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Energy Management for Local Governments: **Lowering Local Government Energy Consumption Through** **Energy Planning**

NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

JUNE 28, 2019



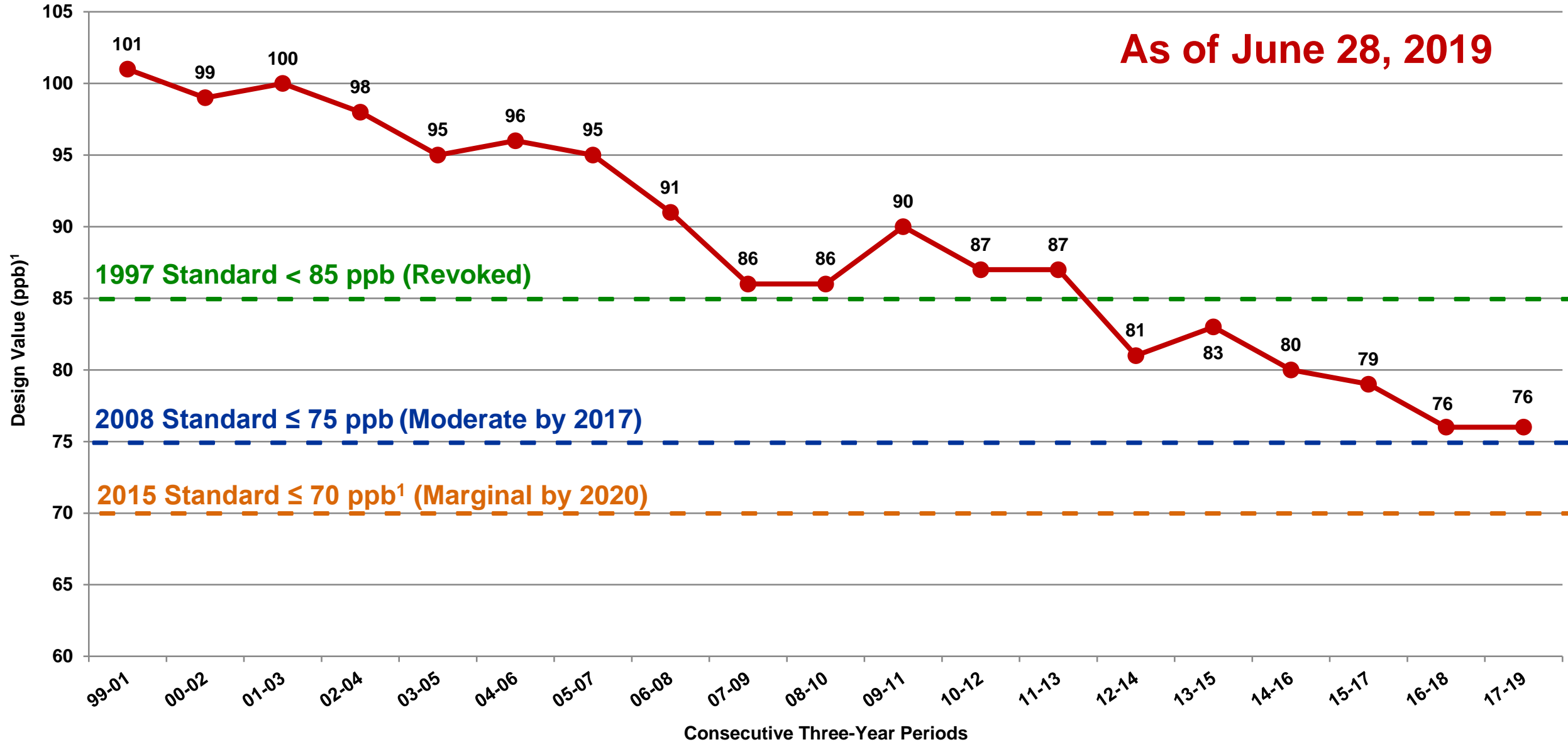
North Central Texas
Council of Governments

Importance of Policy Implementation and Energy Planning

BY THE NUMBERS

8-HOUR OZONE NAAQS HISTORICAL TRENDS

As of June 28, 2019



¹Attainment Goal - According to the US EPA National Ambient Air Quality Standards, attainment is reached when, at each monitor, the *Design Value* (three-year average of the annual fourth-highest daily maximum eight-hour average ozone concentration) is equal to or less than 70 parts per billion (ppb).

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

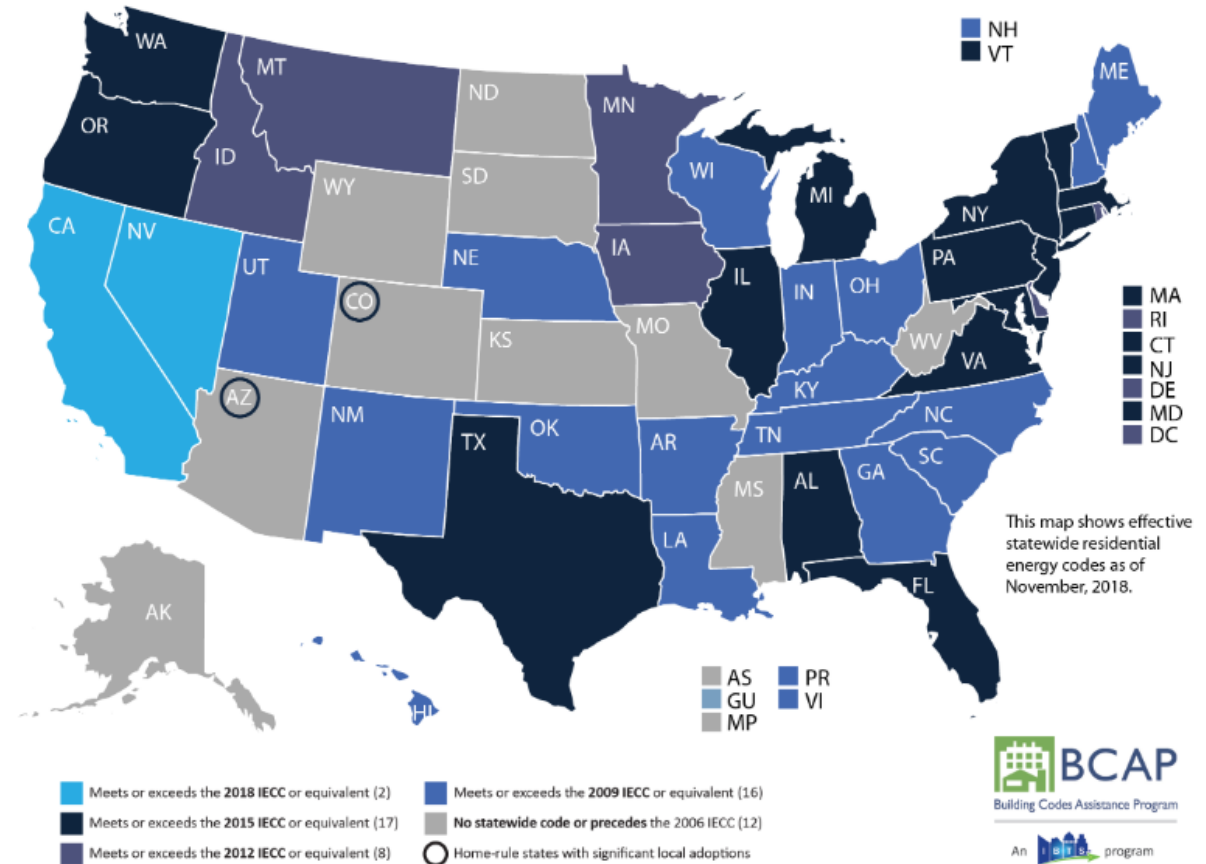
Increase Energy Efficiency Through Policy

Local Jurisdictions

Building Codes & Energy Codes

- Establish codes
- Enforce codes
- Lead by example
- Promote high efficiency certification of public and private buildings

RESIDENTIAL ENERGY CODE ADOPTION



Why Energy Codes Matter

In the U.S. buildings use..



40% of total energy

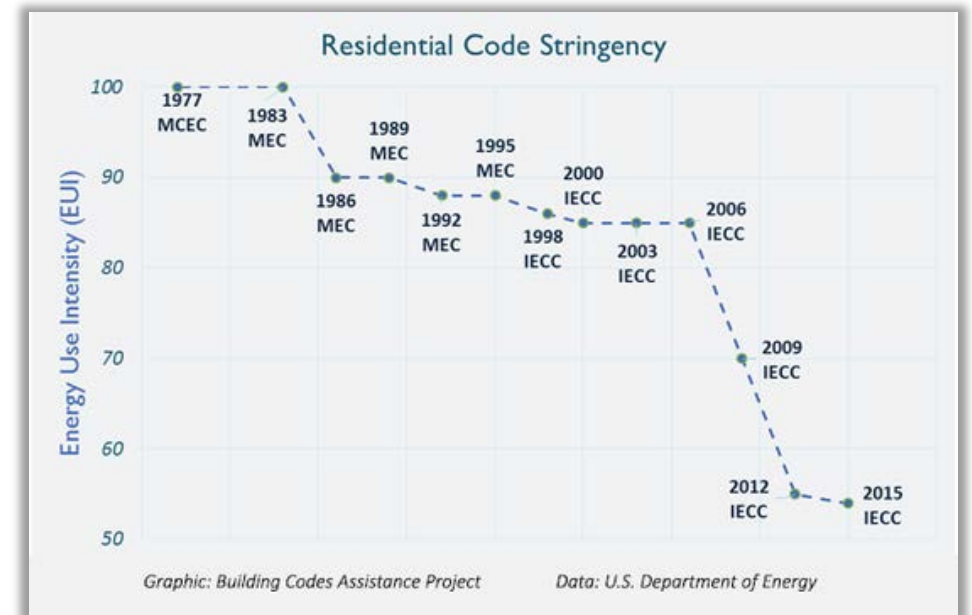
70% of total electricity

And account for

40% of emissions

Building Energy Codes Matter because they...

- ✓ Reduce Pollution and Increase Reliability
- ✓ Make a Cost-Effective Investment
- ✓ Improve Long-term Sustainability
- ✓ Provide Quality and Comfort



Who Benefits from Energy Codes?

Consumers and homebuyers can be assured that they have purchased or rented a home that meets minimum standards for energy efficiency, and as a result will see significantly lower utility bills.

The construction industry can have a documented advantage over existing homes, as well as a level playing field, with respect to minimum energy efficiency requirements.

Code officials can be confident that new and renovated buildings are designed and built to meet industry standards for quality and comfort, thus improving consumer protection.

Utilities can benefit from supporting energy codes through access to cost-benefit data to use in determining future investments and attribution of savings to efficiency programs. Additionally, codes can provide better energy forecasting and decreased peak demand.

State and local governments can reduce energy demand and greenhouse gas emissions, while ensuring that their constituents live and work in comfortable buildings with low utility bills.

Energy Code Impacts

Model energy codes for residential and commercial buildings are projected to save from 2010-2040:

\$126 billion energy cost savings

841 MMT of avoided CO₂ emissions

12.82 quads of primary energy

These savings equate to the annual emissions of:

177 million passenger vehicles

245 coal power plants

89 million homes

HOW ENERGY CODES MAKE COMMERCIAL BUILDINGS MORE EFFICIENT

ci refers to **Continuous Insulation**, which was introduced in 90.1-2004 to prevent energy loss through thermal bridging

R-value indicates **thermal resistance**. The higher the R-value, the more effective the insulation.

U-value measures the **rate of heat loss** through a material. The lower the U-value, the more effective the heat retention.



\$140,500
2001

TOTAL COST OF ENERGY USAGE

\$82,900
2010

Estimated saving of \$57,600 per year

* This increase in Window Solar Heat Gain Coefficient is a slight drop in efficiency, but other changes in the new code compensate for this increase.

Adopt Available Green Building Certifications

Texas ranks 5th in per capita LEED gross square footage by State



Check out who's certified in our region!



Green at College Park
Arlington, TX
Perot Museum
Dallas, TX



Plano, TX
Denton, TX

Adopt Available Building Codes

2018 International Residential Code



*Appendix T: Solar-Ready Provisions for detached one- and two-family dwellings, townhouses; includes chapters on “Energy Efficiency”

2018 International Green Construction Code



Provides criteria for energy efficiency, resource conservation, water safety, land use, site development, indoor environmental quality and building performance that can be adopted broadly

Get a List of Recommended Codes and Regional Amendments Here:
<https://www.nctcog.org/environ/regional-building-codes/amendments>

Regional Success



Simply Sustainable

includes initiatives on Energy Efficiency and Conservation



Adopted a Green Building Ordinance,
2015 International Energy Conservation Code, &
Green Energy Policy



Adopted the Green Built Texas Protocol

Comprehensive Energy Plan Success - Knoxville, TN

Community Size: Population of 180,000

Goal: Reduce energy intensity 20% by 2020

Barriers:

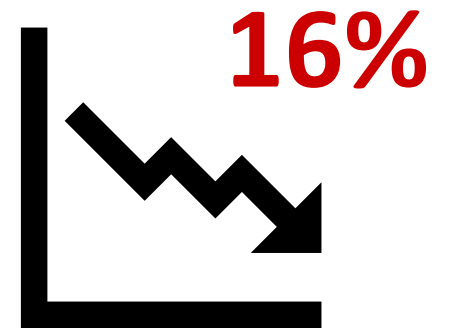
- Lack of a unified organizational plan capable of efficiency improvements
- Lack of access to building performance data

Solution:

- Developed a public task-force to develop a work plan, entered into a energy services performance contract to retrofit municipal buildings, and implemented a data tracking system

Outcome:

- An average **16% decrease in energy consumption from retrofitted facilities** and energy data more easily accessible prompting the proposal of efficiency ideas



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

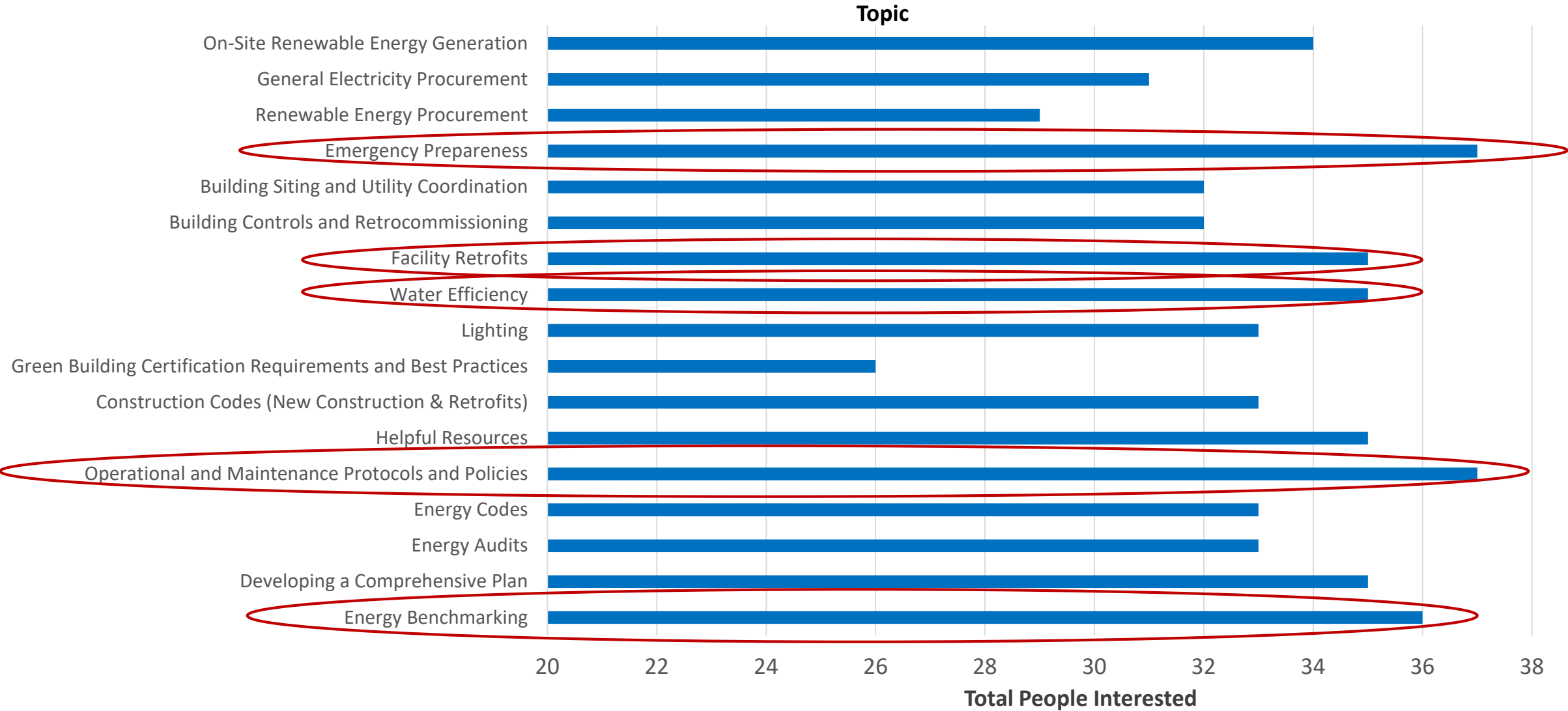
Develop workshops and trainings based on regional interests identified in survey

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 (82R) / SB 241 (86R)
- Lower Energy Use 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

Local Government Energy Reporting - SECO

SB898 (82R) amended by SB241 (86R) Section 388.005 (c) Health and Safety Code

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 Nonattainment Counties to establish a goal of reducing electric consumption by at least 5% each state fiscal year for ~~10 years~~ **7 years** beginning September 1, ~~2011~~ **2019** and to Submit Annual Reporting

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

Local Government Energy Reporting - SECO

Who Reports?

The following entities in 42 Nonattainment or Near Nonattainment counties:

Cities and Counties

State Agencies

Institutes of Higher Education

What's Due:

Annual 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

SECO
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 _____
Please indicate the areas in which your entity has made efforts and progress toward meeting energy goals.

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 instead demonstrate that the 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 requirement 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.

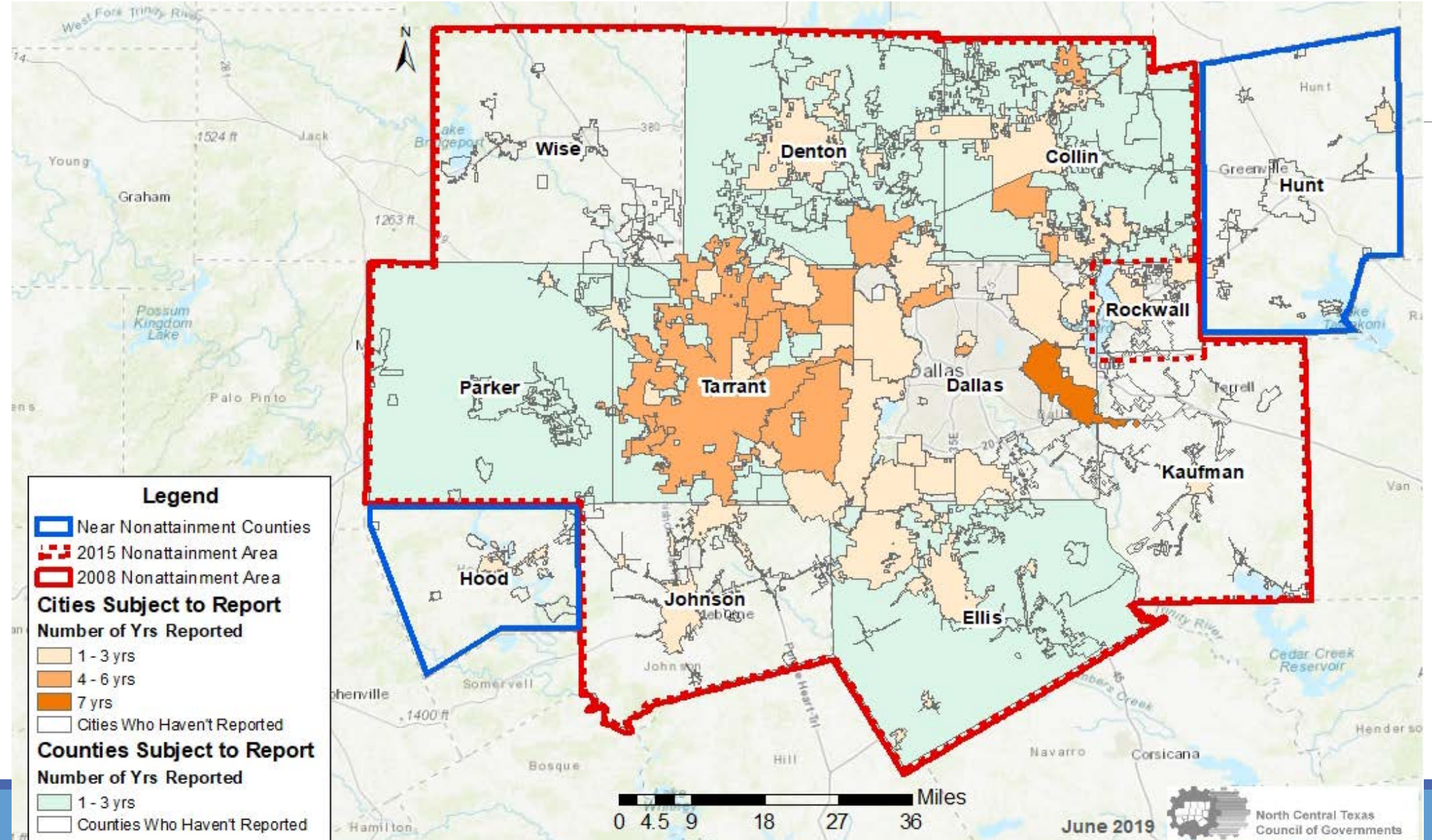
I have read Senate Bill 898 (82R) regarding exemptions, and hereby certify that the said entity has met the exemption.

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

5048-0015

Cities & Counties That Have Submitted Energy Reporting Requirements to the State Energy Conservation Office (SECO) Outlined in Section 388.005 Texas Health and Safety Code



FOR MORE INFORMATION

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