. The average pounds per set-out of recyclables is estimated at 9.85 pounds per household. The City's recycling tonnage averages 2,000 - 2,200 tons per year. In a recent survey (2022), 48% of respondents indicated it is "extremely important," and 20% indicated it is "very important" for Mesquite to offer a curbside/alley collection of recyclables. 58% indicated they set out recyclables once per week.

Regionally, there is an increasing push for diversion. Over time, the number of residents participating in recycling and the number of tons of recycled is likely to increase.

With the recent municipalization of Commercial Solid Waste, the City has an opportunity to be competitive in the recycling market. The market is open; thus, the City will approach commercial users to expand this service.

There are two main goals for the expansion of recycling programs:

**Waste Reduction**
Decreasing the total amount of waste created and the amount of waste sent to the landfill

**Access to Recycling**
Provide additional opportunities to divert waste from the landfill

| Goal | Recommended Actions |
|---|---|
| **Waste Reduction** | • Increase the residential diversion rate<br>• Promote the "Reduce" and "Reuse" attributes of the waste hierarchy<br>• Continue to promote the voluntary 45-gallon cart as part of an overall program enhancement<br>• Focus on the growth of commercial solid waste recycling |
| **Access to Recycling** | • Increase access to recycling at multi-family and commercial properties<br>• Increase the number of residential recycling participants<br>• Provide additional opportunities to divert organic waste |


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# Expand Recycling Programs

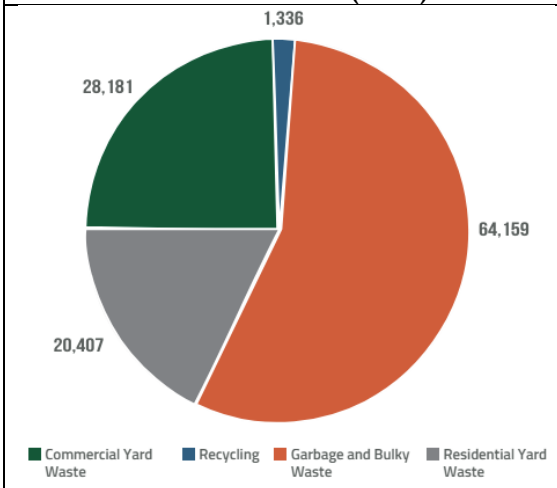
## How the City of Mesquite will Measure Success:

- Diversion rate
- Waste tonnages
- Monitor municipal water usage
- Number of residents participating in recycling (set out rates)
- Number of commercial users opting into the City's recycling program

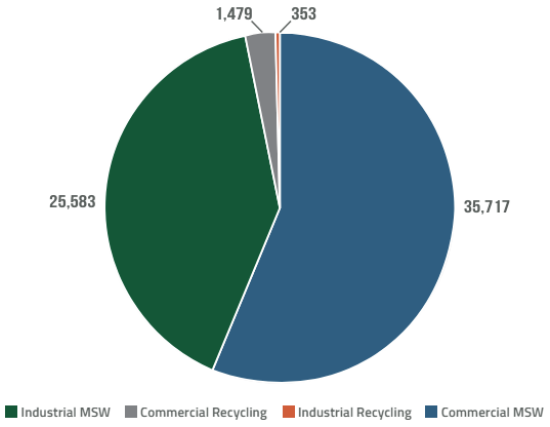
## Additional Benefits:

- Extended landfill lifespan
- Reduced collection and landfill costs
- Resource conservation
- Greenhouse gas reduction


**City-Managed Tonnage Breakdown (2022)**




**Commercial Tonnage Breakdown (2022)**

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## Coordination with State and Surrounding Governments Entities

The City of Mesquite understands that it must coordinate and share information with the North Texas region and the state to thoroughly use energy efficiency and conservation benefits covered by the EECBG program. Additionally, the City will coordinate and share information locally with The North Texas Council of Governments and surrounding partners.

## Future Needs Assessment

This document provides a living framework for the next three to five years of municipal and community sustainability actions. It establishes a foundation that will be built upon to address longer-term sustainability issues that require vast transformations from the status quo. The efforts proposed in this plan will also identify limitations that municipal governments have to achieve sustainability goals. The City of Mesquite will continue to work with other municipalities and regional utilities and identify necessary policies at the state and federal levels.

## Conclusion

The four goals of the City of Mesquite's Energy Efficiency and Conservation Strategy are to reduce GHG emissions, reduce energy consumption, adopt electric vehicle usage, and expand access to recycling.

The City will also follow the EECBG Blueprint 2 in the near term to hire a consultant to conduct an energy audit. Establishing a baseline level of energy usage in the City's buildings, pinpointing energy inefficiencies, and discovering the city's greenhouse gas emissions will provide the baseline data needed to measure the effectiveness of this plan.

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