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

NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

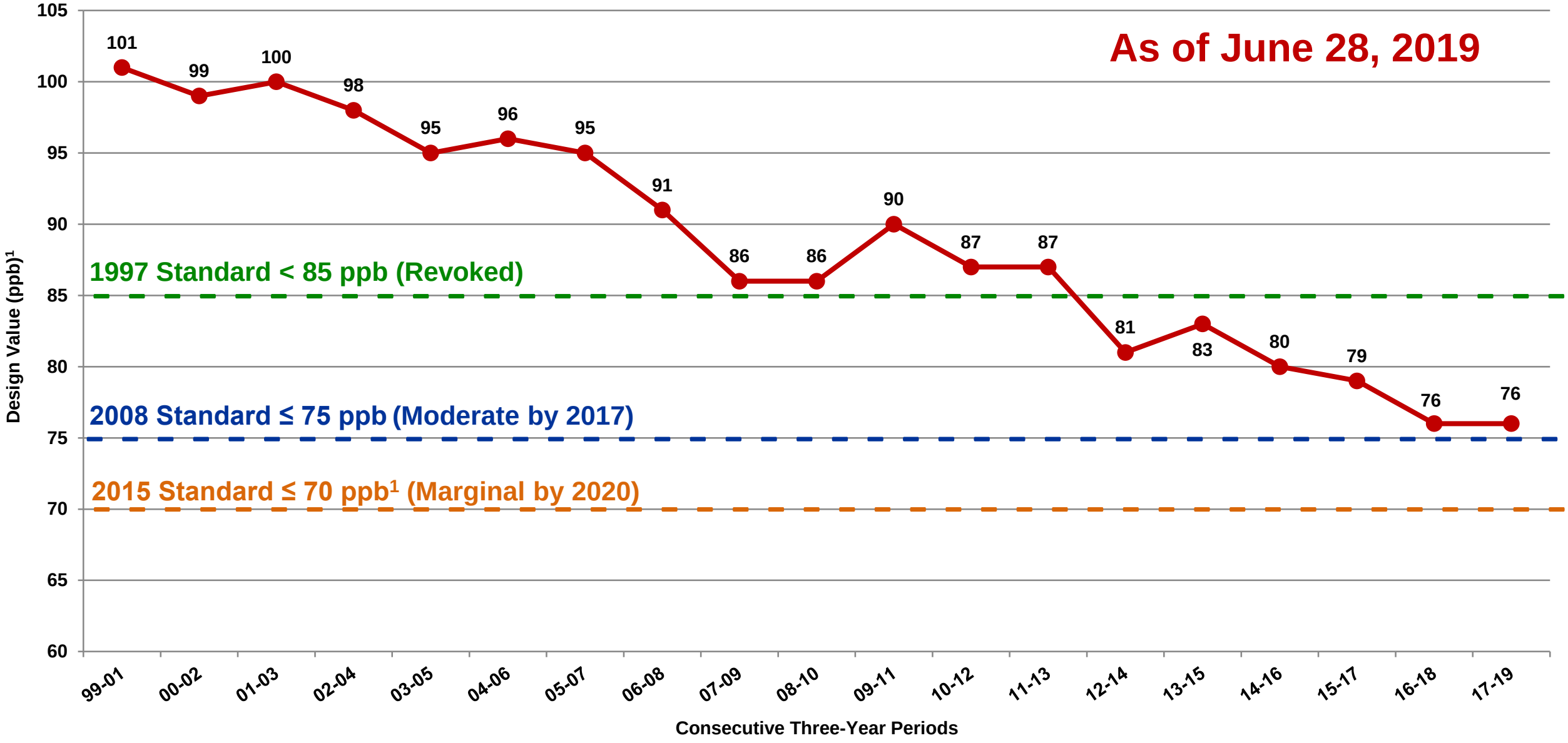
JUNE 28, 2019

North Central Texas
Council of Governments

Importance of Policy Implementation and Energy Planning

BY THE NUMBERS

8-HOUR OZONE NAAQS HISTORICAL TRENDS



[1]Attainment 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).

Source: NCTCOG TR Dept

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

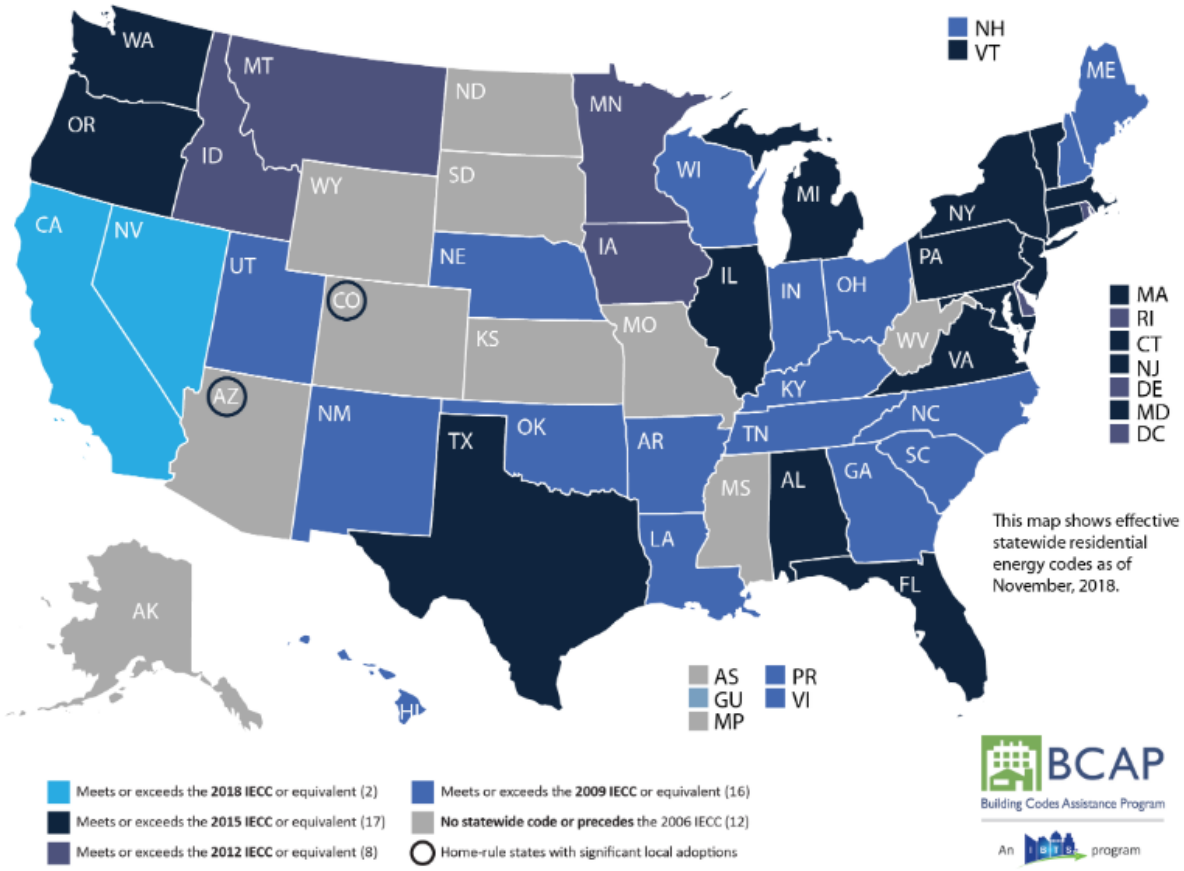
Source: https://www.eia.gov/energyexplained/index.php?page=us_energy_commercial

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



Sources: https://www.nrel.gov/docs/fy10osti/46532.pdf, http://bcapcodes.org/code-status/residential/

Why Energy Codes Matter

In the U.S. **buildings** use..

40% of total energy

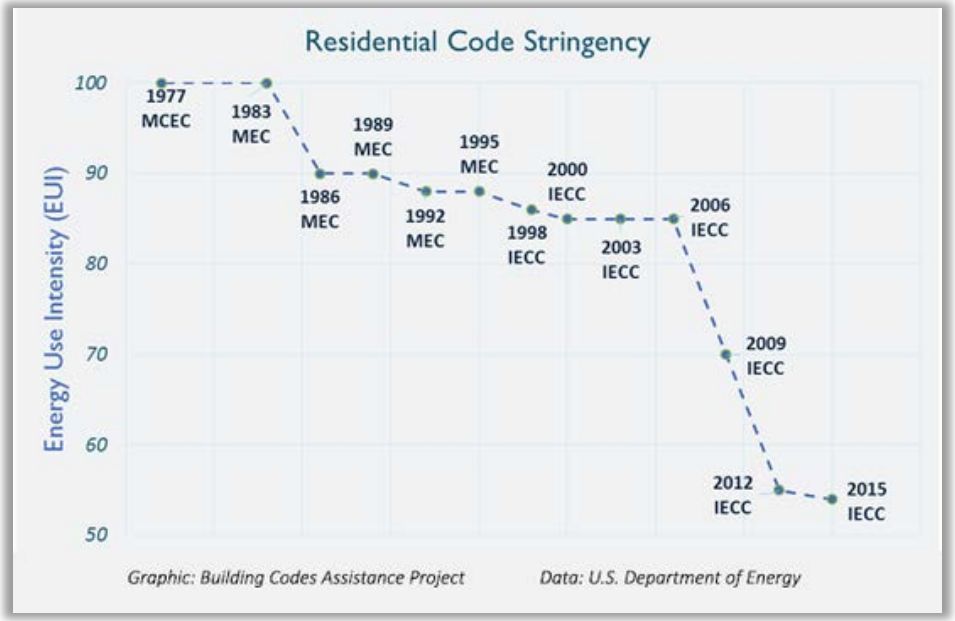
70% of total electricity

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



Source: http://bcapcodes.org/getting-started/why-energy-codes-matter/

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.

Sources: https://www.energycodes.gov/about/why-building-energy-codes

Energy Code Impacts

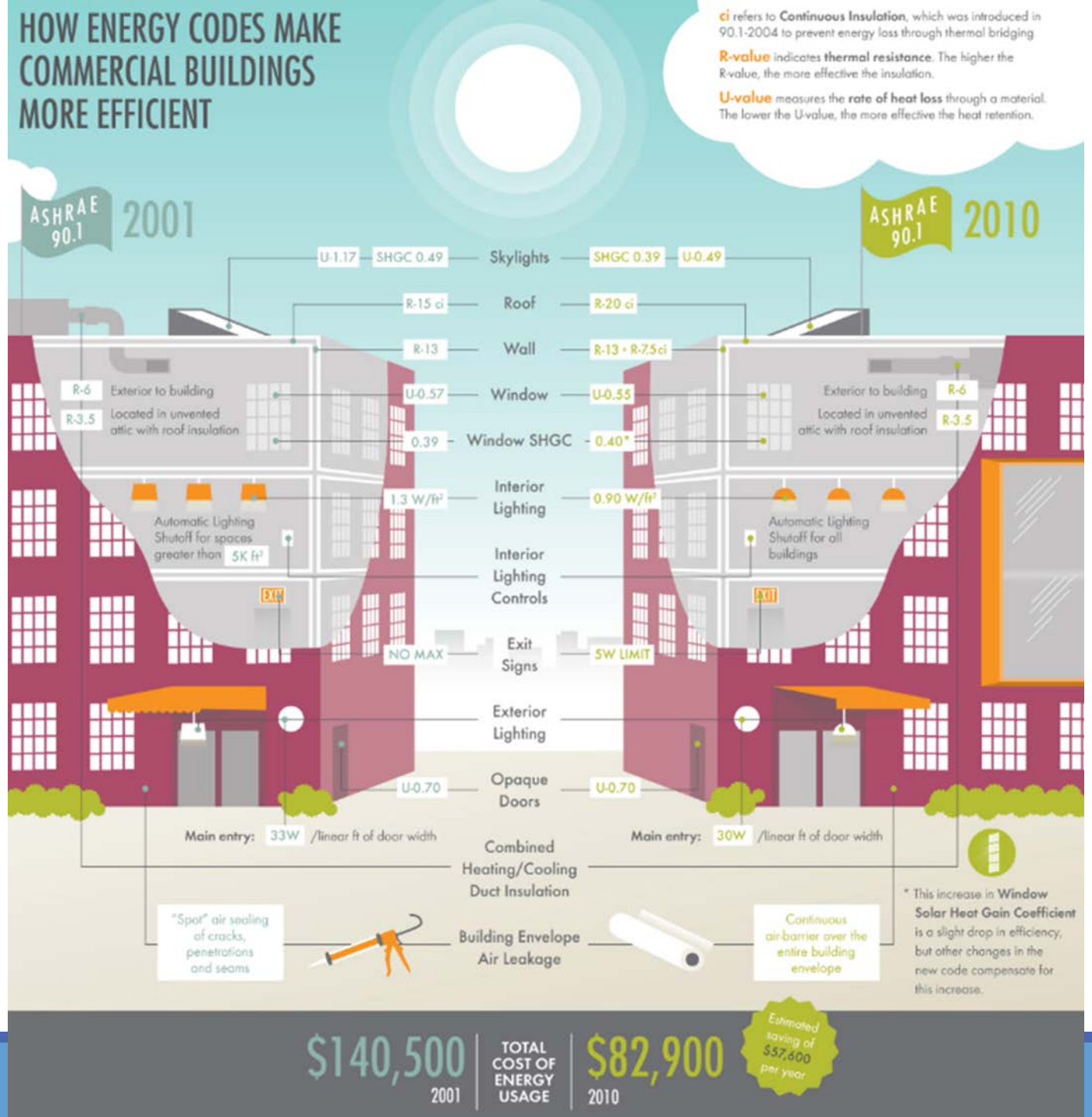
Model energy codes for residential and commercial buildings are projected to save from 2010-2040:

- **$126 billion** energy cost savings
- **841 MMT** of avoided CO_2 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

Sources: https://www.energycodes.gov/about/why-building-energy-codes



Source: https://www.imt.org/wp-content/uploads/2018/02/CodesCommercialInfographic.jpg

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/envir/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:

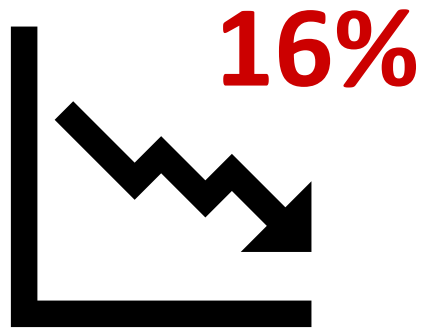
- Lack of a unified organizational plan capable of efficiency improvements
- Lack of access to building performance data

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



Source: https://betterbuildingssolutioncenter.energy.gov/implementation-models/designing-comprehensive-energy-plan

Regional Energy Manager Project

PARTNERSHIP WITHIN NCTCOG, BETWEEN TRANSPORTATION AND ENVIRONMENT & DEVELOPMENT STAFF

Project Overview

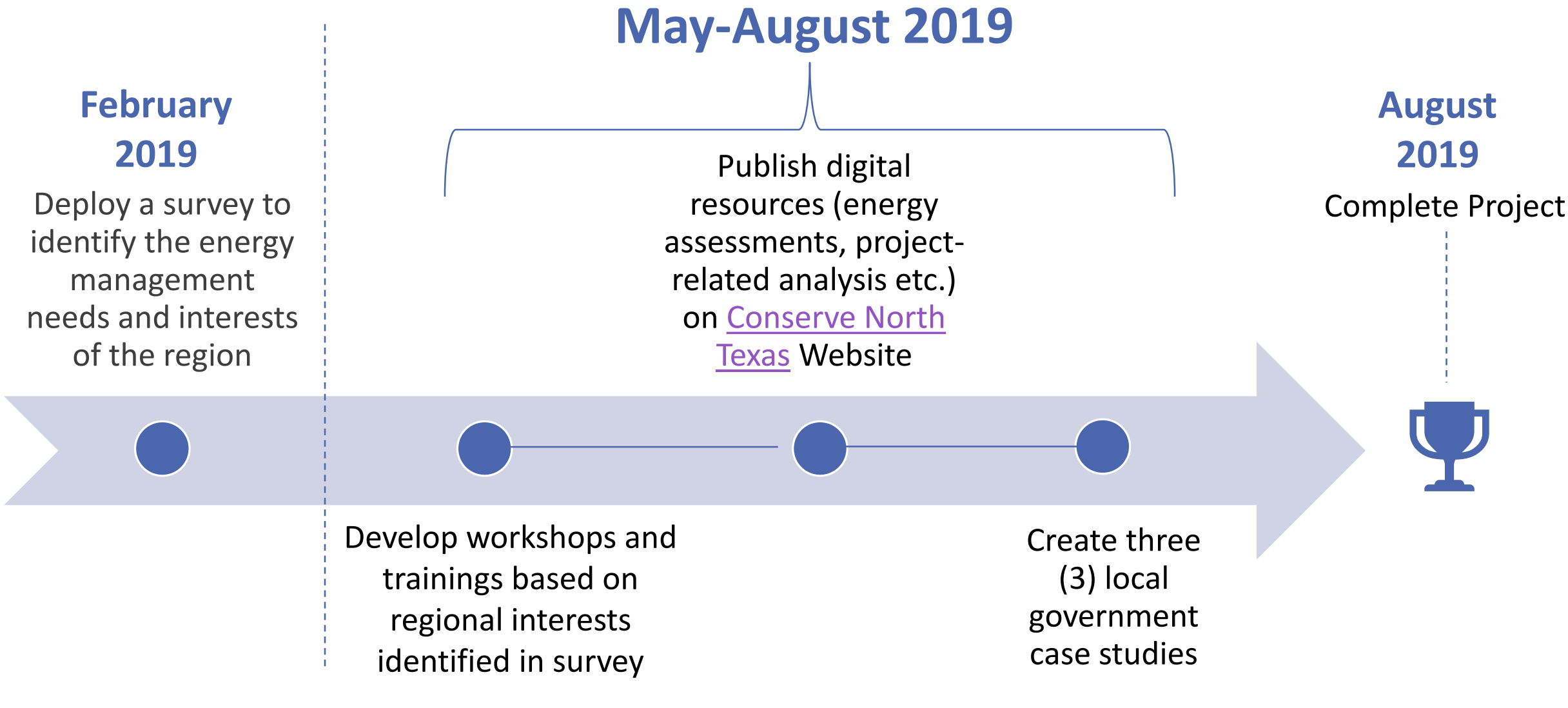
Purpose

- 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

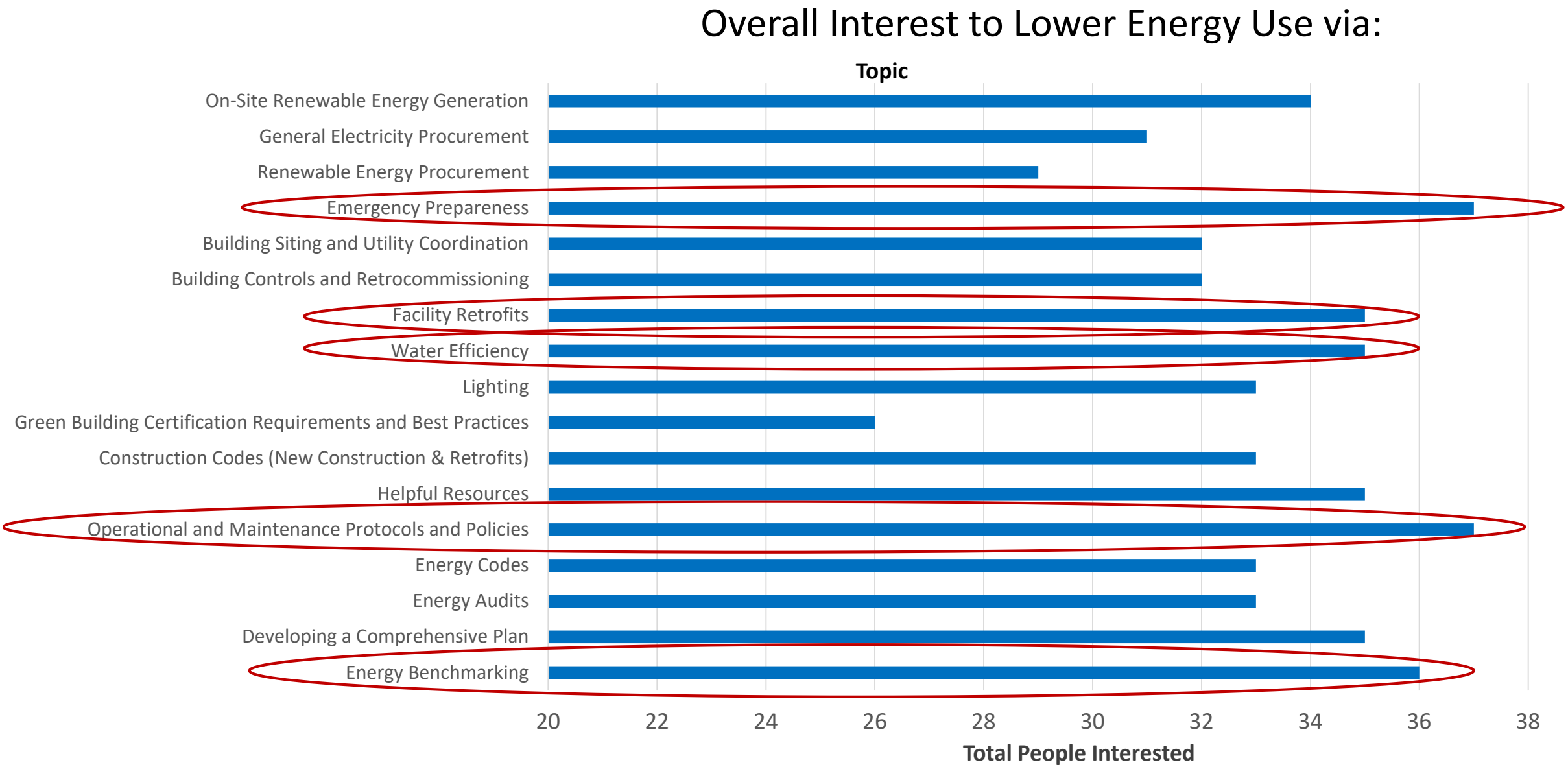
Outcome

- 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



Regional Survey Results



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?

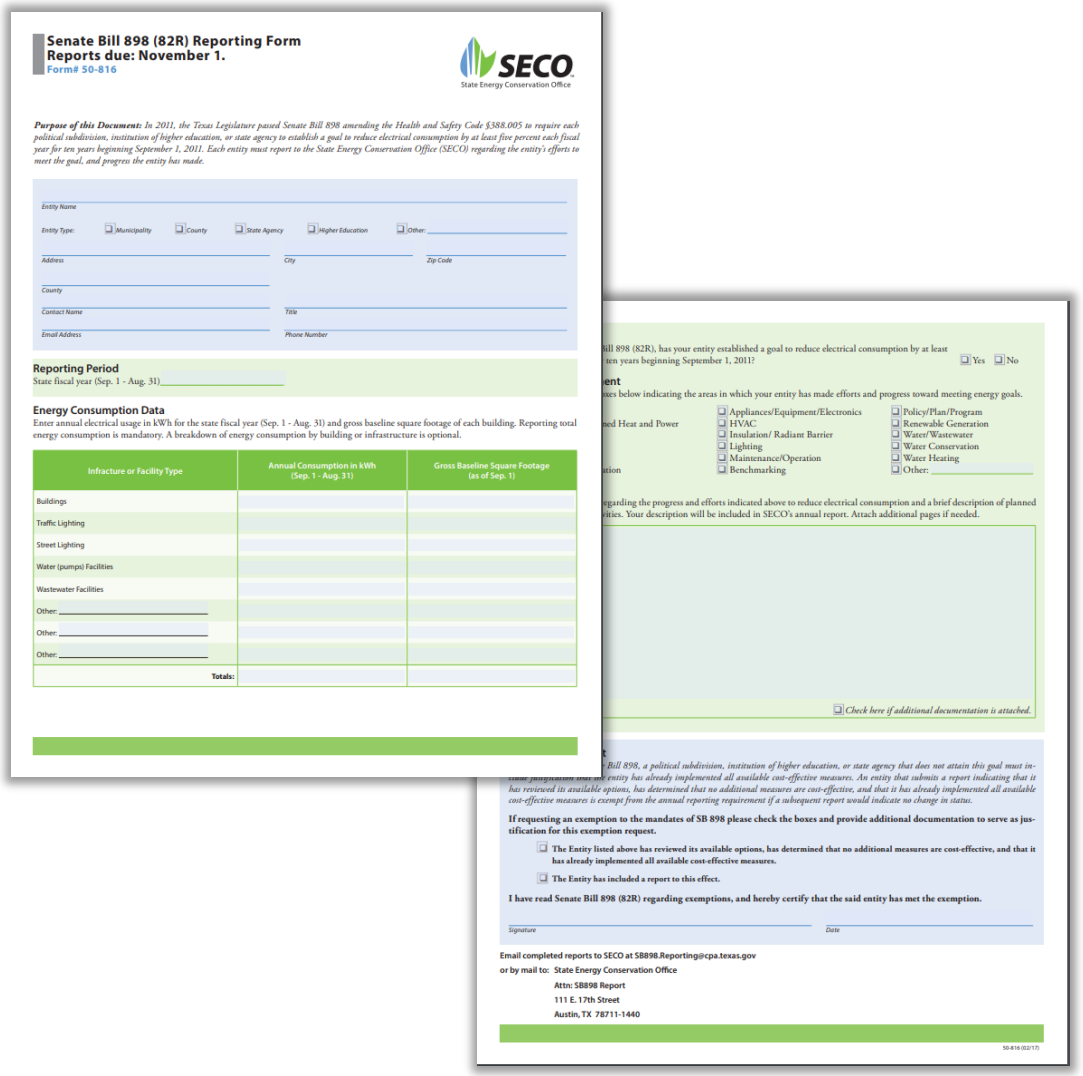
The following entities in 42 Nonattainment or Near Nonattainment counties:

- 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.

Infracture 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 (pumps) Facilities		
Wastewater Facilities		
Other:		
Other:		
Other:		
Totals:		

ill 898 (82R), has your entity established a goal to reduce electrical consumption by at least ten years beginning September 1, 2011? ☐ Yes ☐ No

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

ned Heat and Power

ation

☐ Appliances/Equipment/Electronics
☐ HVAC
☐ Insulation/ Radiant Barrier
☐ Lighting
☐ Maintenance/Operation
☐ Benchmarking
☐ Policy/Plan/Program
☐ Renewable Generation
☐ Water/Wastewater
☐ Water Conservation
☐ Water Heating
☐ Other:

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

☐ *Check here if additional documentation is attached.*

t
Bill 898, a political subdivision, institution of higher education, or state agency that does not attain this goal must in-clude [illegible] 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.**

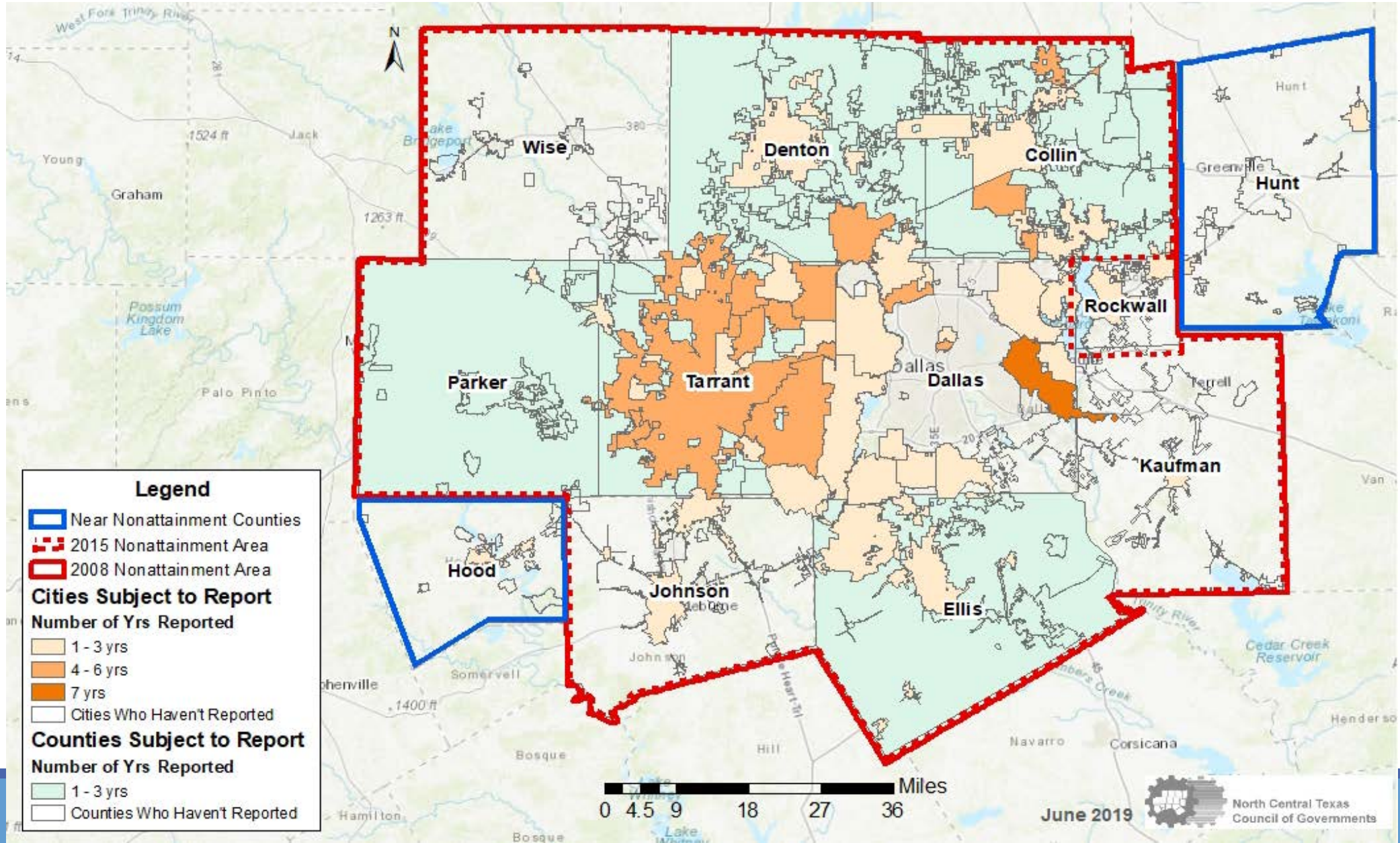
I have read Senate Bill 898 (82R) regarding exemptions, and hereby certify that the said entity has met the exemption.

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

50-816 (02/17)

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



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https://www.nctcog.org/envir/natural-resources/energy-efficiency

North Central Texas
Council of Governments

Energy Management Policy & Plan

Presented by: Saleem Khan, P.E., CxA

June 28, 2019

(Texas Energy Engineering Services, Inc.)
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What is Energy Management?

- "Energy management is the proactive, organized and systematic coordination of ***procurement, conversion, distribution*** **and** ***use*** of energy to meet the requirements, taking into account environmental and economic objectives"

Source: VDI-Guideline VDI 4602, page 3, Beuth Verlag, Berlin 2007.

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Why ?

- Why do we need energy plans and energy management policies?
  - Energy management plans and policies are effective strategies to influence day-to-day operations and behavioral practices
  - Low cost to implement
  - Can yield appreciable energy and maintenance cost savings
  - Occupant satisfaction
  - Integration into sustainability plan

Challenges

- Organization structure and top management support
- Training and awareness
- Staffing resources, shrinking budgets
- Capital required for energy efficiency building upgrades
- Failing equipment or poor equipment performance
- Occupant satisfaction & support (at all levels)
- Establishing a baselines for tracking
- Development & adoption of policy and plans

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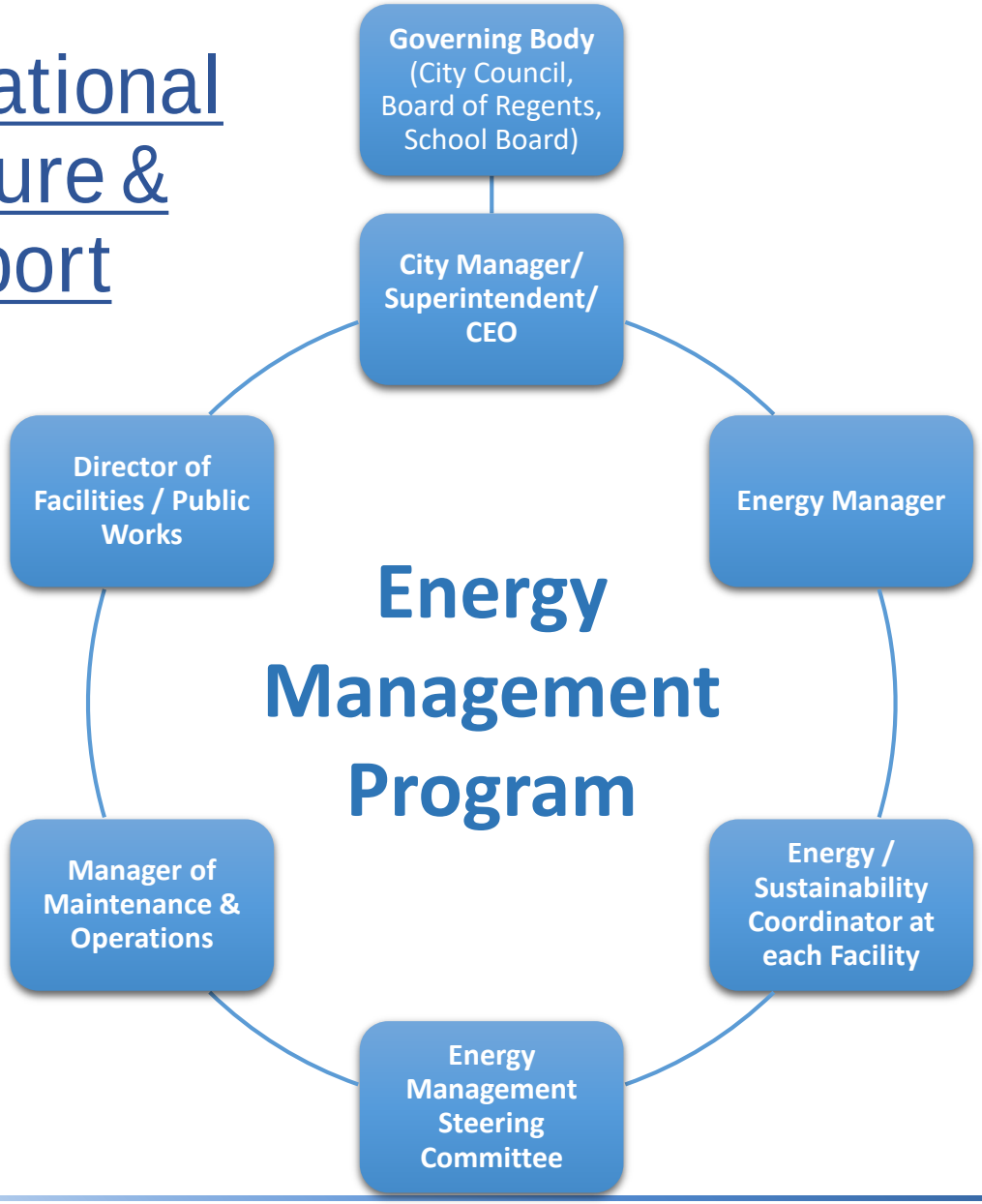
Organizational Structure & Support



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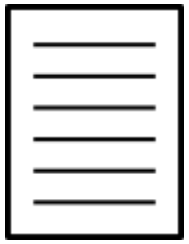
Energy Policy and Plan Distinction



Energy Management *Policy*

vs.

Energy Management *Plan*

- Adoption Strategy
  - Varies
  - Recommend two step process
    - Policy
    - Plan

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Energy Management Policy

- Authoritative document establishing the vision, intent and goals of the Energy Management (EM) program
  - Usually 1-2-page document
  - Includes the general responsibilities and roles of different departments relating to Energy Management
  - Establishes overall goals and objectives

Energy Management Plan

- Document detailing *how* the energy goals will be achieved
  - Establish goals, equipment parameters and usage, facility operation, temperature setpoints, O&M procedures, new construction, etc.
- Further details the responsibilities and roles of different departments
  - Energy Management Steering Committee, Energy Management Department, etc.
- "Sustainability Plan" includes water management, recycling, alternative energy, carbon footprint, etc.

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Energy Management Plan Outline

i. **Mission Statement**
ii. **Statement of Concerns**
iii. Commitment to Implementation of Program
iv. Energy Management Steering Committee

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Energy Management Plan Outline (cont.)

v. Promotion of Energy Management

vi. Energy Management Department Role

vii. Acceptable Equipment Operating Parameters

- **Handling of comfort issue**

viii. Equipment Usage and Requirements

Energy Management Plan Outline (cont.)

ix. Lighting Energy Conservation

x. After Hours Event Approval Process

xi. Maintenance and Operation (M&O) for Buildings and Equipment

xii. Public Awareness / Outreach

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Energy Management Plan Outline (cont.)

xiii. New Building and Construction

xiv. Alternative Energy Sources

xv. Establish a Water Management Program

xvi. Integration into Sustainability Planning

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Energy Management Plan Specifics

- Mission Statement
  - To be implemented within each of the facilities and/or campuses; will produce a safe and productive environment for occupants, while simultaneously providing prudent management of financial and energy resources.
- Statement of Concerns
  - The [City/County/District] is concerned with current and projected energy costs and power requirements due to current population growth patterns within the area.
  - It is within the best interest of the [City/County/District] to conserve energy and natural resources.

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Energy Management Department Roles

- Develop comprehensive program for energy efficient op's
- Responsible for implementation, operations, and enforcement
- Establish routine energy tracking
- Evaluate energy rates and utility provider proposals
- Routinely review efficiency improvements; recommend new technologies, more efficient equipment, systems and operating techniques
- Work with other departments to develop efficient practices
- Annually review and revise the standard practices
- Energy purchase, systems purchasing, education, reporting

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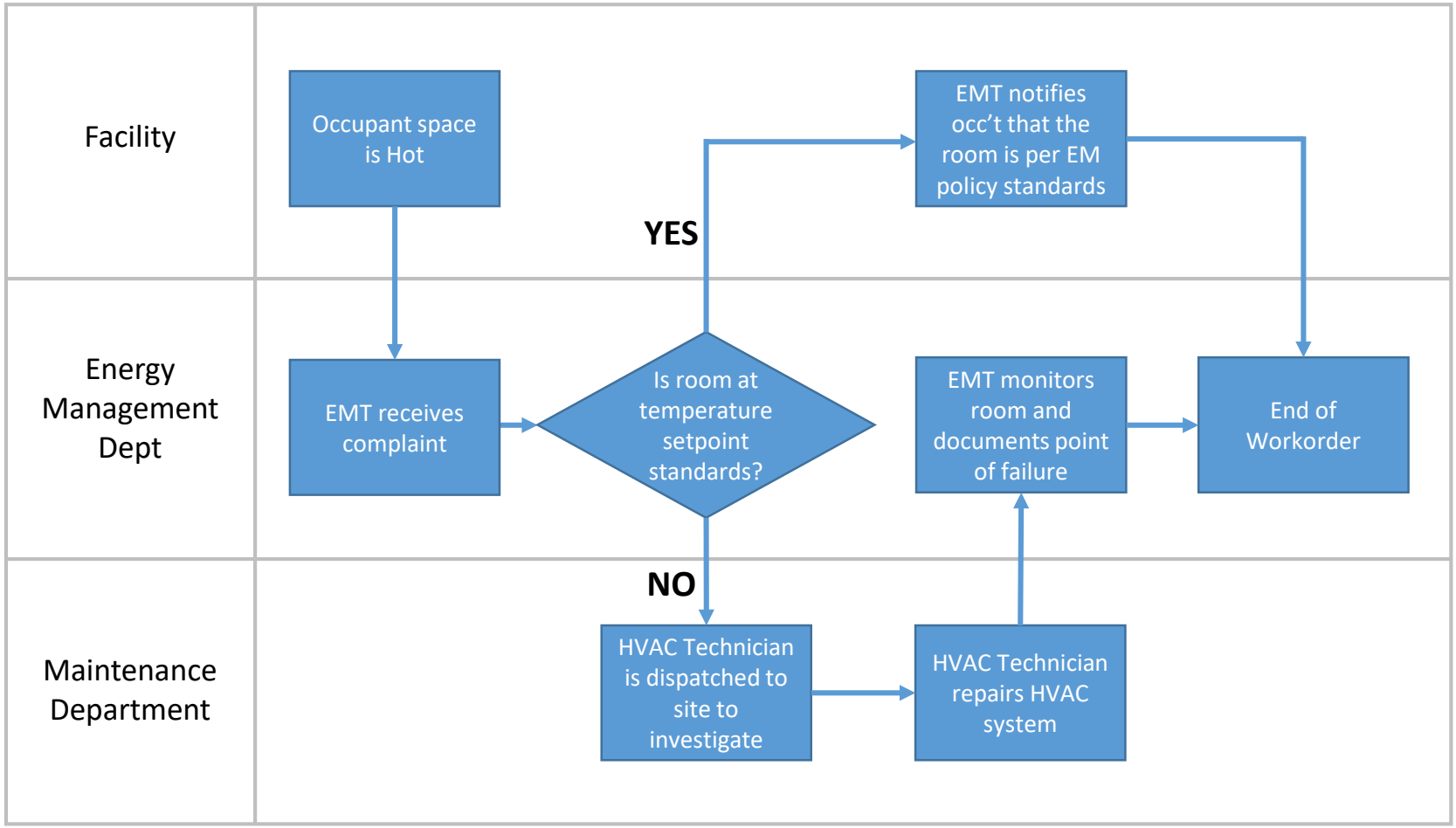
Acceptable Equipment Parameters

- Establish uniform temperature set points for all spaces
  - Occupied/unoccupied
- Monitor and ensure other building parameters (humidity levels, CO_2, etc.) are within acceptable limits
- Start/stop times will be adjusted seasonally to avoid unnecessary runtimes
- Holiday shut downs
- Procedure for handling comfort complaint

Typical Daily Workorder Scenario (handling of comfort issue)



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Public Awareness

- All staff, occupants should be aware of utility management efforts
  - Signage to turn off lights, etc.
- Provide feedback on energy and $ saved
  - Posters, emails, newsletters
  - ENERGY STAR Certifications
  - Possible incentives

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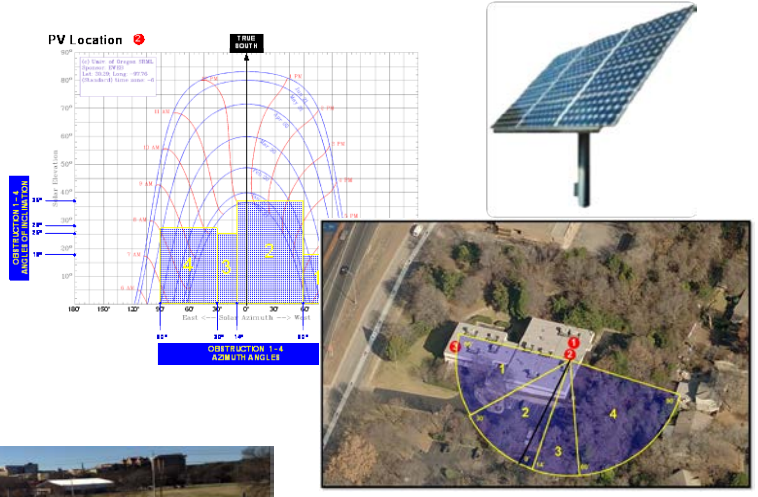
Alternative Energy Sources

- Pursue cost effective applications of alternative energy sources including, but not limited to, PV Solar Arrays, Solar Water Reheat, and alternative fuels

Wind Generation



Solar PV

Solar Thermal Pool Heating

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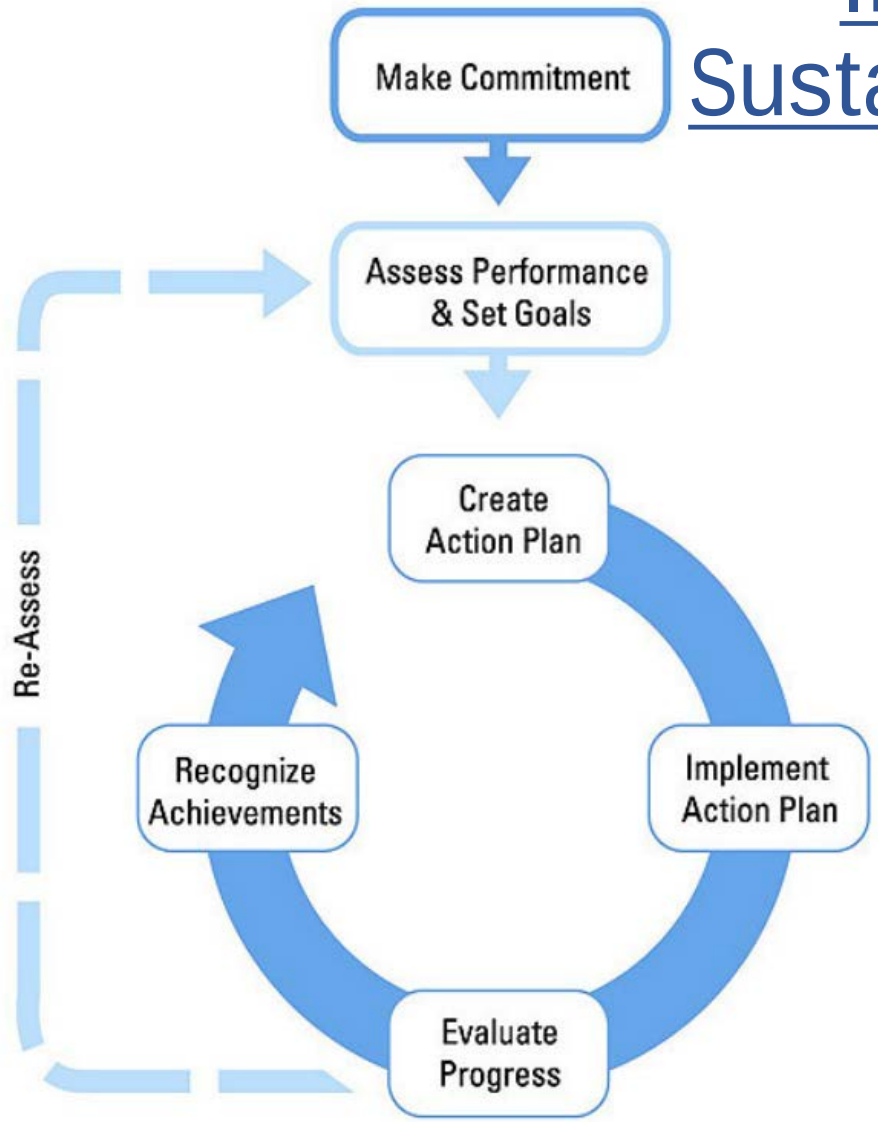
Water Management Program

Establish a program to reduce water consumption. The following conservation measures should be employed:

- Investigate the use of water conserving faucets, showerheads, and toilets in all new and existing facilities.
- Utilize water-pervious materials such as gravel, crushed stone, open paving blocks or previous paving blocks for walkways and patios to minimize runoff and increase infiltration.
- Employ Xeriscaping, using native plants that are well suited to the local climate, that are drought-tolerant and do not require supplemental irrigation.
- Utilize drip irrigation systems for watering plants in beds and gardens.
- Install controls to prevent irrigation when the soil is wet from rainfall.
- Establish a routine check of water consuming equipment for leaks and repair equipment immediately

Integration into Sustainability Planning



- STEP 1 – Make a Commitment to Sustainability
- STEP 2 – Assess Performance and Set Goals
- STEP 3 – Create Action Plan
- STEP 4 – Implement Action Plan
- STEP 5 – Evaluate Progress and Re-Assess
- STEP 6 – Recognize Achievements
- **Roadmap to sustainability through Energy Management**

Source: Guidelines for Energy Management, ENERGY STAR

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Recap and Summary

- Energy plans can help realize increased cost savings potential in conjunction with Energy Efficiency projects
- Awareness and behavioral practices have minimal upfront cost with appreciable impacts on conservation efforts
- The success of the program is dependent upon total cooperation from every level within the system; from the top down

Questions?

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Energy Savings and Maintenance and Operations Practices

Presented by: Saleem Khan, P.E., CxA

June 28, 2019

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ENERGY STAR PARTNER

Operations & Maintenance (O&M)

- Operations and Maintenance are the decisions and actions regarding the **control** and **upkeep** of property and equipment. These are inclusive, but not limited to, the following: 1) actions focused on scheduling, procedures, and work/systems control and optimization; and 2) performance of routine, preventive, predictive, scheduled and unscheduled actions aimed at preventing equipment failure or decline with the goal of increasing efficiency, reliability, and safety.

Source: "Operations & Maintenance Best Practices", Federal Energy Management Program, Department of Energy, August 2010.

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Preventive Maintenance

- Reactive
- Preventive
- Predictive
- Reliability Centered

Maintenance Type	Avg Maintenance Breakdown*
Reactive	>55%
Preventive	31%
Predictive	12%
Other	~2%

**From a study in 2000 in the US*

** Source: "Operations & Maintenance Best Practices", Federal Energy Management Program, Department of Energy, August 2010.*

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Operations Efficiency

- *Operational Efficiency* represents the life-cycle, cost-effective mix of preventive, predictive, and reliability-centered maintenance technologies, coupled with equipment calibration, tracking, and computerized maintenance management capabilities all targeting reliability, safety, occupant comfort, and **system efficiency**.
- **O&M department prime objective "keep things running and functional"**

Source: "Operations & Maintenance Best Practices", Federal Energy Management Program, Department of Energy, August 2010.

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Energy Management

- "Energy management is the proactive, organized and systematic coordination of *procurement*, *conversion*, *distribution* and ***use*** of energy to meet the requirements, taking into account environmental and economic objectives"
  - **Prime objective is to create policies and practices that aim to minimize energy consumption to the maximum extent possible.**

Source: VDI-Guideline VDI 4602, page 3, Beuth Verlag, Berlin 2007.

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Organizational Structure

- Organizational setup and hierarchy
  - Facilities/Public Works
  - M&O Department
  - Sustainability Department
  - Energy Manager/Department
  - Other

Typically, O&M Energy Savings Measures…

- Low-cost or no cost in nature
- Easily implemented with in-house personnel
- Quick paybacks

Examples – Lighting Systems

- Review Light Levels
- Inspect and Improve control of Interior and Exterior Lighting
- Replace incandescent and fluorescent lamps with LEDs
- Install LED Exit Signs
- Clean lighting equipment and document lighting levels
- Group re-lamping or de-lamping

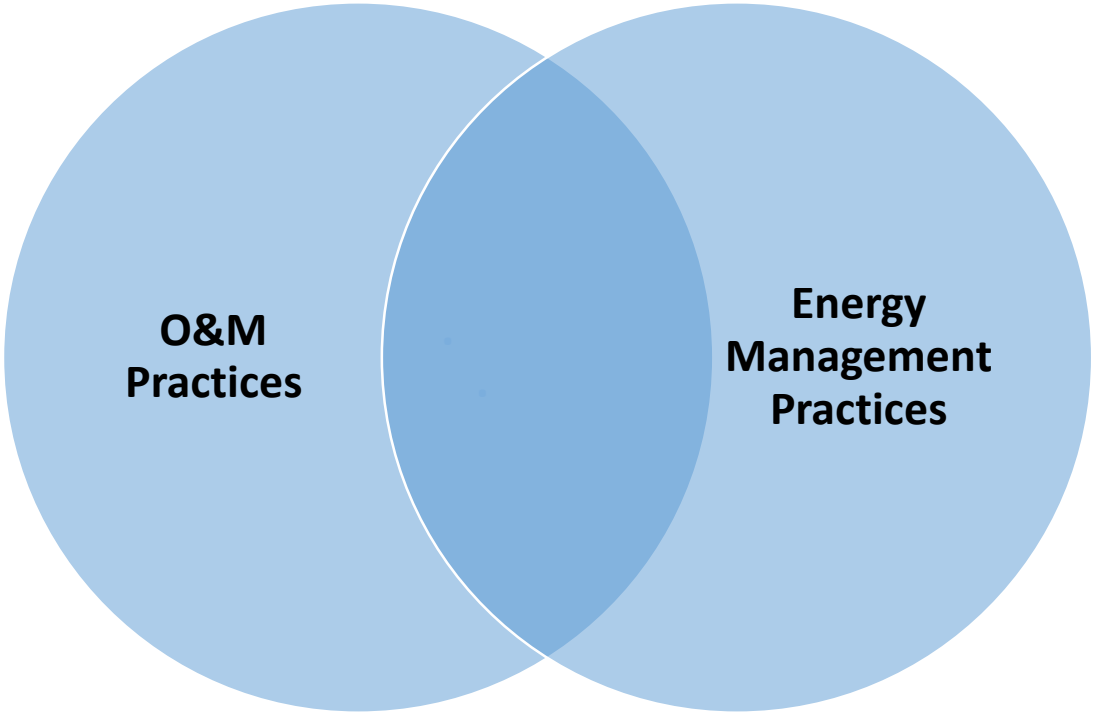
Examples – HVAC Systems

- Establish HVAC unit service schedules
- Maintain boilers/ furnaces
- Inspect cooling equipment
- Maintain economizers
- Test AHU's
- Inspect and clean coils, fans, air ducts
- Replace air filters
- Maintain controls
- Sensor Calibration

Examples – HVAC Systems (cont.)

- Schedule HVAC equipment operation based on building occupancy
- Avoid manual operation of equipment
- Separately schedule temperature control and ventilation
- Maintain optimum cooling, heating, and setback set points
- Hail guards on condenser coils
- Insulate Hot Water and Chilled Water equipment
- Repair leaking control valves
- Flush hot water fixtures

Nexuses between O&M and Energy Management Functions



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Importance of Cross Training

Strategies to Reduce Energy Waste

Behavioral Practices

Practices that can be adopted by all building occupants; staff, students, etc.

O&M Practices

Practices that can be adopted by building custodians, operators, and managers

Both requiring very little to no capital investment!

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Effective O&M Program Benefits

- Energy savings of 5%-20% of whole-building energy use (depending on building type, baseline, & use)
- Minimal comfort complaints
- Equipment that operates adequately until the end of its useful life or beyond
- IAQ maintained
- Safe working conditions for the buildings' operating staff

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Temperature Setpoints

	Temperature Setpoints
Occupied Cooling	74°F - 76°F
Unoccupied Cooling	85°F
Occupied Heating	67°F - 69°F
Unoccupied Heating	50°F

- What is the impact of raising the space cooling setpoint by 1 degree Fahrenheit?
  - Approximately 1% reduction of HVAC energy consumption/year!

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HVAC Scheduling

- Schedule HVAC Operation based on building occupancy
  - Cooling, heating, **outside air ventilation**, etc.
  - Occupancy sensors communicating with HVAC

- A facility in the NCTCOG region could save 15% of HVAC **cooling costs** by reducing HVAC operation by 2 hours

  - Assumptions: DFW Climate; 12 month operation; existing EFLCH = 1,267; proposed EFLCH = 1,078

Lighting

- Lighting makes up 20%-40% of electric bill
- Turn off lights when not in use!
  - Offices, common areas, kitchen, etc.

- Turning off the lights for even one hour of per day could result in approximately 10% reduction in lighting energy!

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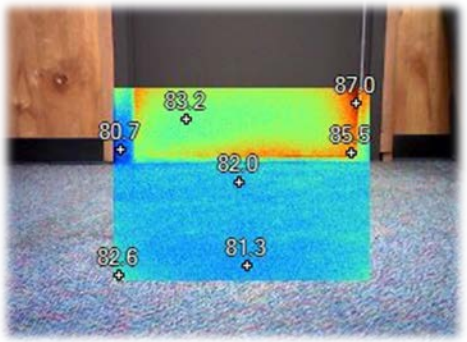
State Energy Conservation Office

Outside Air Infiltration Reduction



- Reduce outside air infiltration
  - Weather stripping, leaky ducts, etc.
- An average exterior doorway without weather stripping could result in approximately $25/year in cooling and heating energy costs!
  - Source: SECO Quick Calcs for DFW area

SECO
State Energy Conservation Office

Discussion and/or Questions?

Saleem Khan, P.E., CxA
TEESI Engineering
(512) 328-2533
saleem@teesi.com
www.teesi.com

Stephen Ross
State Energy Conservation Office (SECO)
Office: 512-463-1770
stephen.ross@cpa.texas.gov
https://comptroller.texas.gov/programs/seco/

SECO
State Energy Conservation Office

NCTCOG and SECO Resources for Energy Management

NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

JUNE 28, 2019

North Central Texas
Council of Governments

SECO Resources

About SECO

Mission Statement: To Increase the Efficient Use of Energy and Water While Protecting the Environment

Focus on Public Sector Facilities – Indirectly Benefitting Taxpayers

Support for Energy and Water Efficiency Project Implementation

- Education and Training
- Technical Assistance
- Project Financing

U.S. Department of Energy State-Level Program Conduit

- State Energy Program (SEP)
- Pantex/Waste Isolation Pilot Plant (WIPP)

SECO
State Energy Conservation Office

SECO Support

Training/Education

- Energy Codes (Workshops & Adoption Toolkit)
- WattWatchers

Technical Assistance

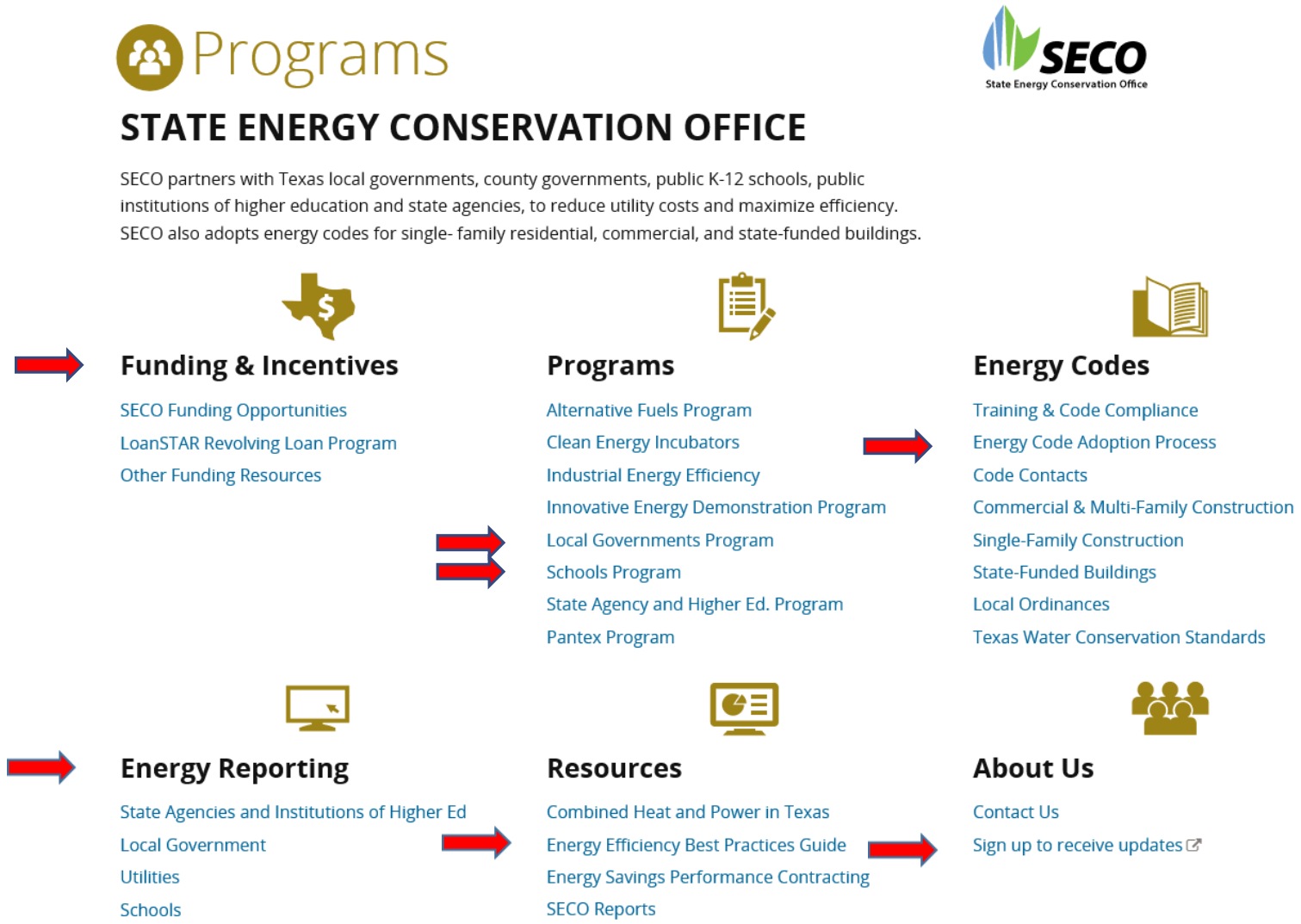
- Preliminary Energy Audits (K-12 & Local Governments)
- Virtual Energy Audits

Financing

- LoanSTAR Revolving Loan Program
- Energy Savings Performance Contract Guidelines & Education

SECO
State Energy Conservation Office

https://comptroller.texas.gov/programs/seco



LoanSTAR Revolving Loan

Finances Projects that Reduce Energy/Water/Utility Costs

- Simple Payback Period of 15 Years or Less
- 2% Loan Interest Rate; 1% if Choose ARRA Funds with More Reporting

Open Enrollment Through **August 30, 2019**

- Maximum $8 Million Loan Per Application
- Maximum 3 Loans per Entity

Program Overview
https://www.youtube.com/watch?v=4IFuj_5ZeGI

Other Funding & Incentives

Database of State Incentives for Renewable Energy:
Local, Utility, State, Federal
www.dsireusa.org

Texas Department of Agriculture:
City Population < 50,000; County Population <200,000
Water / Wastewater infrastructure; Street / Drainage; Housing
Awards Range from $75,000 - $800,000
www.texasagriculture.gov/GrantsServices

Texas Water Development Board:
Financial Assistance Programs
Loans, Grants, Deferred Interest, Combination Grant/Loan
Political Subdivisions, non-Profit and Community Water Supply Corporations, Private
www.twdb.texas.gov/financial/programs

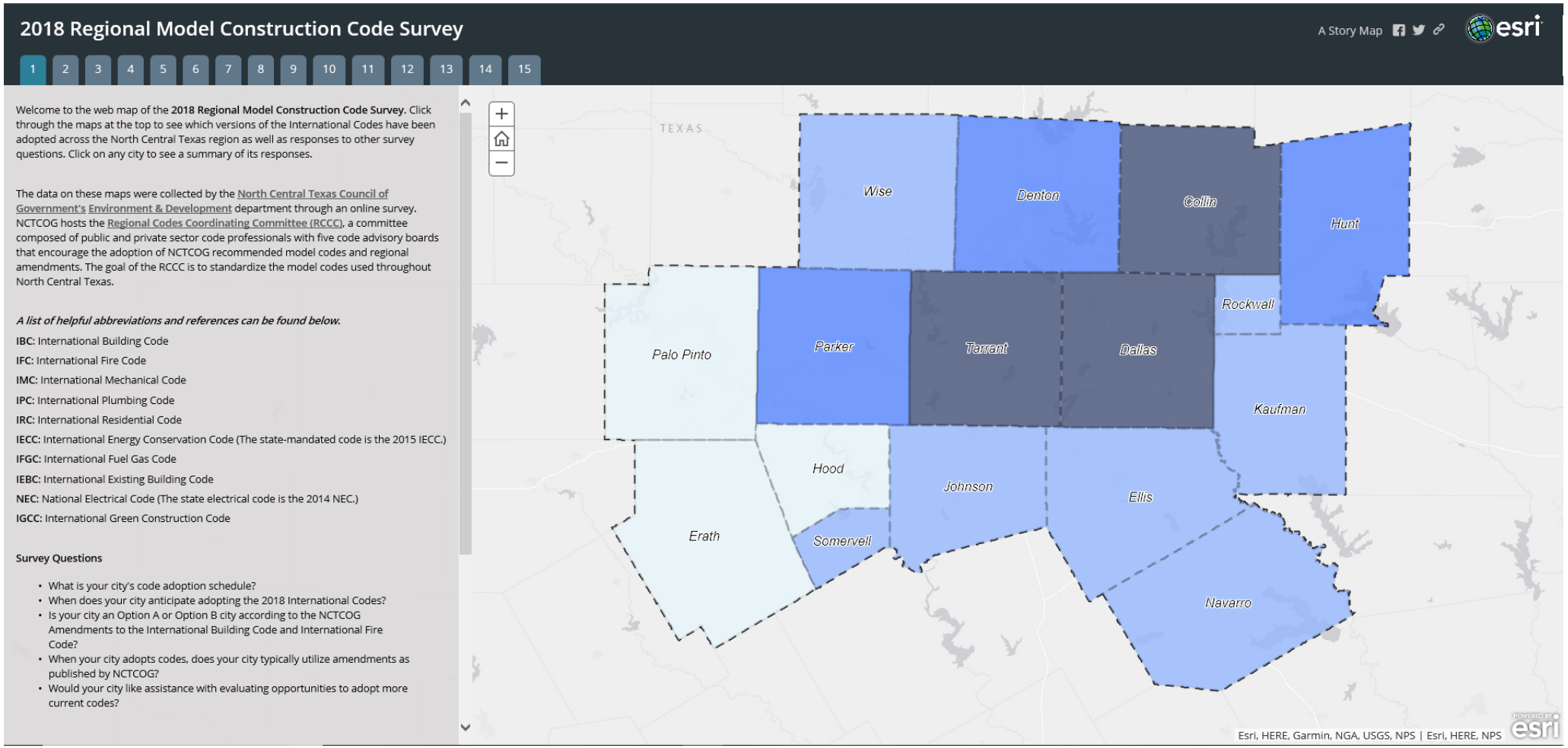
NCTCOG Resources

2018 Recommended Codes and Regional Amendments

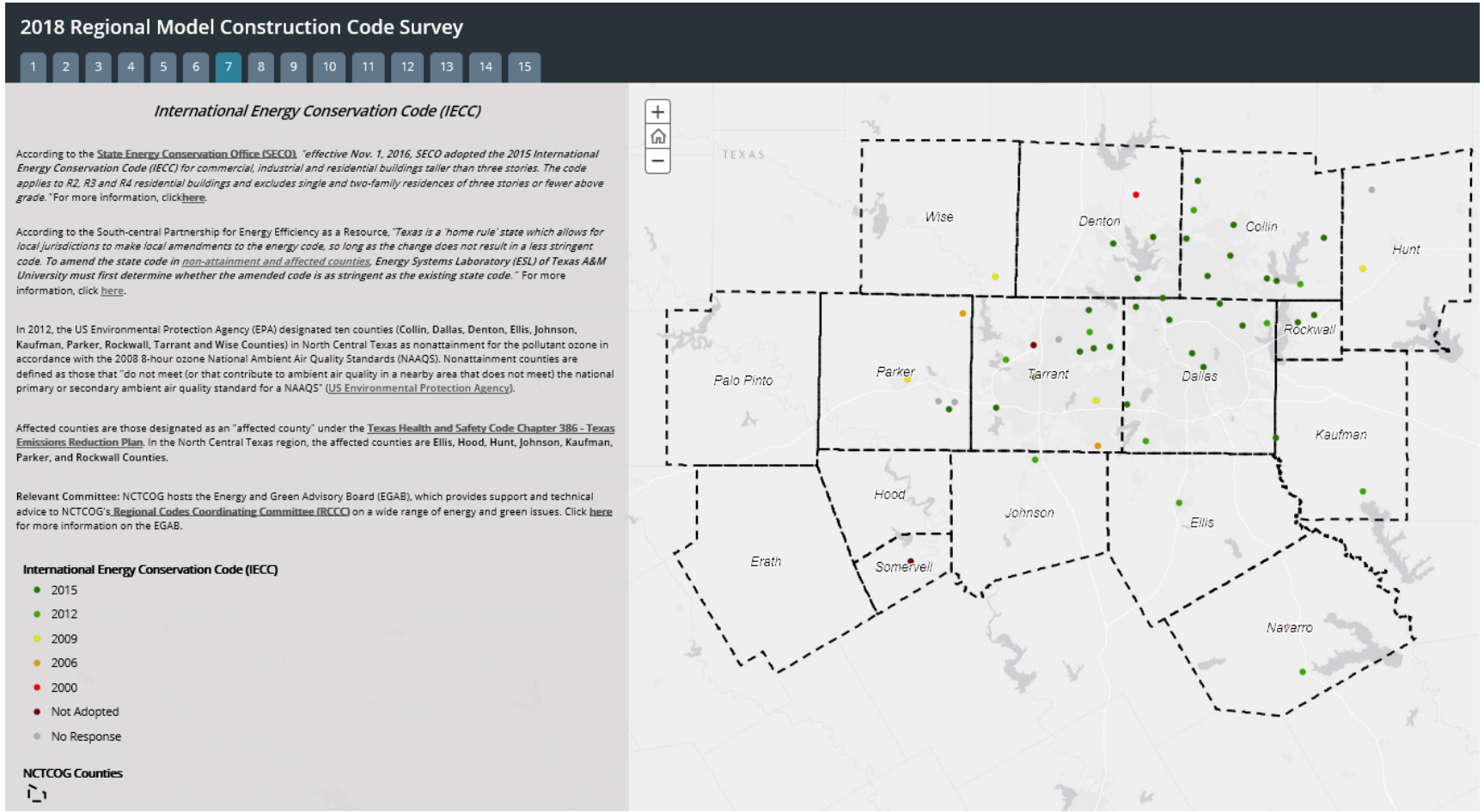
- The Regional Codes Coordinating Committee (RCCC) reviews International Codes and recommends regional amendments.
- Goal is to standardize model codes and recommend regional amendments for use throughout North Central Texas.
- Reduces municipalities cost of training code personnel; makes it easier for contractors, builders, and developers to work from city to city; and reduces overall construction costs.
- The 2018 Recommended Codes and Regional Amendments can be found at: https://www.nctcog.org/envir/regional-building-codes/amendments

2018 Recommended Codes and Regional Amendments	Download Format
2018 International Building Code - Regional Amendments	[PDF] [Word]
• 2018 Approved Agency Documentation	[PDF] [Word]
• 2018 Final Report	[PDF] [Word]
• 2018 Statement of Required Special Inspections	[PDF] [Word]
• 2018 Special Inspections Program	[PDF] [Word]
2018 International Existing Building Code - Regional Amendments	[PDF] [Word]
2018 International Residential Code - Regional Amendments	[PDF] [Word]
2018 International Swimming Pool and Spa Code - Regional Amendments	[PDF] [Word]
2018 International Plumbing Code - Regional Amendments	[PDF] [Word]
2018 International Mechanical Code - Regional Amendments	[PDF] [Word]
2018 International Fuel Gas Code - Regional Amendments	[PDF] [Word]
2018 International Energy Conservation Code - Regional Amendments	[PDF] [Word]
2018 International Fire Code - Regional Amendments	[PDF] [Word]
2018 International Wildland Urban Interface Code Opinion Statement	[PDF] [Word]

Story Map of 2018 Regional Model Construction Codes Survey



Regional Adoption of International Energy Conservation Code (IECC)



Code History

Effective Dates	Codes
Prior to 1999	No mandatory statewide energy code.
Sept. 1, 2001 – March 31, 2011	2000 IECC (with 2001 supplement)
April 1, 2011 – Oct. 31, 2016	2009 IECC
Nov. 1, 2016	2015 IECC

Conserve North Texas

Clearinghouse of Energy Efficiency, Water Conservation, and Transportation Resources

Resource Types

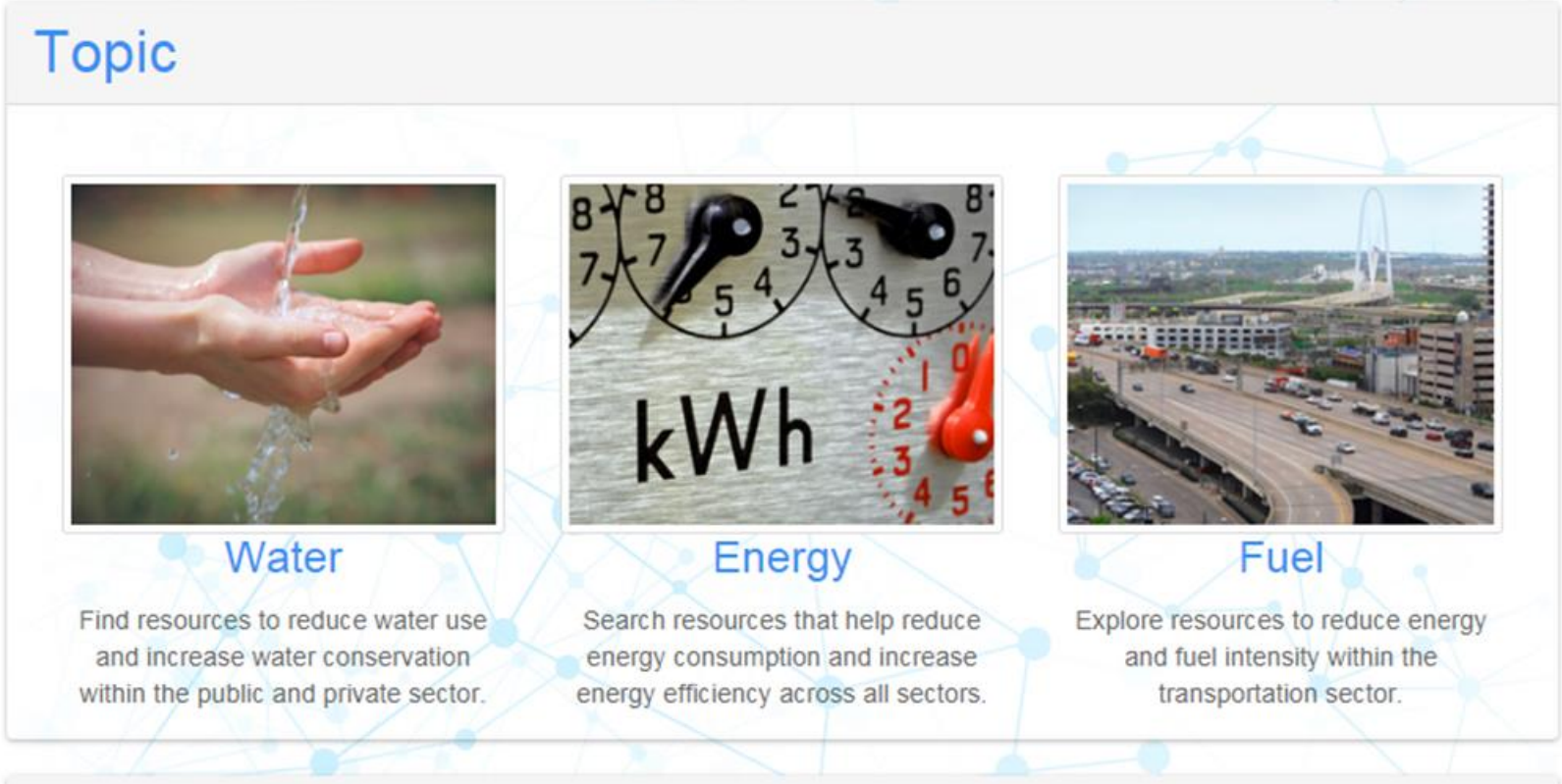
Programs

Tools

Calculators

Case Studies

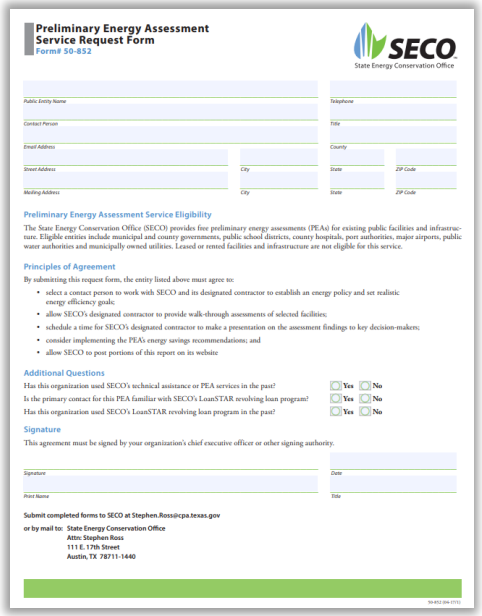
www.conservenorthtexas.org



Conserve North Texas Resource:
Preliminary Energy Assessments (PEAs)

Preliminary Energy Assessments (PEAs) are provided by the State Energy Conservation Office (SECO) and offer cost effective resource efficiency measures entities can implement to decrease energy consumption at **no cost to you!**

- Help guide the development of an energy management policy
- Provides facility benchmarking using ENERGY STAR Portfolio Manager
- Recommended maintenance procedures
- Develop efficiency level guidelines for equipment purchases



Preliminary Energy Assessment
Service Request Form
Form# 50-852

SECO
State Energy Conservation Office

Public Entity Name | Telephone
Contact Person | Title
Email Address | County
Street Address | City | State | ZIP Code
Mailing Address | City | State | ZIP Code

Preliminary Energy Assessment Service Eligibility

The State Energy Conservation Office (SECO) provides free preliminary energy assessments (PEAs) for existing public facilities and infrastructure. Eligible entities include municipal and county governments, public school districts, county hospitals, port authorities, major airports, public water authorities and municipally owned utilities. Leased or rented facilities and infrastructure are not eligible for this service.

Principles of Agreement

By submitting this request form, the entity listed above must agree to:

- select a contact person to work with SECO and its designated contractor to establish an energy policy and set realistic energy efficiency goals;
- allow SECO's designated contractor to provide walk-through assessments of selected facilities;
- schedule a time for SECO's designated contractor to make a presentation on the assessment findings to key decision-makers;
- consider implementing the PEAs energy savings recommendations; and
- allow SECO to post portions of this report on its website

Additional Questions

Has this organization used SECO's technical assistance or PEA services in the past? ☐ Yes ☐ No
Is the primary contact for this PEA familiar with SECO's LoanSTAR revolving loan program? ☐ Yes ☐ No
Has this organization used SECO's LoanSTAR revolving loan program in the past? ☐ Yes ☐ No

Signature

This agreement must be signed by your organization's chief executive officer or other signing authority.

Signature | Date
Print Name | Title

Submit completed forms to SECO at Stephen.Ross@cpa.texas.gov
or by mail to: State Energy Conservation Office
Attn: Stephen Ross
111 E. 17th Street
Austin, TX 78711-1440

50-852 (04-17)

List of Preliminary Energy Assessments (PEAs) from Entities in the North Central Texas Region:

Cities:

City of Richland – PEA 2007

City of Rockwall – PEA 2010

City of Fort Worth – PEA 2015

City of Denton – PEA 2018

Water Districts:

Tarrant Regional Water District – PEA 2010, PEA 2015

Trinity River Authority – PEA 2015, PEA 2016

City of Fort Worth Water Production – PEA 2016

Counties:

Ellis County – PEA 2004

ISD's:

Cedar Hill ISD – PEA 2009, PEA 2011

Crowley ISD – PEA 2009

Duncanville ISD – PEA 2009, PEA 2011

Rains ISD – PEA 2009

Allen ISD – PEA 2010

Find the full list of PEAs from entities in our region on Conserve North Texas here!

Go Solar Texas

Texas-Specific Information about Solar

Key Resource Types

Best Management Practices

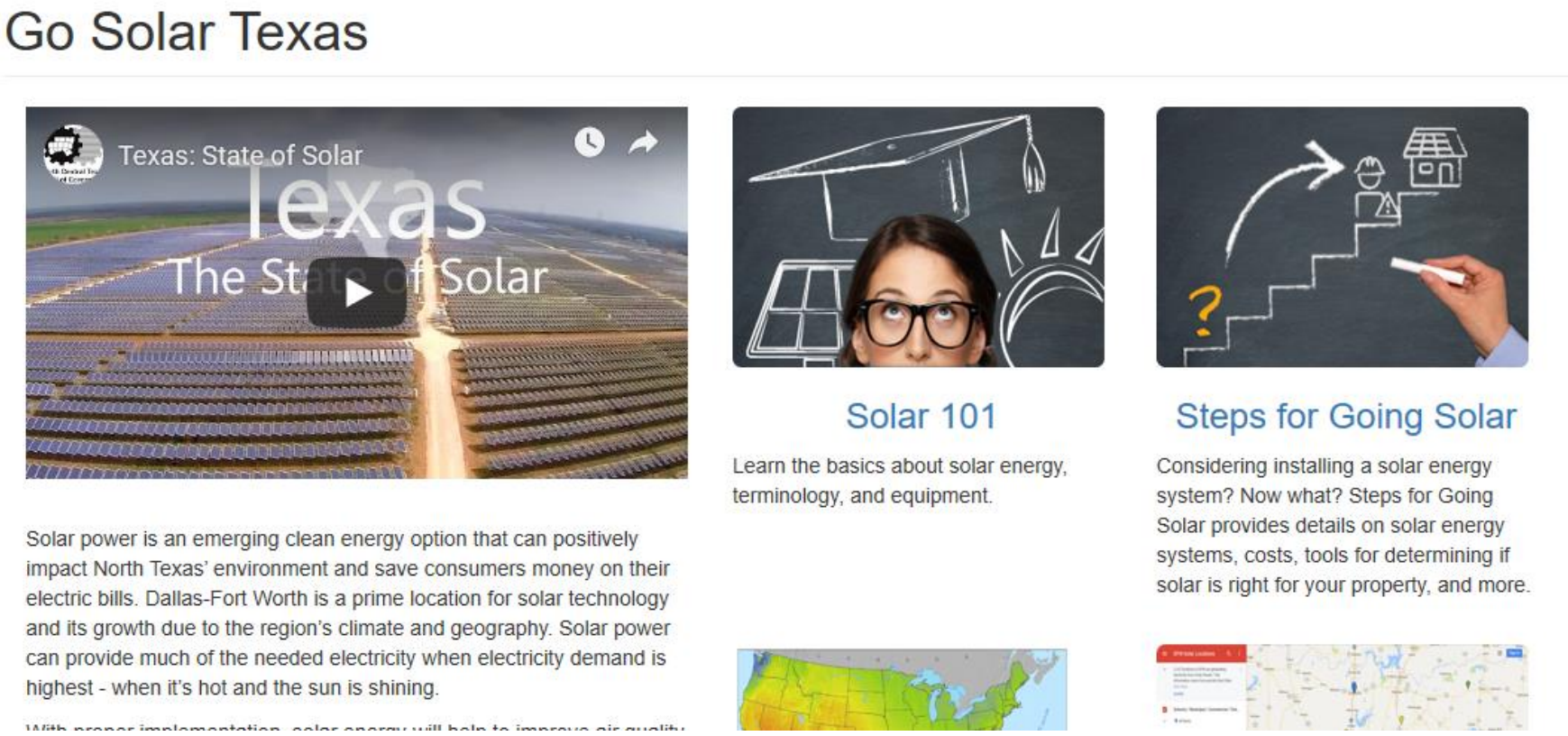
Cost Benefit Analysis

Trainings

Case Studies

Meeting-in-a-Box

www.gosolartexas.org



Solar-Ready Guidelines and Ordinances

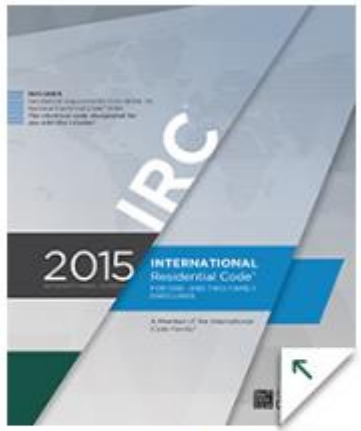
2015 International Residential Code

Second Printing: Jan 2016

- APPENDIX N VENTING METHODS
- APPENDIX O AUTOMATIC VEHICULAR GATES
- APPENDIX P SIZING OF WATER PIPING SYSTEM
- APPENDIX Q RESERVED
- APPENDIX R LIGHT STRAW-CLAY CONSTRUCTION
- APPENDIX S STRAWBALE CONSTRUCTION
- APPENDIX T RECOMMENDED PROCEDURE FOR WORST-CASE TESTING OF ATMOSPHERIC VENTING SYSTEMS UNDER N1102.4 OR N1105 CONDITIONS ≤ 5ACH 50
- APPENDIX U SOLAR-READY PROVISIONS—DETACHED ONE- AND TWO-FAMILY DWELLINGS, MULTIPLE SINGLE- FAMILY DWELLINGS (TOWNHOUSES)

INDEX

- EDITORIAL CHANGES – SECOND PRINTING



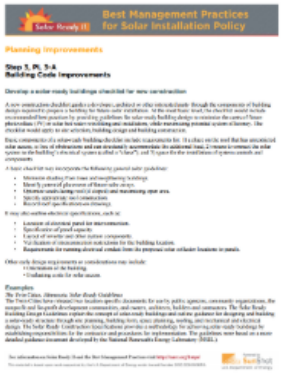
FREE VIEW BUY

2015 International Residential Code

(Second Printing: Jan 2016)

This title has multiple versions

Go Solar Texas Resources

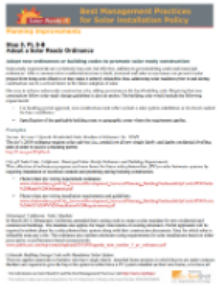


Develop a Solar-Ready Buildings Checklist for New Construction

This document is a white paper created by Solar Ready II to provide best management practices for developing a solar-ready buildings checklist for new construction and includes relevant examples.

Model Ordinance Guidelines for Municipalities

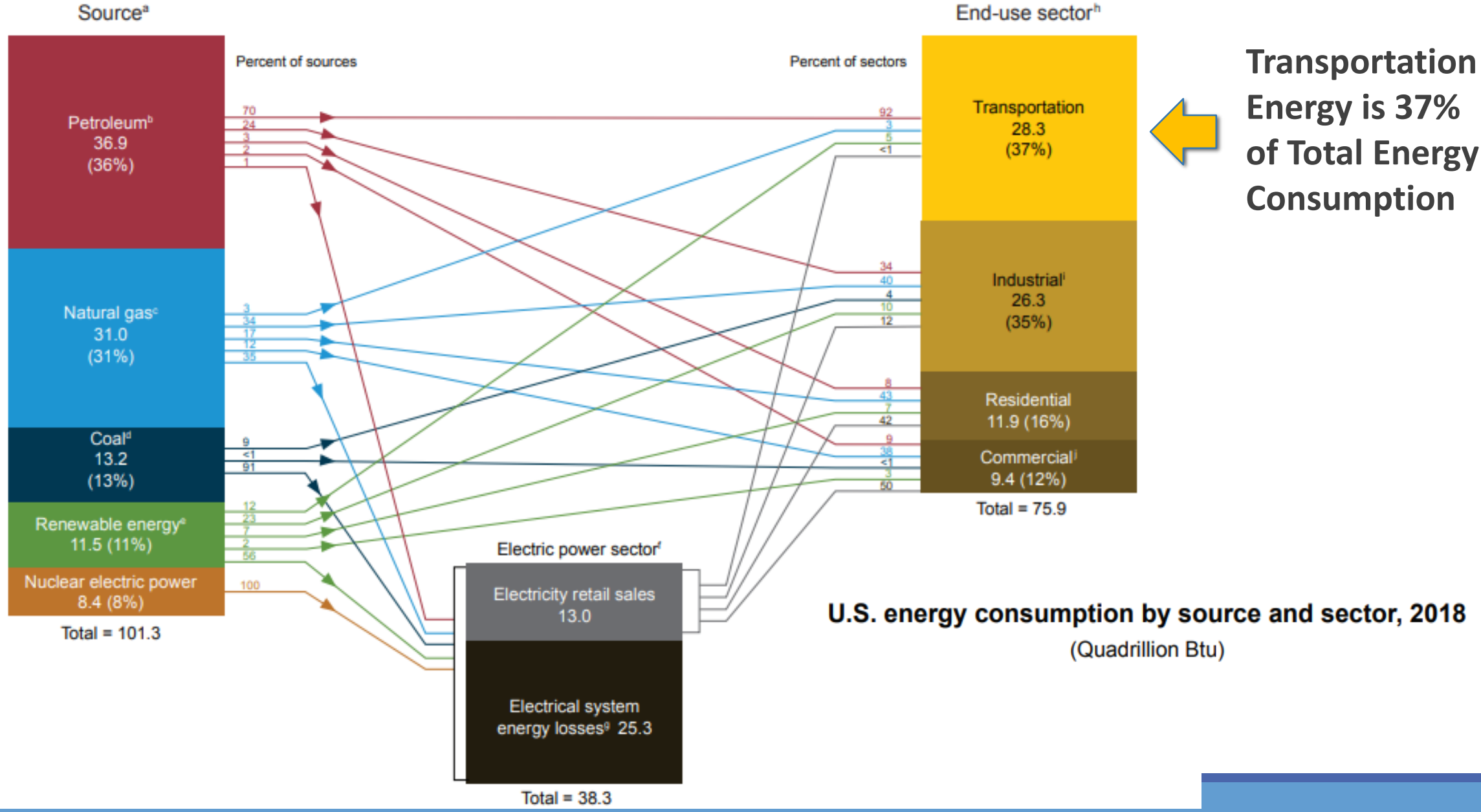
The Model Ordinance Guidelines for Municipalities provide guidance for cities on best practices for the development of a solar ordinance. These guidelines are based on a series of roundtable discussions held by NCTCOG with planners, sustainability managers, building inspectors, and solar industry professionals from North Texas. See **page 31** for language specific to solar-ready construction.



Adopt a Solar-Ready Ordinance

This document is a white paper created by Solar Ready II to provide best management practices for adopting solar-ready ordinances or building codes to promote solar-ready construction and includes relevant examples.

Transportation as Part of the Energy Economy



Transportation Energy is 37% of Total Energy Consumption

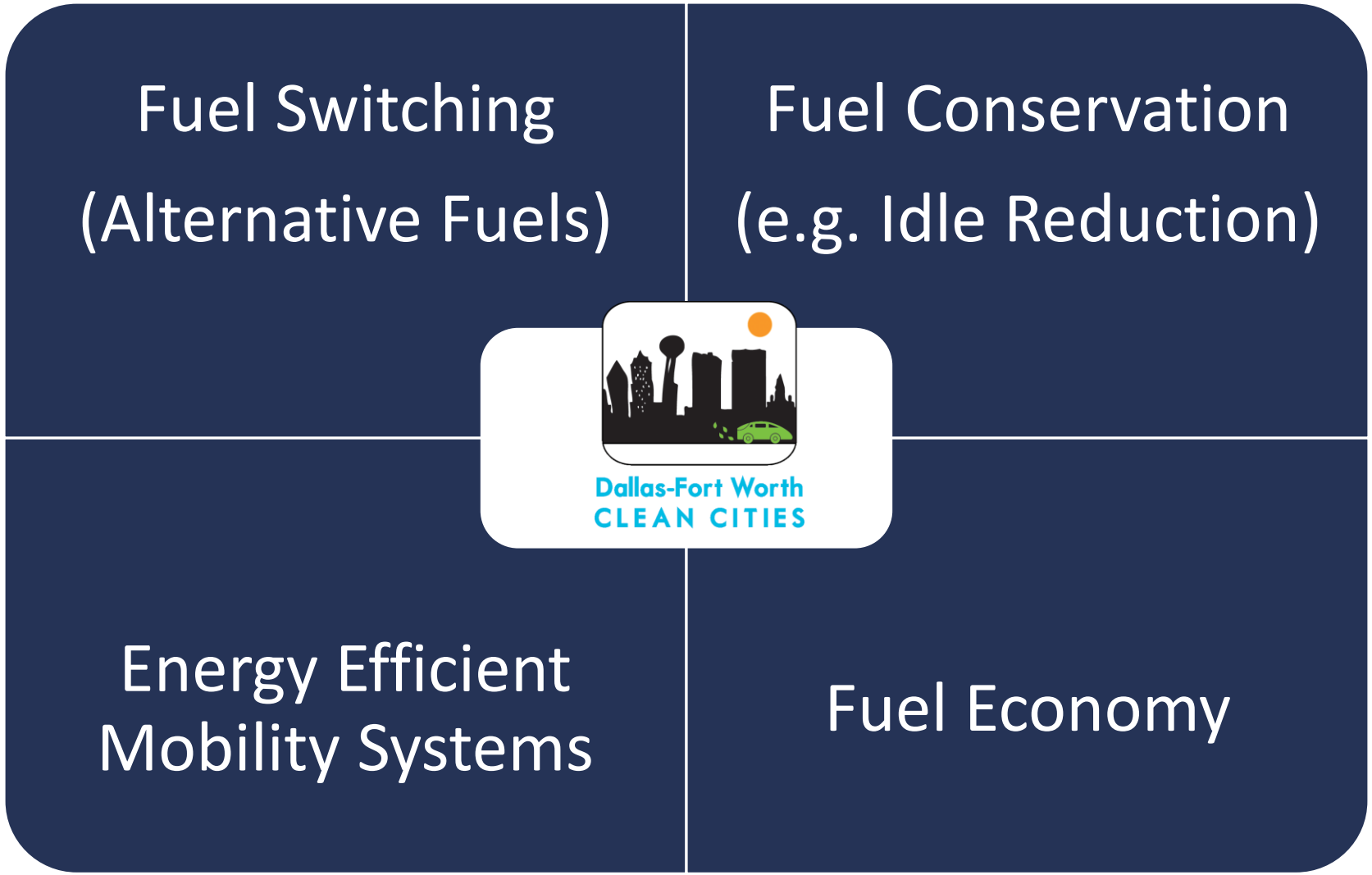
U.S. energy consumption by source and sector, 2018

(Quadrillion Btu)

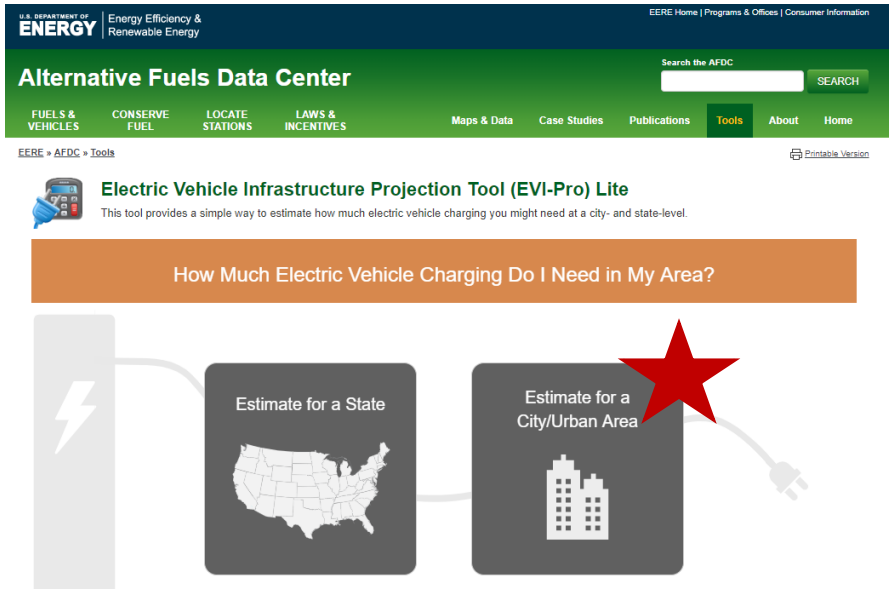
Source: https://www.eia.gov/totalenergy/data/monthly/pdf/flow/css_2018_energy.pdf

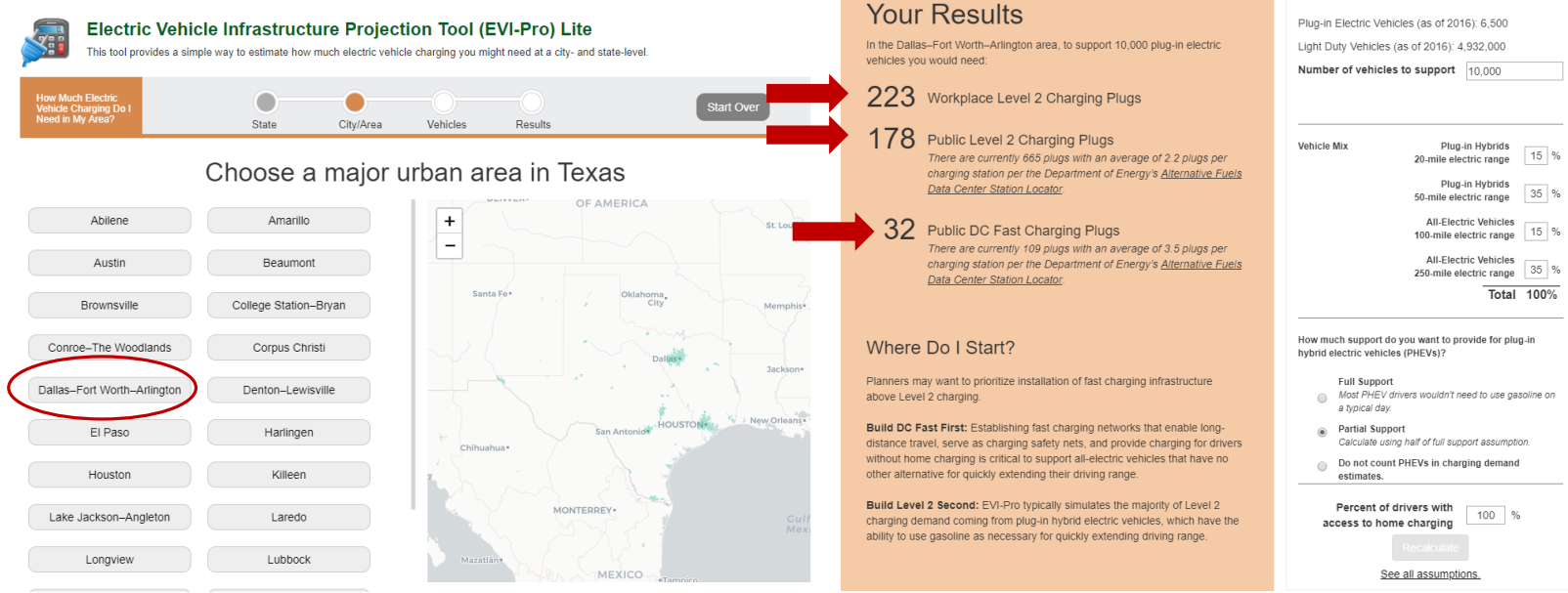
DFW Clean Cities – Transportation Efficiency

www.dfwcleancities.org



Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite





https://afdc.energy.gov/evi-pro-lite

FOR MORE INFORMATION

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https://www.nctcog.org/envir/natural-resources/energy-efficiency

North Central Texas
Council of Governments