SECO
State Energy Conservation Office

North Central Texas Council of Governments

SECO – Energy Topics

Funding Opportunities and Select Analysis

Nov 1, 2018

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Introductions

SECO
State Energy Conservation Office

- Welcome
- Presenter Introductions
- Thanks to NCTCOG & Texas Energy Aggregation
- Introduction to the State Energy Conservation Office (SECO)

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Agenda

1. Overview of SECO
   - SECO Schools and Local Government Program
   - SECO LoanSTAR Revolving Loan Program
2. Changes in HVAC Design
   - Schools and Local Governments Considerations
3. Utility Rate Analysis
   - Basic Method

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SECO – Schools and Local Governments Program

RENEWABLE PROJECTS QUALIFY

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SECO – Schools & Local Governments Program

Programs

STATE ENERGY CONSERVATION OFFICE

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

SECO partners with Texas local governments, county governments, public K-12 schools, public institutions of higher education and state agencies, to reduce utility costs and maximize efficiency. SECO also adopts energy codes for single-family residential, commercial, and state-funded buildings.

Funding & Incentives

- SECO Funding Opportunities
- LoanSTAR Revolving Loan Program
- Other Funding Resources

Programs

- Alternative Fuels Program
- Clean Energy Incubators
- Industrial Energy Efficiency
- Innovative Energy Demonstration Program
- Local Governments Program
- Schools Program
- State Agency and Higher Ed. Program
- Pantex Program

Energy Codes

- Training & Code Compliance
- Energy Code Adoption Process
- Code Contacts
- Commercial & Multi-Family Construction
- Single-Family Construction
- State-Funded Buildings
- Local Ordinances
- Texas Water Conservation Standards

Energy Reporting

- State Agencies and Institutions of Higher Ed.
- Local Government
- Utilities
- Schools

Resources

- Combined Heat and Power in Texas
- Energy Efficiency Best Practices Guide
- Energy Savings Performance Contracting
- SECO Reports
- Remote Energy Audits

About Us

- Contact Us
- Sign up to receive updates

SECO – Schools & Local Governments Program

home » programs » seco » programs » local

Programs

SECO

TECHNICAL ASSISTANCE FOR LOCAL GOVERNMENTS

SECO makes energy engineering expertise available to political subdivisions in Texas through its Technical Assistance Program (TAP). Eligible public entities include municipalities, counties, and other special-purpose districts such as port and transit authorities and airports.

SECO contracts with leading engineering firms having a high degree of technical knowledge. They provide customized, on-site, energy-related services across a broad spectrum, ranging from basic consultation to feasibility studies.

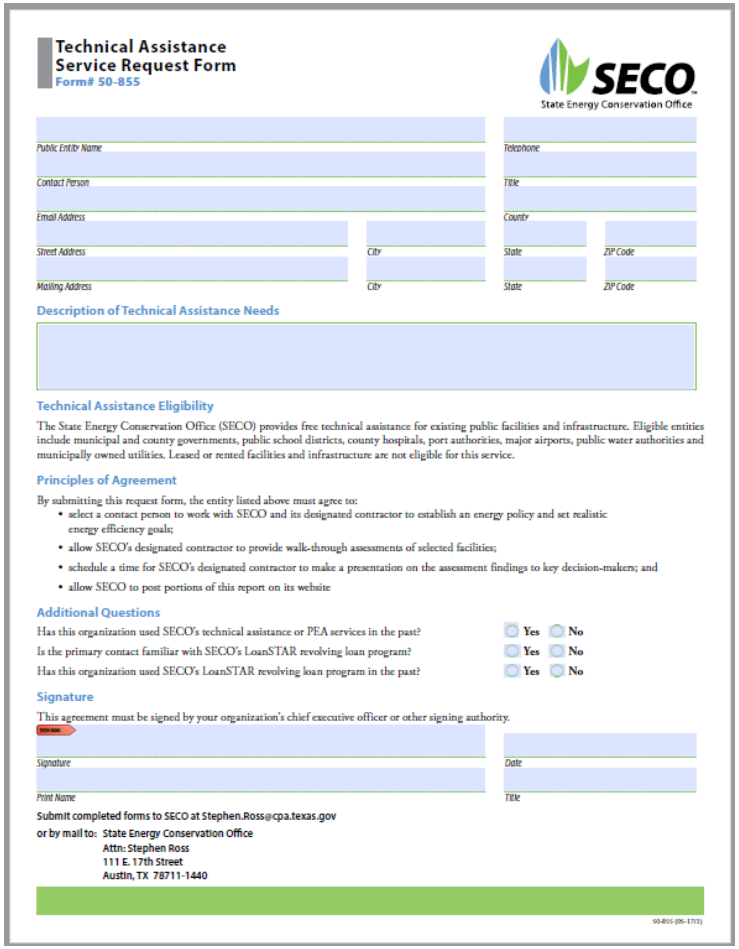
Officials of eligible entities may request assistance with either energy or water-related technical matters. Upon determination that the requested services are reasonable and within the contractors' scope of work, SECO will assign an engineer to contact the officials to determine the level of service necessary to provide assistance. There is no charge to the entity.

How to Apply

To initiate participation in the program, complete the Technical Assistance Request Form and email it to Stephen Ross.

Download Technical Assistance Request Form (PDF)

For more information about TAP, contact Program Manager Stephen Ross.



Technical Assistance
Service Request Form
Form# 50-855

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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

Description of Technical Assistance Needs

Technical Assistance Eligibility

The State Energy Conservation Office (SECO) provides free technical assistance 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; 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 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

50-855 (05-17/1)

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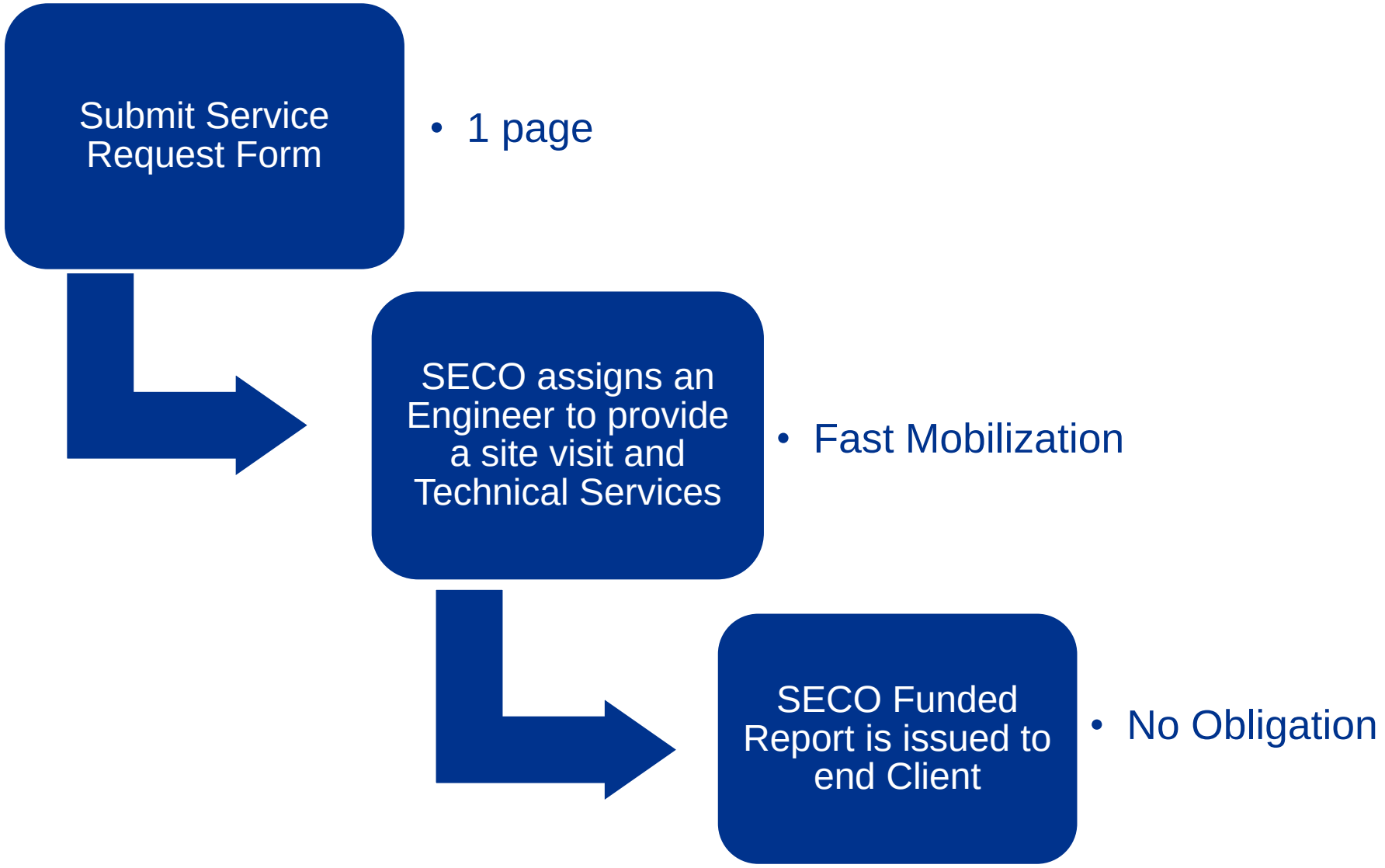
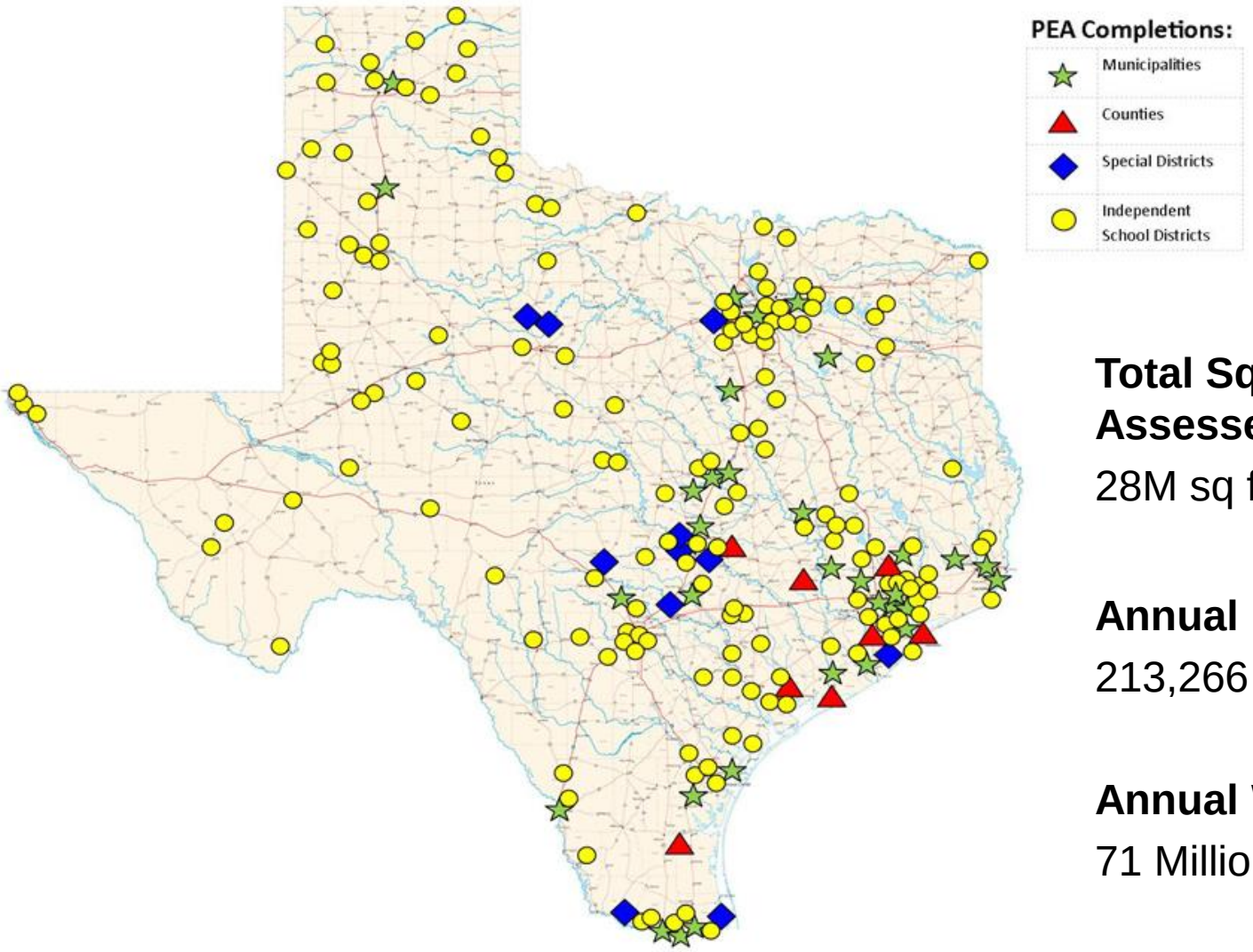
SECO – Schools & Local Governments Program



SECO – Schools & Local Governments Program



Total Square Feet Assessed:

28M sq ft

Annual Energy Savings:

213,266 MMBtu

Annual Water Savings:

71 Million Gallons

Identified Potential Annual Savings (2014 – 2016)

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SECO – LoanSTAR Revolving Loan Program

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SECO – LoanSTAR Revolving Loan Program

Programs

STATE ENERGY CONSERVATION OFFICE

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SECO – LoanSTAR Revolving Loan Program

Availability and Interest Rates

- Issuance: October 19, 2018
- Deadline: August 31, 2019 at 2:00 p.m. CT

- Maximum Loan Amount: $8.0 million
- Maximum 3 loans per borrower per application period

- Recent NOLFA Interest Rates
  - 2% interest
  - 1% interest (ARRA restrictions and reporting)

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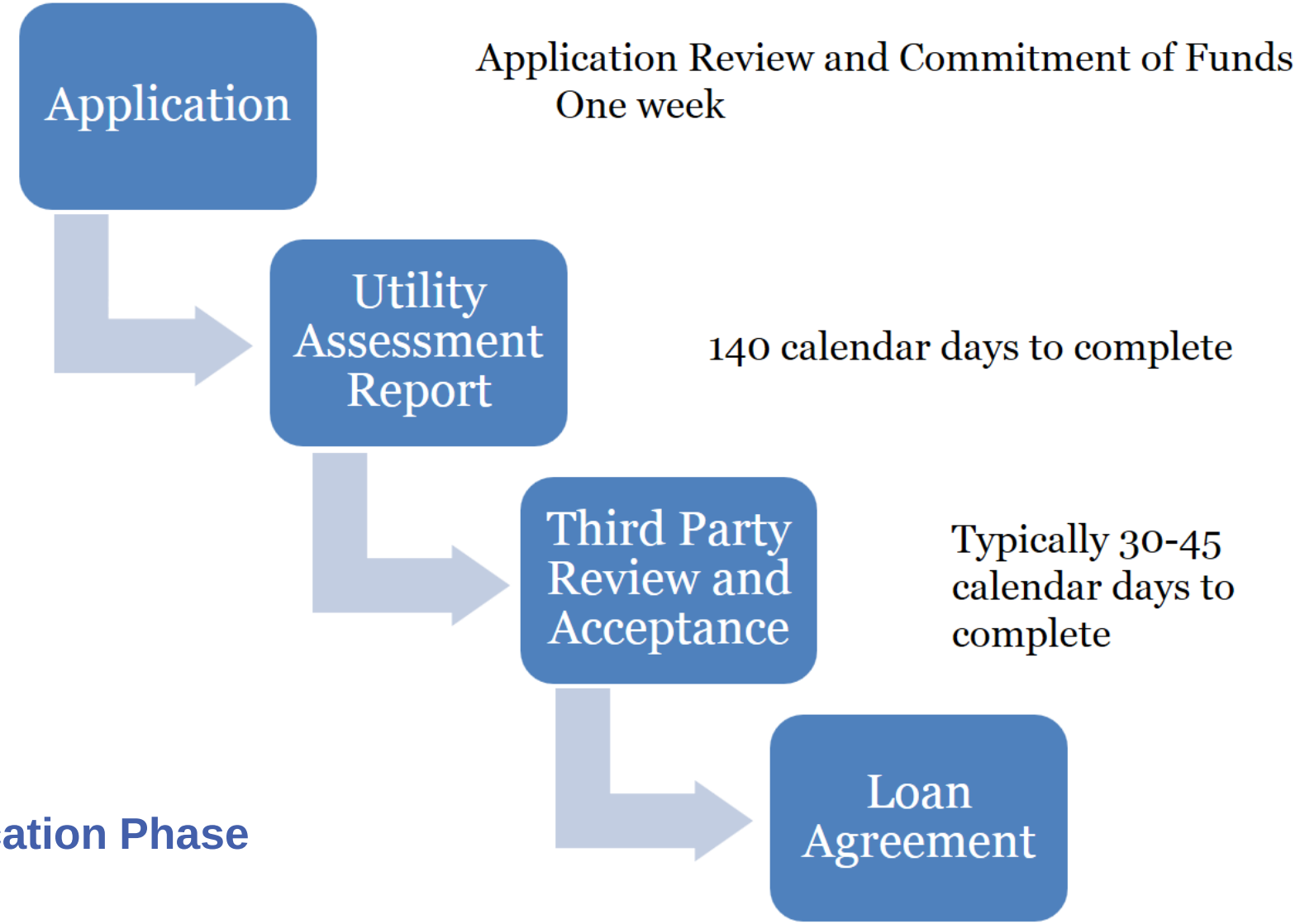
SECO – LoanSTAR Revolving Loan Program

300 loans, Over $400 million

Borrower	Number of Loans	Average Simple Payback (years)
K-12 Public Schools	134	8
State Agencies	72	7
Local Governments	57	9
Higher Education	14	9
Hospitals	13	8

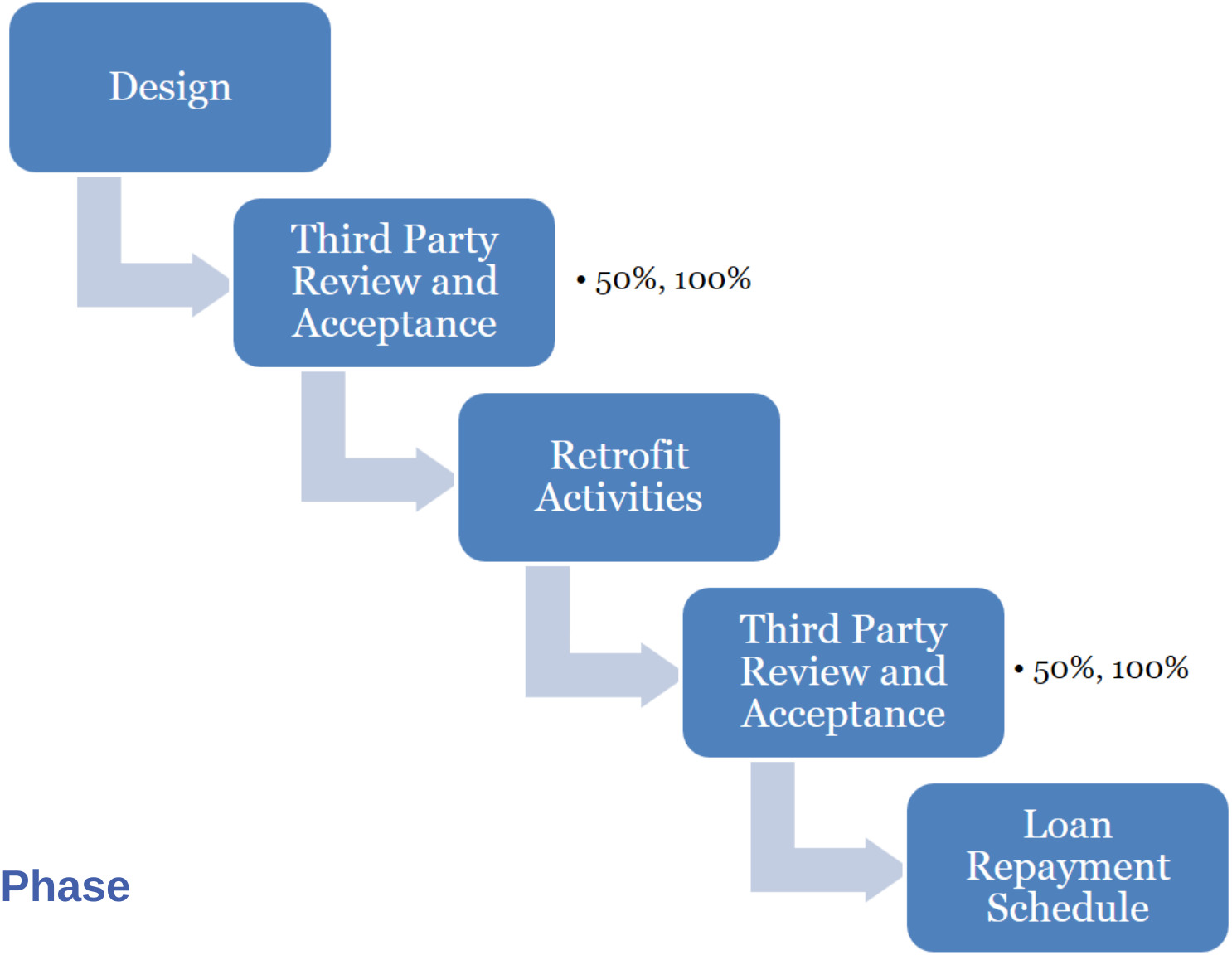
Borrower	Number of Design Build or Design Bid Build Contracts	Number of Energy Savings Performance Contracts
K-12 Public Schools	126	8
State Agencies	59	13
Local Governments	41	16
Higher Education	13	1
Hospitals	12	1

SECO – LoanSTAR Revolving Loan Program



Application Phase

SECO – LoanSTAR Revolving Loan Program



Retrofit Phase

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Texas State Energy Conservation Office (SECO)

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

Dub Taylor - Director
512.463.8352
dub.taylor@cpa.texas.gov

Stephen Ross – Schools and Local Governments
512.463.1770
stephen.ross@cpa.texas.gov

Eddy Trevino – Manager; LoanSTAR
512.463.1876
eddy.Trevino@cpa.texas.gov

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HVAC Design Changes

Schools and Local Governments Considerations

Nov 1, 2018

Presented by:

Mack Wallace, PE
Program Manager
Jacobs Engineering Group,
Fort Worth, TX

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What's Happening?

Changes in HVAC Design

And

What they mean to you

From 2004 to 2013, Eight Climate Zones for 90.1

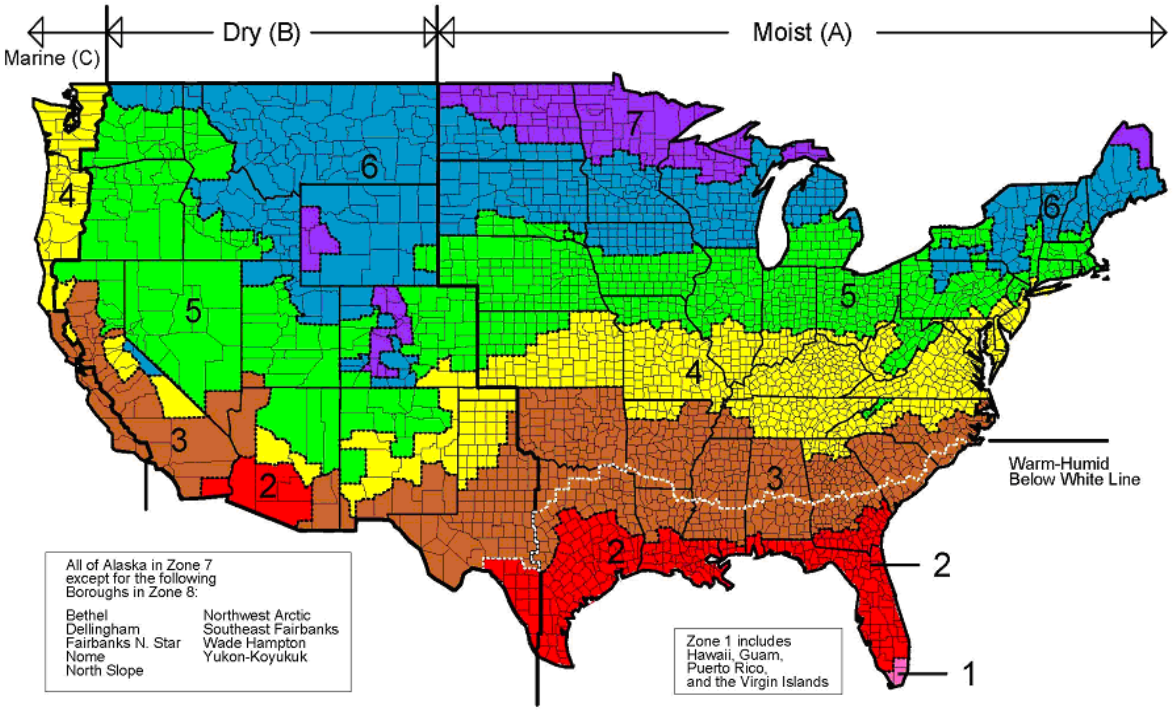

Figure B-1 Climate Zones for United States Locations **(Page 134 of Std. 90.1-2010)**

ASHRAE 90.1 and the IECC agreed on this map

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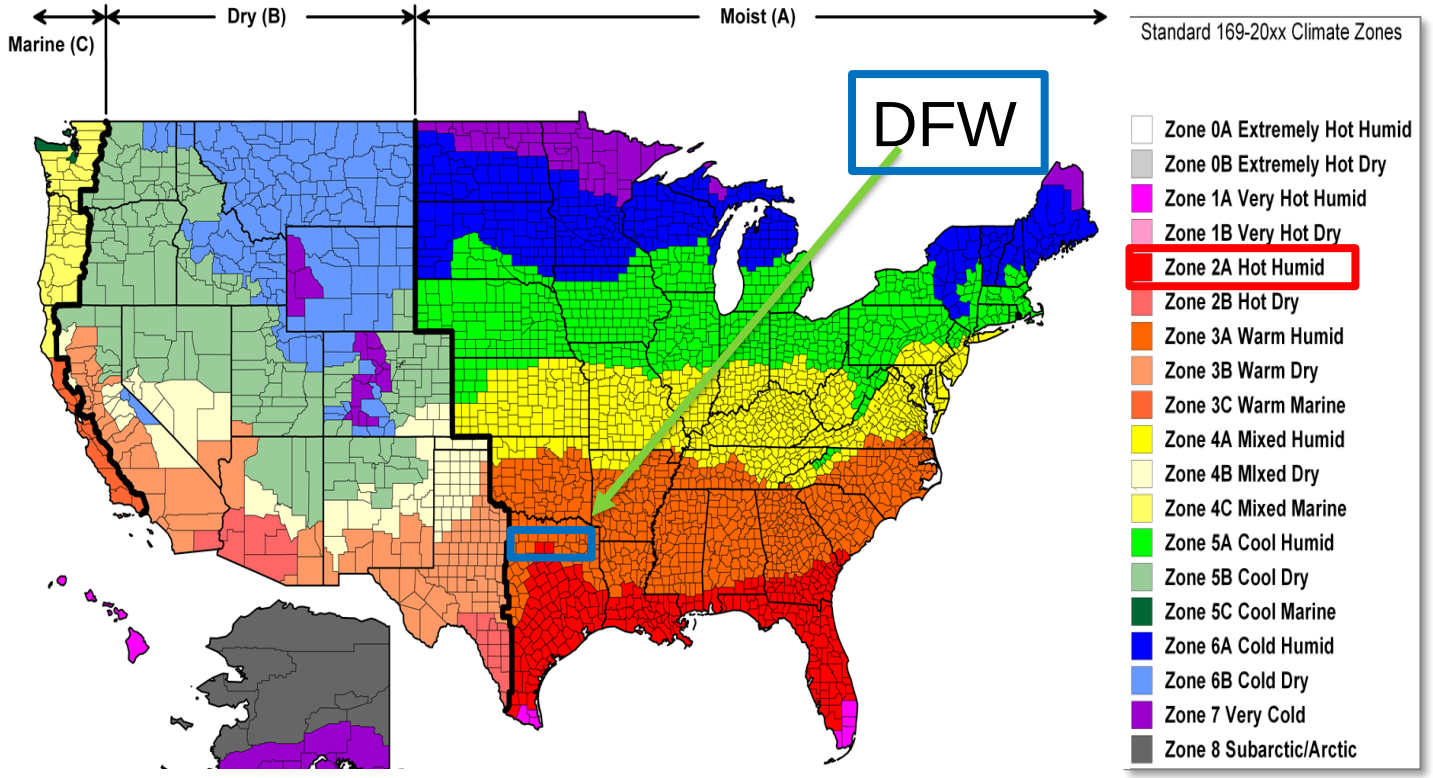
New 9 Climate Zones—Standards 169-2013 and 90.1-2016

New for 2016



The IECC 2018 did not change climate zones

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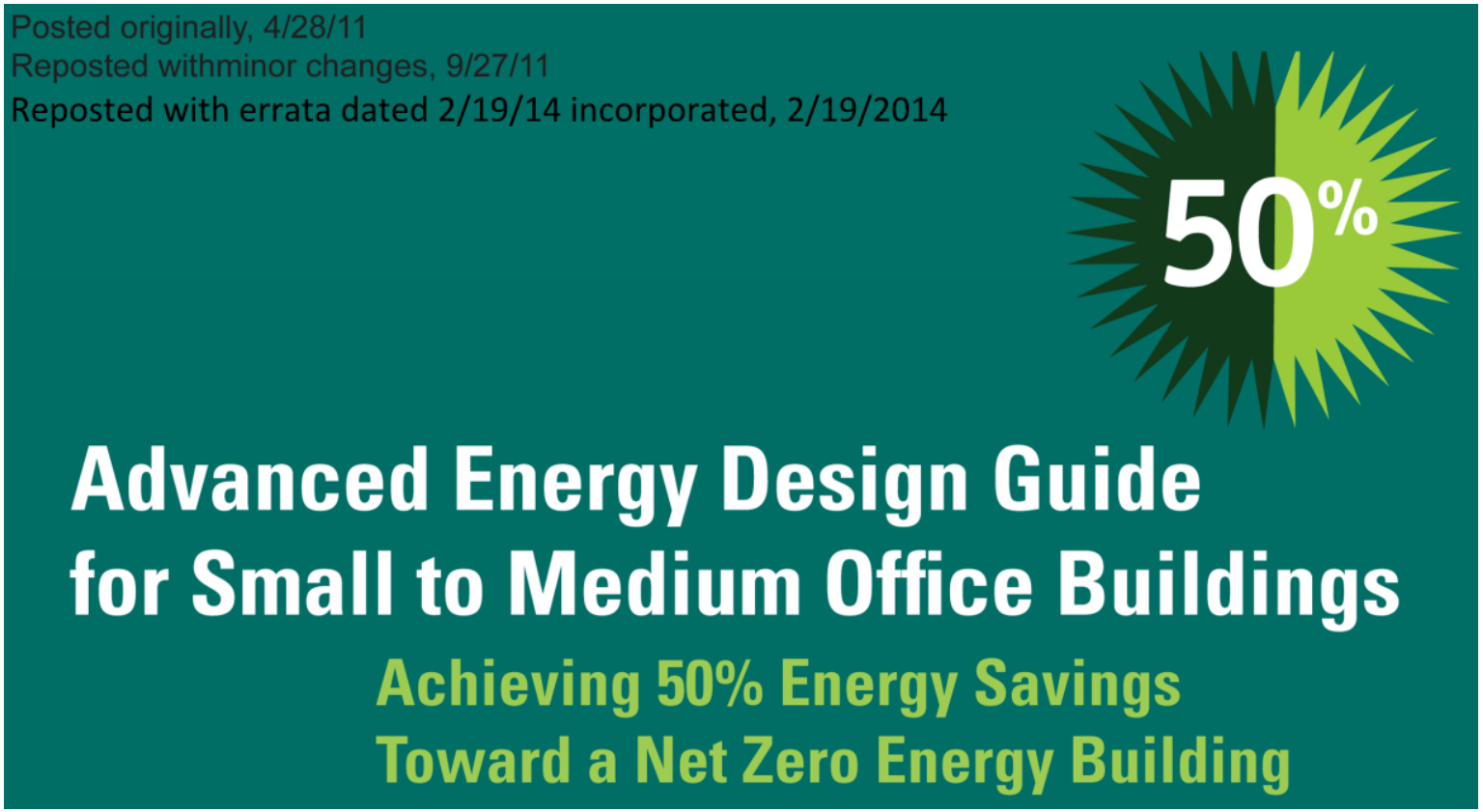
50% AEDGs 7 years old



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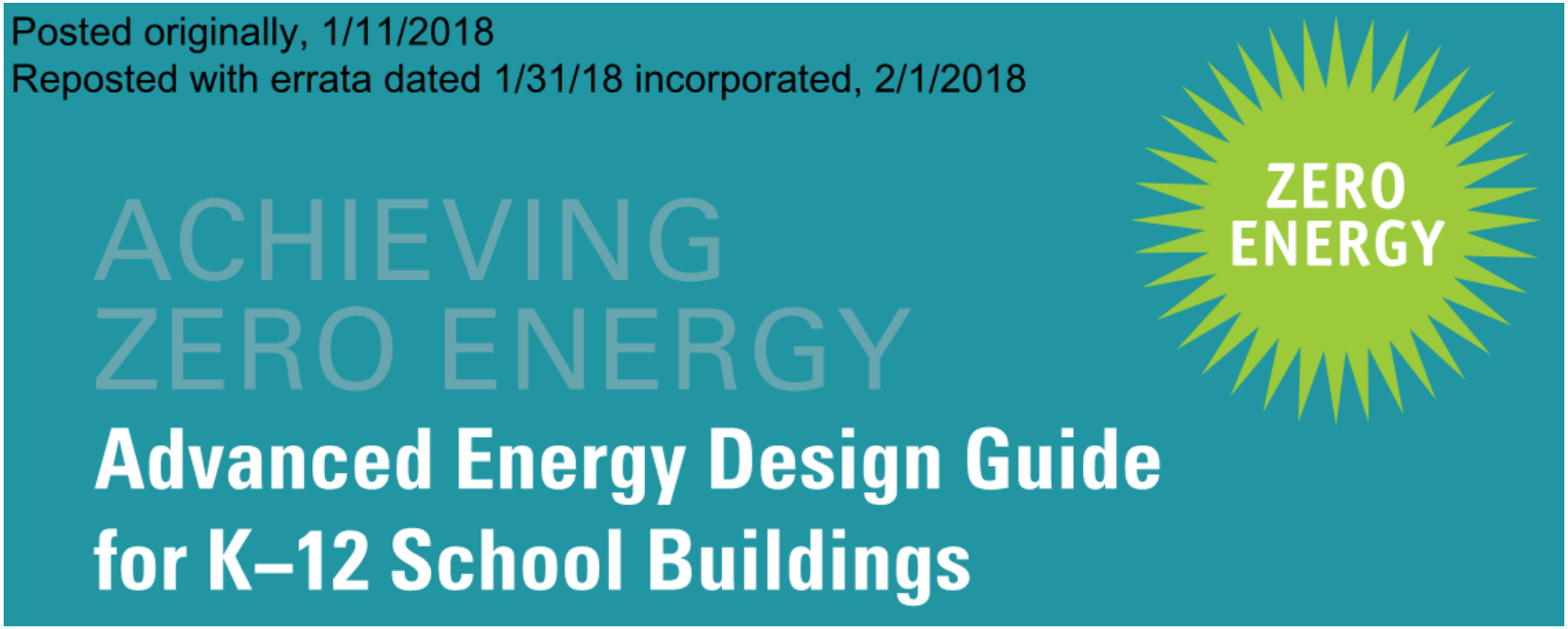
Net Zero - 2018 AEDG – Schools First



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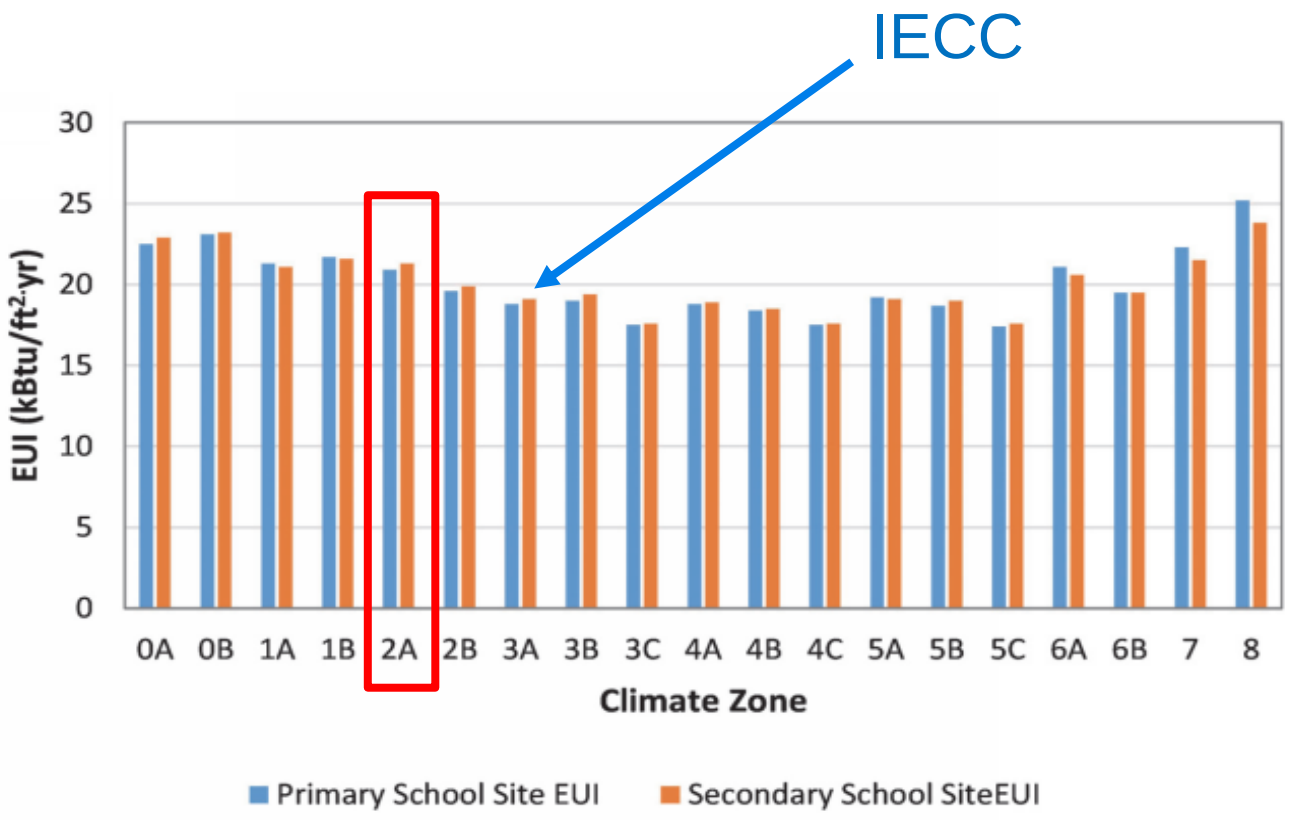
Target Site EUI



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Right here in DFW – page 21 of the AEDG

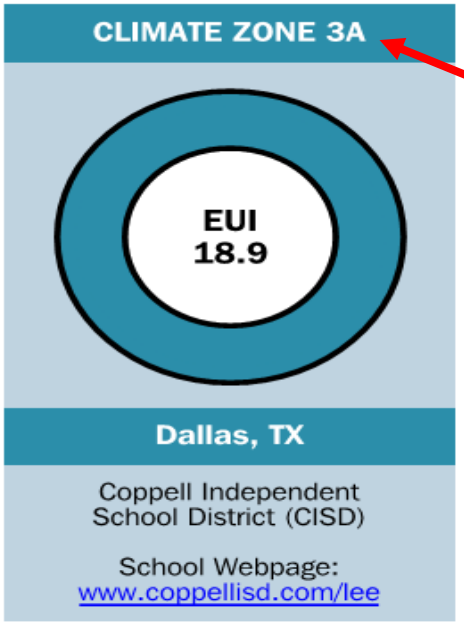
RICHARD J. LEE ELEMENTARY SCHOOL

The Coppell Independent School District (CISD) set out to construct a sustainable 21st Century school that is sustainable, while providing the best educational environment for the students. The floor plan is arranged in eight "neighborhoods" with collaborative teaching spaces that each open up into a large multipurpose learning space.

The 358 KW solar photovoltaic (PV) system is composed of approximately 1100 panels, all roof mounted. The entire PV system was constructed within the allocated budget.

KEY ENERGY EFFICIENCY AND SUSTAINABLE FEATURES

- Variable-speed dedicated outdoor air system (DOAS) with demand-controlled ventilation to provide appropriate outdoor air to the learning environment and control building CO_2
- All spaces can control their temperature and lighting
- Geothermal HVAC
- LED lighting with 0.60 W/ft^2 lighting power density (LPD)
- Orientation and windows to maximize natural lighting and students' views
- 2900 W wind turbine
- Recycled products integrated into design
- Reduced construction waste.
- 20,000 gal rainwater storage tank for flushing toilets and urinals



Built in 2014, before the weather changed

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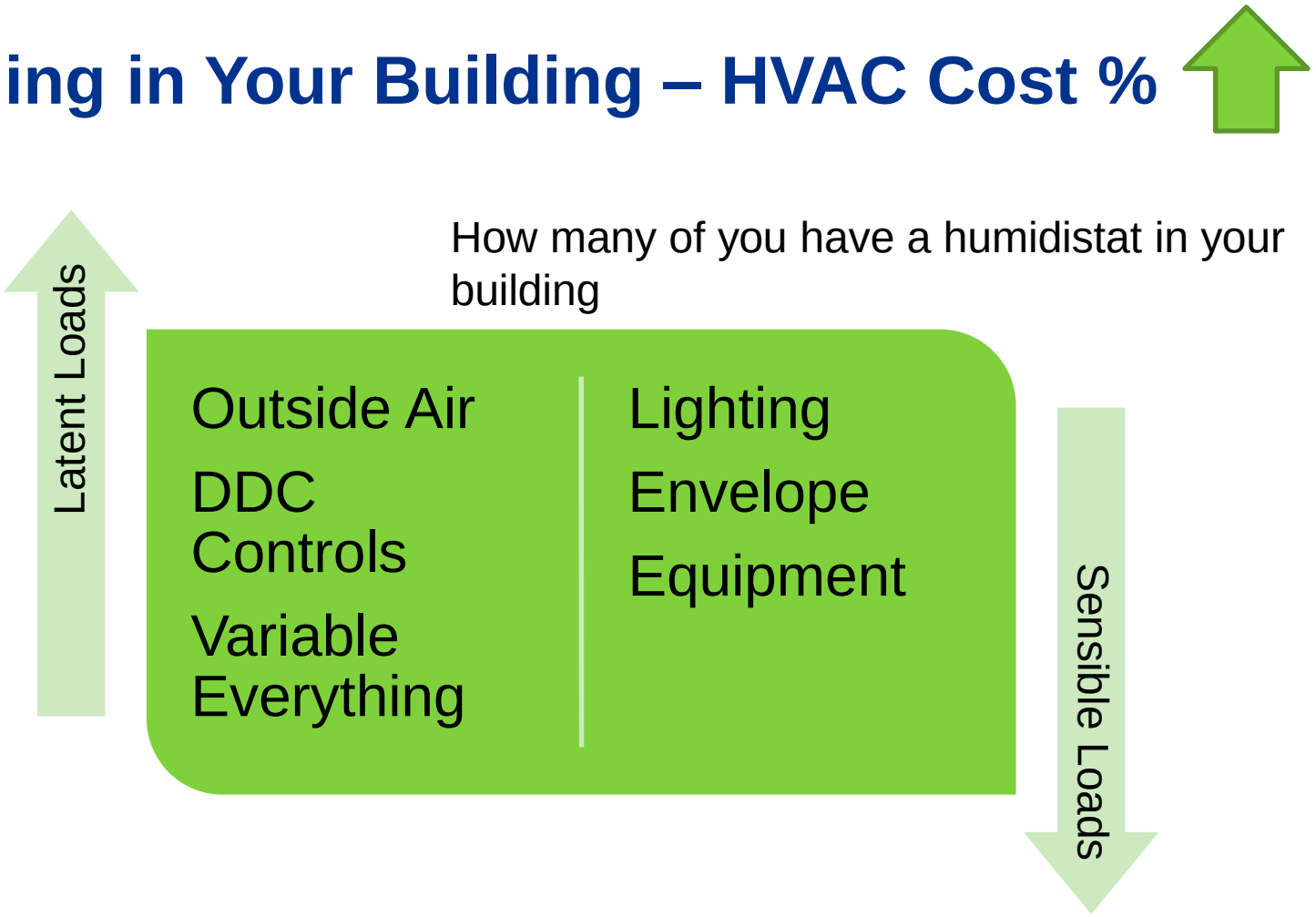
Changing in Your Building – HVAC Cost %



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Richard J. Lee

- Used DOAS to control outside air – normally largest cooling load in DFW
- Used Demand-Controlled Ventilation to reduce outside air
- Used Geothermal HVAC to reduce cost of rejecting heat and serve the loads with water instead of air.
  - Do not blow air for long distances (2018 Decentralized systems)
  - AEDG 2018 – Single zone chilled water fan coils, VRF systems, and GSHP
  - What happened to VAV systems?
- You have to use DOAS in the DFW area
- You do not have to use Geothermal

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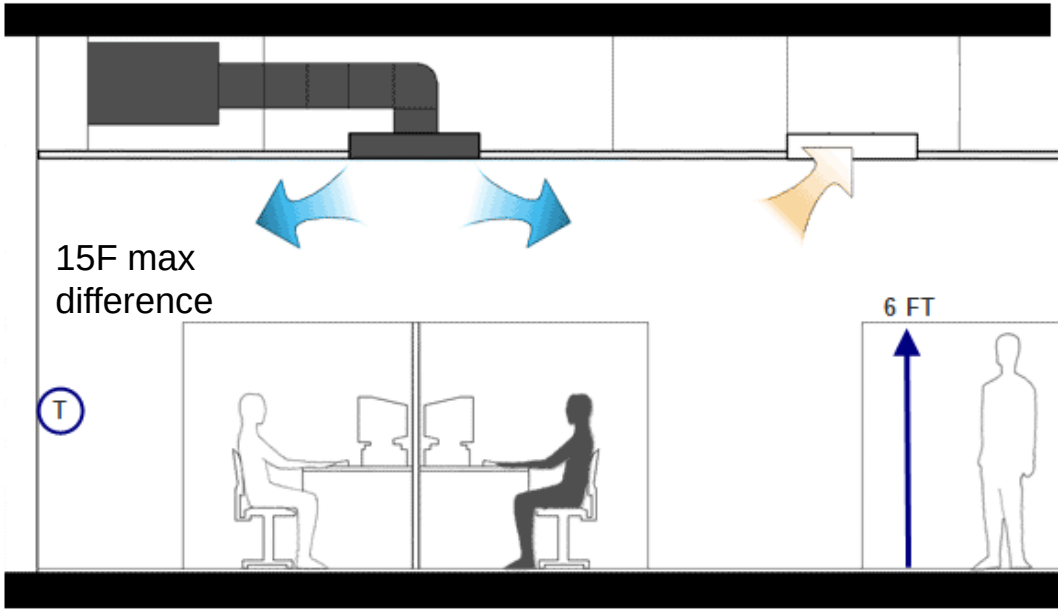
ASHRAE 62.1 VAV rules – Most popular System

1

15F max difference between supply and T stat
100 FPM 4’ from floor
Or
20% more OA to supply warm air and return warm air at the ceiling



2

% OA supplied to space is set by the space that needs the highest % served by the AHU

3

Low sensible load. Cooling CFM at full load less than 0.5 CFM.
Part load down to 0.2 CFM cooling.
Heating CFM more than the 50% allowed by ASHRAE 90.1
People want to have air movement in the space. Water flow very low.
Series Fan Powered Boxes are needed.

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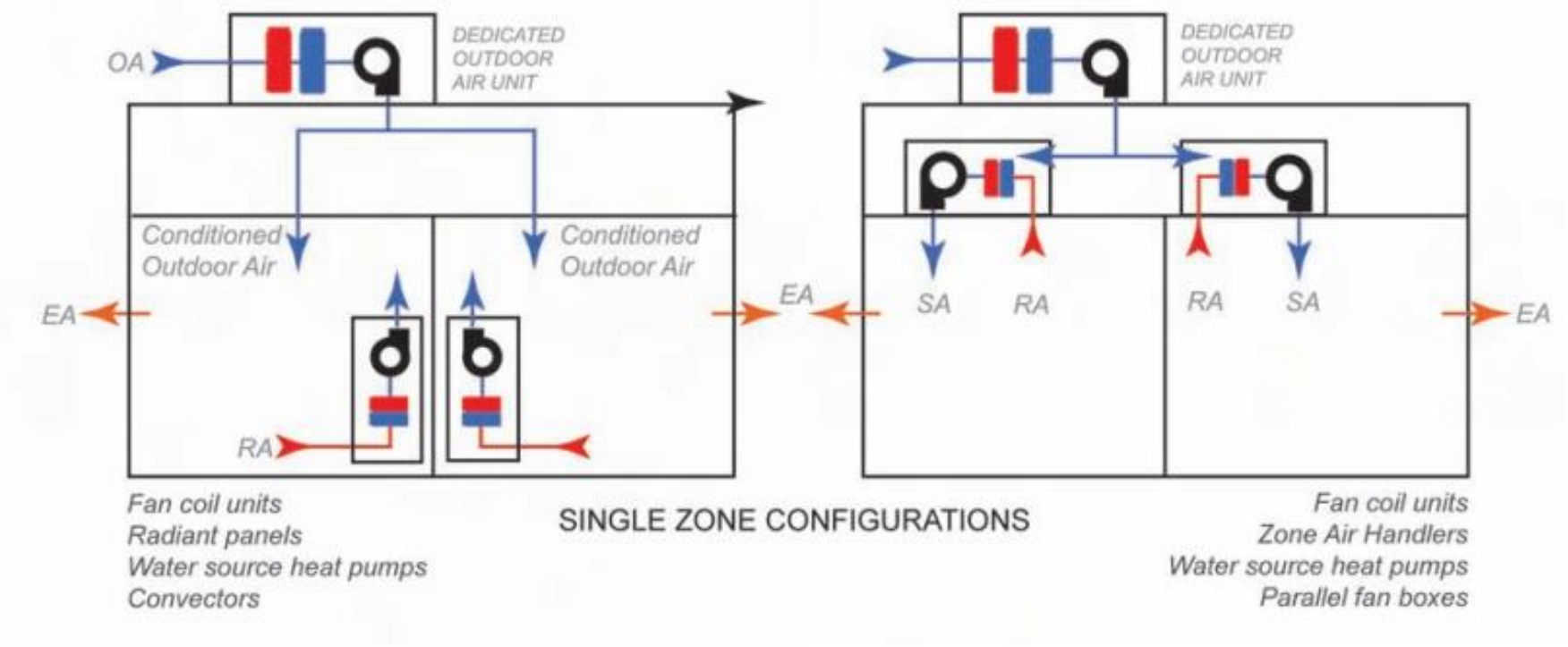
Single Zone DOAS – to the room / to the unit



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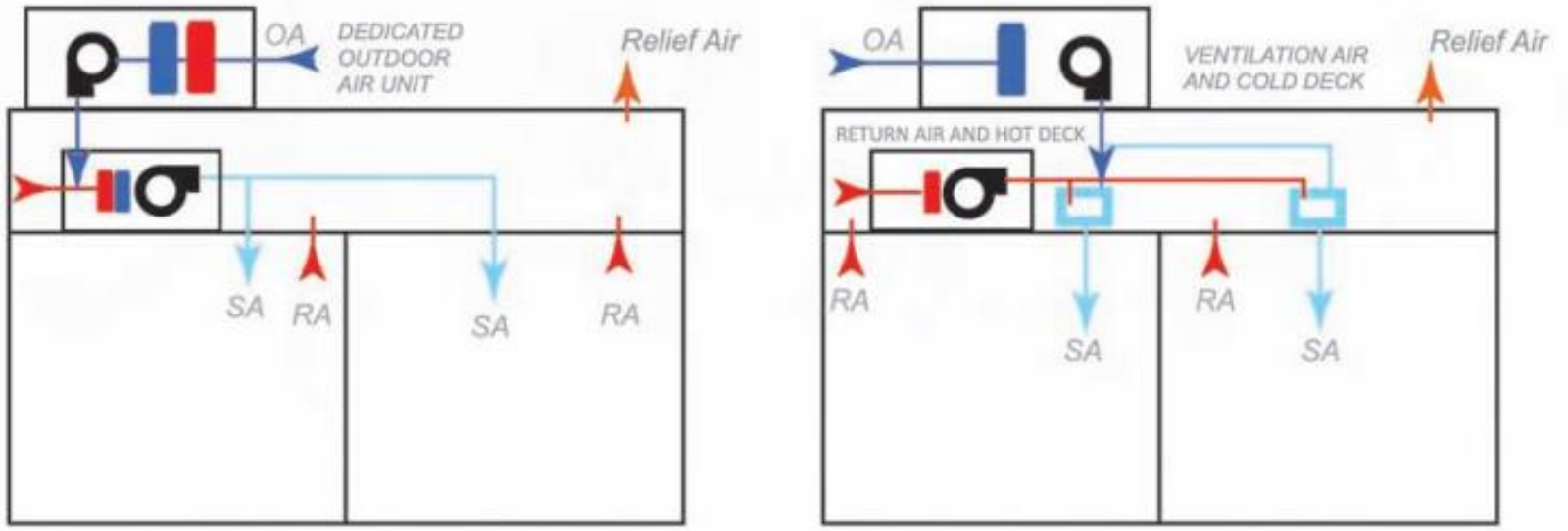
Multiple Zone – to the room / to the unit
ASHRAE 62.1



Zone air handlers
Fan powered boxes
Water source heat pumps

MULTIPLE ZONE CONFIGURATIONS
WITH MIXED RETURN

Dual-duct
VAV boxes

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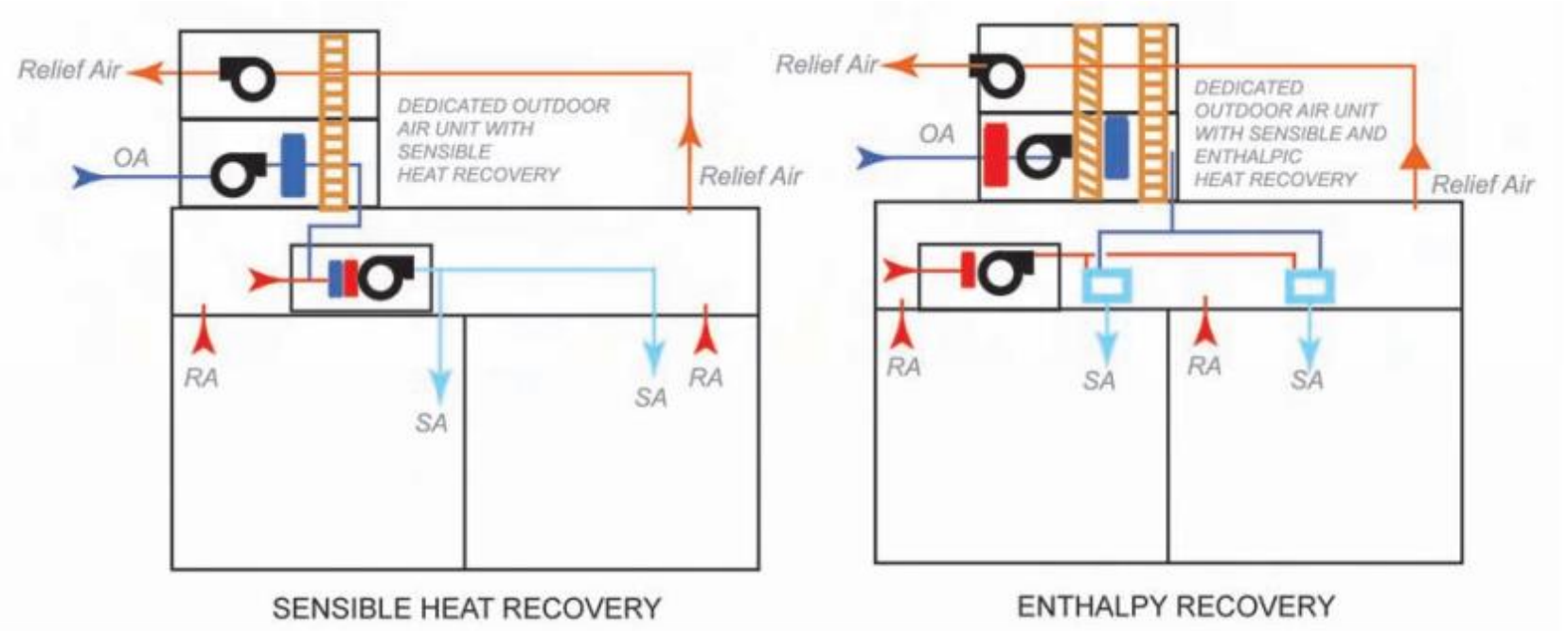
Use Energy Recovery – Everybody Does



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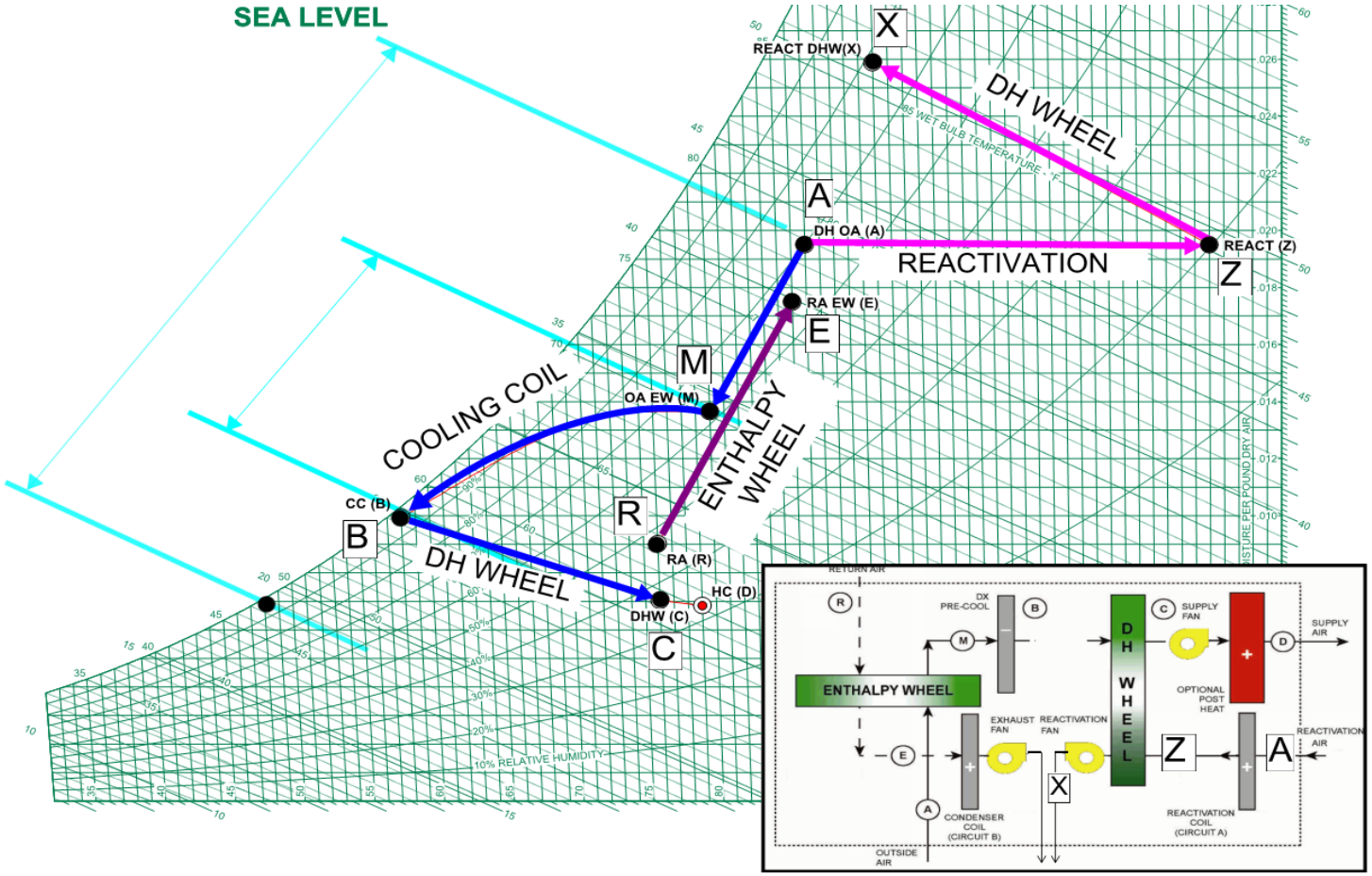
Double Wheel DOAS



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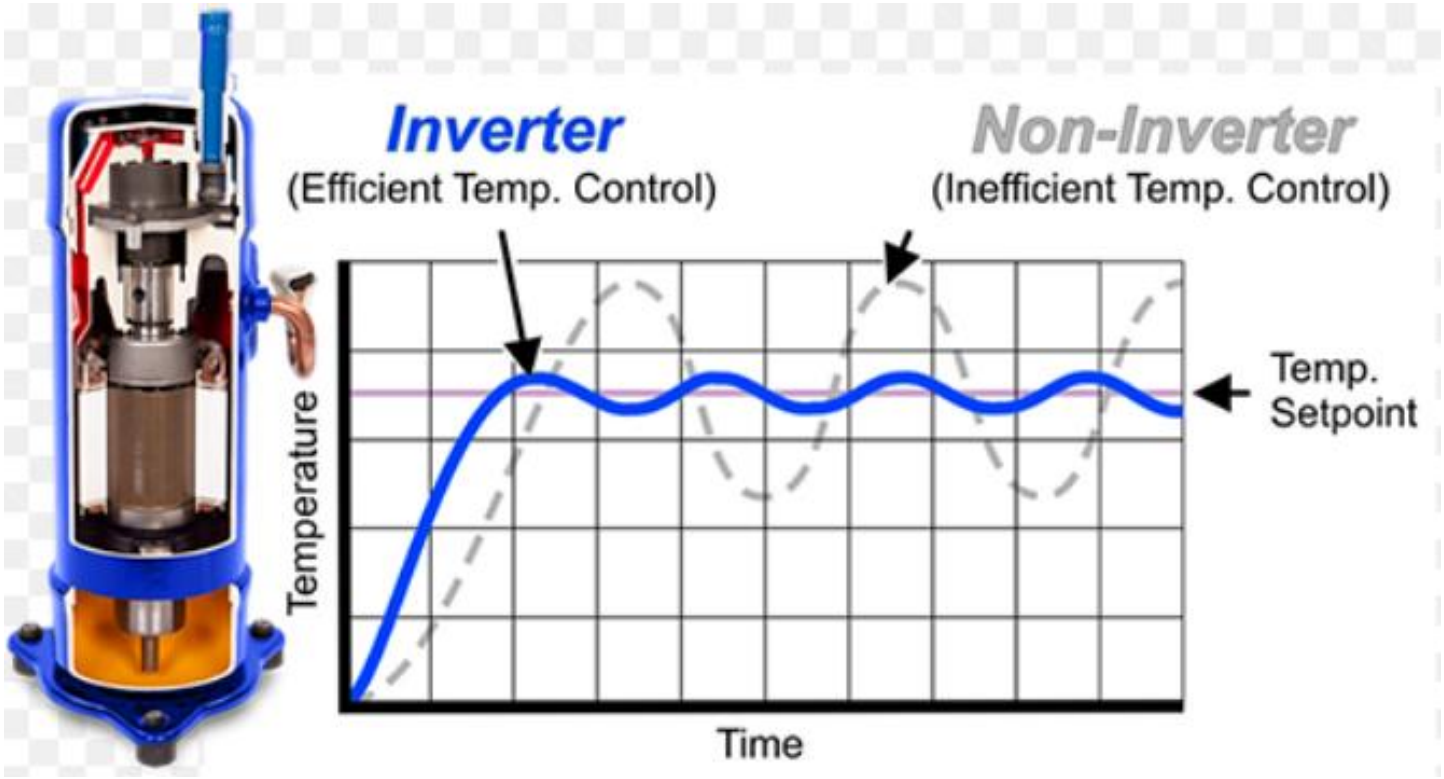
New RTUs – Variable Speed Compressors



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Questions

mack@wisewatt.com

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SECO – Basic Utility Bill Analysis

Nov 1, 2018

Presented by:

Carlos Teran, PE
Senior Energy Engineer
Jacobs Engineering Group,
Houston, TX

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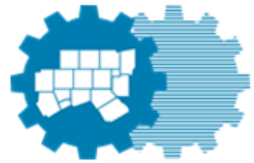
Utility Rate Analysis - Energy Cost Savings

- Typical billing parameters for analysis:
  - Supply
    - Customer Charges
    - Supply Charges (kWh)
      - Time-of-Use (Month, Day, Hour)
      - Consumption Blocks
  - Delivery
    - Transmission & Distribution (kW, kWh)
      - Time-of-Use (Month, Day, Hour)
      - NCP (kW)
      - 4CP (kW)
      - Demand Ratchet (kW)
      - Power Factor (kW)
    - Riders (kW, kWh)
  - Taxes



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Utility Rate Analysis - Energy Cost Savings

- Sample Bill

Rate Schedule for TXU/Oncor Tariff SS > 10 kW Non IDR NCP for Electric			
Component	Charge	Unit	Description
Customer Charge:	$6.80	*per month*	Base Charge
	$22.14	*per month*	Meter Charge
	$11.59	*per month*	Energy Efficiency Charge
	$3.980	*per month*	Advanced Meter Charge
Consumption Charge	$0.05974	*per kWh*	REP charge
	$0.000654	*per kWh*	System Benefit Fund
	-$0.00025	*per kWh*	RTSPP Settle Charge
Demand Charge	$4.38000	*per Billed KW*	Distribution Charge (Annual Load Factor > 26%)
	$5.01000	*per Billed KW*	Distribution Charge (Annual Load Factor 21%-25%)
	$5.16000	*per KW*	Distribution Charge (Annual Load Factor 16%-20%)
	$5.47000	*per KW*	Distribution Charge (Annual Load Factor 11%-15%)
	$6.10000	*per KW*	Distribution Charge (Annual Load Factor 0%-10%)
	$2.22297	*per kW*	Transmission Cost Recovery Factor
	$0.17100	*per Billed KW*	Transition Charge TC1
	$0.26400	*per Billed KW*	Transition Charge TC2
	$0.007521	*per Billed KW*	Rate Case Surcharge
	$0.04400	*per Billed KW*	Nuclear Decommission Charge

Utility Rate Analysis - Energy Cost Savings

- Time-of-Use

SUMMARY OF BILLING COMPONENTS:

	Summer (Jun-Sep)	Winter (Oct-May)
Customer Charge:	$1,000.00/month	$1,000.00/month
Energy Charges:		
Block 1, first 250 KWH/KW:	$0.0369/KWH	$0.0369/KWH
Block 2, all remaining KWH:	$0.0329/KWH	$0.0329/KWH
Average Fuel Adj. Cost[1]:	$0.01104/KWH	$0.01104/KWH
Average Reg. Adj. Cost[1]:	$0.00271/KWH	$0.00271/KWH
Demand Charges:		
	Summer	Winter
Direct Demand Charge:	$10.45/KW	$8.30/KW

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Utility Rate Analysis - Energy Cost Savings

- Riders

II. Nuclear Decommissioning Charge:	See Rider NDC	per kWh
III. Transmission Cost Recovery Factor:	See Rider TCRF	
IV. Energy Efficiency Cost Recovery Factor:	See Rider EECRF	
V. Competitive Meter Credit:	See Rider CMC	
Other Charges or Credits		
VI. Rate Case Expense Surcharge:	See Rider RCE	per kWh
VII. Remand Surcharge:	See Rider RS	per kWh
VIII. Capital Structure Refund:	See Rider CSR	per kWh
IX. Distribution Cost Recovery Factor:	See Rider DCRF	per kWh
X. Tax Refund Factor:	See Rider TRF	per kWh

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Utility Rate Analysis - Energy Cost Savings

- Power Factor

Meter	Type	Dates	Current Meter Read	Previous Meter Read	Multiplier	kWh Usage	kW Demand	Power Factor
091692353LG	ACT	03/18 - 04/16	5919.03	5798.99	1500	**180,039.60**	890.00	0.9

Current Charges	Qty	Rate	Amount
Electric Service			
CKWH : Commercial Energy.....	180,039.60	0.05530	$9,956.19
HUB-LZ Basis Charge.....	180,039.60	0.00291	$523.97
TDSP : TDSP Pass-Through Charges.....			$8,587.00
DIS001:Distribution Charge.....	*939.00*	*5.01000*	*$4,704.39*
MSC025:Nuclear Decommissioning.....	*1,222.00*	*0.04400*	*$53.77*
BAS001:Basic Customer Charge.....	*1.00*	*6.80000*	*$6.80*
TRN002:Firm Point to Point Transmission Service Charge for long term or short term firm.....	*845.00*	*3.77038*	*$3,185.97*
BAS003:Delivery Point Charge.....	*1.00*	*22.14000*	*$22.14*
MSC041:Energy Efficiency Cost Recovery Factor (EECRF).....	*180,039.00*	*0.00035*	*$63.55*
MSC049:Rate Case Expenses Surcharge.....	*1,222.00*	*0.01140*	*$13.93*
MSC029:Recovery of securitzed portion of stranded assets and costs.....	*1,222.00*	*0.17200*	*$210.18*
MSC036:Recovery of securitized regulatory assets - stranded costs (TC2).....	*1,222.00*	*0.26700*	*$326.27*
Total Current Charges.....			$19,067.16

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Utility Rate Analysis - Energy Cost Savings

- Unmetered Facilities

MONTHLY RATE

I. Unmetered Facilities

Points of Delivery (POD) Charge: $57.41 per governmental entity served by the Competitive Retailer.

Lamp	Watts	Lumens	kWh	Schedule			Rectangular*	Post-Top*
				A	B*	C* and D		
Metal Halide	150	14,000	65	$12.42	N.A	$1.43	N.A.	N.A.
	175 (see note 2)	14,000	65	$12.42	$18.80	$1.43	N.A.	N.A.
	250	25,000	100	$14.26	$22.29	$2.13	$36.62	N.A.
	400	36,000	160	$14.74	$23.04	$3.34	$36.62	N.A.
	1,000*	110,000	370	$17.75	$26.03	$7.56	$40.98	N.A.
LED/Low Wattage (See Note 3)	100		40	N.A.	N.A.	$0.92	N.A.	N.A.

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