



ERCOT Update

Dub Taylor, Director
State Energy Conservation Office

SECO Web page: www.seco.state.tx.us/
Stimulus Web Page: www.secostimulus.org

Presentation Outline

- ▶ SECO Overview
- ▶ Energy Efficiency Mandates
- ▶ SECO's Loan Program for Energy Efficiency Projects
- ▶ State Energy Management Project
- ▶ SECO-Managed ARRA Programs



About SECO

- ▶ **Mission:** to maximize energy efficiency while protecting the environment
- ▶ Public sector energy/water efficiency
- ▶ Project implementation, education, outreach – no R&D
- ▶ Implementation of Legislative policies and directives
 - ▶ (TERP; SB5 amended by SB12; HB3693 amended by SB300)
- ▶ DOE/EERE state level program conduit
 - ▶ State Energy Program (SEP)
 - ▶ Demonstration & Deployment focus
- ▶ 56 state/territory Energy Offices
- ▶ At the Comptroller's Office since 1999



Conservation vs. Efficiency

Conservation

A change in **behavior** based on the attitude:

“Do less to use less”

Efficiency

The application of **technologies and best practices** to eliminate waste based on the attitude:

“Do the same or more with less”

SECO Programs / Initiatives

- ▶ Alternative Fuels
- ▶ Building Codes and Standards
- ▶ Building Efficient Technologies
- ▶ Clean Cities
- ▶ Colonias Initiatives
- ▶ Energy Education Curriculum
- ▶ Energy Education Outreach
- ▶ Energy Management Training
- ▶ Energy Management Services
- ▶ Fuel Savings Technology Evaluation
- ▶ Housing Partnership Program
- ▶ Innovative Energy Program
- ▶ LoanSTAR Program
- ▶ Marine Fuel Efficiency
- ▶ Energy Saving Performance Contracting
- ▶ Preliminary Energy Assessments
- ▶ Renewable Energy Education
- ▶ Residential Energy Code Training
- ▶ Schools/Local Government Energy Efficiency
- ▶ Pollution Mitigation
- ▶ State Agency Energy Advisory Group
- ▶ Solar for Schools
- ▶ State Facilities Utility Management
- ▶ Sustainable School Design
- ▶ Texas Energy Design Standard
- ▶ Texas Energy Partnership
- ▶ Texas Industrial Energy Efficiency
- ▶ Water Conservation Guidelines



Legislative and Executive Mandates

Senate Bill 5 – 2001

Executive Order RP 49 - 2005

House Bill 3693 and Senate Bill 12 - 2007

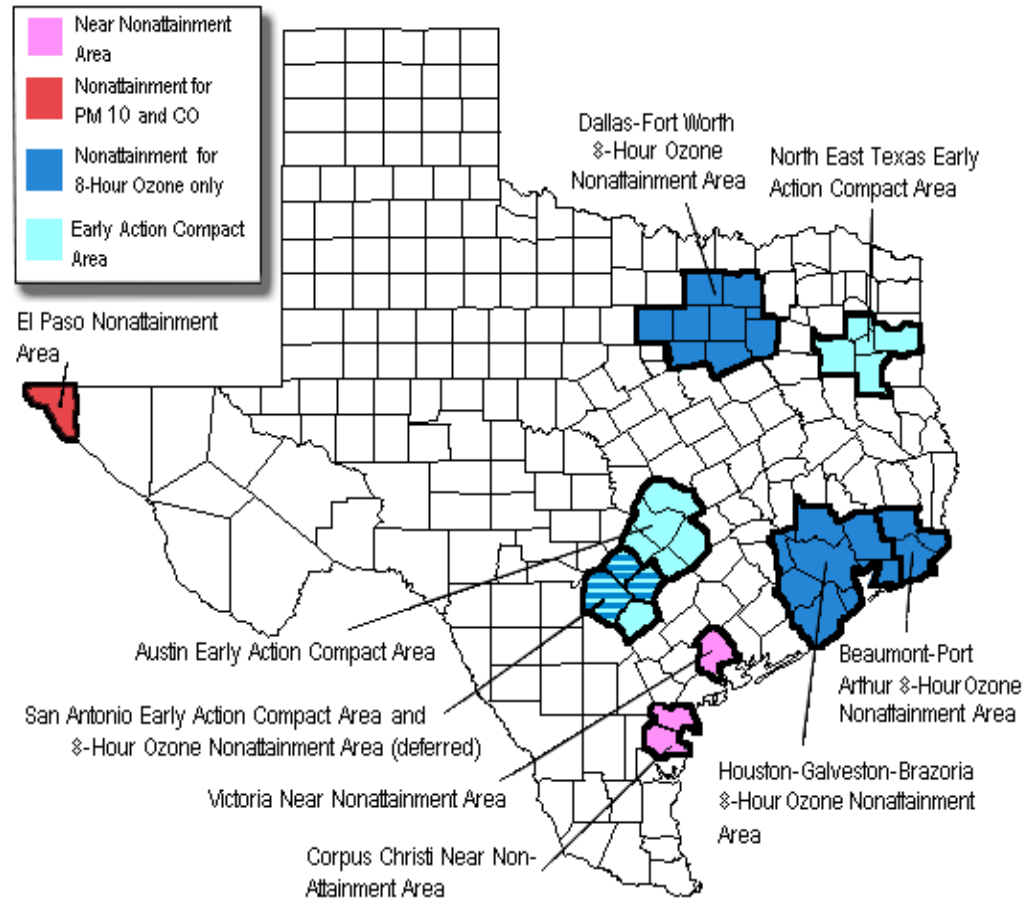
Texas Health and Safety Code

CHAPTER 388. TEXAS BUILDING ENERGY PERFORMANCE STANDARDS - LEGISLATIVE FINDINGS:

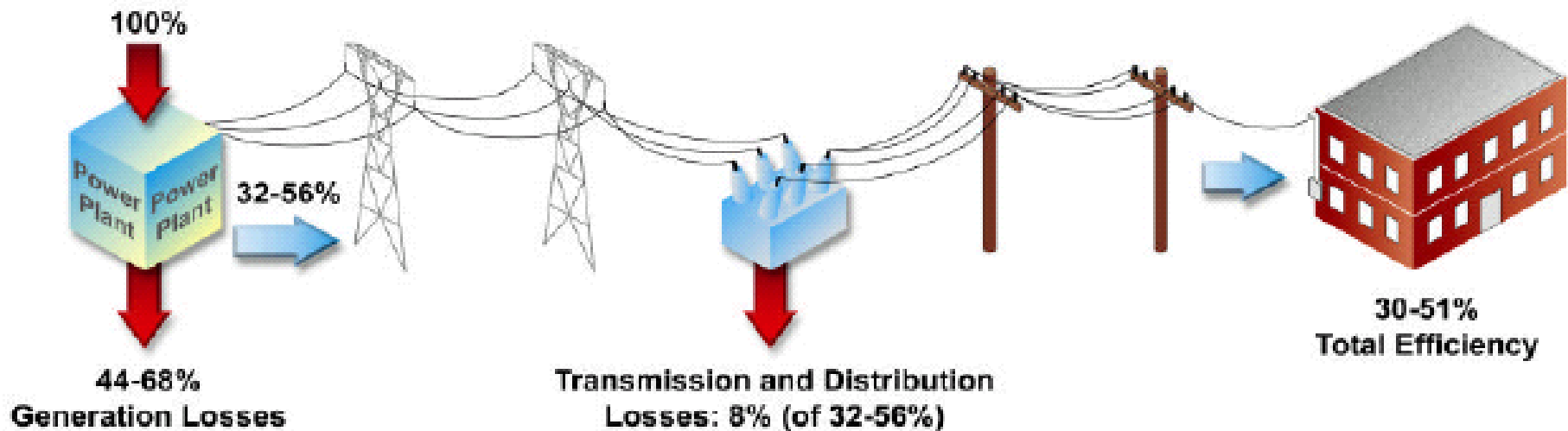
- (a) The legislature finds that an effective building energy code is essential to:
- (1) reducing the air pollutant emissions that are affecting the health of residents of this state;
 - (2) moderating future peak electric power demand;
 - (3) assuring the reliability of the electrical grid; and
 - (4) controlling energy costs for residents and businesses in this state.
- (b) The legislature further finds that this state has a number of unique climate types, all of which require more energy for cooling than for heating, and that there are many cost-effective measures that can reduce peak energy use and reduce cooling and other energy costs in buildings.



Texas Ozone Non-attainment and Affected Counties



Energy Efficiency – 2x Benefit



Utility Data Reporting

Government Code Chapter 2264.001

- 1) A governmental entity responsible for payments for electric, water, or natural gas utility services shall record in an electronic repository the governmental entity's metered amount of electricity, water, or natural gas consumed for which it is responsible to pay and the aggregate costs for those utility services.
- 2) The governmental entity shall report the recorded information on a publicly accessible Internet website with an interface designed for ease of navigation if available, or at another publicly accessible location.



Hays County's Utility Usage

* Information posted in accordance with House Bill 3693, Chapter 2264-Section 2264.001(b).
Detailed bills can be obtained through the Hays County Auditor's Office in writing under the Public Information Act:

County Auditor

111 E. San Antonio St., Ste. 100
San Marcos, TX 78666

COUNTY OF HAYS

RECORD OF ELECTRICITY, WATER, AND NATURAL GAS CONSUMPTION UTILITY BILLS PAID IN JULY 2010

ELECTRIC CONSUMPTION	Metered Amount Units	Aggregate Costs
City of San Marcos	483,920 KWH	\$ 39,177.01
Pedernales Electric Co-Op - Buildings	44,180 KWH	\$ 4,926.59
Pedernales Electric Co-Op - Non Buildings 116 KWH		\$ 299.06
Bluebonnet Electric Co-Op	93,600 KWH	\$ 8,761.28
Other Companies	19,000 KWH	\$ 1,885.64
Total	640,816 KWH	\$ 55,049.58

<http://www.co.hays.tx.us/LinkClick.aspx?fileticket=mNFIF49Rh%2fY%3d&tabid=71&mid=489>



School Districts

- 1) Utility data reporting
- 2) Establish a long-range energy plan to reduce energy consumption by 5%, starting FY2008 and to follow that plan for subsequent years
 - Must include strategies for achieving energy efficiency that results in net savings or can be achieved without any cost
 - Requires that each strategy consider an analysis of short-term capital costs as well as costs/savings that may result from the strategy over a 7-year term
- 3) Purchase and use energy-efficient light bulbs for instructional facilities.



Sustainable School Design

- ▶ **Roy Lee Walker Elementary School, McKinney ISD**
 - ▶ Classroom and corridor daylighting
 - ▶ Wind-water pumping/solar hot water
 - ▶ Rainwater harvesting
 - ▶ Sustainable building materials



Renewable Energy at Schools

- ❖ 53 Locations
- ❖ 1 kW PV Systems
 - ❖ Grid-connected
- ❖ Computer-based Monitoring Systems
 - ❖ www.Soltrex.Com
- ❖ Hands-on Learning Tools
- ❖ Student & Staff Training



[Home](#) > [Explore Systems](#) >

Martin Middle School

System Details

Location Austin, TX [Map](#)
Capacity 4,059 kWdc, 3,653 kWac
Commissioned Date October 1, 2006
Monitoring Method Soltrex
Array Azimuth 180° [What's this?](#)
Array Tilt 30° [What's this?](#)

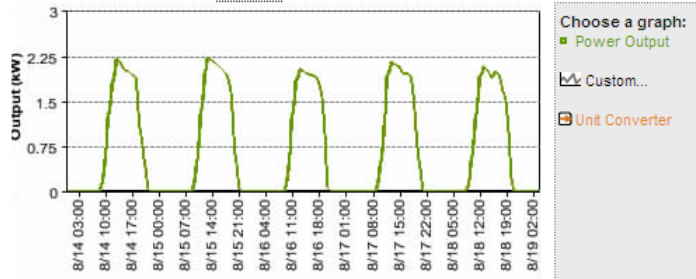


Module Make and Model	Module Wdc	Quantity	Total Capacity (KWdc)
Sharp ND-L3EJEA	123	33	4,059

Inverter Make and Model	Inverter Wac	Quantity	Total Capacity (KWac)
Fronius IG-4500	4500	1	4,500

Latest Graph Data

Showing: Power output in kilowatts (kW)



Modeled vs. Measured Energy

PV Energy (kWh)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Tot
Modeled kWh ?	391	381	489	494	486	487	514	534	480	488	380	370	5,494
2010 Actual kWh ?	389	359	351	289	131	377	452	313					2,662
2010 Ratio to Model	1.00	0.94	0.72	0.59	0.27	0.77	0.88	0.59					0.70
2009 Actual kWh	501	497	504	506	525	573	552	581	388	399	436	329	5,789
2009 Ratio to Model	1.28	1.30	1.03	1.03	1.08	1.18	1.07	1.09	0.81	0.82	1.15	0.89	1.05
2008 Actual kWh	397	520	392	147	567	599	613	559	586	582	465	377	5,805
2008 Ratio to Model	1.02	1.36	0.80	0.30	1.17	1.23	1.19	1.05	1.22	1.19	1.22	1.02	1.06
2007 Actual kWh	296	399	383	396	381	377	267	296	241	264	205	385	3,890
2007 Ratio to Model	0.76	1.05	0.78	0.80	0.78	0.77	0.52	0.55	0.50	0.54	0.54	1.04	0.71
2006 Actual kWh											368	348	717
2006 Ratio to Model											0.97	0.94	0.96

[Get Local](#)

US Census Bureau Map



Austin

- [Home Energy Saver \(DOE\)](#)
- [EnviroMapper \(EPA\)](#)
- [Weather Forecast \(NOAA\)](#)

Texas

- [PV Energy Estimator \(NREL\)](#)
- [State Incentives \(DSIRE\)](#)

Public Higher Education

- 1) Utility data reporting.
- 2) Adopt a goal to reduce electrical consumption by facilities by 5% for 6 years, beginning September 1, 2007.
- 3) Implement all energy efficiency measures for existing facilities that meet the standards established for a contract for energy conservation measures under Local Government Code Section 302.004(b). (20 – year payback)
- 4) Submit annual reports to SECO in an electronic format regarding the entity's energy efficiency progress, efforts and consumption data.*
- 5) Purchase and use energy-efficient light bulbs for educational and housing facilities.

**Substitute: a percentage-based energy conservation plan adopted before 9/1/2007 that is in effect with quarterly reports submitted quarterly to the Governor, LBB and SECO.*



State Agencies

- 1) Utility data reporting.
- 2) Adopt a goal to reduce electrical consumption by facilities by 5% for 6 years, beginning September 1, 2007.
- 3) Implement all energy efficiency measures for existing facilities that meet the standards established for a contract for energy conservation measures under Local Government Code Section 302.004(b). (20 – year payback)
- 4) Submit annual reports to SECO in an electronic format regarding the entity's energy efficiency progress, efforts and consumption data.*
- 5) Purchase and use energy-efficient light bulbs for educational and housing facilities.

**Substitute: a percentage-based energy conservation plan adopted before 9/1/2007 that is in effect with quarterly reports submitted quarterly to the Governor, LBB and SECO.*



Political Subdivisions in the 41 Non-attainment and “affected” Counties

- 1) Utility data reporting
- 2) Adopt a goal to reduce electrical consumption in facilities by 5% for 6 years, beginning September 1, 2007.
- 3) Implement all energy efficiency measures for existing facilities that meet the standards established for a contract for energy conservation measures under Local Government Code Section 302.004(b). (20 – year payback)
- 4) Submit annual report to SECO in an electronic format regarding the entity’s energy efficiency progress, efforts and consumption data.



Reporting results (2001 – 2005)

- ▶ 280 political subdivisions established goals
- ▶ Many have requested preliminary energy assessments
- ▶ All large cities reported
- ▶ Increased County participation
- ▶ Each non-attainment region represented
- ▶ For jurisdictions reporting their baselines...
 - ▶ 447.10 tons/year NO_x reductions in 2005 (ESL, TX A&M)
(based on data provided by the jurisdictions)



Reported Energy Reductions (SB5) (2001-2005)

- ▶ Longview (47%)
- ▶ Nederland (36%)
- ▶ Bellaire (25%)
- ▶ Ft. Worth (22%)
- ▶ Allen (20%)
- ▶ Galveston (19%)
- ▶ Conroe (15%)
- ▶ Dallas (9%)
- ▶ VIA Metro (6%)



MOU and Electric Cooperatives

- ▶ PURA Section 39.9051 and 39.9052 requires the 9 largest (retail sales > 500,000 MWH in 2005) municipally-owned electric systems and the 18 largest electric cooperative to report combined effects of their energy efficiency activities to SECO by 9/1/2009
- ▶ Programs include:
 - ▶ Advanced metering, appliance efficiency, energy audits, commercial efficiency, education, green building, home energy rating, HVAC, lighting, loans, multifamily, refrigerator recycling, reflective roofing, solar PV and thermal, RF thermostats, tree planting, water efficiency, weatherization, whole-house efficiency



Utility EE Programs

- ▶ Senate Bill 7 (1999) Texas mandated that at least 10% of an investor owned utility's (IOU) annual growth in electricity demand be met through energy efficiency programs each year.
- ▶ Goals for energy efficiency were increased through House Bill 3693 during the 2007 legislative session.
- ▶ Currently, the IOUs are required to meet 20% of their growth in demand through energy efficiency programs.
- ▶ 2009 – Goal exceeded by 78%
 - ▶ Demand reduction goal: 134.67 MW
 - ▶ Achieved: 240.08 MW
- ▶ Effective December 1, 2010, the latest Energy Efficiency Rule mandates that IOUs meet the following demand reduction goals by the end of the specified year:
 - ▶ 2011: 20% of the electric utility's annual growth in demand
 - ▶ 2012: 25% of the electric utility's annual growth in demand
 - ▶ 2013: 30% of the electric utility's annual growth in demand



Texas Building Energy Codes

2001: 77th Texas Legislature passed SB 5

- ❖ adopted a statewide energy code under Section 388 of the Health and Safety Code titled “Texas Building Energy Performance Standards”
 - ❖ Energy requirements (Chapter 11) of 2000 International Residential Code (IRC) with the 2001 Supplement adopted as the minimum for single-family construction.
 - ❖ 2000 International Energy Conservation Code (IECC) with the 2001 Supplement, adopted as the minimum for other residential construction and commercial.
- ❖ Cities have the ability to adopt local amendments to with review by the Energy Systems Laboratory (ESL) of the Texas A&M University.



Building Energy Code Update

2007: 80th Texas Legislature passed HB 3693/SB12

- ❖ Delegated SECO the authority to adopt by rule the latest published editions of:
 - ❖ Energy requirements (Chapter 11) International Residential Code (IRC) for single-family construction.
 - ❖ International Energy Conservation Code (IECC) for other residential construction and commercial.
- ❖ Texas A&M/Energy Systems Laboratory reviews to ensure stringency of latest editions of the IRC and IECC compared to current statewide energy codes.
 - ❖ Provides SECO a written recommendation based on analysis
- ❖ **Cities can continue to adopt local amendments**
 - ❖ Review by the Energy Systems Laboratory (ESL) of the Texas A&M University



Building Energy Code Update

Final Rule: §19.53. *Building Energy Efficiency Performance Standards*

(a) **Single-family residential construction. Effective January 1, 2012,** the **energy efficiency provisions** (Chapter 11) of the **International Residential Code** as they existed on May 1, 2009, are adopted as the energy code in this state for single-family residential construction as it is defined in Health and Safety Code, §388.002(12).

(b) **All other residential, commercial, and industrial construction. Effective April 1, 2011,** the **International Energy Conservation Code** as it existed on May 1, 2009, is adopted as the energy code for use in this state for all residential, commercial, and industrial construction that is not single-family residential construction under subsection (a) of this section.



Building Energy Code Update

Energy Savings Impact (site)

- ▶ Houston 7.7%
- ▶ Brownsville 12.1%
- ▶ Dallas 8.9%
- ▶ El Paso 7.1%
- ▶ Amarillo 11.3 %

*2001 IECC Performance Path vs. Chapter 11 of the 2009 IRC
Prescriptive Path



Texas LoanSTAR Revolving Loan Program

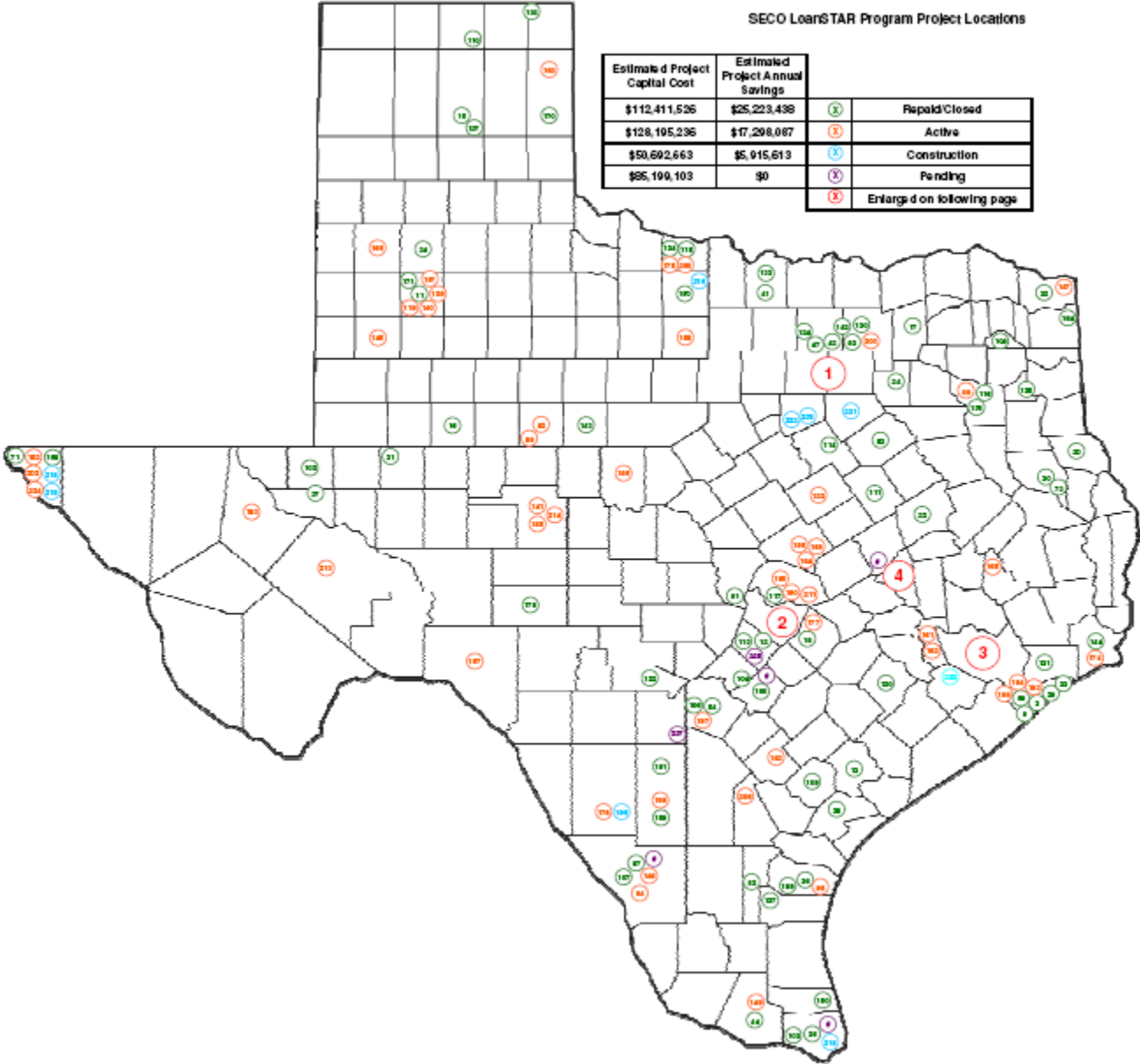
Texas LoanSTAR Program

- ▶ Low interest revolving loan program for energy efficiency building retrofits
- ▶ Borrowers - any public entity in Texas
- ▶ 227 loans
- ▶ Average loan size - \$1.4 million
 - ▶ Min - \$12,500 and Maximum \$5,000,000
- ▶ 6.4 year average payback
- ▶ Cumulative energy savings – \$302 million
- ▶ Cumulative emission reductions since 1990:
 - ▶ NO_x 9,772 tons
 - ▶ CO₂ 3.1 million tons
 - ▶ SO₂ 6,909 tons
 - ▶ Mercury 0.0429 tons



SECO LoanSTAR Program Project Locations

Estimated Project Capital Cost	Estimated Project Annual Savings		
\$112,411,526	\$25,223,438	(X)	Repaid/Closed
\$128,195,236	\$17,298,067	(X)	Active
\$50,692,663	\$5,915,613	(X)	Construction
\$25,199,103	\$0	(X)	Pending
		(X)	Enlarge d on following page



Financial Considerations

Payback Guidelines

- Individual CRM and Composite CRM
 - Individual Cost Reduction Measure (CRM) simple payback – less than economic useful life
 - Composite CRM payback– 10 years or less (Loan Term)
- ESPC
 - Composite payback calculation includes M&V and loan interest

Checks and Balances

- Technical Guidelines
- Energy Saving Performance Contracting Guidelines
http://www.seco.cpa.state.tx.us/sa_pc.htm



Project Types

Design-bid-build

- Not guaranteed savings
- Borrower still responsible for repay loan with energy cost reductions
- Performance bonds required

Energy Savings Performance Contracts

- Guaranteed savings
 - Performance bonds required
-



Application Process

FROM

First come,
first serve

- Maximum loan size - \$5,000,000
- Interest Rate – 3%
- Memorandum of Understanding

TO

Competitive
application
process

- Notice of Loan Fund Availability (NOLFA)
 - Twice per year
- Loan Size - \$5,000,000 or less (may change with each NOLFA but will not exceed \$5,000,000)
- Interest Rate – to be determined with each announcement



Cost Reduction Measures

Guidelines for
cost reduction
measures
(CRMs)

- Decide maximum time for individual CRMs

Applications

- Renovations, major renovations, new construction



Red Oak ISD

- ▶ Loan Amount - \$2,499,220
- ▶ Payback – 8.2 years
- ▶ Savings - \$312,000
- ▶ ECMs
 - ▶ High Efficiency Lighting
 - ▶ Occupancy Sensors
 - ▶ EMS Installation



New gymnasium lighting



New occupancy sensors (with red ring) are tied into the Energy Management System





CCG Energy Management Services Project

Overview

▶ Energy Management

- ▶ Contract enables state agencies and local governments the ability to achieve significant reductions in energy consumption through procurement, recovery audits, and bill analysis
- ▶ Agencies save on personnel time spent on invoice processing under the Energy Management Services contract.

▶ Service Benefits and Features

- ▶ Utility invoice review
- ▶ Historical bill audit with rebates for incorrect billings
- ▶ Collection and reporting of utility usage data
- ▶ Energy Procurement Assistance
- ▶ Energy Conservation Consulting



Success Story As of June 2010

Period	Agency Procurement	Agency Procurement Reductions	Agency Total Procurement Realized Savings	LPB Cash Received	Number of Agency Invoices Processed	Agency Bill Processing Costs Avoided	Agency Audit Reductions	Agency Audit Costs Avoided	Agency Total Audit Realized Savings	LPB Cash Received	Agency Savings of Procurement Audit, Processing	LPB Cash Received Audit, Total	LPB Cash Total
Procurement Type: Default to Contract													
TxDOT	\$ 12,648,884	\$ 619,037	\$ 13,267,920	\$ 15,002,590	512,646	\$ 10,488,737	\$ -	\$ -	\$ -	\$ -	\$ 23,756,658	61%	\$ 15,002,590
TPWD	\$ 876,479	\$ 25,505	\$ 901,984	\$ 2,635,425	59,022	\$ 1,207,590	\$ 2,244	\$ 4,075	\$ 6,318	\$ 6,318	\$ 2,115,892	44%	\$ 2,641,743
TWC	\$ 227,726	\$ (3,918)	\$ 223,808	\$ 164,741	1,084	\$ 22,179	\$ -	\$ -	\$ -	\$ -	\$ 245,986	60%	\$ 164,741
HHSC	\$ 1,695,958	\$ 258,650	\$ 1,954,608	\$ 1,543,848	13,144	\$ 268,926	\$ -	\$ -	\$ -	\$ -	\$ 2,223,535	59%	\$ 1,543,848
TYC*	\$ 274,036	\$ (517,954)	\$ (243,919)	\$ 281,873	1,281	\$ 26,209	\$ 80	\$ 3,204	\$ 3,284	\$ 3,132	\$ (214,425)		\$ 285,006
DPS	\$ 23,196	\$ (5,672)	\$ 17,524	\$ 40,200	9,288	\$ 190,032	\$ 118	\$ -	\$ 118	\$ -	\$ 207,674	84%	\$ 40,200
Procurement Type: Contract to Contract													
HHSC	\$ 1,020,500	\$ (1,710,498)	\$ (689,998)	\$ 1,007,195	2,737	\$ 55,999	\$ 33,138	\$ 5,740	\$ 38,878	\$ 38,732	\$ (595,122)		\$ 1,045,926
AG	\$ 132,800	\$ (683,002)	\$ (550,202)	\$ 125,657	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (550,202)		\$ 125,657
TDCJ	\$ 570,776	\$ (1,195,697)	\$ (624,921)	\$ 179,794	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (624,921)		\$ 179,794
Procurement Type: Not Applicable													
CPA	N/A	N/A	N/A	N/A	133	\$ 2,721	\$ 356	\$ -	\$ 356	\$ 356	\$ 3,078	90%	\$ 356
OAG	N/A	N/A	N/A	N/A	472	\$ 9,657	\$ -	\$ -	\$ -	\$ -	\$ 9,657	100%	\$ -
TFC	N/A	N/A	N/A	N/A	2,502	\$ 51,191	\$ -	\$ -	\$ -	\$ -	\$ 51,191	100%	\$ -
TRS	N/A	N/A	N/A	N/A	84	\$ 1,719	\$ -	\$ -	\$ -	\$ -	\$ 1,719	100%	\$ -
TAHC	N/A	N/A	N/A	N/A	120	\$ 2,455	\$ -	\$ -	\$ -	\$ -	\$ 2,455	100%	\$ -
TBPE	N/A	N/A	N/A	N/A	63	\$ 1,289	\$ -	\$ -	\$ -	\$ -	\$ 1,289	100%	\$ -
TSBPE	N/A	N/A	N/A	N/A	48	\$ 982	\$ -	\$ -	\$ -	\$ -	\$ 982	100%	\$ -
TWDB	N/A	N/A	N/A	N/A	21	\$ 430	\$ -	\$ -	\$ -	\$ -	\$ 430	100%	\$ -
Project Totals	\$ 17,470,354	\$ (3,213,549)	\$ 14,256,804	\$ 20,981,323	602,645	\$ 12,330,117	\$ 35,936	\$ 13,019	\$ 48,954	\$ 48,538	\$ 26,635,875	56%	\$ 21,029,861





American Recovery and Reinvestment Act

American Recovery and Reinvestment Act (ARRA)



- ▶ SECO-administered funds....\$287,761,100
- ▶ State Energy Program
 - ▶ \$218,782,000
- ▶ Energy Efficiency and Conservation Block Grant Program
 - ▶ \$45,638,100
- ▶ Energy Star Appliance Rebate Program
 - ▶ \$23,341,000



American Recovery and Reinvestment Act (ARRA)



- ▶ State Energy Program (SEP)...\$218,782,000
- ▶ Program areas approved by U.S. DOE
 - ▶ Building Efficiency and Retrofit Program
 - ▶ \$158 million (loans)
 - ▶ Competitive selection
 - ▶ Transportation Efficiency Program
 - ▶ \$17 million (grants)
 - ▶ Competitive selection
 - ▶ Distributed Renewable Energy Technology Program
 - ▶ \$30 million (grants)
 - ▶ Competitive selection
 - ▶ Energy Sector Training Centers
 - ▶ \$6 million
 - ▶ Public Education and Outreach
 - ▶ \$5 million



Questions?

Dub Taylor

dub.taylor@cpa.state.tx.us

Eddy Trevino

eddy.trevino@cpa.state.tx.us

