

Energy Management for Local Governments: Legislative Requirements, Benchmarking, and Tools to Measure Energy and Water Use

NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

MAY 23, 2019

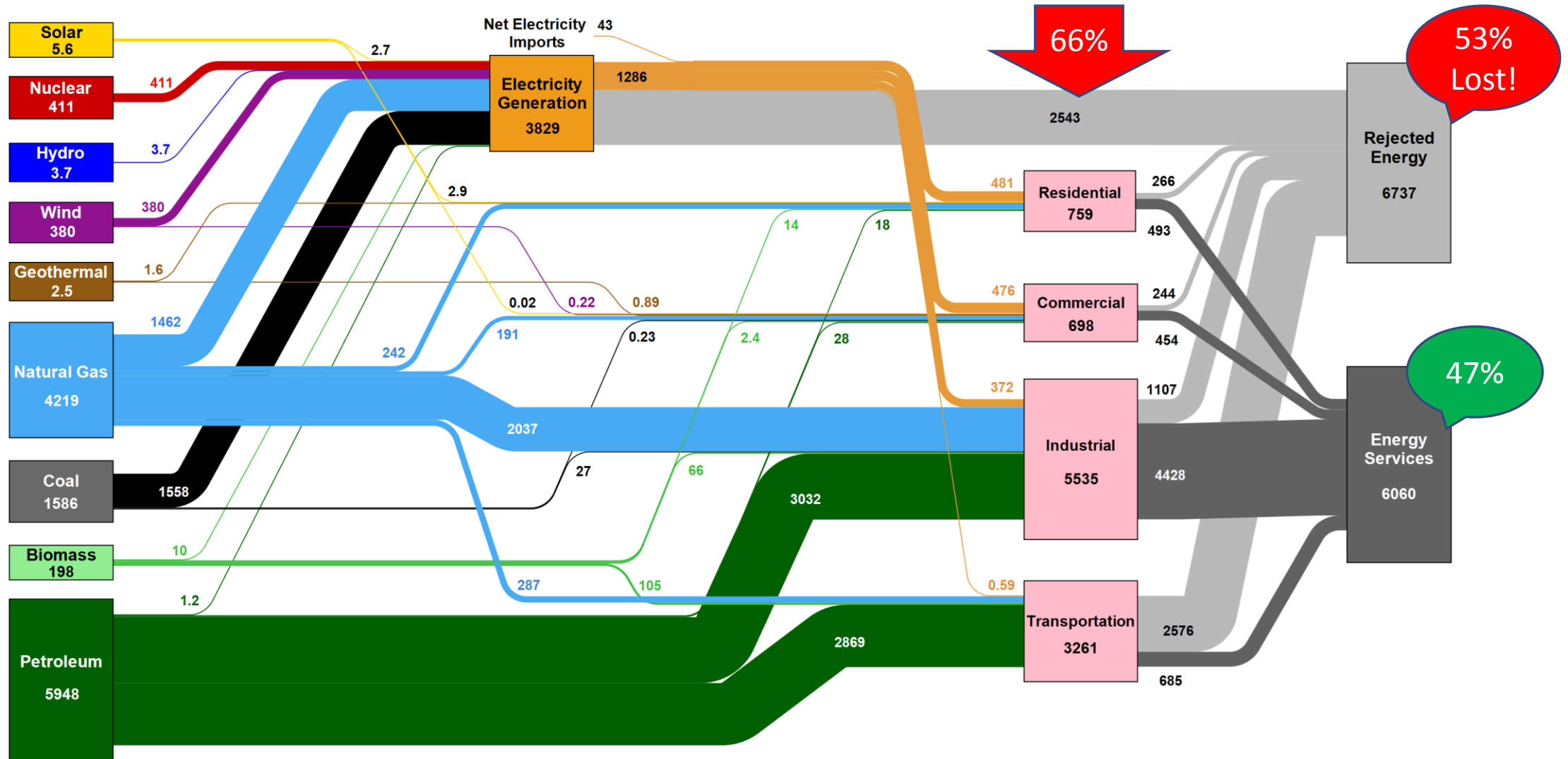


**North Central Texas
Council of Governments**

Importance of Energy Management

BY THE NUMBERS

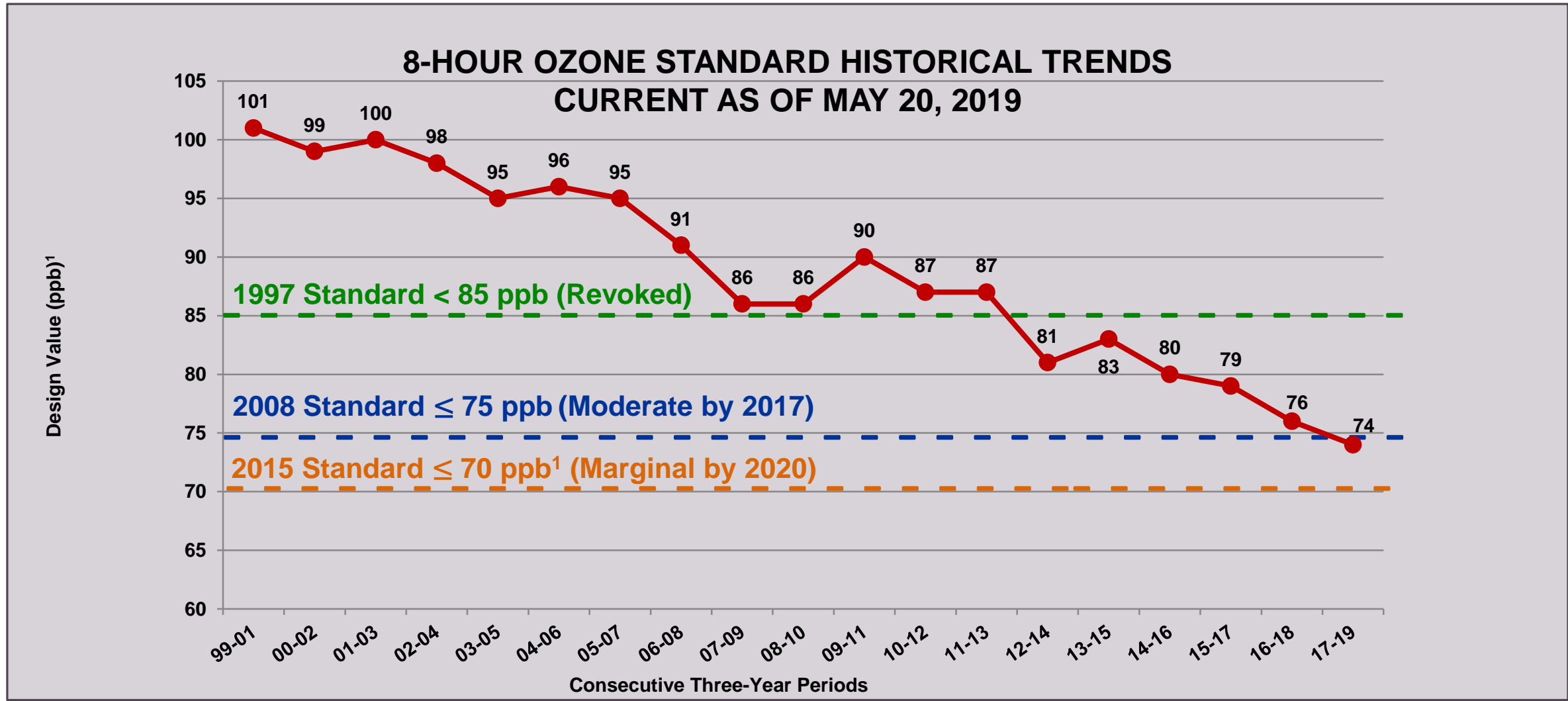
Texas Energy Consumption in 2014: ~ 12797 Trillion BTU



Source: LLNL August, 2016. Data is based on DOE/EIA SEDS (2014). If this information or a reproduction of it is used, credit must be given to the Lawrence Livermore National Laboratory and the Department of Energy, under whose auspices the work was performed. Distributed electricity represents only retail electricity sales and does not include self-generation. EIA reports consumption of renewable resources (i.e., hydro, wind, geothermal and solar) for electricity in BTU-equivalent values by assuming a typical fossil fuel plant heat rate. The efficiency of electricity production is calculated as the total retail electricity delivered divided by the primary energy input into electricity generation. End use efficiency is estimated as 65% for the residential sector, 65% for the commercial sector, 80% for the industrial sector, and 21% for the transportation sector. Totals may not equal sum of components due to independent Rounding. LLNL-MI-410527

North Texas Air Quality Impact

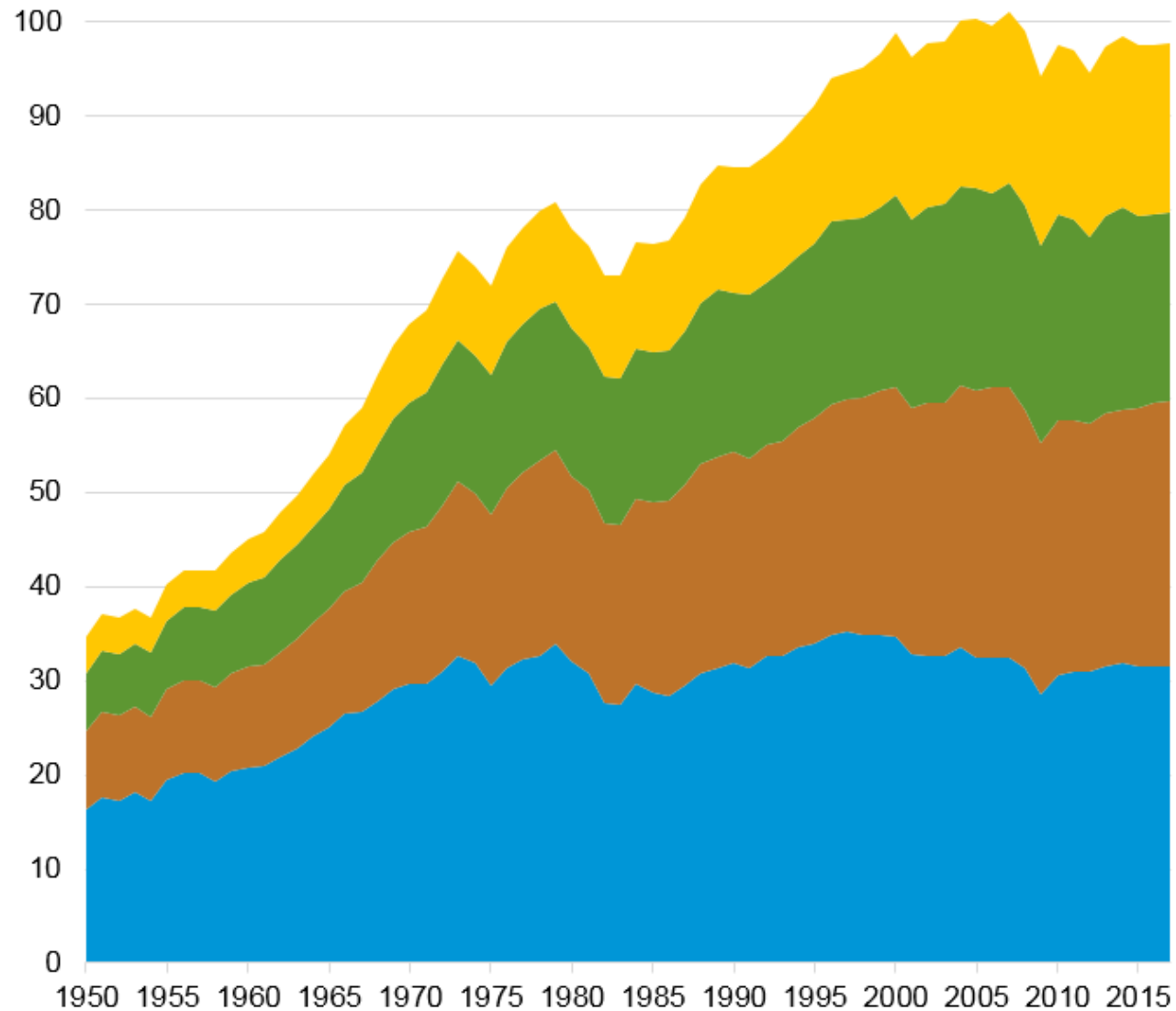
~5% of Ozone-Forming Nitrogen Oxides (NO_x) Attributable to Electricity Generation



Sources: TCEQ and NCTCOG

U.S. total energy consumption by end-use sector, 1950–2017

quadrillion British thermal units



In 2018, the residential and commercial sectors accounted for about 40% of total U.S. energy consumption.

- commercial
- residential
- transportation
- industrial

Note: Total energy consumption includes primary energy and electrical energy.

Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 2.1, April 2018

Energy Use by Type of Building

The top five energy-consuming building categories used about half of the energy consumed by all commercial buildings in 2012

% Consumption

Top five energy-consuming building categories:

15%

Mercantile and service - Malls and stores, Car dealerships, Dry cleaners, Gas stations

14%

Office - Professional and **Government Offices**, Banks

10%

Education - **Elementary, Middle, and High School, Colleges**

8%

Health care - Hospitals, Medical offices

6%

Lodging - Hotels, Dormitories, Nursing homes

Consider the Benefits

IMPROVE AIR QUALITY



1 CFL bulb in every American house = emissions reductions equivalent to taking 800,000 cars off the road*

SAVE MONEY



Energy Star certified office buildings cost \$0.50 less per square foot to operate than their peers**

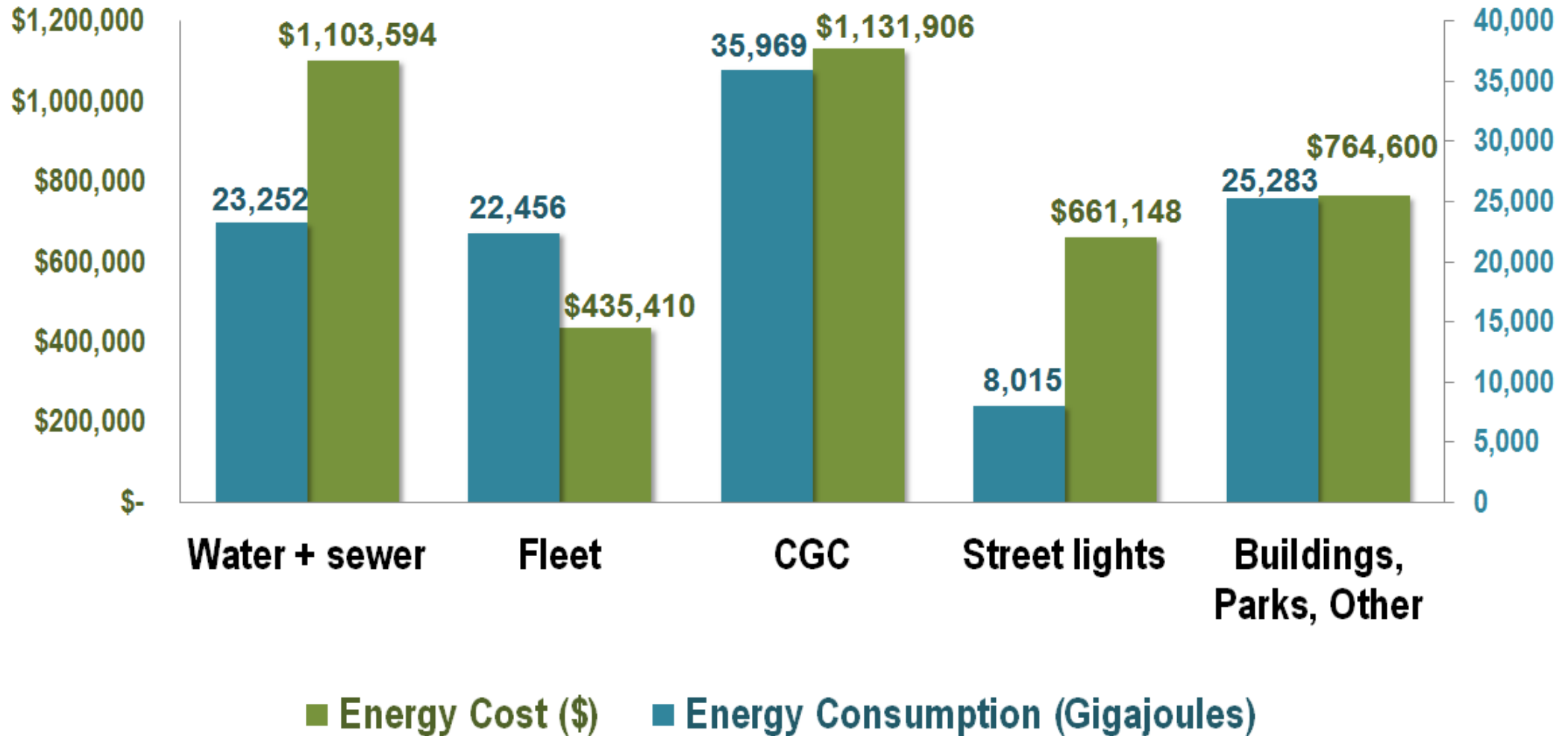
Sources:

*<https://www.energysage.com/energy-efficiency/why-conserve-energy/>

**<https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/ten-reasons-pursue-energy-star>

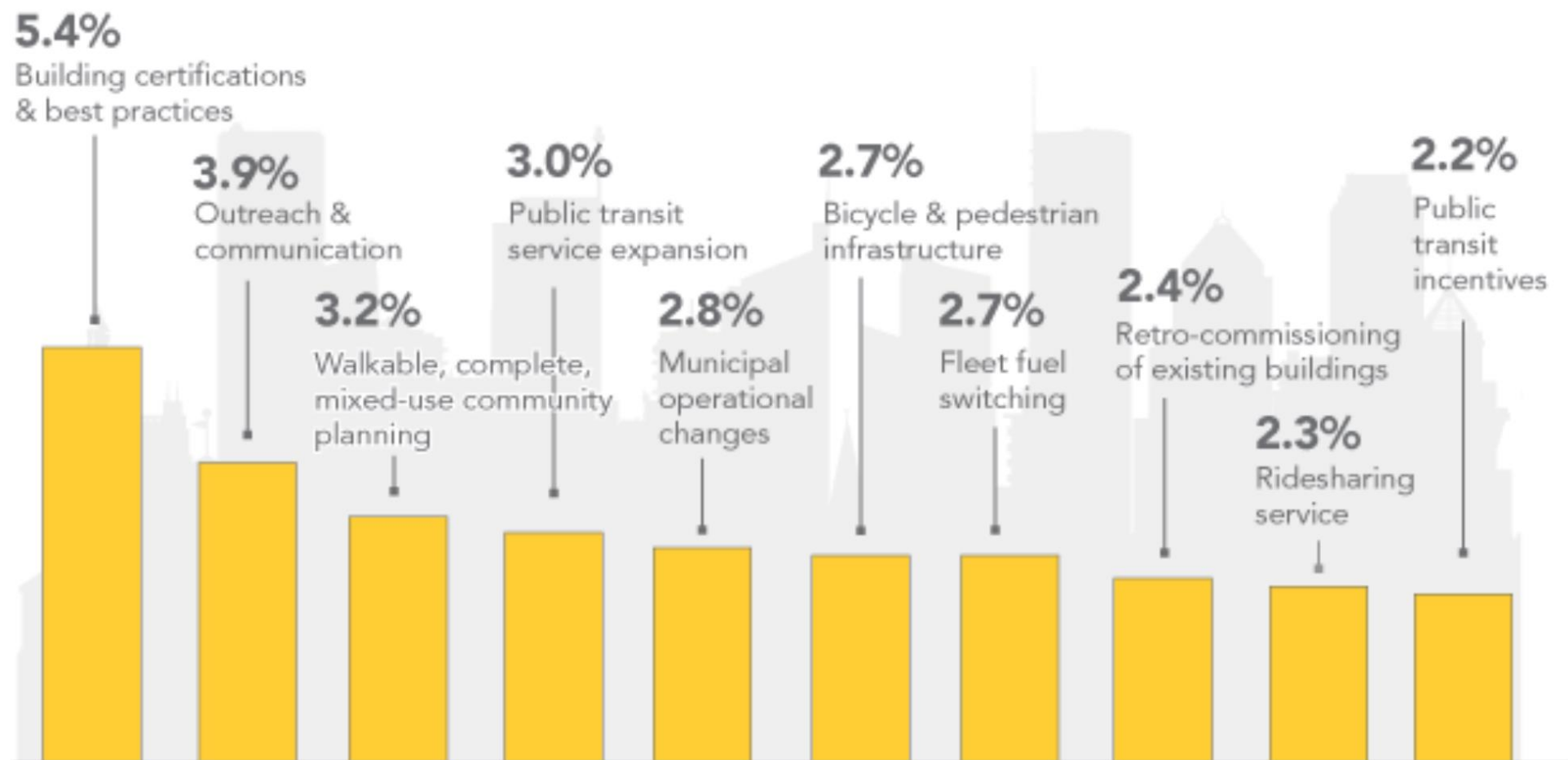
Whitehorse, Canada

City Energy Use 2016



10 Most Common City Actions

This chart shows the most common actions taken by the sampled cities to impact energy use.



Chicago 2013

Building Energy Use Benchmarking Ordinance

REACHING FOR NEW HEIGHTS: ENERGY BENCHMARKING UNCOVERS ANNUAL SAVINGS POTENTIAL OF UP TO \$77M

BY TAKING ACTION TO IMPROVE ENERGY EFFICIENCY, CHICAGO'S LARGEST BUILDINGS ARE MAKING OUR CITY MORE:

Livable
Competitive
Sustainable



ENERGY BENCHMARKING HELPS BUILDINGS
TAKE CONTROL OF ENERGY USE

Chicago buildings spend
\$3 BILLION
per year on energy



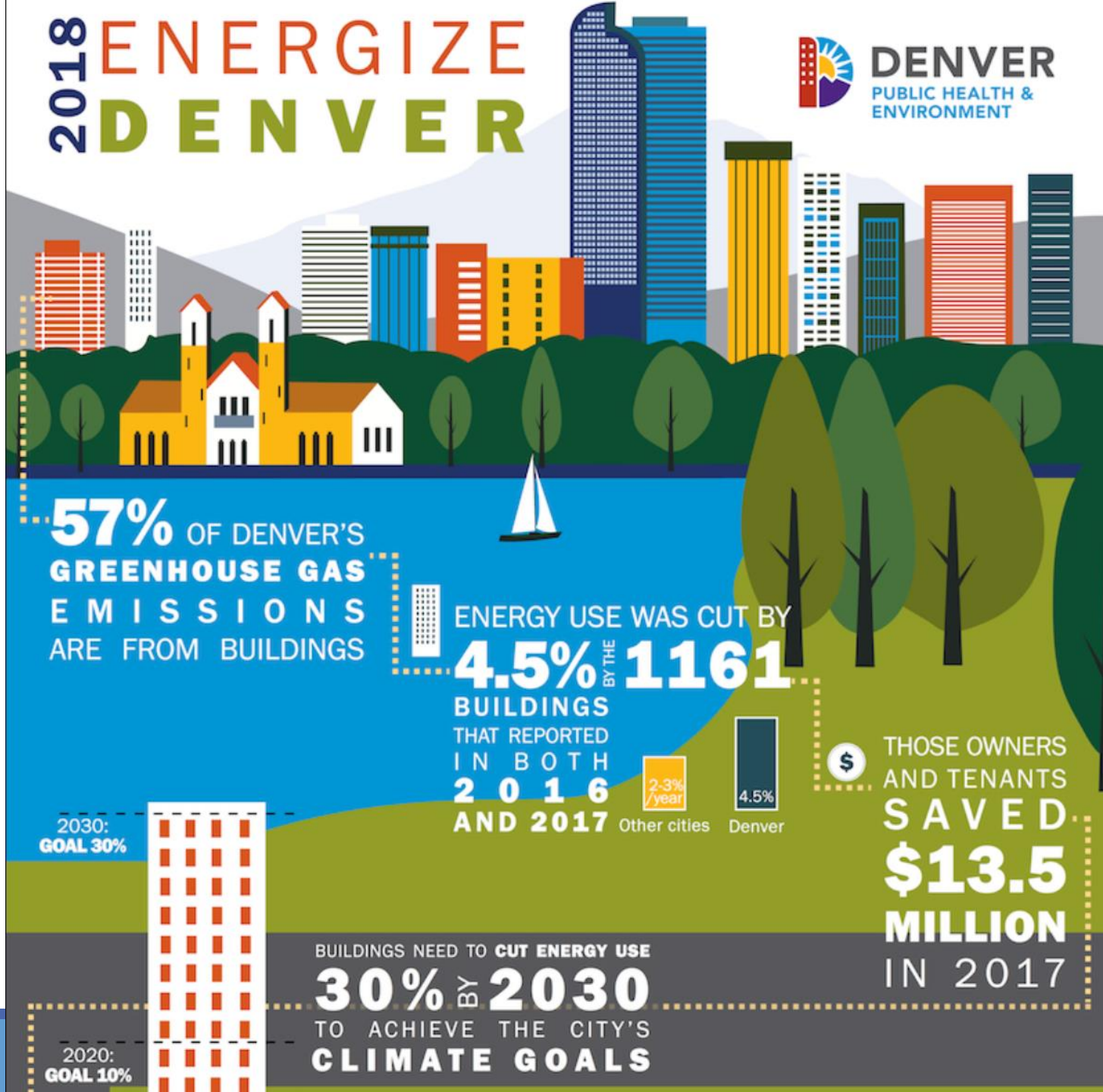
Building energy use drives
71%
of citywide greenhouse gas (GHG) emissions

\$77 
MILLION
IN POTENTIAL SAVINGS
IDENTIFIED FROM 2014
ENERGY BENCHMARKING



Denver 2016

Energize Denver, Benchmarking Requirement



Regional Energy Manager Project

PARTNERSHIP WITHIN NCTCOG, BETWEEN TRANSPORTATION AND ENVIRONMENT & DEVELOPMENT STAFF

Project Overview



Purpose

- Expand Local Government Staff Capabilities in Energy Management Topics and Compliance to SB 898 Reporting
- Increase Use of Energy and Water Benchmarking Tools
- Improve Accuracy of Emissions Reduction Data Associated with Reduced Energy Use



Outcome

- Demonstrate the value and benefits of increasing regional energy education
- Quantify facility energy consumption via benchmarking
- Assess energy reduction impacts on regional Air Quality data in order to serve as a regional template for other regions to utilize.

Project Timeline and Deliverables

May-August 2019

**February
2019**

Deploy a survey to identify the energy management needs and interests of the region

Publish digital resources (energy assessments, project-related analysis etc.) on [Conserve North Texas](#) Website

**August
2019**

Complete Project

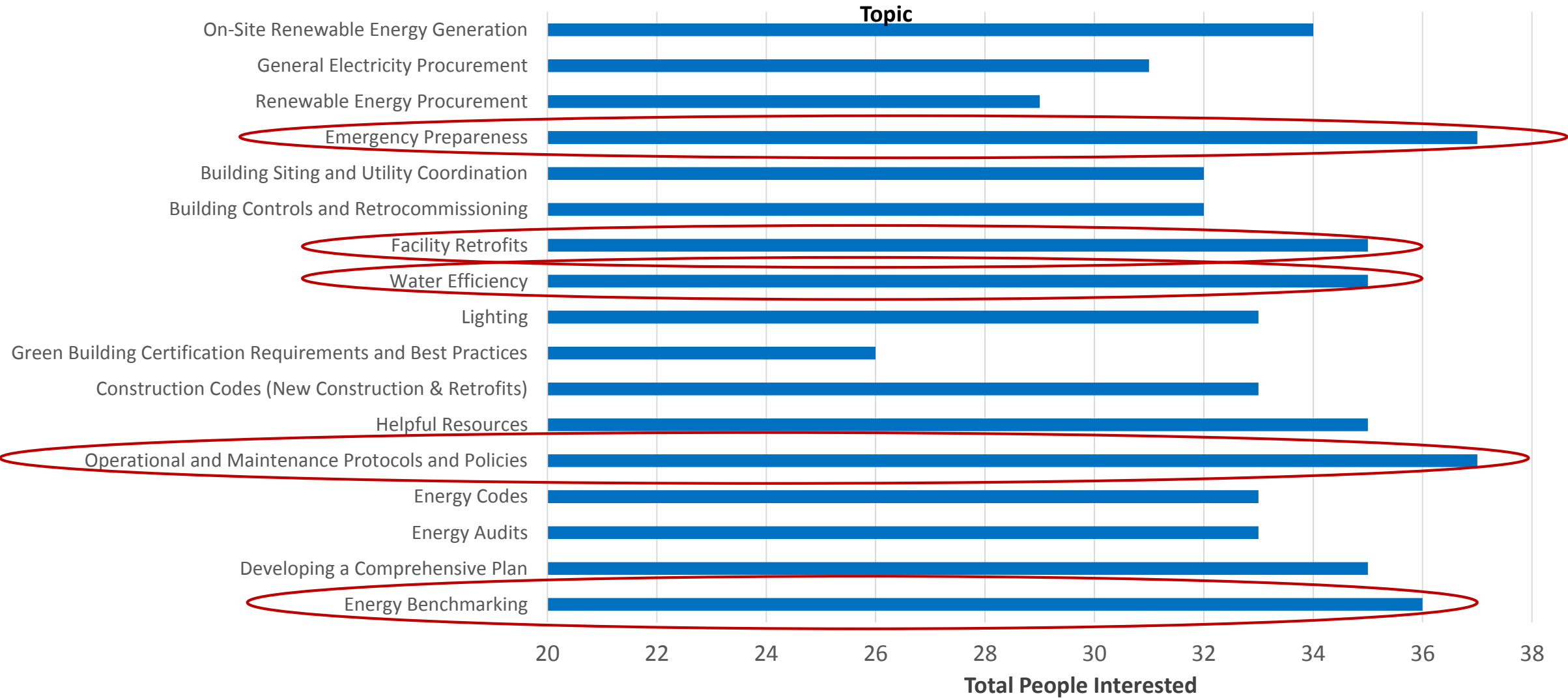
Develop workshops and trainings based on regional interests identified in survey

Create three (3) local government case studies



Regional Survey Results

Overall Interest to Lower Energy Use via:



Upcoming Workshops + Trainings

May

Workshop 1

May 23

- SB 898
- Value of Benchmarking and Building Portfolio Manager

June

Workshop 2

June 28

- SB 898
- Lower energy usage through energy planning and coordination

August

Workshops 3 & 4

August 21

Workshop 3 (9am-12pm)

- Lower energy usage through energy efficiencies in and around buildings

Workshop 4 (1pm -4pm)

- Emergency preparedness and the energy supply

Senate Bill 898 (82R) – Local Government Energy Reporting

Purpose: Lower Local Government Energy Consumption

Requirements: Requires all political subdivisions, institutes of higher education, and state agencies in the 42 Ozone Nonattainment and Near Non Attainment Counties to establish a goal of reducing electric consumption by at least 5% each state fiscal year for 10 years beginning September 1, 2011 and to Submit Annual Reporting

Issues: Lack of Awareness, Non-Compliance with Annual Reporting Requirement

Senate Bill 898 (82R) – Local Government Energy Reporting

Who Reports?

The following entities in 42 Nonattainment or Near Nonattainment counties:

Cities and Counties

State Agencies


Institutes of Higher Education

What's Due:

SB 898 report to SECO regarding the entity's efforts and progress to meet the 5% energy reduction goal

DUE: November 1 (annually)

Senate Bill 898 (82R) Reporting Form
Reports due: November 1.
Form# 50-816


State Energy Conservation Office

Purpose of this Document: In 2011, the Texas Legislature passed Senate Bill 898 amending the Health and Safety Code §388.005 to require each political subdivision, institution of higher education, or state agency to establish a goal to reduce electrical consumption by at least five percent each fiscal year for ten years beginning September 1, 2011. Each entity must report to the State Energy Conservation Office (SECO) regarding the entity's efforts to meet the goal, and progress the entity has made.

Entity Name _____
Entity Type: Municipality County State Agency Higher Education Other _____
Address _____ City _____ Zip Code _____
County _____
Contact Name _____ Title _____
Email Address _____ Phone Number _____

Reporting Period
State fiscal year (Sep. 1 - Aug. 31) _____

Energy Consumption Data
Enter annual electrical usage in kWh for the state fiscal year (Sep. 1 - Aug. 31) and gross baseline square footage of each building. Reporting total energy consumption is mandatory. A breakdown of energy consumption by building or infrastructure is optional.

Infrastructure or Facility Type	Annual Consumption in kWh (Sep. 1 - Aug. 31)	Gross Baseline Square Footage (as of Sep. 1)
Buildings		
Traffic Lighting		
Street Lighting		
Water (pump) Facilities		
Wastewater Facilities		
Other: _____		
Other: _____		
Other: _____		
Totals:		

Bill 898 (82R). Has your entity established a goal to reduce electrical consumption by at least _____ percent over the next ten years beginning September 1, 2011? Yes No

ent

es below indicating the areas in which your entity has made efforts and progress toward meeting energy goals.

ed Heat and Power Appliances/Equipment/Electronics Policy/Plan/Program
 HVAC Renewable Generation
 Insulation/Radiant Barrier Water/Wastewater
 Lighting Water Conservation
 Maintenance/Operation Water Heating
 Benchmarking Other: _____

tion

regarding the progress and efforts indicated above to reduce electrical consumption and a brief description of planned activities. Your description will be included in SECO's annual report. Attach additional pages if needed.

Check here if additional documentation is attached.

Bill 898, a political subdivision, institution of higher education, or state agency that does not attain this goal must increase program and an entity has already implemented all available cost-effective measures. An entity that submits a report indicating that it has reviewed its available options, has determined that no additional measures are cost-effective, and that it has already implemented all available cost-effective measures is exempt from the annual reporting requirements if a subsequent report would indicate no change in status.

If requesting an exemption to the mandates of SB 898 please check the boxes and provide additional documentation to serve as justification for this exemption request.

The Entity listed above has reviewed its available options, has determined that no additional measures are cost-effective, and that it has already implemented all available cost-effective measures.

The Entity has included a report to this effect.

I have read Senate Bill 898 (82R) regarding exemptions, and hereby certify that the said entity has met the exemption.

Signature _____ Date _____

Email completed reports to SECO at SB898.Reporting@cpa.texas.gov
or by mail to: State Energy Conservation Office
Attn: SB898 Report
111 E. 17th Street
Austin, TX 78711-1440

50416 0015

FOR MORE INFORMATION

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