

# 33rd Annual State Construction Conference

March 27th, 2014

## SB 668

# *JUDGMENT DAY*

# Great Trilogies

# LORD OF THE RINGS





# STAR WARS



BY  
SPIGOT



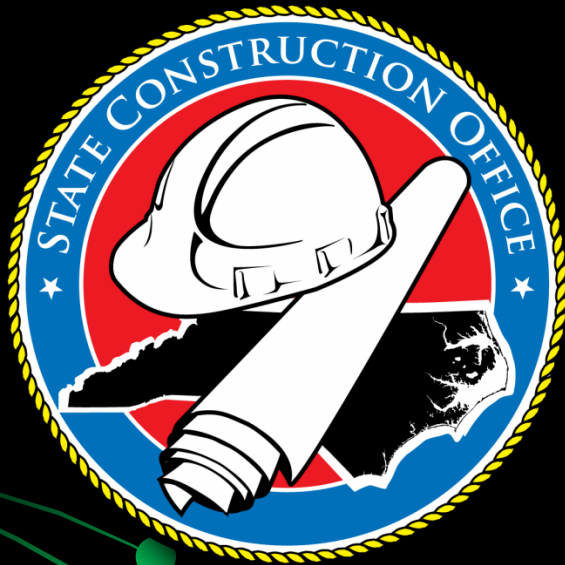


# THE TERMINATOR

# Episode I

## 31st Annual State Construction Conference

March 22nd, 2012



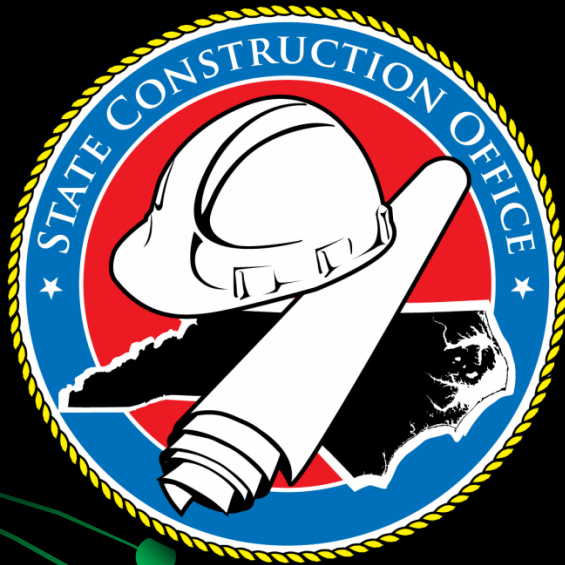
## Senate Bill 668 – A Case Study

<http://www.nc-sco.com/documents/scoconference/2012/2012%20SCO%20Conference%20Senate%20Bill%20668%20-%20A%20Case%20Study.pdf>

# Episode II

Senate Bill 668

*The Sequel!*



32nd Annual  
State Construction  
Conference

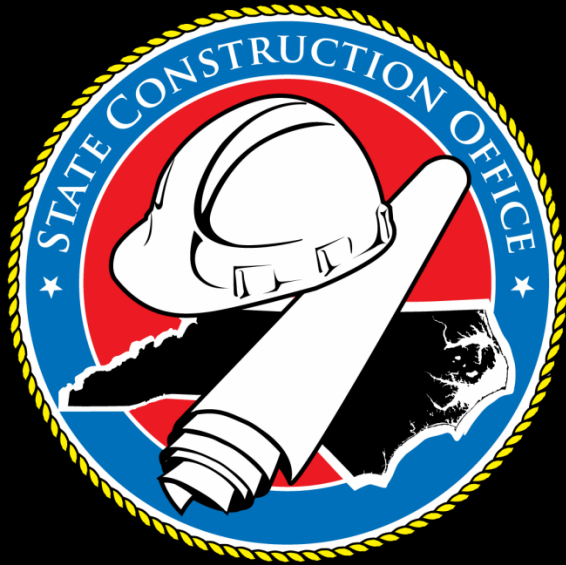
March 28th, 2013

*The Case Studies*

<http://www.nc-sco.com/documents/scoconference/2013/2013SCC-SB668TheSequel.pdf>



# Episode III



## 33rd Annual State Construction Conference

March 27th, 2014

# SB 668

# *JUDGMENT DAY*

# Episode III



33rd Annual

**INTRODUCING** State Construction  
Conference

March 27th, 2014

**HB 6628**

**JUDGMENT DAY**

# SB 668 – *JUDGMENT DAY*

## Refresher

### What is Senate Bill 668?

Purpose is to promote energy and water savings in state owned and state supported buildings.



# SB 668 – *JUDGMENT DAY*

The official title of Senate Bill 668 is

***Performance Standards for Sustainable,  
Energy-Efficient Public Buildings.***

The legislation can be found under NCGS  
143-135.35 through 143-135.40.

(Chapter 143 – Article 8C)

# NCGA

NORTH CAROLINA GENERAL ASSEMBLY

FULL SITE SEARCH: Chapter 143 - Article 8C

SEARCH BILL TEXT: 2013-2014 Session

FIND A BILL: 2013-2014 Session

VIEW MEMBER INFO: Select a member

## Chapter 143 - Article 8C

- HOME
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- SENATE
- ABOUT NCGA
- AUDIO
- CALENDARS
- COMMITTEES
- LEGISLATION/BILLS
- REDISTRICTING
- WHO REPRESENTS

Welcome to the official web site of the North Carolina General Assembly. You can communicate with your State House and Senate and the General Assembly.

The **Regular Session of the 2013-2014 biennium** of the North Carolina General Assembly convened on January 9, 2013 for the purpose of electing officers, adopting rules, and organizing the session and adjourned on January 9, 2013 and reconvened on January 30, 2013.

### House of Representatives



Convenes Wed, Mar 27, 2013 2:00PM

- House Calendar
- Chamber Audio | (Archive)
- Bills with House Action by Day
- House Bills Filed by Day

### Senate



Convenes Wed, Mar 27, 2013 2:00PM

- Senate Calendar
- Chamber Audio
- Bills with Senate Action by Day
- Senate Bills Filed by Day

News & Information  [ more news ]

Legislative Calendar  [ full calendar ]



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# SB 668 – *JUDGMENT DAY*

New projects require:

- 30% less energy usage than a building complying with ASHRAE 90.1-2004
- 20% less indoor water usage than a building complying with the 2006 NC Plumbing Code



# SB 668 – *JUDGMENT DAY*

Renovation projects require:

- 20% less energy usage than a building complying with ASHRAE 90.1-2004
- 20% less indoor water usage than a building complying with the 2006 NC Plumbing Code

# SB 668 – *JUDGMENT DAY*

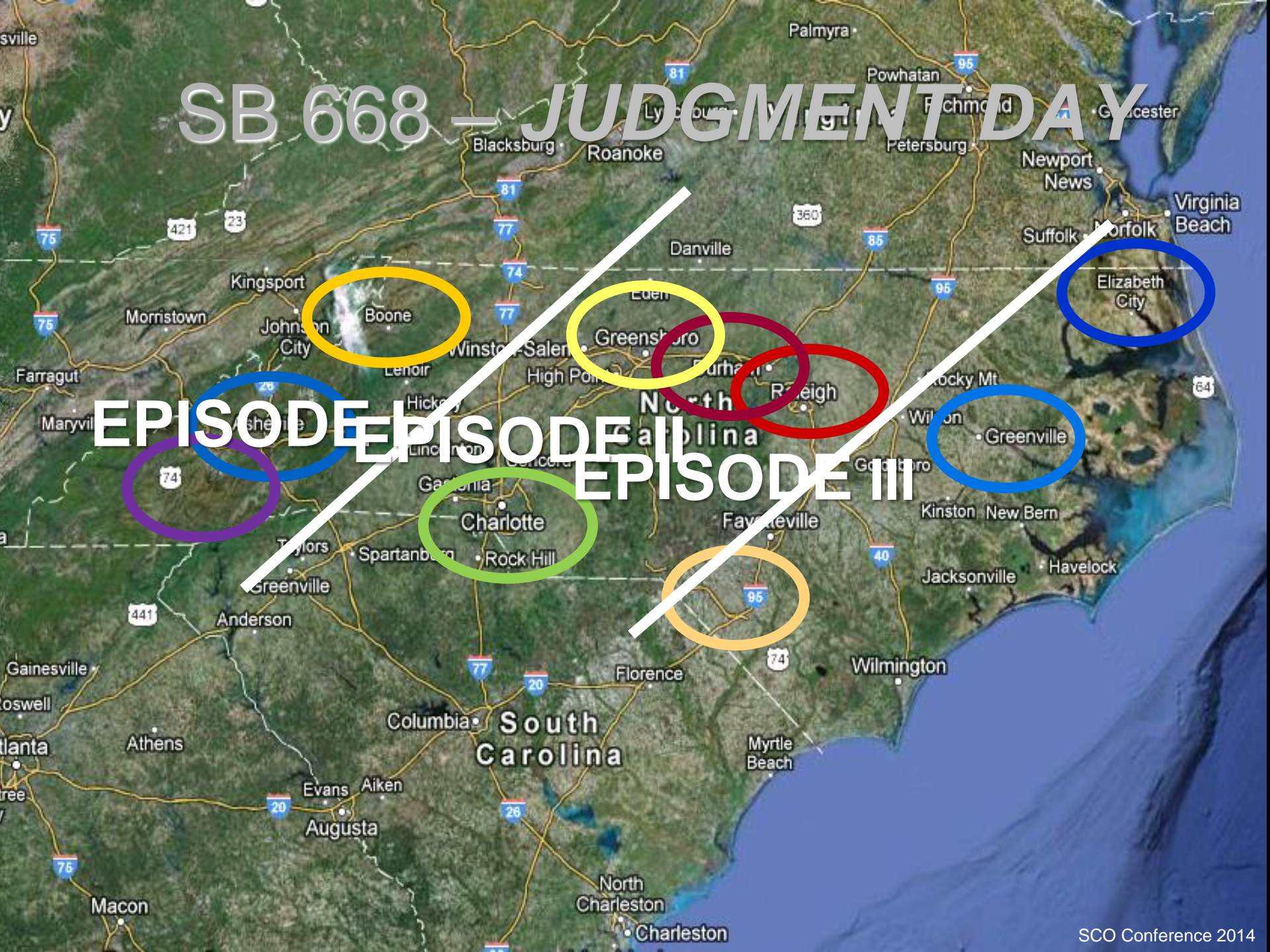
## EUI

- EUI or Energy Use Intensity
- EUI is a measure of building energy use
- Units are KBTU/GSF/YR
- Low EUI = low energy consumption
- Similar to MPG for a car



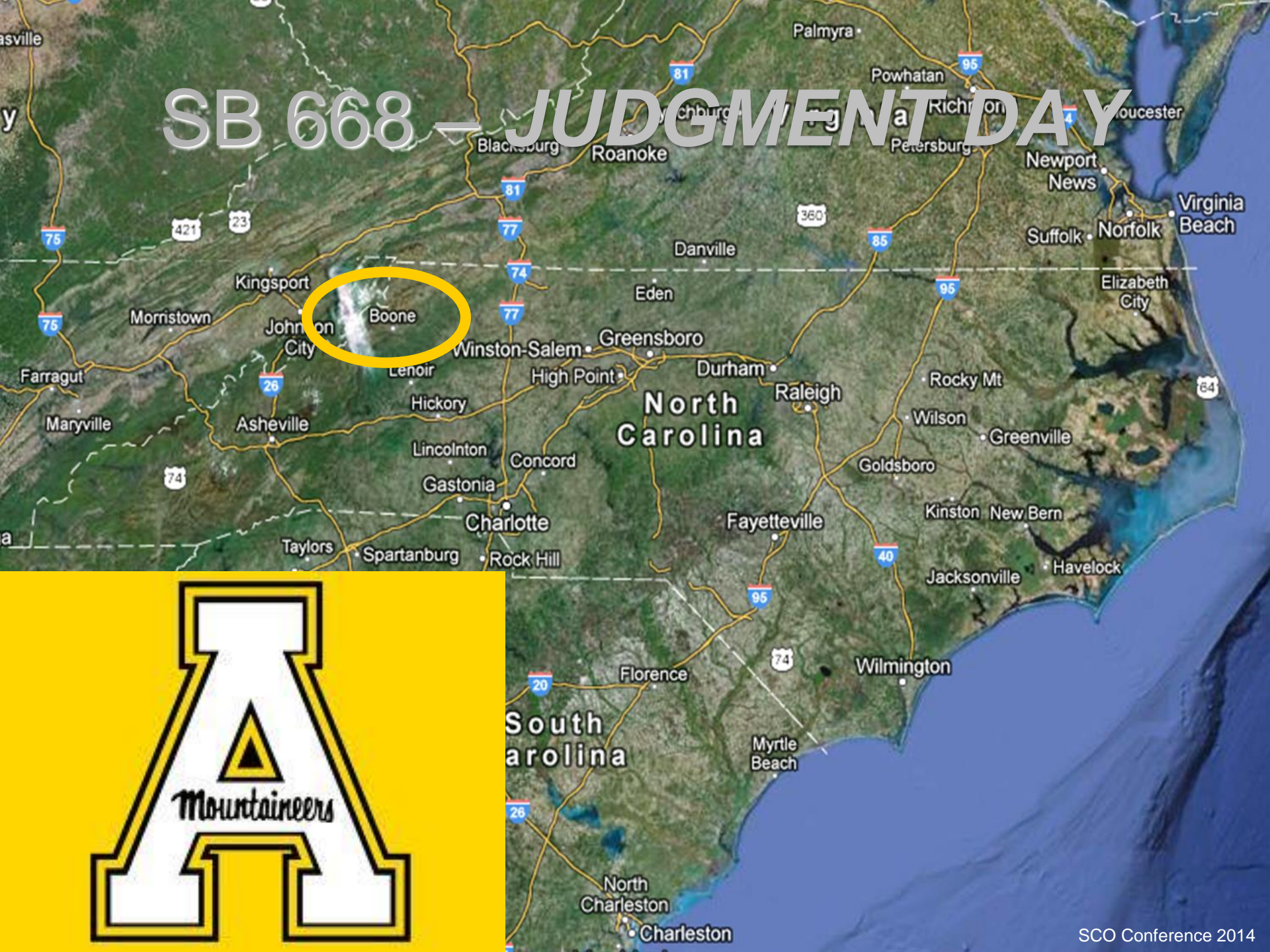
# SB 668 – JUDGMENT DAY

EPISODE I  
EPISODE II  
EPISODE III





# SB 668 – JUDGMENT DAY





# Cone Residence Hall





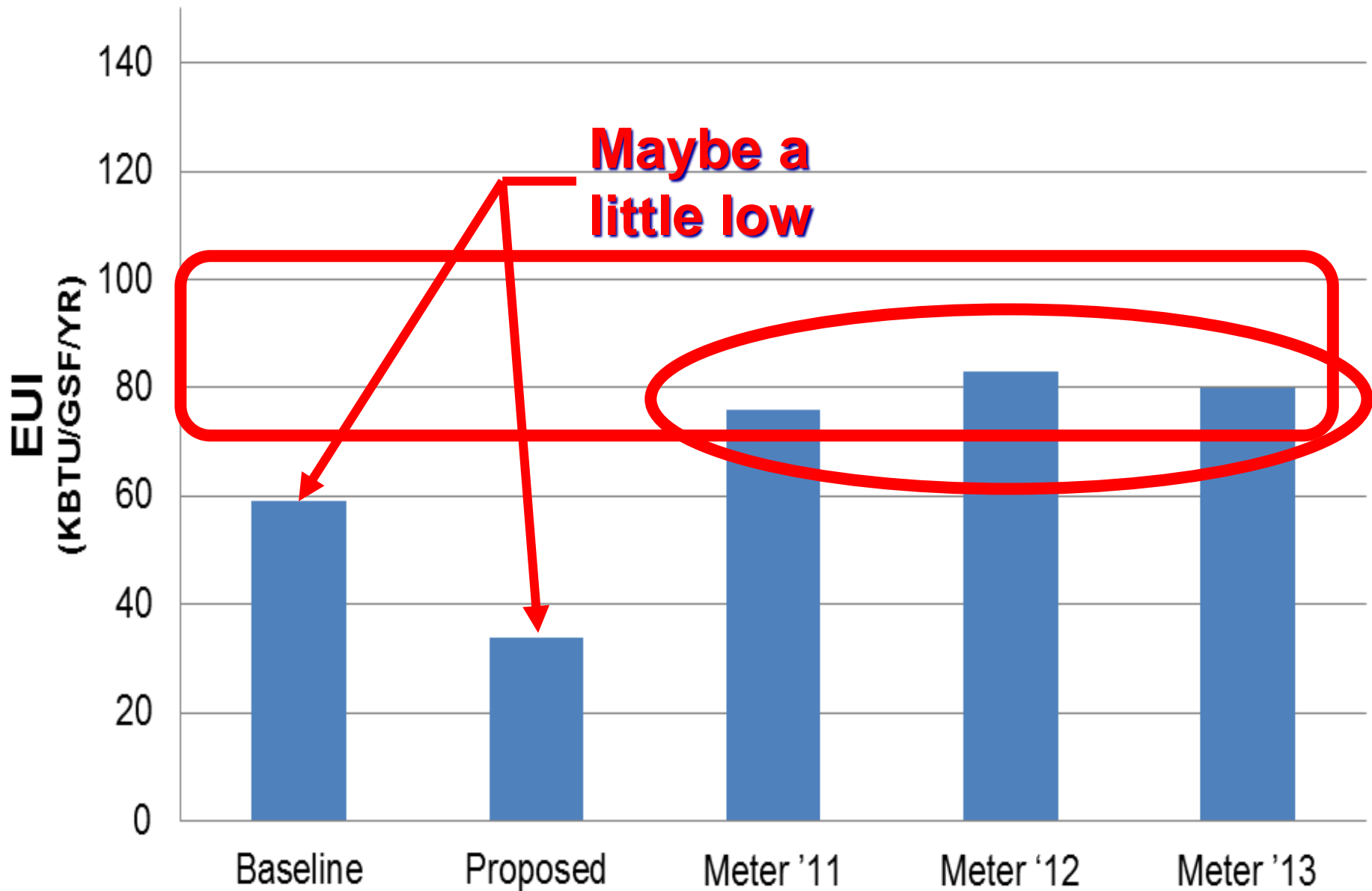
# SB 668 – JUDGMENT DAY

## Cone Residence Hall

### Energy Consumption

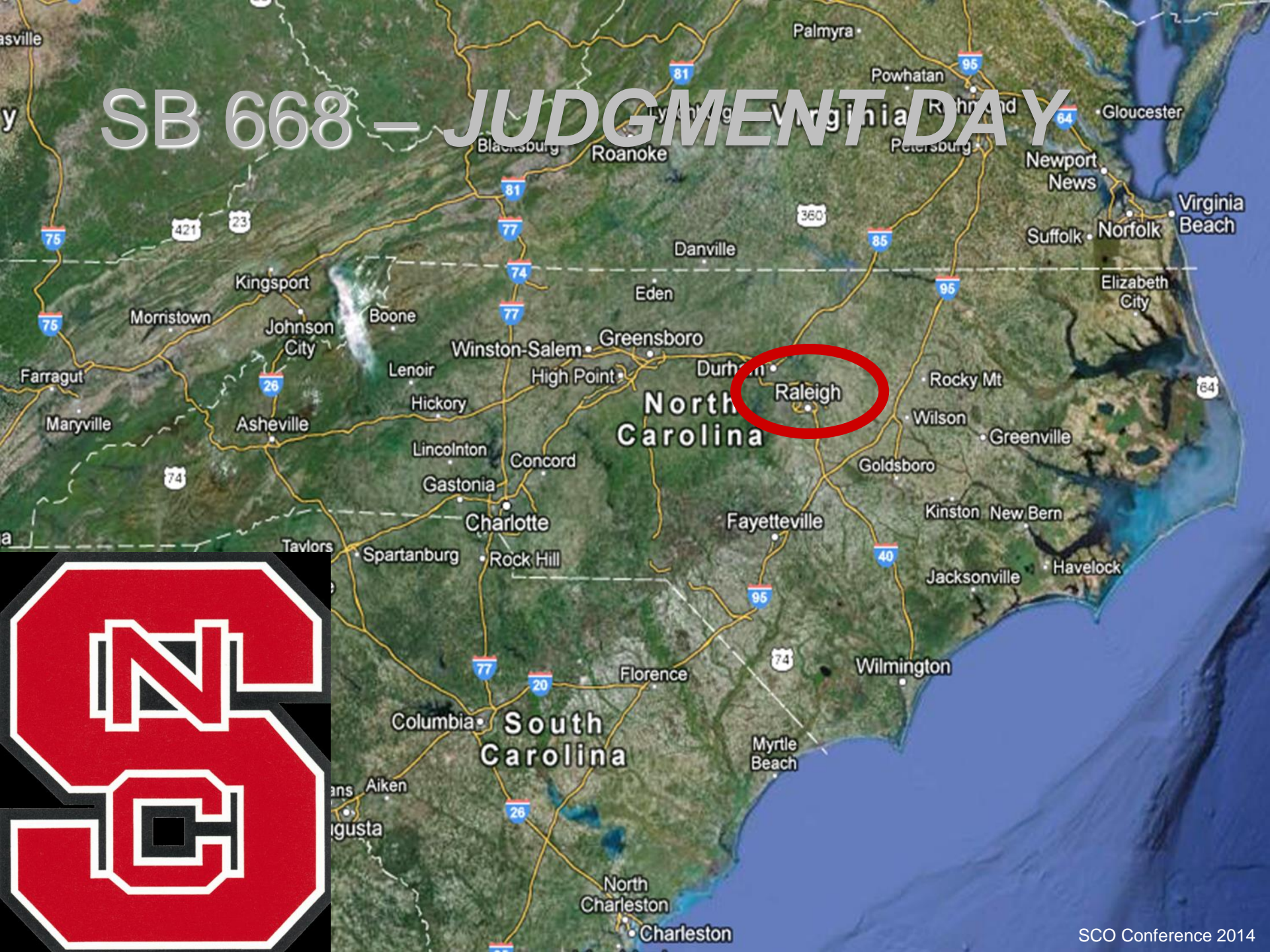
	kBtu	EUI (kBtu/Sq Ft/Yr)	% Improvement	Savings kBtu
Baseline	3,467	59		
Proposed	1,993	34	43	1,474
Meter '11	4,479	76	-29	-1,012
Meter '12	4,896	83	-41	-1,429
Meter '13	4,691	80	-35	-1,224

# Cone Residence Hall





# SB 668 – JUDGMENT DAY





# Student Health Services Center





# Student Health Services Center

Renovation

Addition

# SB 668 – JUDGMENT DAY

## Student Health Services Center

### Energy Consumption

	kBtu	EUI (kBtu/Sq Ft/Yr)	% Improvement	Savings kBtu
Baseline	2,746	111		
Proposed	1,547	63	44	1,199
Meter '12	5,810	88	-112	-3,064
Meter '13	9,165	139	-234	-6,419



# Student Health

**Addition and  
Partial Renov**

**Meter w/  
Steam**

**Meter w/o  
Steam**

**EUI  
(KBTU/GSF/YR)**

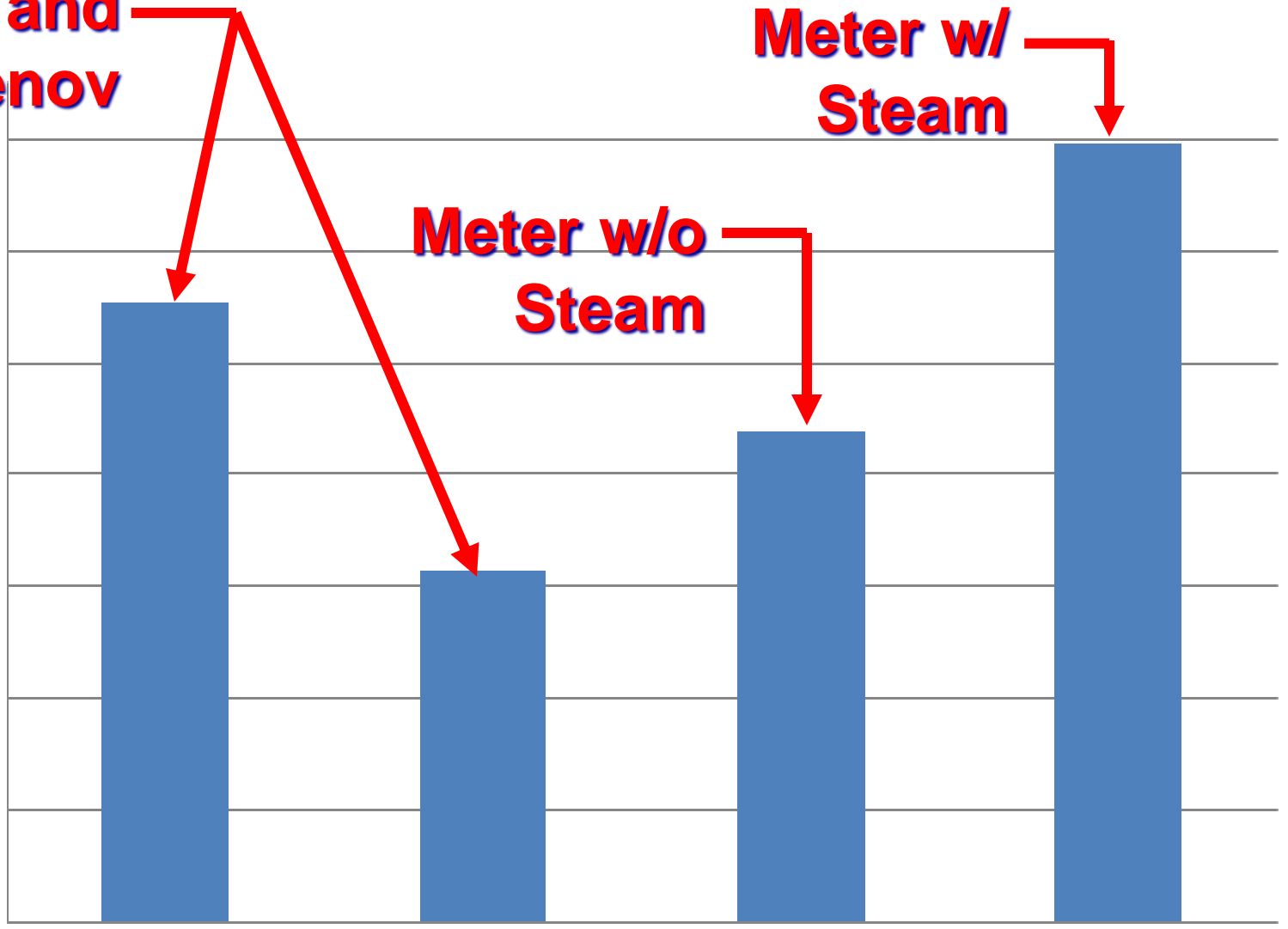
140  
120  
100  
80  
60  
40  
20  
0

Baseline

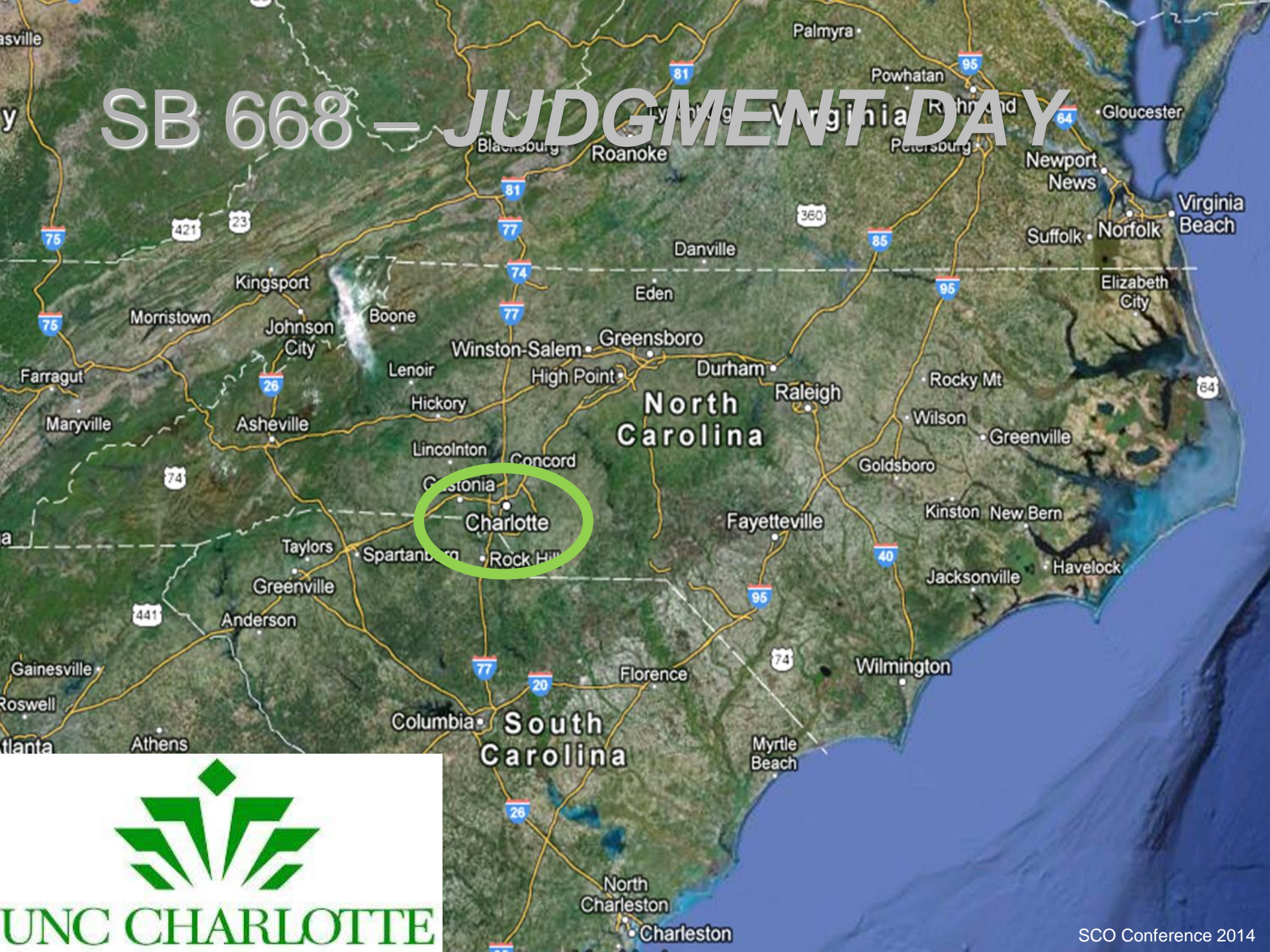
Proposed

Meter '12

Meter '13



# SB 668 – JUDGMENT DAY





# Prospector Hall Partial Renovation



# SB 668 – JUDGMENT DAY

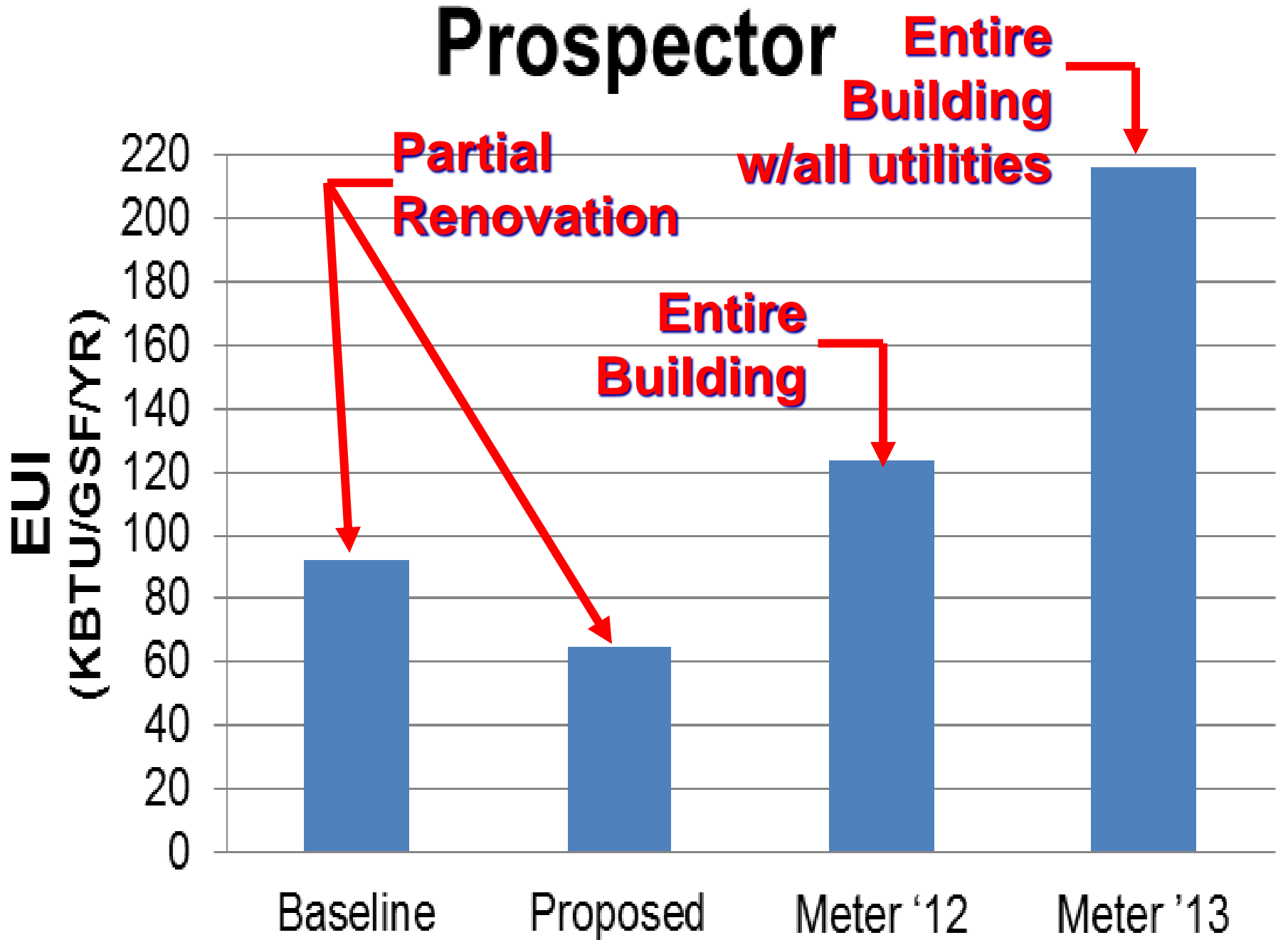
## Prospector Hall Partial Renovation

### Energy Consumption

	kBtu	EUI (kBtu/Sq Ft/Yr)	% Improvement	Savings kBtu
Baseline	2,082	92		
Proposed	1,477	65	29	605
Meter '12	2,815	124	-35	-733
Meter '13	4,908	216	-136	-2,826



# Prospector





# Miltimore Residence Hall

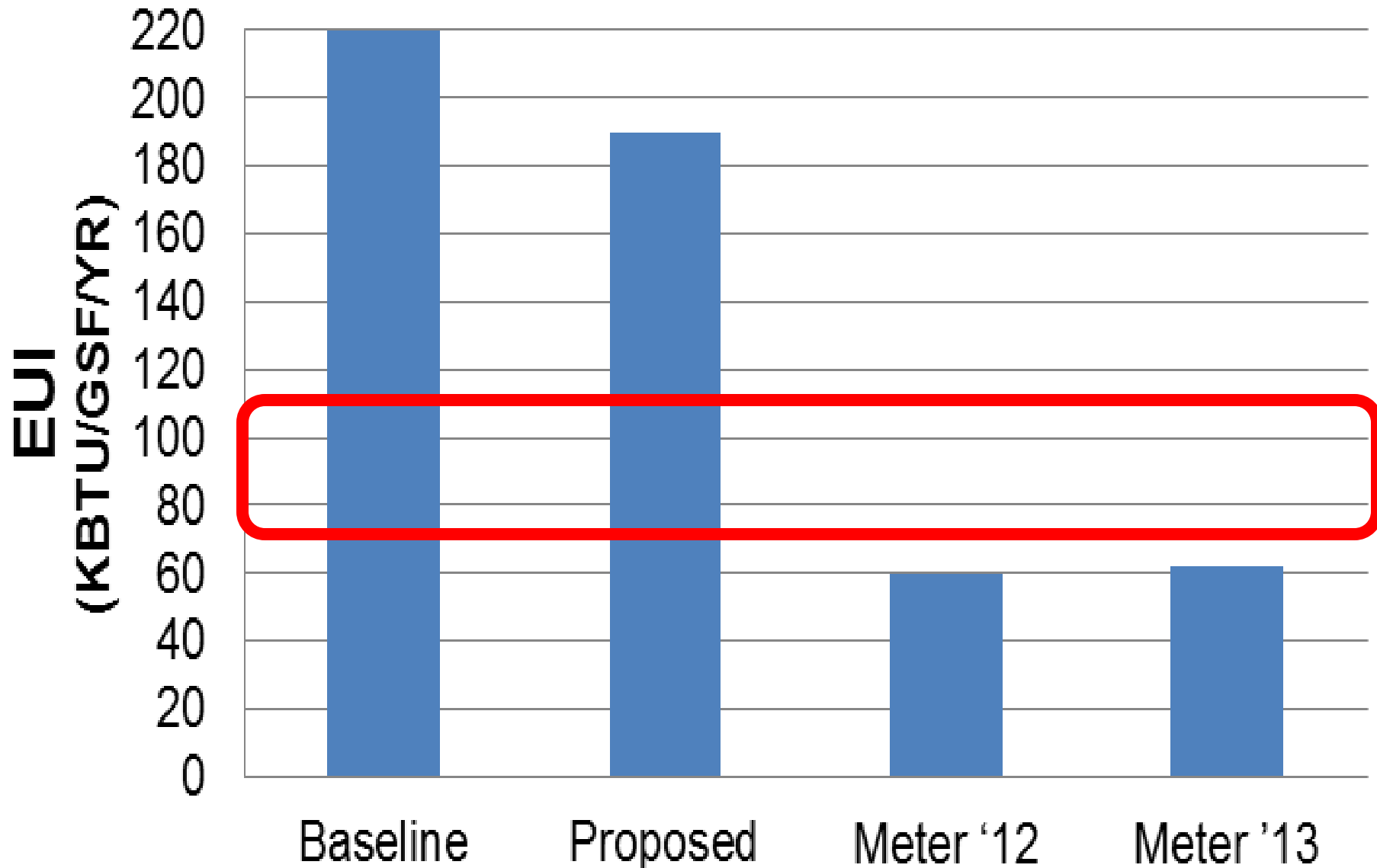
# SB 668 – JUDGMENT DAY

## Miltimore Residence Hall

### Energy Consumption

	kBtu	EUI (kBtu/Sq Ft/Yr)	% Improvement	Savings kBtu
Baseline	38,283	221		
Proposed	32,882	190	14	5,401
Meter '12	10,327	60	73	27,956
Meter '13	10,764	62	72	27,519

# Miltimore







**EPIC**

**(Energy Production & Infrastructure Center)**

SCO Conference 2014



# SB 668 – JUDGMENT DAY

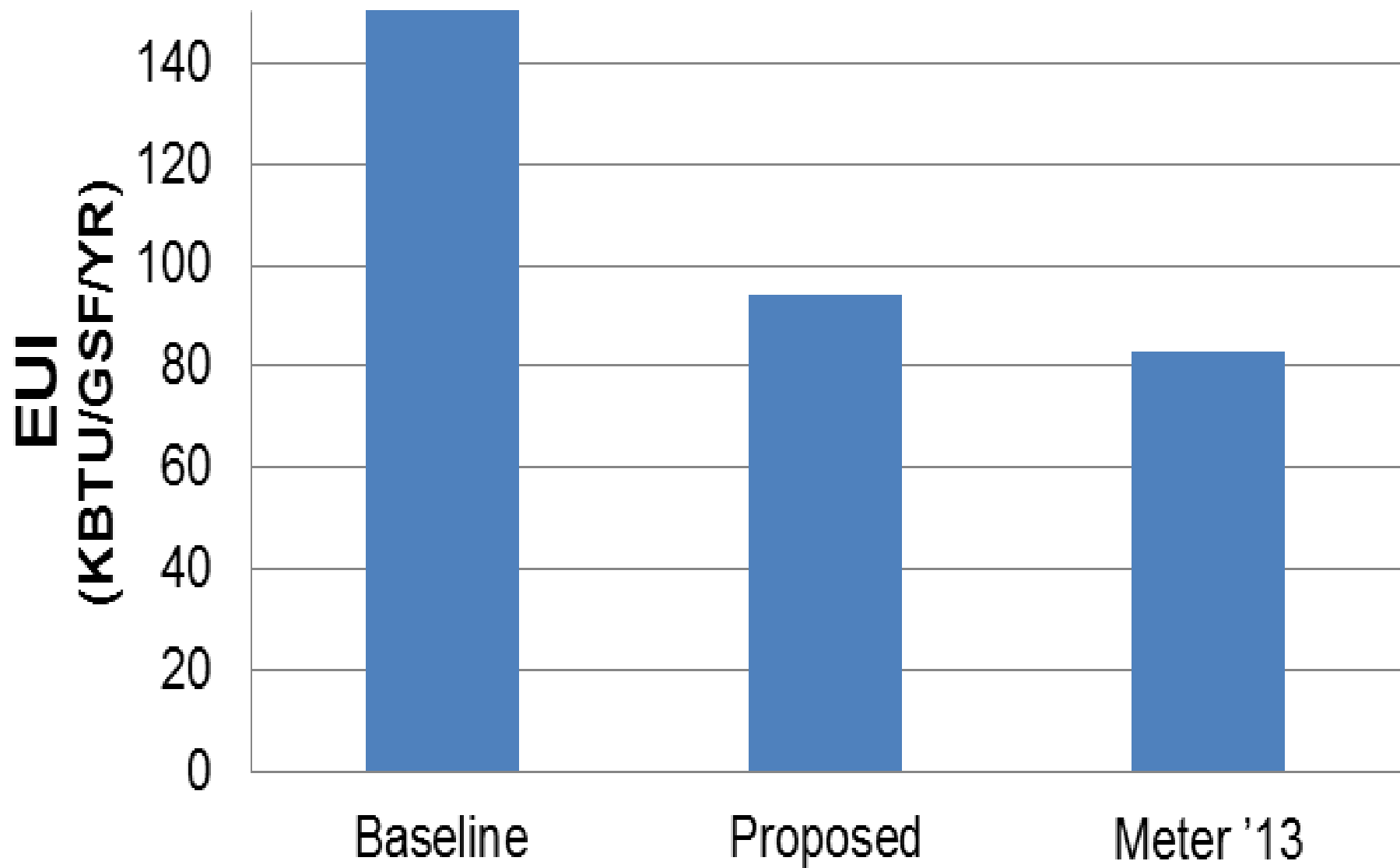
## EPIC

(Energy Production & Infrastructure Center)

### Energy Consumption

	kBtu	EUI (kBtu/Sq Ft/Yr)	% Improvement	Savings kBtu
Baseline	30,495	152		
Proposed	18,911	94	38	11,584
Meter '13	16,526	83	46	13,969

# EPIC





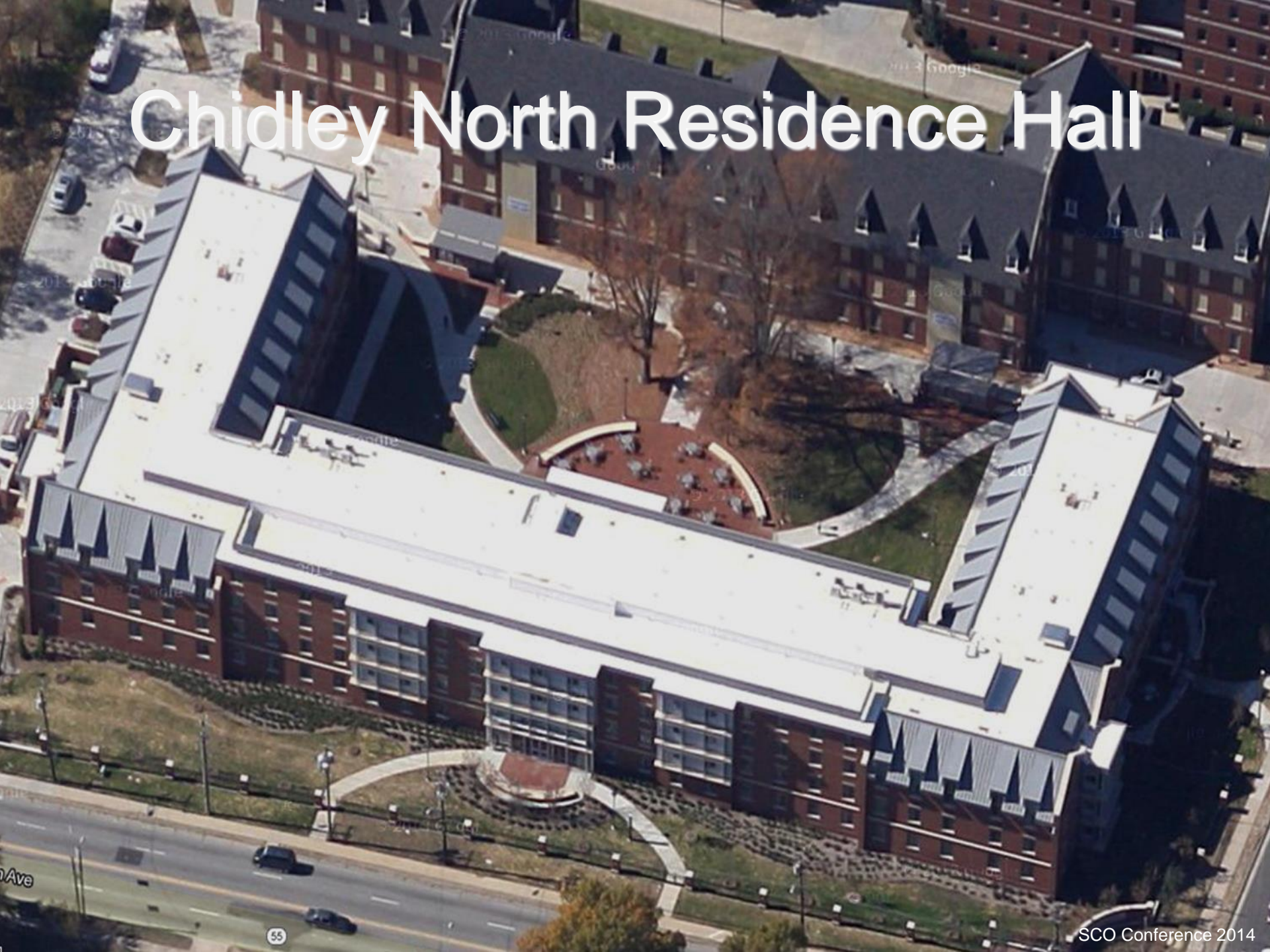
# SB 668 – JUDGMENT DAY



**NCCU**



# Chidley North Residence Hall



# SB 668 – JUDGMENT DAY

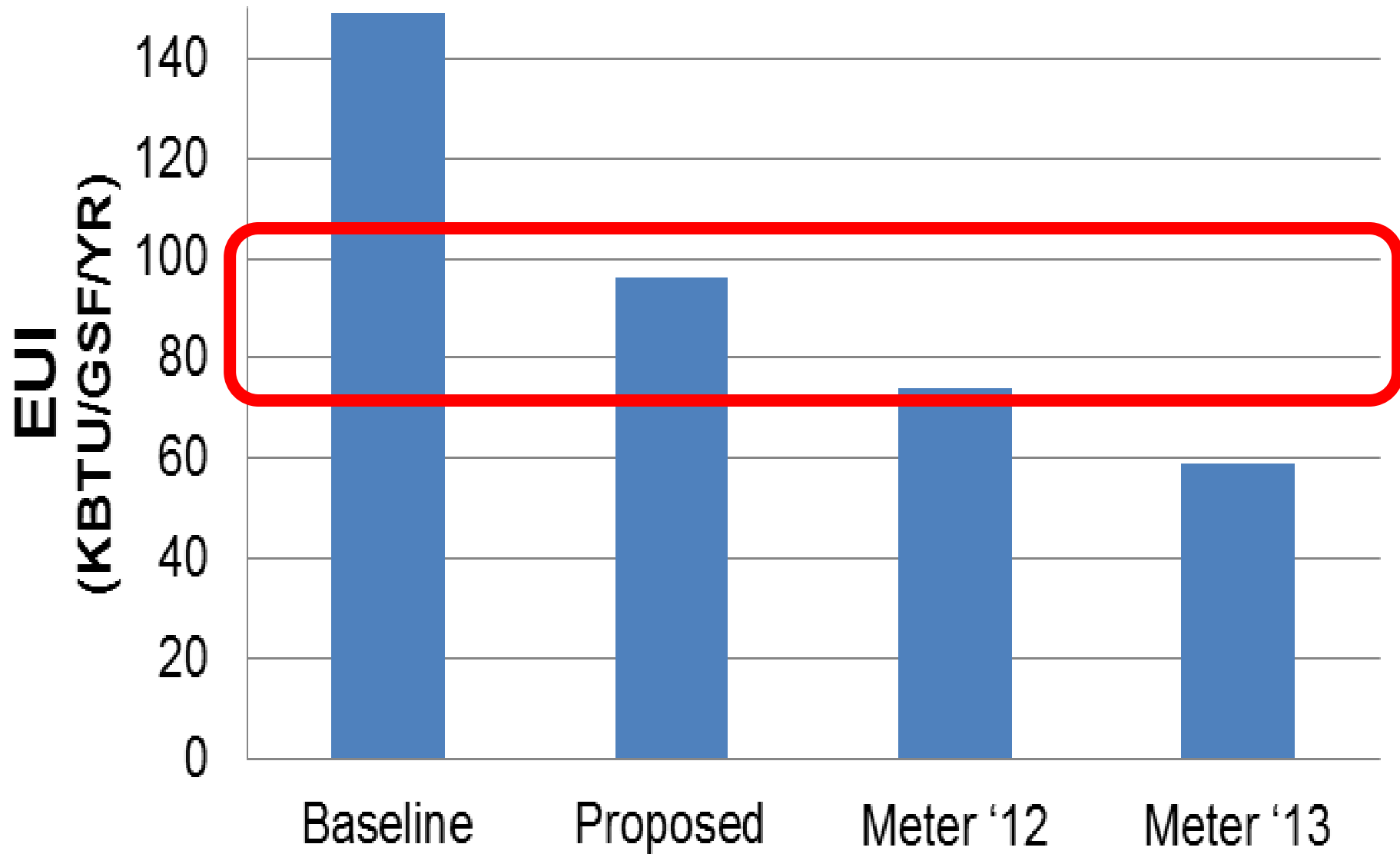
## Chidley North Residence Hall

### Energy Consumption

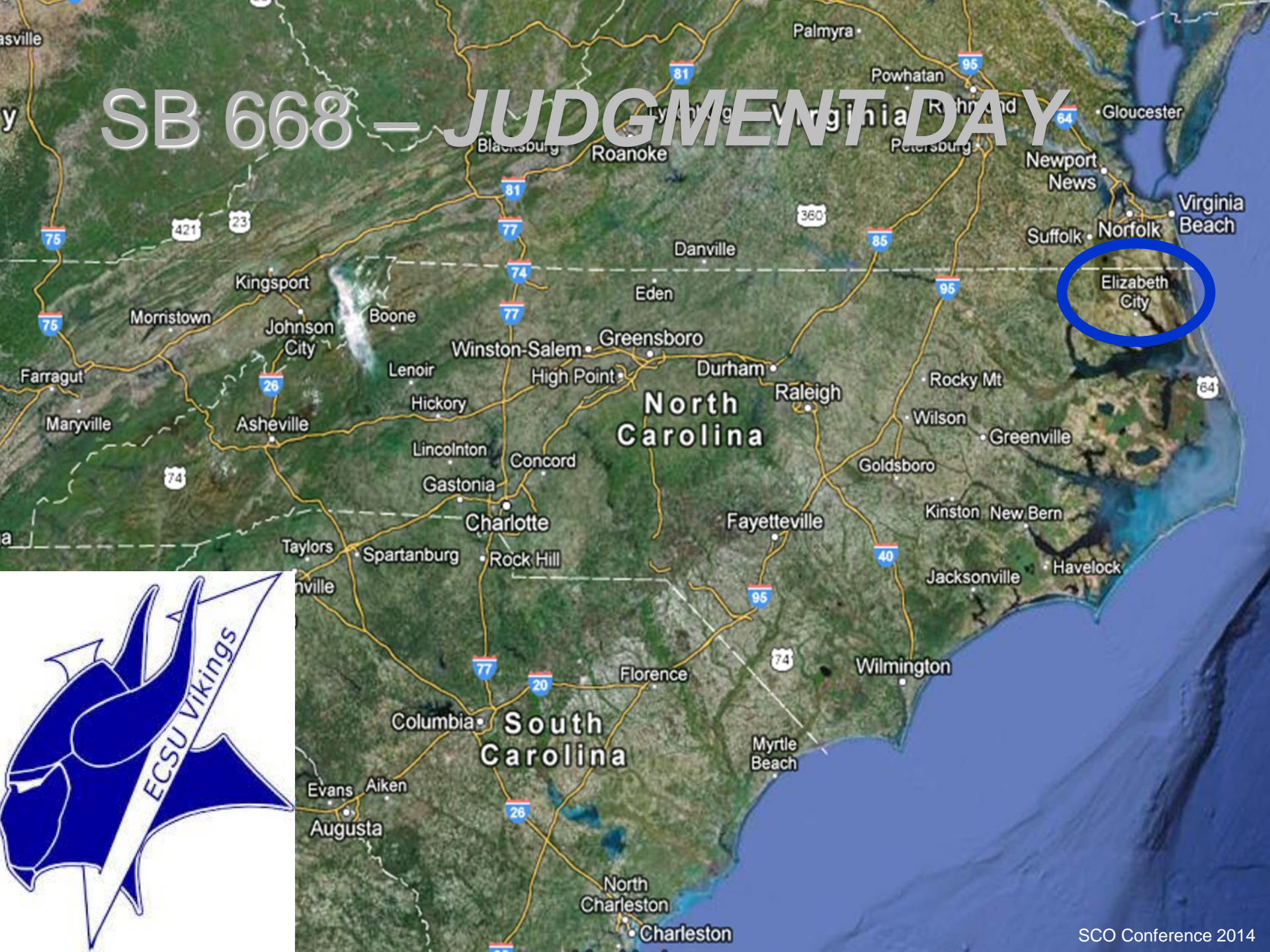
	kBtu	EUI (kBtu/Sq Ft/Yr)	% Improvement	Savings kBtu
Baseline	16,482	149		
Proposed	10,635	96	35%	5,847
Meter '12	5,347	48		
<b>+Model</b>	<b>+118+2,757</b>	<b>74</b>	<b>50%</b>	<b>8,260</b>
Meter '13	4,972	37		
<b>+Model</b>	<b>+2,757</b>	<b>58</b>	<b>53%</b>	<b>8,753</b>



# Chidley

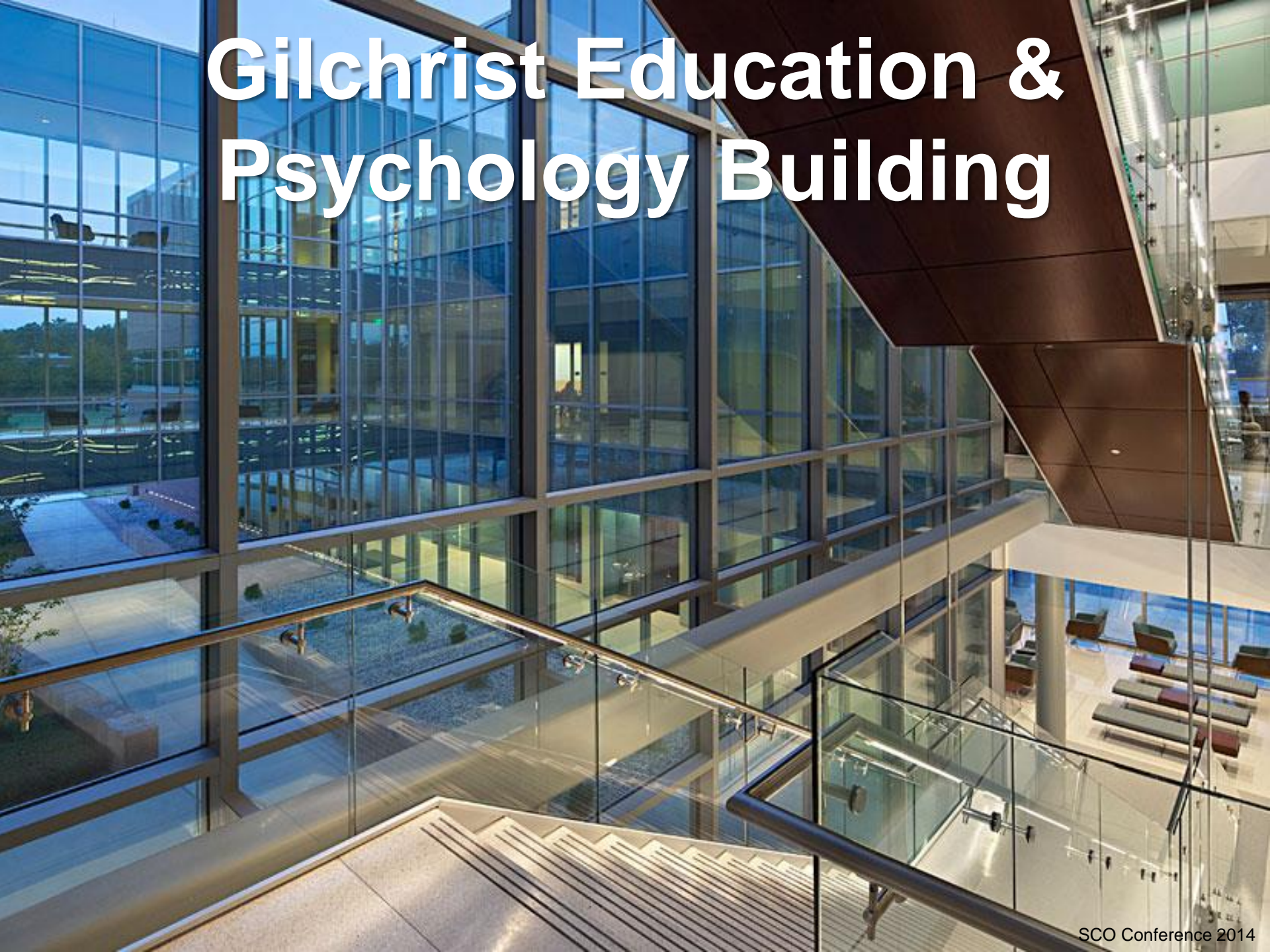


# SB 668 – JUDGMENT DAY





# Gilchrist Education & Psychology Building





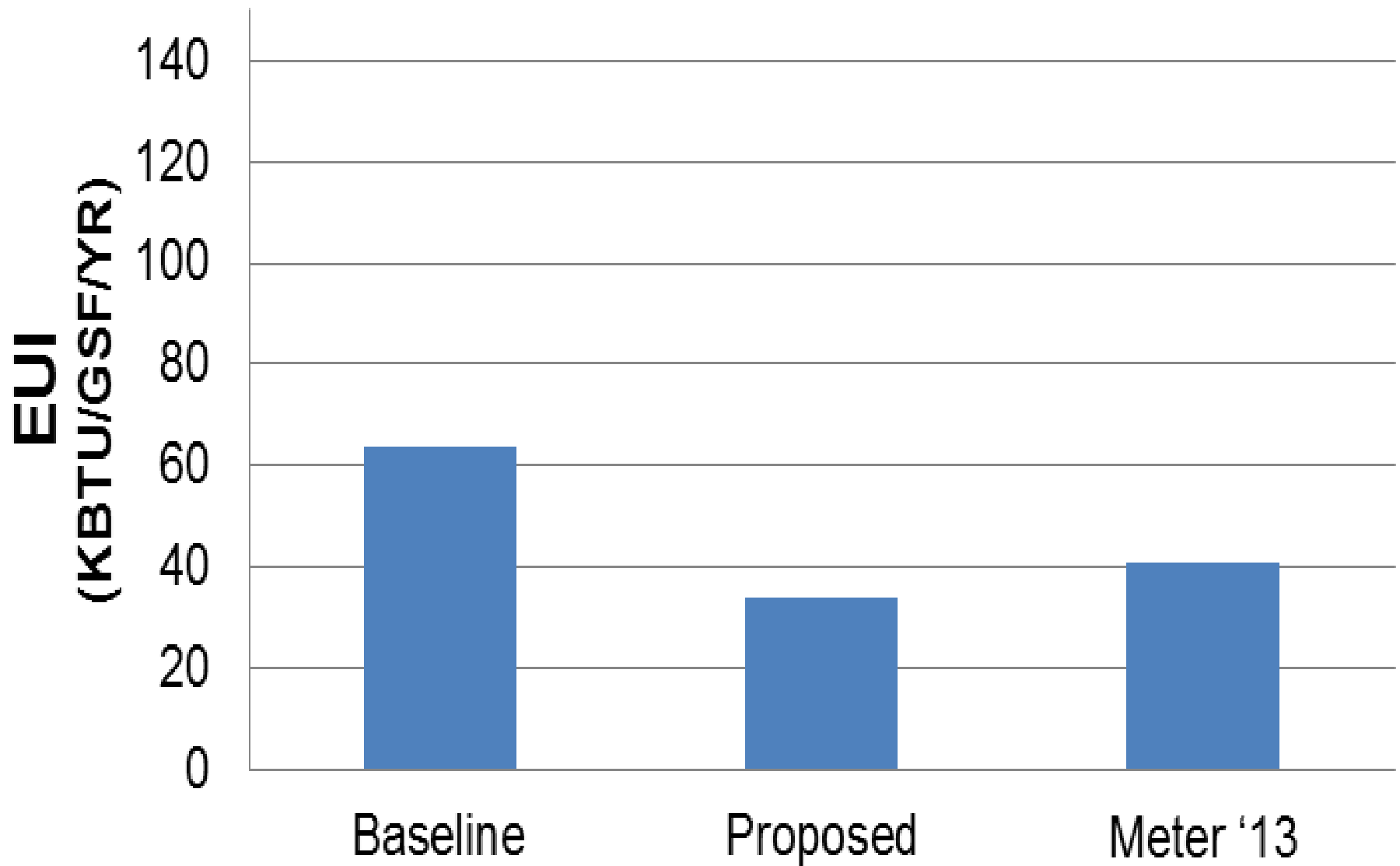
# SB 668 – JUDGMENT DAY

## Gilchrist Education & Psychology Building

### Energy Consumption

	kBtu	EUI (kBtu/Sq Ft/Yr)	% Improvement	Savings kBtu
Baseline	3,078	64		
Proposed	1,625	34	47%	1,453
Meter '13	1,986	41	35%	1,092

# Gilchrist



# Viking Tower Residence Hall





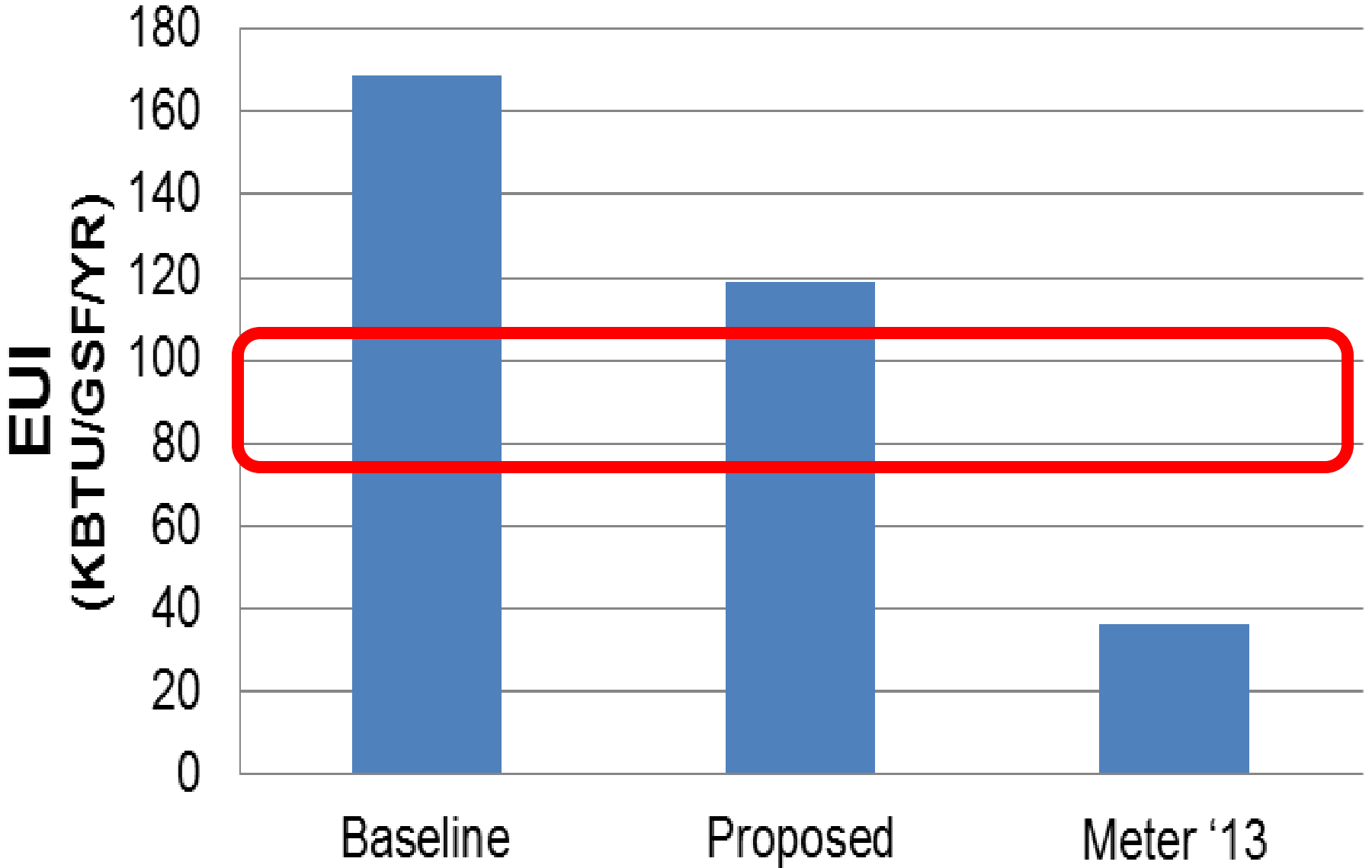
# SB 668 – JUDGMENT DAY

## Viking Tower Residence Hall

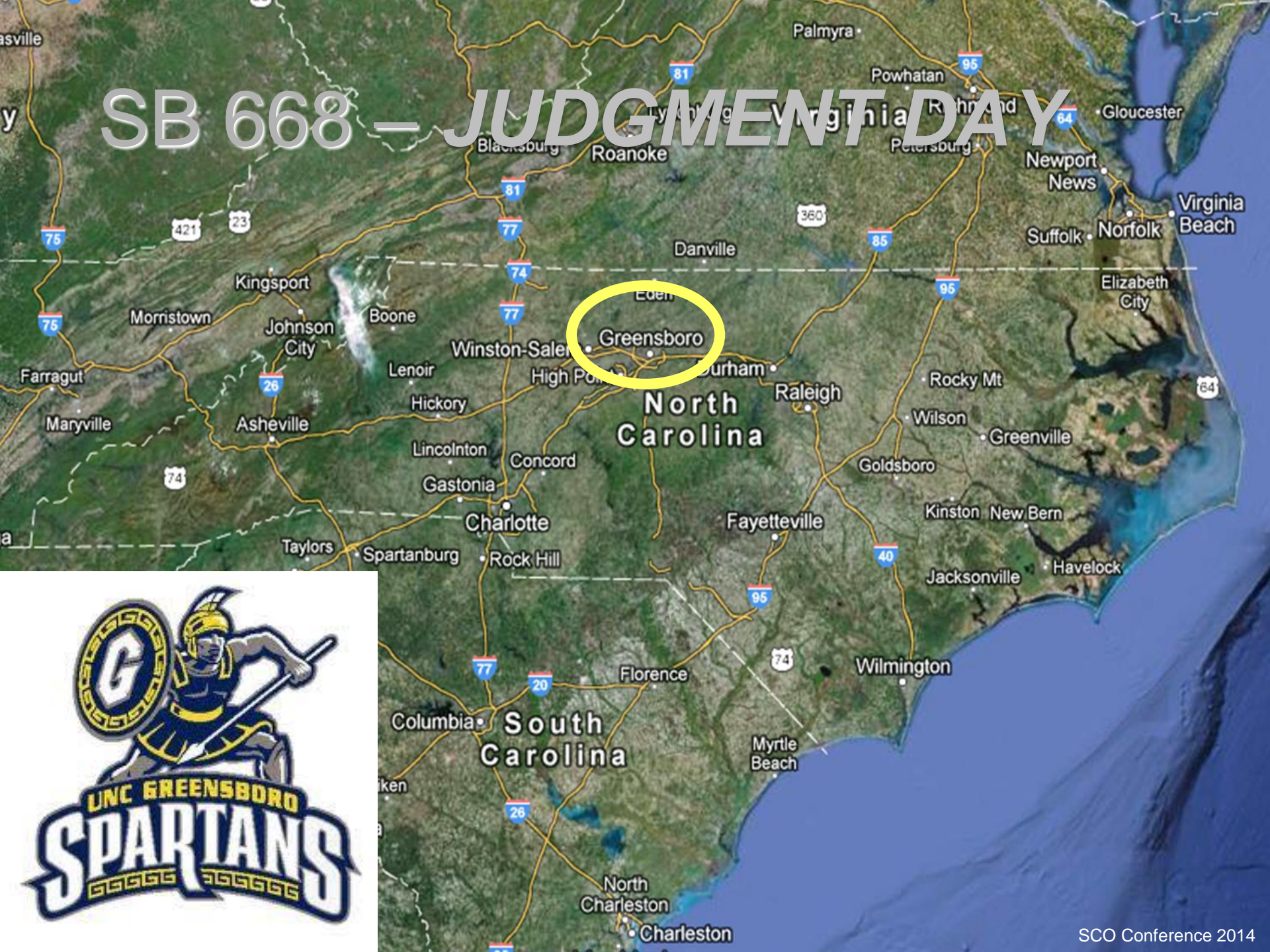
### Energy Consumption

	kBtu	EUI (kBtu/Sq Ft/Yr)	% Improvement	Savings kBtu
Baseline	9,118	169		
Proposed	6,399	119	30%	2,719
Meter '13	1,923	36	79%	7,195

# Viking



# SB 668 – JUDGMENT DAY







# Quad Residence Hall Renovations



# Quad Residence Hall Renovations

COIT

COTTON

GRAY

JAMISON

BAILEY

HINSHAW

SHAW



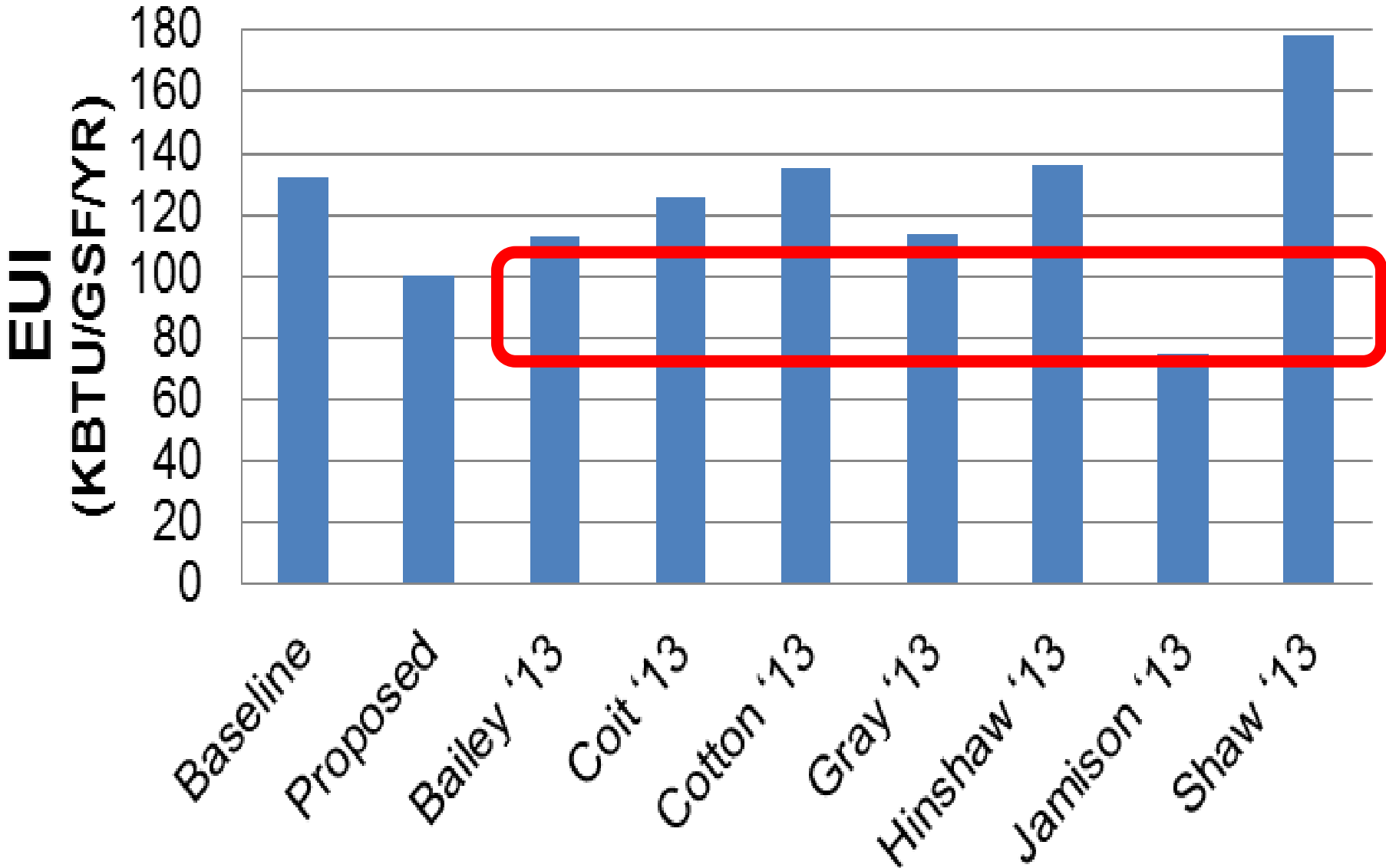
# SB 668 – JUDGMENT DAY

## Quad Residence Hall Renovations

### Energy Consumption (2013)

	kBtu	EUI (kBtu/Sq Ft/Yr)	% Improvement	Savings kBtu
Baseline	4,056	132		
Proposed	3,076	100	24%	980
Bailey	3,459	113	15%	597
Coit	3,872	126	5%	184
Cotton	4,156	135	-2%	-100
Gray	3,497	114	14%	559
Hinshaw	4,168	136	-3%	-112
Jamison	2,309	75	43%	1,747
Shaw	9,787	178	-141%	-5,731

# Quad Res Halls









# Russell Classroom Building





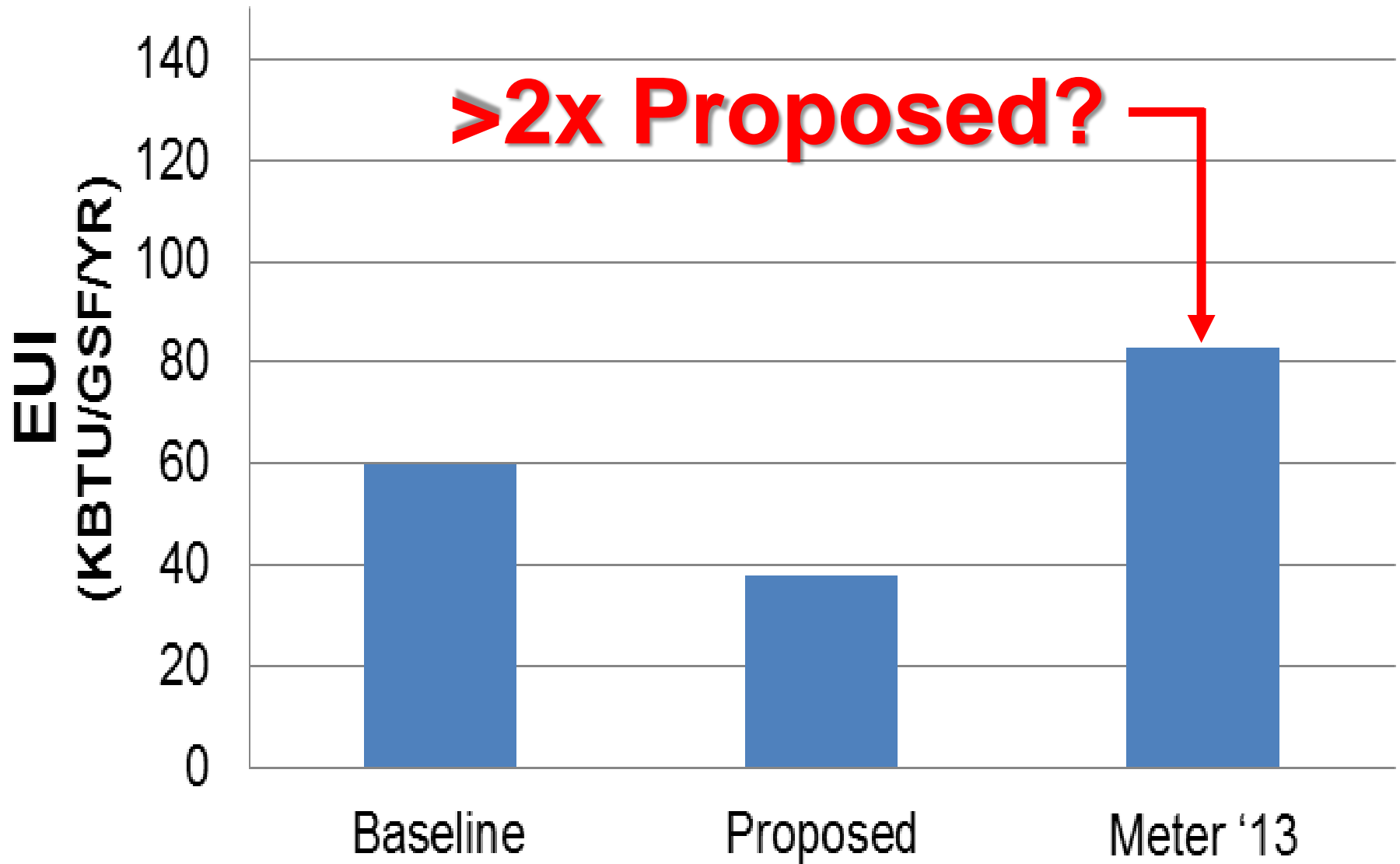
# SB 668 – JUDGMENT DAY

## Russell Classroom Building

### Energy Consumption

	kBtu	EUI (kBtu/Sq Ft/Yr)	% Improvement	Savings kBtu
Baseline	3,018	60		
Proposed	1,900	38	37%	1,118
Meter '13	4,167	83	-38%	-1,149

# Russell



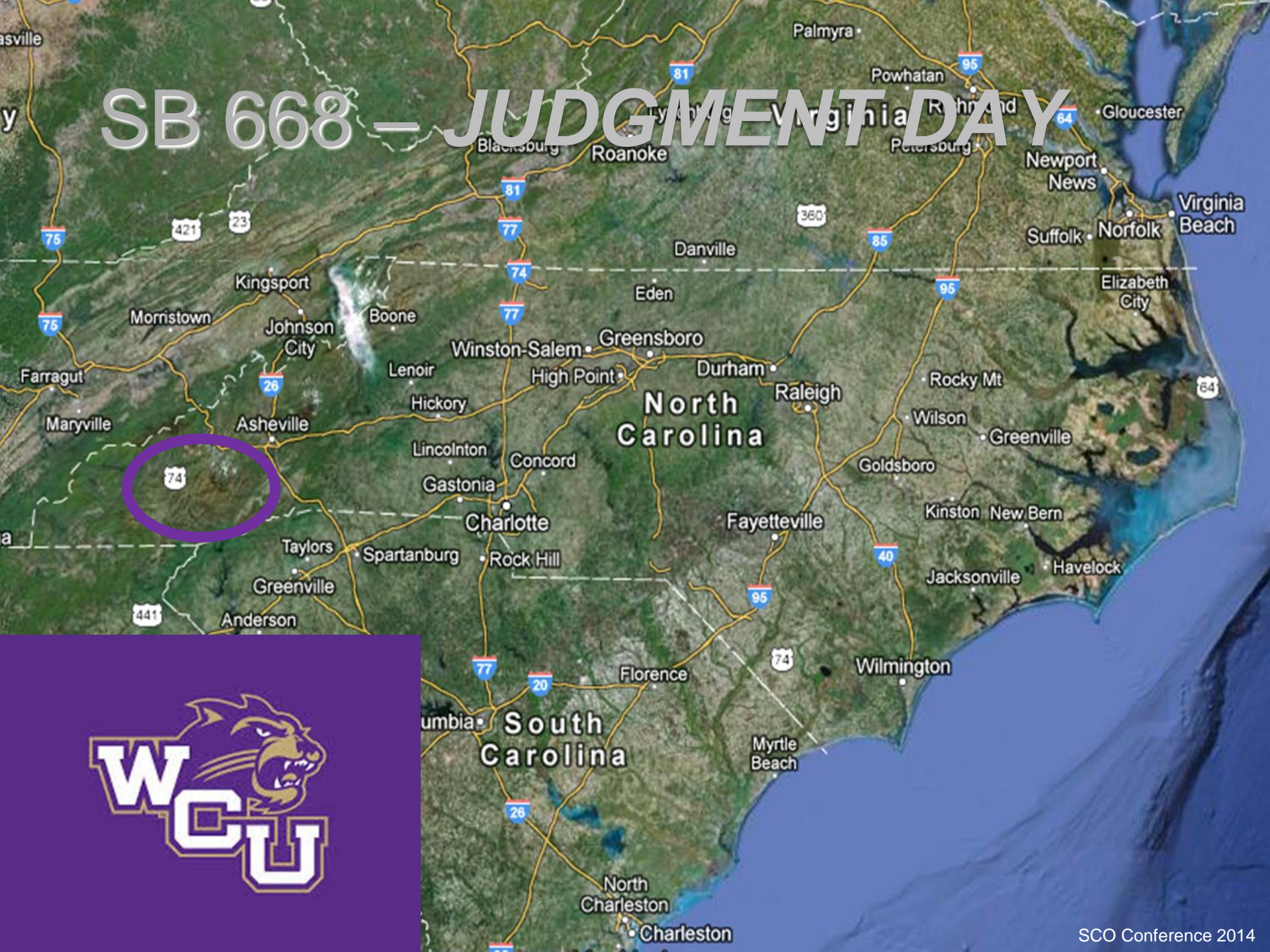


# Russell Classroom Building





# SB 668 – JUDGMENT DAY





# Harrill Residence Hall Renovation



# SB 668 – JUDGMENT DAY

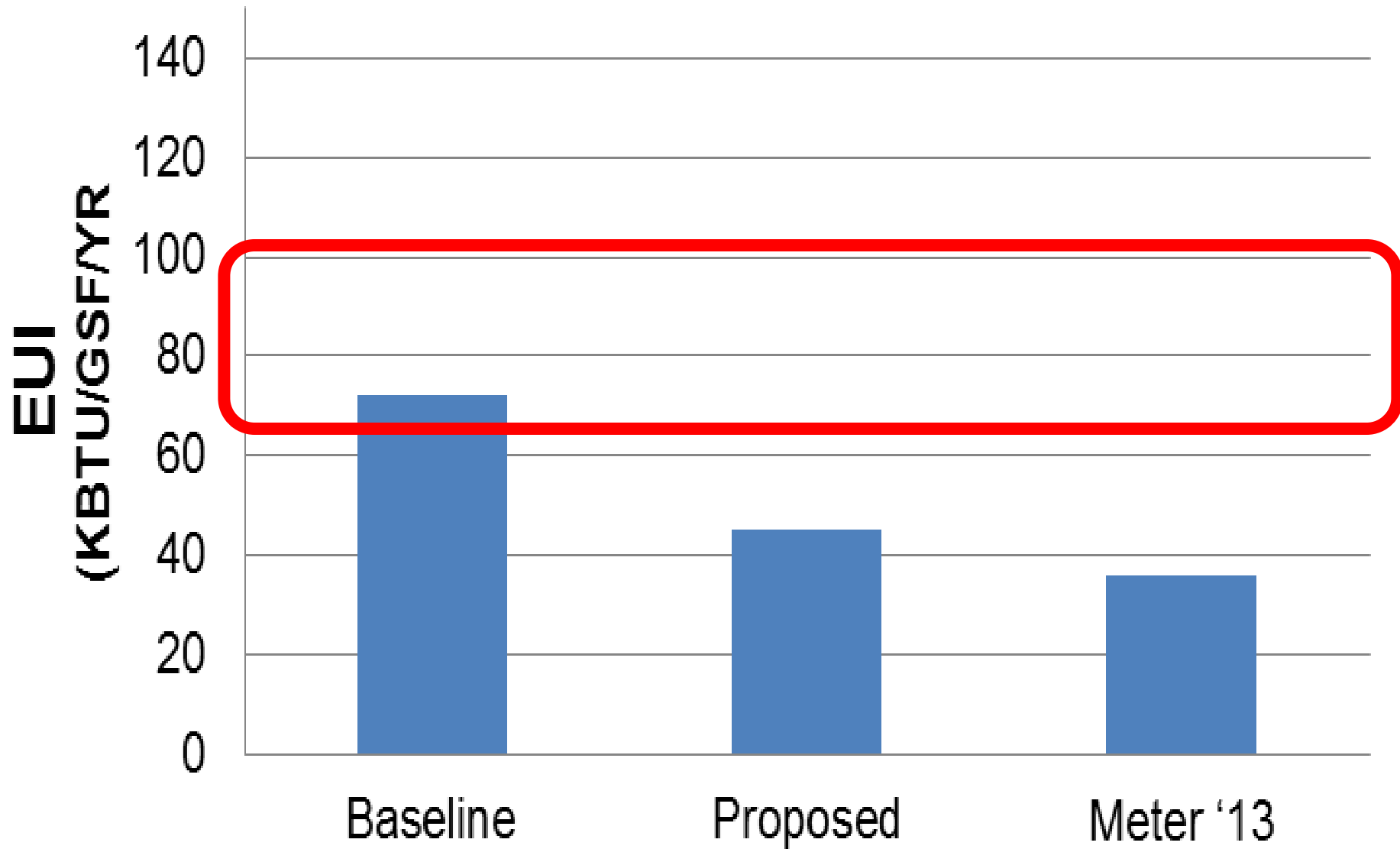
## Harrill Residence Hall Renovation

### Energy Consumption

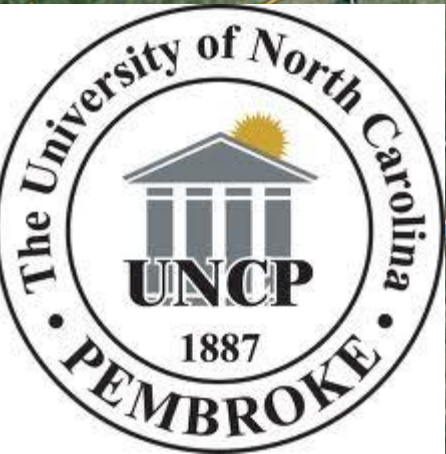
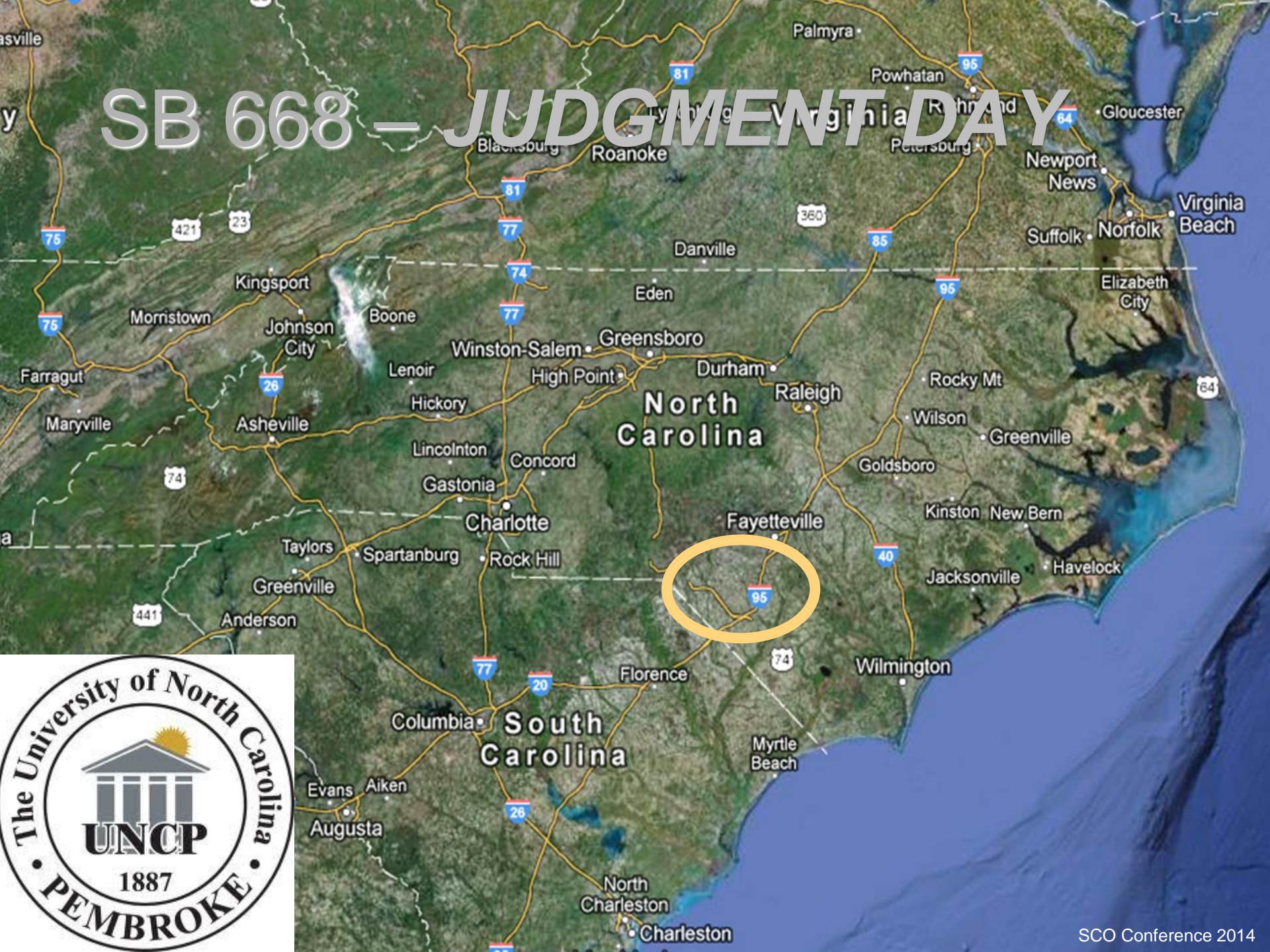
	kBtu	EUI (kBtu/Sq Ft/Yr)	% Improvement	Savings kBtu
Baseline	5,122	72		
Proposed	3,189	45	38%	1,933
Meter '13	2,553	36	50%	2,569



# Harrill



# SB 668 – JUDGMENT DAY





# Health Sciences Building



# SB 668 – JUDGMENT DAY

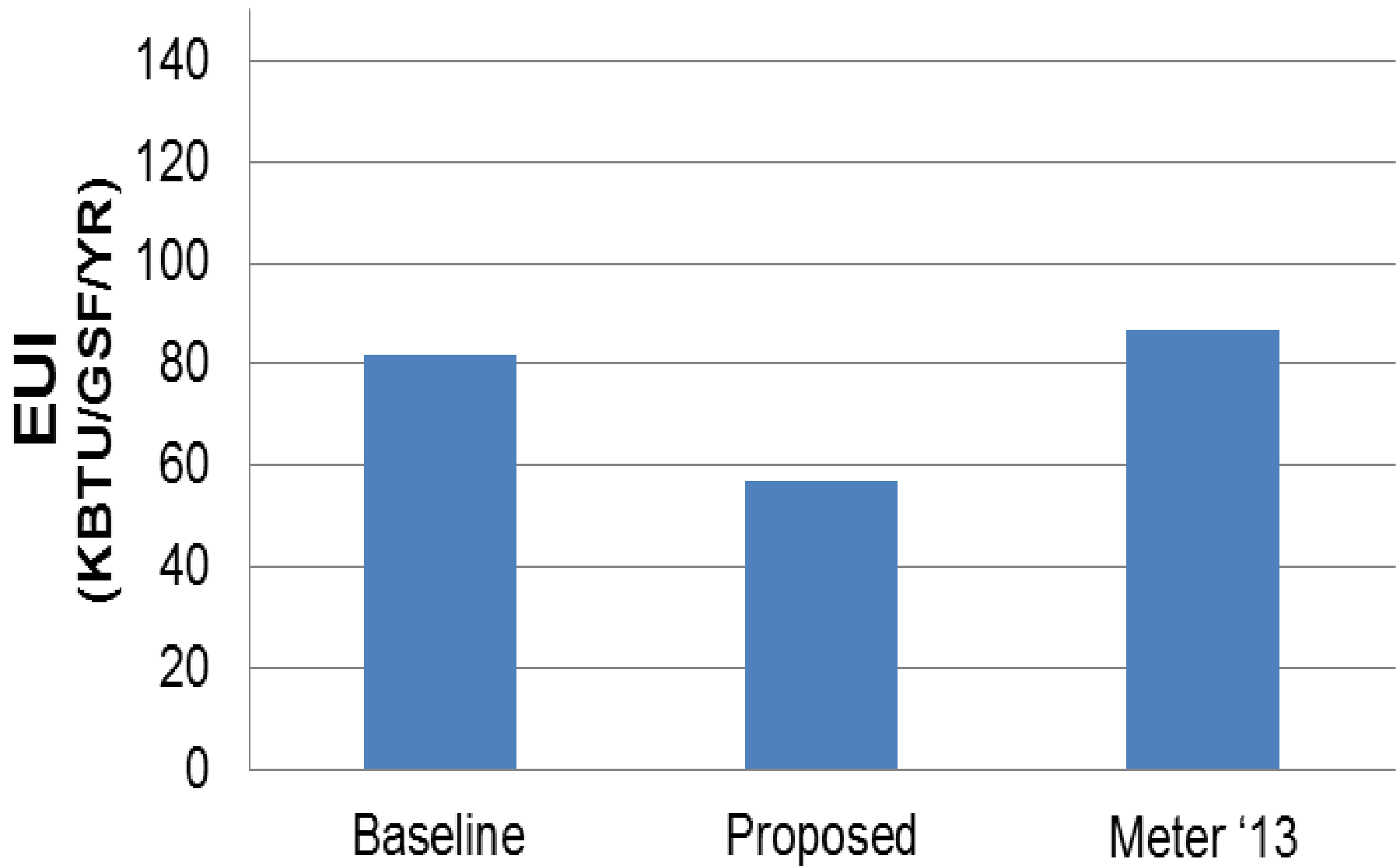
## Health Sciences Building

### Energy Consumption

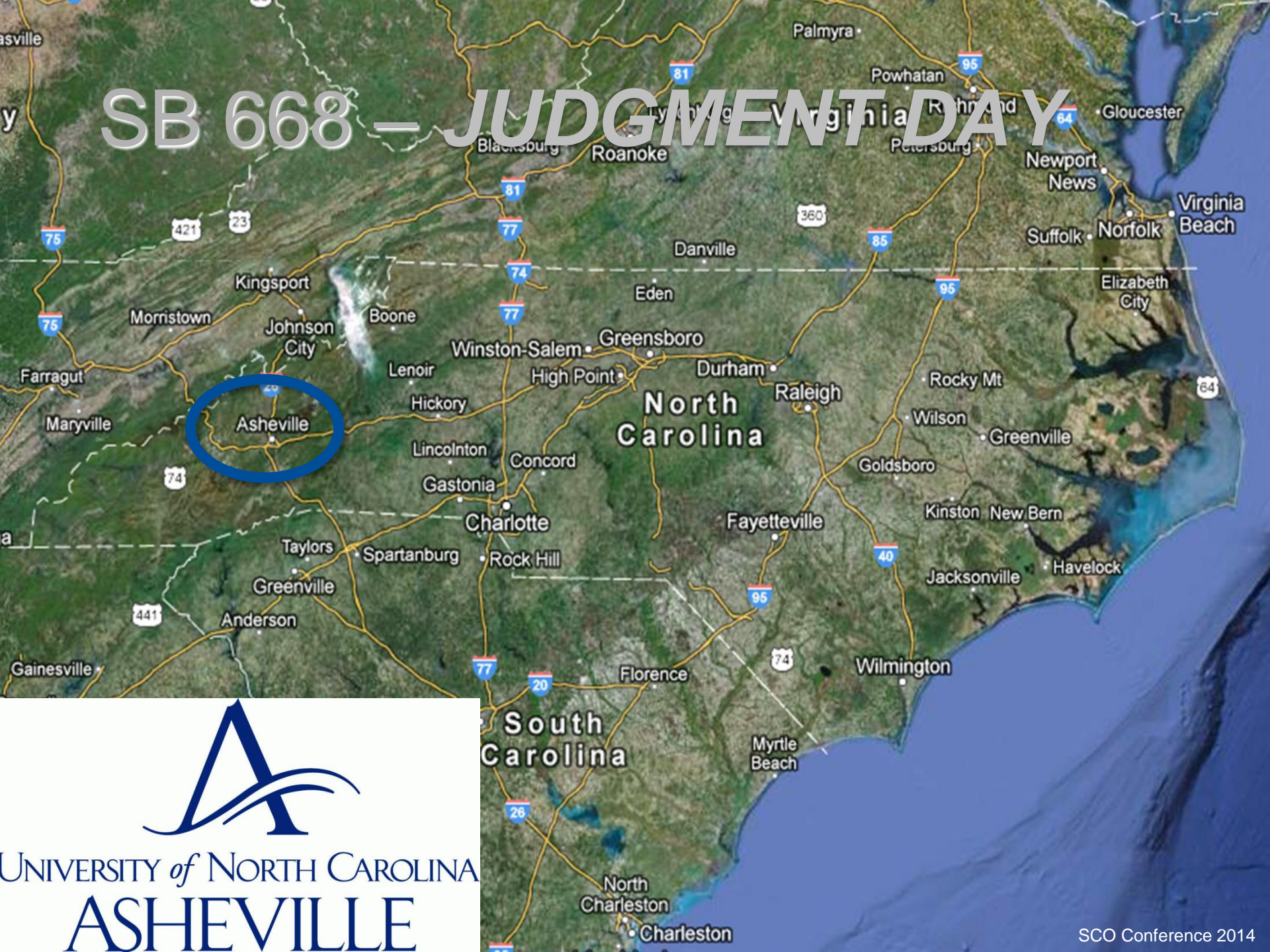
	kBtu	EUI (kBtu/Sq Ft/Yr)	% Improvement	Savings kBtu
Baseline	7,163	82		
Proposed	4,954	57	31%	2,209
Meter '13	7,568	87	-6%	-405



# Health Sciences



# SB 668 – JUDGMENT DAY



UNIVERSITY OF NORTH CAROLINA  
**ASHEVILLE**



# Overlook Residence Hall



# SB 668 – JUDGMENT DAY

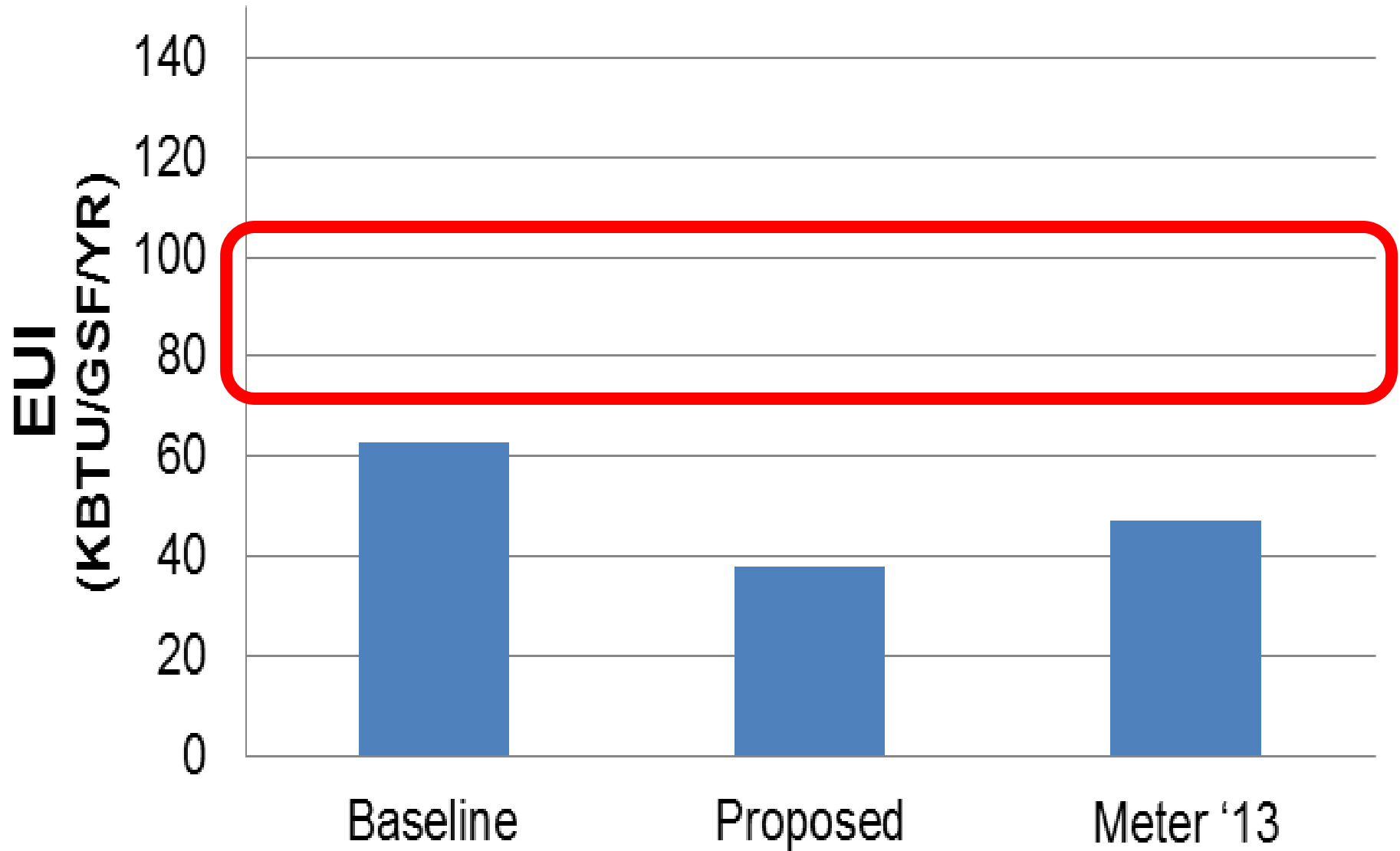
## Overlook Residence Hall

### Energy Consumption

	kBtu	EUI (kBtu/Sq Ft/Yr)	% Improvement	Savings kBtu
Baseline	5,737	63		
Proposed	3,460	38	40%	2,277
Meter '13	4,293	47	25%	1,444




# Overlook



# SB 668 – *JUDGMENT DAY*

We have 19 buildings with  
meter data

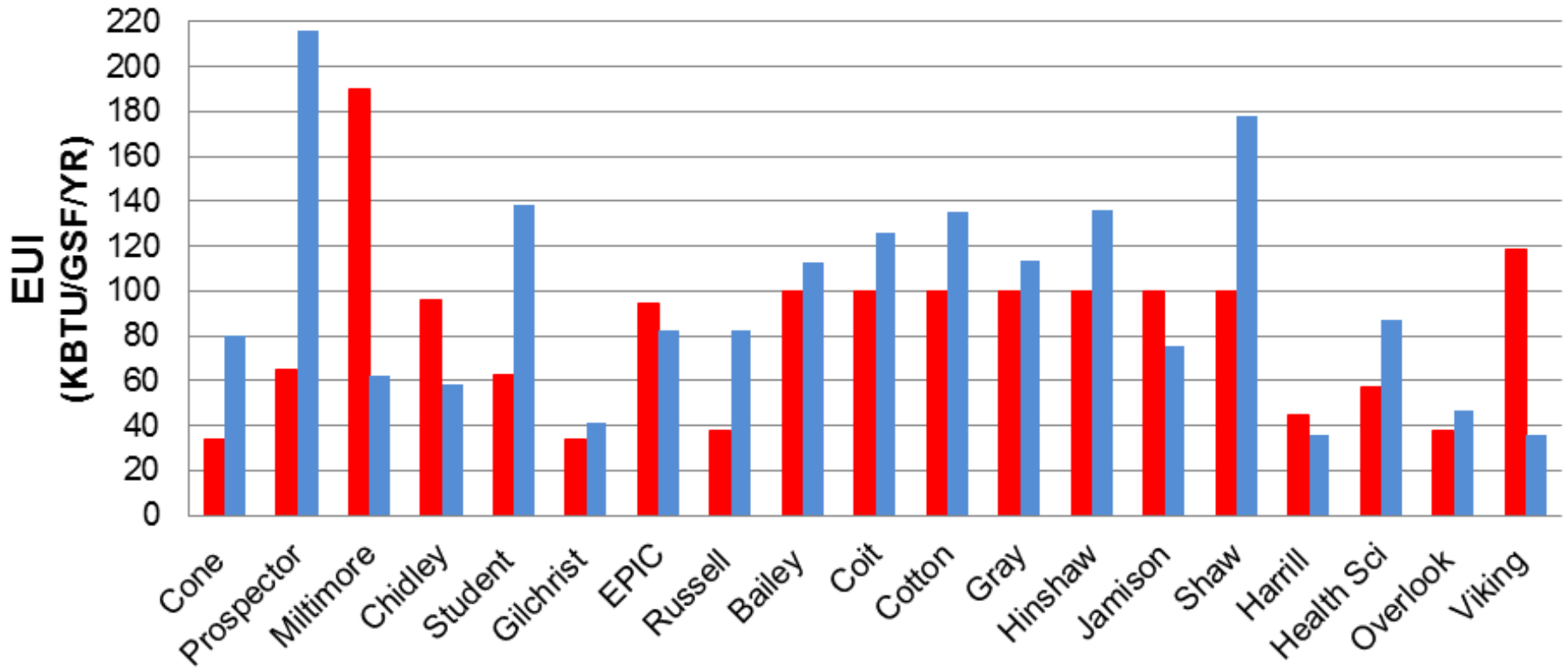
Here's what they look like  
plotted on the same graph:

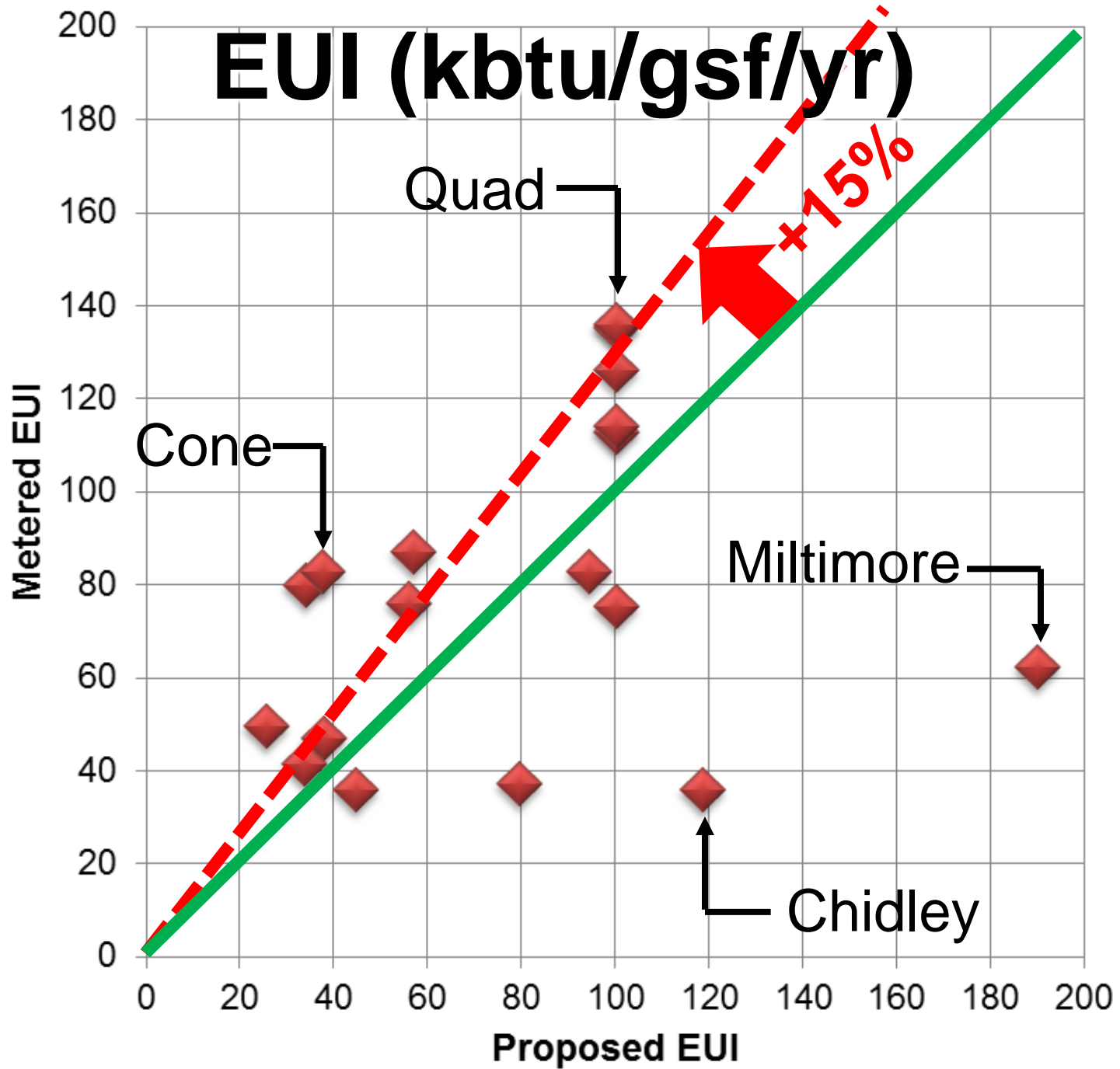




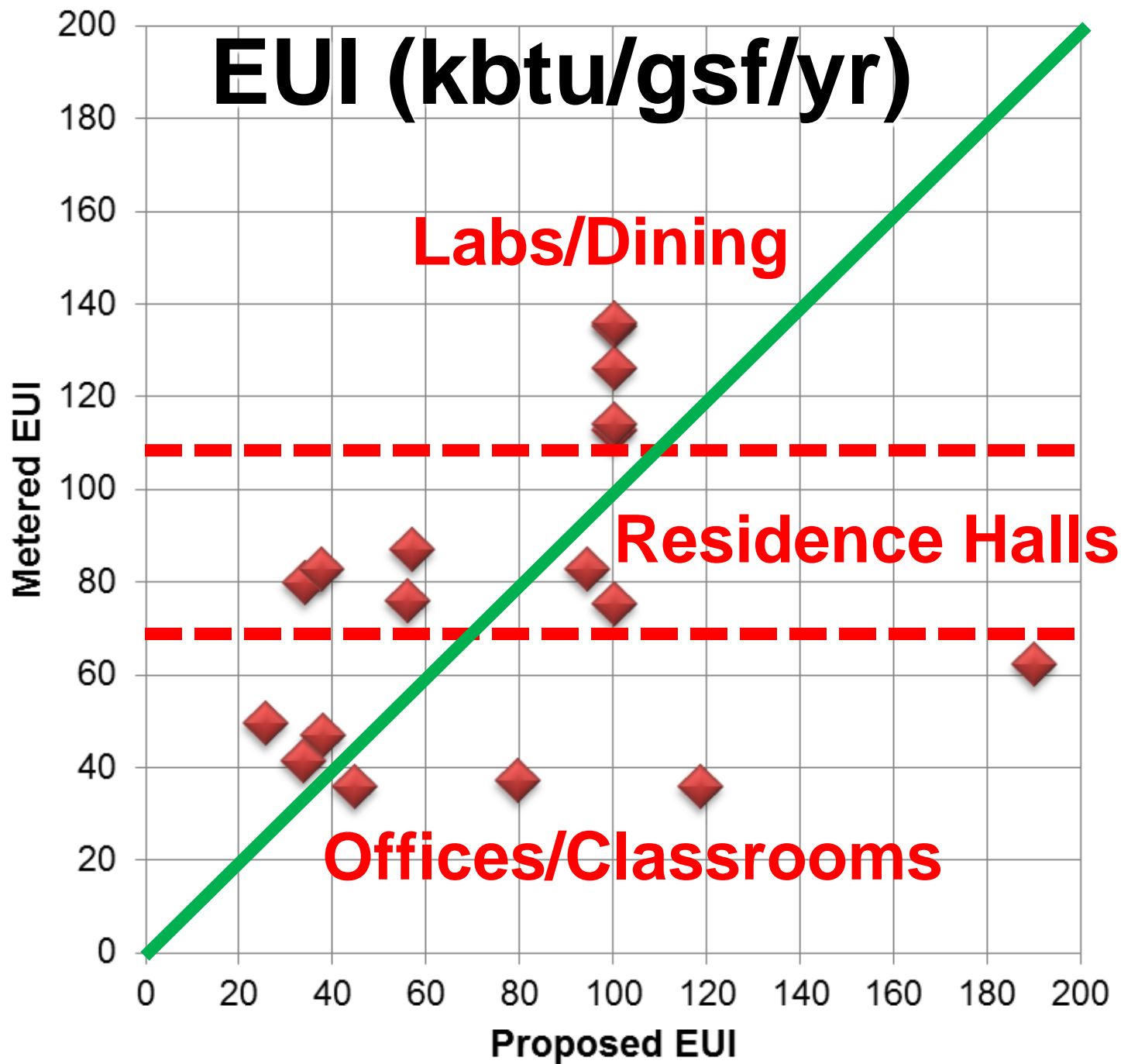
# SB 668 – JUDGMENT DAY

## Proposed and Metered Energy









# DOE BPD

US Department of Energy

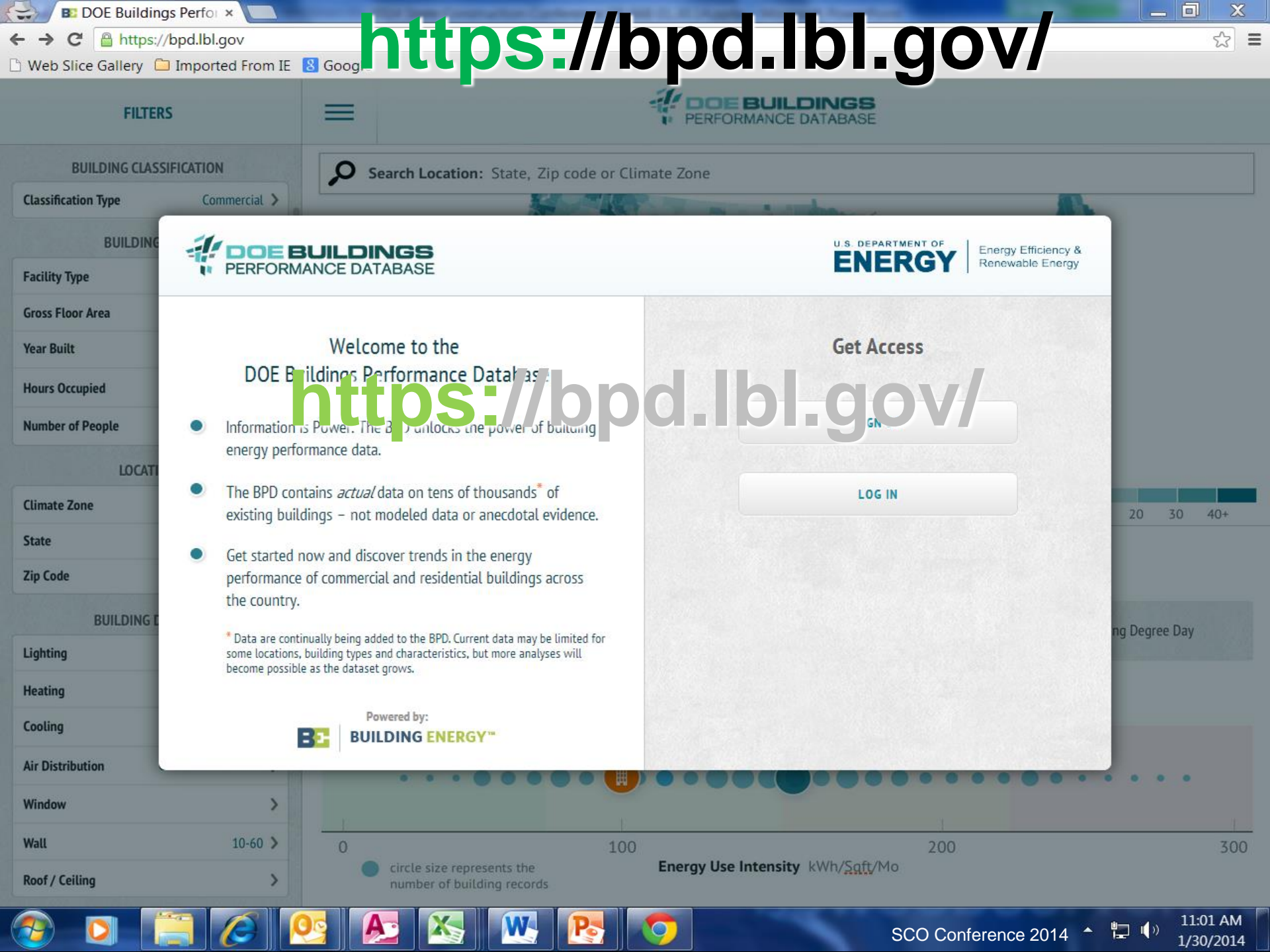
**B**uildings

**P**erformance

**D**atabase



# https://bpd.lbl.gov/



# https://bpd.lbl.gov/

DOE BUILDINGS PERFORMANCE DATABASE

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Welcome to the DOE Buildings Performance Database.

- Information is Power. The BPD unlocks the power of building energy performance data.
- The BPD contains *actual* data on tens of thousands\* of existing buildings – not modeled data or anecdotal evidence.
- Get started now and discover trends in the energy performance of commercial and residential buildings across the country.

\* Data are continually being added to the BPD. Current data may be limited for some locations, building types and characteristics, but more analyses will become possible as the dataset grows.

Powered by: BUILDING ENERGY™

Get Access

SIGN UP

LOG IN



### DEFINE PEER GROUP



ABOUT BPD

FEEDBACK

LOG OUT

#### BUILDING CLASSIFICATION

- Classification Type Commercial >
- Facility Type >

#### BUILDING INFO

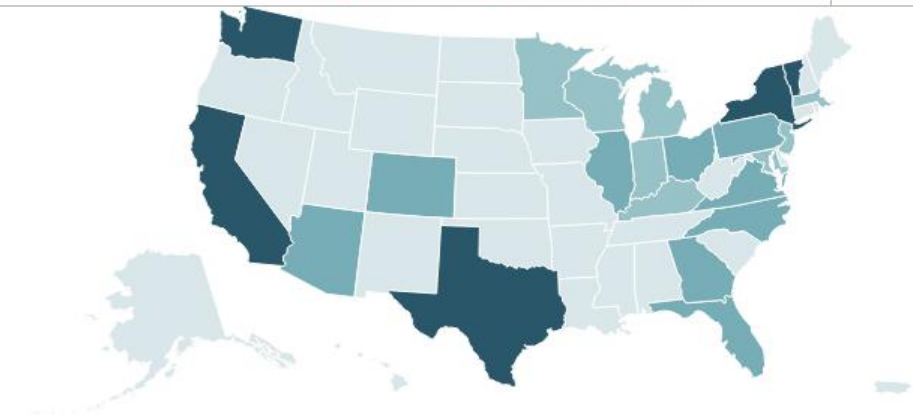
- Floor Area >
- Year Built >
- Hours Occupied >
- Number of People >

#### LOCATION

- Climate Zone >
- State >
- Zip Code >

#### BUILDING SYSTEMS

- Lighting >
- Heating >
- Cooling >
- Window Glass Type >
- Window Glass Layers >
- Air Flow Control >
- Wall Insulation R-Value >
- Roof/Ceiling >



28,377 / 181,177 Buildings

Featured Examples

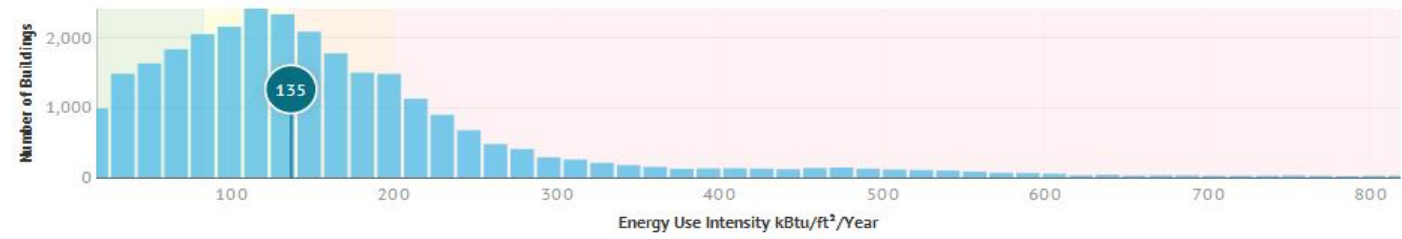
### Peer Group

Bar Scatterplot

DISPLAY: Energy Use Intensity by Source Consumption

+ ADD YOUR BUILDING

PEER GROUP MEDIAN



### Retrofit Analysis

Building system... compare Select one... versus Select one...



# US Energy Information Administration CBECS

**C**OMMERCIAL

**B**UILDINGS

**E**NERGY

**C**ONSUMPTION

**S**URVEY

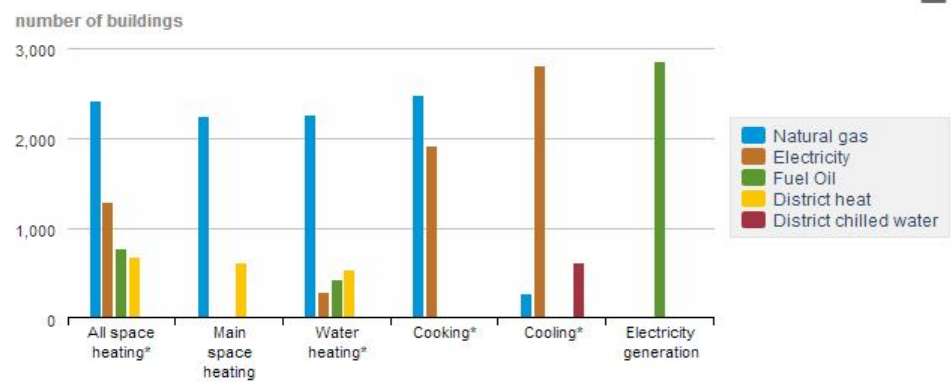


CONSUMPTION & EFFICIENCY

# COMMERCIAL BUILDINGS ENERGY CONSUMPTION SURVEY (CBECS)

## Energy Characteristics and Energy Consumed in Large Hospital Buildings in the United States in 2007 >

### Fuels and Energy End Uses in Large Hospital Buildings, 2007



Source: U.S. Energy Information Administration, Commercial Building Energy Consumption Survey, 2007

## CBECS Status

EIA will begin data collection for the 2012 CBECS Energy Supplier Survey (ESS) in early Spring 2014. Westat, EIA's contractor for the ESS, began contacting energy providers in December 2013. To learn more about the ESS, visit [About the CBECS](#).

### Background Information

- [About the CBECS](#)
- [CBECS Survey Forms](#)
- [CBECS Maps](#)
- [CBECS Terminology](#)
- [Survey Background & Technical Information](#)
- [Building Type Definitions](#)
- [Archived Reports](#)

**Q:** Is it possible to obtain a list of all the buildings that participated in your survey?

[See all CBECS FAQs >](#)

### Features

- [How Will Buildings Be Selected for the 2012 CBECS?](#)
- [Large Hospital Report \(2007\)](#)
- [Water Data Collection \(2007\)](#)



# 2003 CBECs Data

## COMMERCIAL BUILDINGS ENERGY CONSUMPTION SURVEY (CBECS)

OVERVIEW DATA ANALYSIS & PROJECTIONS GLOSSARY FAQs

### 2003 CBECS Survey Data

2003 | 1999 | 1995 | 1992 | PREVIOUS

Building Characteristics Consumer Expenditures Microdata Methodology

#### Building Characteristics

In the 2003 CBECS, the survey procedures for strip shopping centers and enclosed malls ("mall buildings") were changed from those used in previous surveys, and, as a result, mall buildings are now excluded from most of the 2003 CBECS tables. Therefore, some data in the majority of the tables are not directly comparable with previous CBECS tables, all of which included mall buildings. Some numbers in the 2003 tables will be slightly lower than earlier surveys since the 2003 figures do not include mall buildings. See "Change in Data Collection Procedures for Malls" for a more detailed explanation.

Tables A1 through A8 contain estimates for all buildings including malls but have a limited set of row categories; Tables B1 through B46 include complete sets of row categories but the estimates do not include malls.

A table of Relative Standard Errors (RSEs) is included as a worksheet tab in the Excel version of all building characteristics tables (A1-A8 and B1-B46). Complete sets of RSE tables (What is an RSE?) are also available in PDF format.

[CHANGE IN DATA COLLECTION PROCEDURES FOR MALLS](#) [ + ] SEE MORE

[GUIDE TO THE 2003 CBECS DETAILED TABLES](#) [ + ] SEE MORE

+ EXPAND ALL

- ▶ [Building Characteristics Tables for All Buildings \(Including Malls\)](#) Additional Formats
- ▶ [Buildings Characteristics Tables for Non-Mall Buildings](#) Additional Formats

#### RSE Tables

Standard error is a measure of the reliability or precision of the survey statistic. The value for the standard error can be used to construct confidence intervals and to perform hypothesis tests by standard statistical methods. Relative Standard Error (RSE) is defined as the standard error (square root of the variance) of a survey estimate, divided by the survey estimate and multiplied by 100. (More information on RSEs)

#### Background Information

- [About the CBECS](#)
- [CBECS Survey Forms](#)
- [CBECS Maps](#)
- [CBECS Terminology](#)
- [Survey Background & Technical Information](#)
- [What is an RSE?](#)
- [Building Type Definitions](#)
- [Archived Reports](#)

Q: Is it possible to obtain a list of all the buildings that participated in your survey?

[See all CBECS FAQs >](#)

#### Features

- [How Will Buildings Be Selected for the 2012 CBECS?](#)
- [Large Hospital Report \(2007\)](#)



# 2013 DENR/DEACS/USI Annual Report

energy evaluation for agencies and universities

year	energy \$ avoided	energy \$/gross square foot	\$/million Btu	\$/million Btu %change	Btu/square foot	Btu/square foot %change
2002-03		\$2.06	\$12.58		164,109	
2003-04	\$26,194,202	\$1.89	\$13.15	5%	143,622	-12%
2004-05	\$27,833,735	\$2.00	\$13.85	10%	144,354	-12%
2005-06	\$39,366,947	\$2.27	\$16.05	28%	141,380	-14%
2006-07	\$43,247,249	\$2.19	\$15.70	25%	139,258	-15%
2007-08	\$59,558,326	\$2.34	\$17.35	38%	134,571	-18%
2008-09	\$55,207,761	\$2.43	\$17.64	40%	137,832	-16%
2009-10	\$61,539,754	\$2.39	\$17.64	40%	135,375	-18%
2010-11	\$77,033,141	\$2.31	\$17.86	42%	129,582	-21%
2011-12	\$106,139,126	\$2.29	\$18.43	47%	119,493	-27%
2012-13	\$101,973,172	\$2.16	\$17.86	42%	120,991	-26%
2013-14	\$0	\$0.00	\$0.00	0%	0	0%
2014-15			\$0			0%
2015-16			\$0.00	0%	0	0%
2016-17			\$0			0%
2017-18			\$0			0%
2018-19	\$0	\$0.00	\$0.00	0%	0	0%
2019-20	\$0	\$0.00	\$0.00	0%	0	0%

SB 668 = \$1.40

SB 668 = 93,593

RESULT = - 35%

RESULT = - 22%





# State Construction Office



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## State Construction Office

### Recent News

The 33rd Annual State Construction Conference will be held on March 27, 2014 at the McKimmon Center:

- [Click Here to Register Online](#)
- [Click Here View Agenda](#)

SL 2013-242 Procedural Implementation of Article 8C (GS 143-135.35-.40) (pdf)

2013-14 Repair & Preservation Reserve Project List (pdf)

Design Review Status and Construction Status have been relocated to the Interscope dropdown menu.

SCO Energy Benchmarking Project (revised 11/20/13)

for our 2014 Frank B. Turner Award and Certificates of Merit. The please send nominations or requests for more information to

cklist, March 2013

dition, January 2013

A History by John H. Emerson, P.E.



**Main Office:** 919-807-4100  
**Fax:** 919-807-4110


**Mailing Address:**  
1307 Mail Service Center  
Raleigh, North Carolina 27699-1307

**Physical Location:**  
New Education Building  
301 North Wilmington Street, Suite 450  
Raleigh, NC 27601

**(SCO version of CBECS)**







## State of North Carolina - Department of Administration State Construction Office - Energy Benchmarking Project

**January 21, 2014**      **PACKAGE DATA (Pages 1 - 6)**

Project	Agency or Institution	SCO ID#	Energy Model Report Date	Energy Model Report Phase	Construction Contract Award Date	Actual or Projected Acceptance Date	Principal Use(s)	Number of Beds	Size (GSF from building code summary)	Floors or Levels
Cone Residence Hall Renovation	ASU	08-07272-01A	1/20/2009	CD	9/14/2009	6/23/2010	Residence Hall	278	58,803	8
Prospector Hall Renovation Phase II	UNCC	06-07223-01A	3/15/2013	LEED submit.	8/12/2010	5/30/2011	Food Service/Dining	NA	22,705	2
Miltimore Residence Hall	UNCC	05-06656-01A	6/10/2009	CD	7/22/2009	7/19/2011	Residence Hall	431	173,086	5
Chidley North Residence Hall	NCCU	05-07248-02A	3/23/2012	LEED submit.	8/3/2009	8/10/2011	Residence Hall	528	133,570	4
Davis Arena Add & Renov	DoAG&CS	08-07347-02A	5/6/2010	CD	10/26/2010	8/19/2011	Assembly	NA	67,904	1
Student Health Center Add and Renovation	NCSU	07-07345-02	3/12/2010	CD	6/10/2010	9/12/2011	Offices/Clinics	NA	24,663	2
Gilchrist Education and Psychology Complex	ECSU	07-07081-02A	1/11/2010	CD	1/5/2010	2/1/2012	Office/Classroom	NA	48,112	3
SENC Ag Center	DoAG&CS	08-07348-02A	6/28/2010	DD	3/22/2011	4/12/2012	Equine & Livestock	NA	55,605	1
EPIC	UNCC	07-07078-02A	8/21/2009	CD	9/30/2009	4/12/2012	Offices/Labs/Classrooms	NA	200,164	4
Veteran's Nursing Home-Swannanoa	NCDOA-VA	06-06924-05A	12/22/2009	CD	5/24/2010	5/31/2012	Nursing Home	100	108,770	1
Russell Classroom Building	Pitt CC	08-07329-02A	4/12/2010	CD	12/6/2010	6/27/2012	Office/Classroom	NA	50,434	2
Quad Res Hall LLC Bailey	UNC-G	09-07927-03A	9/15/2010	CD	11/29/2010	7/1/2012	Residence Hall Bailey	86	30,735	4
Quad Res Hall LLC Coit	UNC-G	09-07927-03A	9/15/2010	CD	11/29/2010	7/1/2012	Residence Hall Coit	86	30,735	4
Quad Res Hall LLC Cotton	UNC-G	09-07927-03A	9/15/2010	CD	11/29/2010	7/1/2012	Residence Hall Cotten	86	30,735	4
Quad Res Hall LLC Gray	UNC-G	09-07927-03A	9/15/2010	CD	11/29/2010	7/1/2012	Residence Hall Gray	86	30,735	4
Quad Res Hall LLC Hinshaw	UNC-G	09-07927-03A	9/15/2010	CD	11/29/2010	7/1/2012	Residence Hall Hinshaw	86	30,735	4
Quad Res Hall LLC Jamison	UNC-G	09-07927-03A	9/15/2010	CD	11/29/2010	7/1/2012	Residence Hall Jamison	86	30,735	4
Quad Res Hall LLC Shaw	UNC-G	09-07927-03A	9/15/2010	CD	11/29/2010	7/1/2012	Residence Hall Shaw	118	54,847	4



January 21, 2014 ANNUAL ENERGY USAGE (x1,000,000 BTU/YEAR) (Pages 7 -12)

Project	ASHRAE Standard	Baseline	EUI Baseline (kBtu/Sq Ft/yr)	Proposed	EUI Proposed (kBtu/Sq Ft/yr)	Proposed improvement in energy efficiency	Proposed Energy Savings	Year of Meter Data (updated annually Oct 1)	Metered Energy Usage	EUI Metered (kBtu/Sq Ft/yr)	Metered improvement in energy efficiency	Metered Energy Savings
Cone Residence Hall Renovation	90.1-2004	3,467	59	1,993	34	43%	1,474	3rd	4,691	80	-35%	(1,224)
Prospector Hall Renovation Phase II	90.1-2004	2,082	92	1,477	65	29%	605	2nd	4,908	216	-136%	(2,826)
Miltimore Residence Hall	90.1-2004	38,283	221	32,882	190	14%	5,401	2nd	10,764	62	72%	27,519
Chidley North Residence Hall	90.1-2004	16,482	123	10,635	80	35%	5,847	2nd	4,972	37	70%	11,510
Davis Arena Add & Renov	90.1-2004	2,961	41	1,736	26	41%	1,225	1st	2,354	49	-13%	(393)
Student Health Center Addition and Renovation	90.1-2004	1,741	17	1,117	4	43%	624	2nd	9,112	2	-21%	(6,490)
Glchrist Education and Psychology Complex	90.1-2004	3,078	64	1,625	34	47%	1,453	1st	1,986	41	35%	1,092
SENC Ag Center	90.1-2004	1,743	31	749	13	57%	994	-				
EPIC	90.1-2004	30,495	152	18,911	94	38%	11,584	1st	16,526	83	46%	13,969
Veteran's Nursing Home Swananoa	90.1-2004	8,495	78	5,163	47	39%	3,332	-				
Russell Classroom Building	90.1-2004	3,018	60	1,900	38	37%	1,118	1st	4,167	83	-38%	(1,149)
Quad Res Hall LLC Bailey	90.1-2004	4,056	132	3,076	100	24%	980	1st	3,459	113	15%	597
Quad Res Hall LLC Coit	90.1-2004	4,056	132	3,076	100	24%	980	1st	3,872	126	5%	184
Quad Res Hall LLC Cotton	90.1-2004	4,056	132	3,076	100	24%	980	1st	4,156	135	-2%	(100)
Quad Res Hall LLC Gray	90.1-2004	4,056	132	3,076	100	24%	980	1st	3,497	114	14%	559
Quad Res Hall LLC Hinshaw	90.1-2004	4,056	132	3,076	100	24%	980	1st	4,168	136	-3%	(112)
Quad Res Hall LLC Jamison	90.1-2004	4,056	132	3,076	100	24%	980	1st	2,309	75	43%	1,747
Quad Res Hall LLC Shaw	90.1-2004	4,056	74	3,076	56	24%	980	1st	4,168	76	-3%	(112)

109 Projects and counting

# SB 668 Annual Report

**Performance Standards for Sustainable,  
Energy-Efficient Public Buildings**

## **Consolidated Report**

Required under G.S. 143-135.39(g)



October 1, 2013

**Search Engine:  
“2013 energy efficient public  
buildings consolidated  
report”**



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About 19,200,000 results (0.47 seconds)

Cap\_2013 Performance Standards for Sustainable Energ...

mobile.ncleg.gov/.../2013/...%20Manda... Oct 1, 2013 ... Energy-Efficient Public Buildings. ... S. 143-135.39(g). October ...

Initial Declaration for the 2013 ...

www.energy.ca.gov/.../initial-declaration-for-the-2013-... Staff member prepared this report. ... Public Resources Commission ... The 2013 ... general key areas to improve the ..... authority and provided ...



State and Local Energy Efficiency Action Network: Events

www1.eere.energy.gov/.../state-and-local-energy-efficiency-action-network-events-10/29/2013, Webinar, Existing Commercial Buildings, Energy Audits and ... Regulatory Assistance Project; Michael Harrington and Ronny Sandoval, Consolidated Edison ... Report: Analyzing and Managing Bill Impacts on Energy Efficiency ... Benchmarking and Disclosure Policies for Public and Commercial Buildings ...

Federal Facility Consolidated Annual Reporting Requireme...

energy.gov/.../federal-facility-consol... United States Department of Energy Oct 8, 2013 - Section 548(a) of National Energy Conservation Policy Act (NEPCA, 42 U.S.C. ... DOE's Annual Report to Congress on Federal Government Energy Management. ... Annual GHG and Sustainability Data Report for FY 2013 Reporting ... 2: Energy Performance Excluded Buildings List Template; Attachment 3: ...

ASU System Sustainable Energy Efficient Buildings Per...

www.asusystem.edu/.../0dccbacc-4981-... Arkansas State University System Nov 29, 2013 - energy and natural resources in buildings owned by public agencies ... a consolidated report, each campus is presented discretely due to the diversity of age and ..... projects has resulted in \$36,332 in utility savings in FY2013.

Draft 2013 Consolidated Annual Performance Evaluation Re...

www.nhcdfa.org/events/event/115 Draft 2013 CAPER PUBLIC COMMENT PERIOD AND PUBLIC HEARING. ... Draft 2013 Consolidated Annual Performance Evaluation Report Public ... Energy Efficiency.

# **Performance Standards for Sustainable, Energy-Efficient Public Buildings**

## **Consolidated Report**

Required under G.S. 143-135.39(g)



October 1, 2013

# Lessons Learned – Design

- Use full capabilities of the model
- Right model for systems used
- No default settings for inputs
- Lighting W/SF vs lighting schedule
- Model what will be metered
- Use correct weather file
- Input correct set points



# Lessons Learned – Design

- Accurately model use or occupancy
- Input correct schedule with setbacks
- Verify correct energy rates are used
- Account for plug and process loads
- Review model results with similar facilities
  - Too high?
  - Too low?
- Specified meter accuracy or tolerances

# Lessons Learned – Construction

- Value Engineering (VE) changes
  - Automated controls to manual controls
- Change orders during construction
- Equipment changes from
  - energy model
  - equipment schedule
  - specification
  - installation
  - operation

# Lessons Learned – Construction

- Design changes during construction
  - Submittals
  - Substitutions
  - RFIs
- Install equipment according to:
  - Manufacturer's requirements
  - Contract documents
  - Controls calibrated



# Lessons Learned – Occupancy

- Meter what has been modeled
- Meter the utilities
- Verify operation of meters
- Verify reporting of meters
- Compare meter data to the model data
- Compare meter data to similar facilities
- Increase in outside air

# Lessons Learned – Occupancy

- Steam meter operation difficulties
- Control component operation & accuracy
- Occupancy set points = model set points
- Occupancy schedule = model schedule
- Plug load accuracy
- Utility cost accuracy
- Account for utility rate escalation

# Lessons Learned – Occupancy

- Variations in weather
- Verify correct units when reporting meter data:
  - Gallons?
  - Cubic Feet? (CF)
  - Hundred Cubic Feet? (CCF)
- Report meter data annually to SCO



# Lessons Learned – Occupancy

First year meter data is not accurate:

- Systems not complete
- Construction not complete
- Cx ongoing and not complete
- Building not fully occupied
- Utility meters not switched to owner
- Building has not been sub metered
- Meters are not read
- Meters are not reporting

# Lessons Learned – Occupancy

§ 143-135.37. Energy and water use standards for public major facility construction and renovation projects; verification and reporting of energy and water use.

(e) Separate Utility Meters.

- If the average energy use or the average water use over the initial 12-month period of facility operation exceeds the applicable energy-efficiency standard under subsection (b) of this section or exceeds the applicable water use standard under subsection (c) of this section by fifteen percent (15%) or more,

the public agency shall investigate the actual energy or water use, determine the cause of the discrepancy, and recommend corrections or modifications to meet the applicable standard.

# SB 668 – JUDGMENT DAY

EPAYEE Estimated at 100 MPG





# SB 668 – JUDGMENT DAY

Modelled by EU Roof 120

1225

citibank

# Senate Bill 668 – *The Future!*

- ASU
  - Plemmons Student Center Addition
- Cape Fear Community College
  - Union Station
- ECU
  - School of Dentistry
  - Minges Coliseum Practice Facility
- FSU
  - Science and Technology Building



# Senate Bill 668 – *The Future!*

- Gaston Community College
  - Lena Sue Beam Building Renovation
- NCDoA
  - Kinston VA Nursing Home
- NCSU
  - Cherry Building Renovation
  - Hunt Library
  - Wolf Ridge at Centennial (Six residence halls)



# Senate Bill 668 – *The Future!*

- Randolph Community College
  - Continuing Education & Industrial Center Renovation
- UNCA
  - Rhoades Hall Renovation
- UNCC
  - Belk Residence Hall
  - Football Complex
  - Hunt Residence Hall

# Senate Bill 668 – *The Future!*

- UNCW
  - Student Recreation Facility Addition
  - MARBIONC
- WSSU
  - Reaves Student Activities Center

# *Judgment Day*

*Model what  
you meter.*



# *Judgment Day*

*Meter what  
you model.*

# Introducing House Bill 628

What is House Bill 628?

# House Bill 628

- Purpose is to require net savings for energy and water savings in state owned and state supported buildings.
- Promote NC products.



The official title of House Bill 628 is

***AN ACT TO REQUIRE NET SAVINGS IN ASSOCIATION WITH MAJOR FACILITY CONSTRUCTION AND RENOVATION PROJECTS AND PROTECT USE OF NORTH CAROLINA PRODUCTS IN MAJOR FACILITY CONSTRUCTION AND RENOVATION PROJECTS UNDER THE SUSTAINABLE ENERGY-EFFICIENT BUILDINGS PROGRAM.***

# What is House Bill 628?

Modifies NCGS 143-135.37  
(SB 668) by adding:

# Net Savings Required

# House Bill 628

House Bill 628 can be found under  
NCGS 143-135.35 through 143-135.40.

OR

Chapter 143 – Article 8C.

(Same legislation as SB 668)



# NCGA

NORTH CAROLINA GENERAL ASSEMBLY

FULL SITE SEARCH: Chapter 143 - Article 8C

SEARCH BILL TEXT: 2013-2014 Session

FIND A BILL: 2013-2014 Session

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## Chapter 143 - Article 8C

Welcome to the official web site of the North Carolina General Assembly. You can communicate with your State House and Senate and the General Assembly.

The **Regular Session of the 2013-2014 biennium** of the North Carolina General Assembly convened on January 9, 2013 for the purpose of electing officers, adopting rules, and organizing the session and adjourned on January 9, 2013 and reconvened on January 30, 2013.

### House of Representatives



Convenes Wed, Mar 27, 2013 2:00PM

- House Calendar
- Chamber Audio | (Archive)
- Bills with House Action by Day
- House Bills Filed by Day

### Senate



Convenes Wed, Mar 27, 2013 2:00PM

- Senate Calendar
- Chamber Audio
- Bills with Senate Action by Day
- Senate Bills Filed by Day

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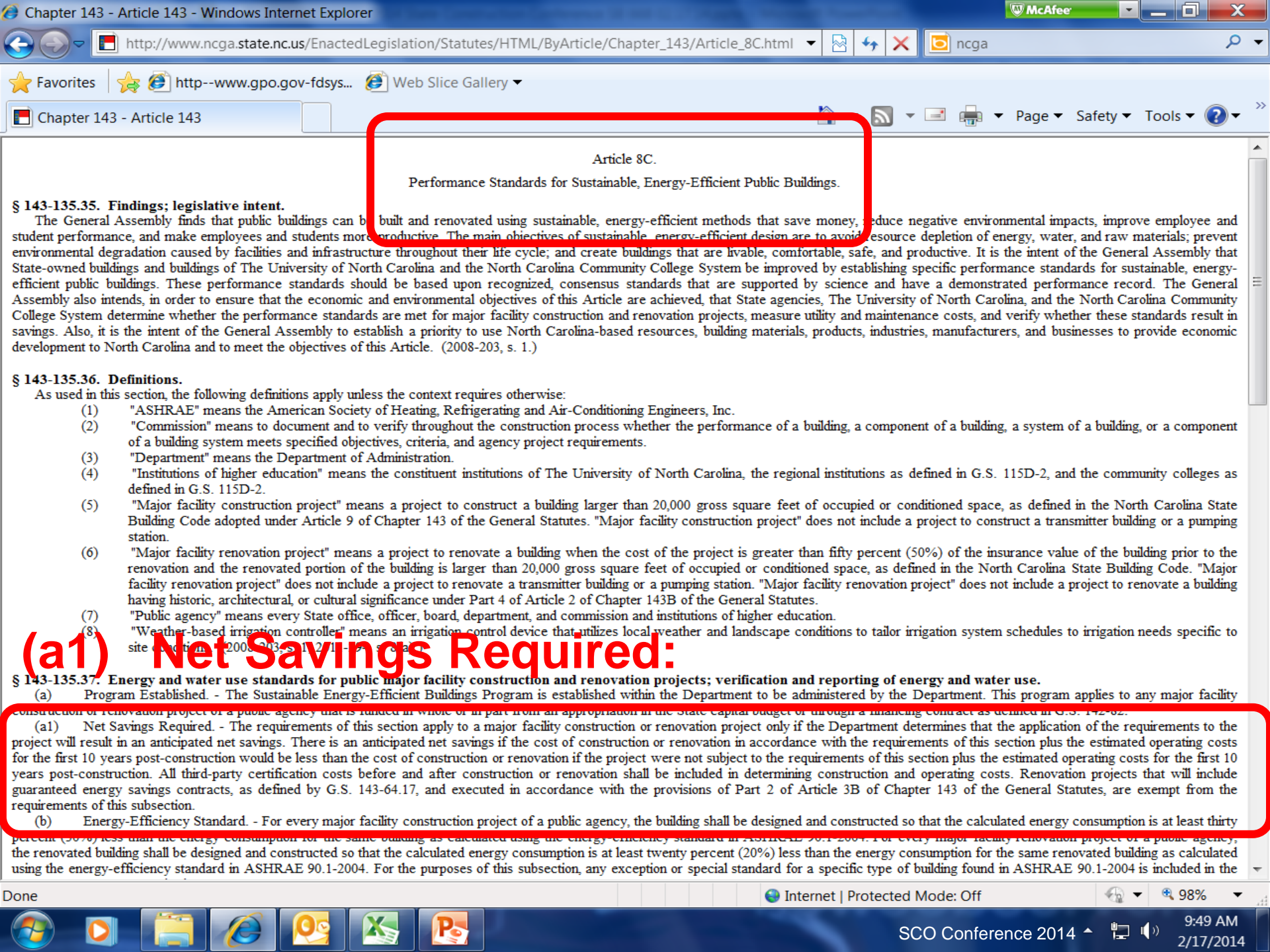


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## Article 8C.

### Performance Standards for Sustainable, Energy-Efficient Public Buildings.

#### § 143-135.35. Findings; legislative intent.

The General Assembly finds that public buildings can be built and renovated using sustainable, energy-efficient methods that save money, reduce negative environmental impacts, improve employee and student performance, and make employees and students more productive. The main objectives of sustainable, energy-efficient design are to avoid resource depletion of energy, water, and raw materials; prevent environmental degradation caused by facilities and infrastructure throughout their life cycle; and create buildings that are livable, comfortable, safe, and productive. It is the intent of the General Assembly that State-owned buildings and buildings of The University of North Carolina and the North Carolina Community College System be improved by establishing specific performance standards for sustainable, energy-efficient public buildings. These performance standards should be based upon recognized, consensus standards that are supported by science and have a demonstrated performance record. The General Assembly also intends, in order to ensure that the economic and environmental objectives of this Article are achieved, that State agencies, The University of North Carolina, and the North Carolina Community College System determine whether the performance standards are met for major facility construction and renovation projects, measure utility and maintenance costs, and verify whether these standards result in savings. Also, it is the intent of the General Assembly to establish a priority to use North Carolina-based resources, building materials, products, industries, manufacturers, and businesses to provide economic development to North Carolina and to meet the objectives of this Article. (2008-203, s. 1.)

#### § 143-135.36. Definitions.

As used in this section, the following definitions apply unless the context requires otherwise:

- (1) "ASHRAE" means the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
- (2) "Commission" means to document and to verify throughout the construction process whether the performance of a building, a component of a building, a system of a building, or a component of a building system meets specified objectives, criteria, and agency project requirements.
- (3) "Department" means the Department of Administration.
- (4) "Institutions of higher education" means the constituent institutions of The University of North Carolina, the regional institutions as defined in G.S. 115D-2, and the community colleges as defined in G.S. 115D-2.
- (5) "Major facility construction project" means a project to construct a building larger than 20,000 gross square feet of occupied or conditioned space, as defined in the North Carolina State Building Code adopted under Article 9 of Chapter 143 of the General Statutes. "Major facility construction project" does not include a project to construct a transmitter building or a pumping station.
- (6) "Major facility renovation project" means a project to renovate a building when the cost of the project is greater than fifty percent (50%) of the insurance value of the building prior to the renovation and the renovated portion of the building is larger than 20,000 gross square feet of occupied or conditioned space, as defined in the North Carolina State Building Code. "Major facility renovation project" does not include a project to renovate a transmitter building or a pumping station. "Major facility renovation project" does not include a project to renovate a building having historic, architectural, or cultural significance under Part 4 of Article 2 of Chapter 143B of the General Statutes.
- (7) "Public agency" means every State office, officer, board, department, and commission and institutions of higher education.
- (8) "Weather-based irrigation controller" means an irrigation control device that utilizes local weather and landscape conditions to tailor irrigation system schedules to irrigation needs specific to site conditions. (2008-203, s. 1/2/11--enacted)

(a1) Net Savings Required:

#### § 143-135.37. Energy and water use standards for public major facility construction and renovation projects; verification and reporting of energy and water use.

(a) Program Established. - The Sustainable Energy-Efficient Buildings Program is established within the Department to be administered by the Department. This program applies to any major facility construction or renovation project of a public agency that is funded in whole or in part from an appropriation in the State capital budget or through a financing contract as defined in G.S. 142-62.

(a1) Net Savings Required. - The requirements of this section apply to a major facility construction or renovation project only if the Department determines that the application of the requirements to the project will result in an anticipated net savings. There is an anticipated net savings if the cost of construction or renovation in accordance with the requirements of this section plus the estimated operating costs for the first 10 years post-construction would be less than the cost of construction or renovation if the project were not subject to the requirements of this section plus the estimated operating costs for the first 10 years post-construction. All third-party certification costs before and after construction or renovation shall be included in determining construction and operating costs. Renovation projects that will include guaranteed energy savings contracts, as defined by G.S. 143-64.17, and executed in accordance with the provisions of Part 2 of Article 3B of Chapter 143 of the General Statutes, are exempt from the requirements of this subsection.

(b) Energy-Efficiency Standard. - For every major facility construction project of a public agency, the building shall be designed and constructed so that the calculated energy consumption is at least thirty percent (30%) less than the energy consumption for the same building as calculated using the energy efficiency standard in ASHRAE 90.1-2004. For every major facility renovation project of a public agency, the renovated building shall be designed and constructed so that the calculated energy consumption is at least twenty percent (20%) less than the energy consumption for the same renovated building as calculated using the energy efficiency standard in ASHRAE 90.1-2004. For the purposes of this subsection, any exception or special standard for a specific type of building found in ASHRAE 90.1-2004 is included in the

# Net Savings Required

There is an anticipated net savings if the cost of construction or renovation in accordance with the requirements of this section plus the estimated operating costs for the first 10 years post-construction would be less than the cost of construction or renovation if the project were not subject to the requirements of this section plus the estimated operating costs for the first 10 years post-construction



# House Bill 628

- Effective date is for projects started on or after October 1, 2013 (Advance Planning Phase Contract Date)
- Does not apply to performance contract projects

# HB 628 Compliance Path

- Submit two LCCA's with the Advance Planning Phase submission
- Each LCCA is for a 10 year period:
  1. LCCA for a SB 668 building
  2. LCCA for a non SB 668 building



# State Construction Office

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## State Construction Office

### Recent News

The 33rd Annual State Construction Conference will be held on March 27, 2014 at the McKimmon Center:

- [Click Here to Register Online](#)
- [Click Here View Agenda](#)

SL 2013-242 Procedural Implementation of Article 8C (GS 143-135.35-.40) (pdf)

2013-... Project List (pdf)

Design Interscope... status has been relocated to the

SCO... ed 11/20/13)

We are... for 2014 Frank B. Turner Award and Certificates of Merit. The deadline for nominations or requests for more information to

UPDA... March 2013

General Conditions (OC-15) 24th Edition, January 2013

The Division of State Construction: A History by John H. Emerson, P.E.



**Main Office:** 919-807-4100  
**Fax:** 919-807-4110

**Mailing Address:**  
1307 Mail Service Center  
Raleigh, North Carolina 27699-1307

**Physical Location:**  
New Education Building  
301 North Wilmington Street, Suite 450  
Raleigh, NC 27601





# HB 628 Compliance



## North Carolina Department of Administration


Pat McCrory, Governor  
Bill Daughtride, Jr., Secretary

State Construction Office  
Gregory A. Driver, P.E., Director

November 1, 2013

### MEMORANDUM

TO: All Capital Projects Coordinators

FROM: Gregory A. Driver 

SUBJECT: Session Law 2013-242  
House Bill 628 – Section 1 Paragraph (a1)  
Procedural Implementation of Article 8C (GS 143-135.35 - .40) (SB668)  
Performance Standards for Sustainable Energy Efficient Public Buildings

Section 1, paragraph (a1) of the above referenced legislation reads as follows:

**SECTION 1.** G.S. 143-135.37 is amended by adding two new subsections to read:  
“(a1) Net Savings Required. – The requirements of this section apply to a major facility construction or renovation project only if the Department determines that the application of the requirements to the project will result in an anticipated net savings. There is an anticipated net savings if the cost of construction or renovation in accordance with the requirements of this section plus the estimated operating costs for the first 10 years post-construction would be less than the cost of construction or renovation if the project were not subject to the requirements of this section plus the estimated operating costs for the first 10 years post-construction. All third-party certification costs before and after construction or renovation shall be included in determining construction and operating costs. Renovation projects that will include guaranteed energy savings contracts, as defined by G.S. 143-64.17, and executed in accordance with the provisions of Part 2 of Article 3B of Chapter 143 of the General Statutes, are exempt from the requirements of this subsection.”

To provide clarification in regards to implementation of the above law the following shall apply:

- 1) Designer shall submit 2 project costs analysis with a summary comparison of the two at Advance Planning Phase Submittal to SCO:
  - a. Cost of construction (including design) if Article 8C is complied with, plus operating costs for the first 10 years including 3<sup>rd</sup> party certification costs before and after construction. (SB668 Bldg)
  - b. Cost of construction (including design) if Article 8C is **not** complied with, plus operating costs for the first 10 years including 3<sup>rd</sup> party certification costs before and after construction. (NonSB668 Bldg)
- 2) If (1a) is **more** than (1b) then owner does not have to comply with the requirements of Article 8C. If (1a) is **less** than (1b) then owner does have to comply with the requirements of Article 8C.
- 3) The owner may voluntarily incorporate performance standards of Article 8C regardless of cost analysis required by SL 2013-242.

# HB 628 Compliance



North Carolina  
Department of Administration

Pat McCrory, Governor  
Bill Daughtridge, Jr., Secretary

State Construction Office  
Gregory A. Driver, P.E., Director

November 1, 2013

## MEMORANDUM

TO: All Capital Projects Coordinators  
FROM: Gregory A. Driver *[Signature]*

To provide clarification in regards to implementation of the above law the following shall apply:

- 1) Designer shall submit 2 project costs analysis with a summary comparison of the two at Advance Planning Phase Submittal to SCO:
  - a. Cost of construction (including design) if Article 8C is complied with, plus operating costs for the first 10 years including 3<sup>rd</sup> party certification costs before and after construction. (SB668 Bldg)
  - b. Cost of construction (including design) if Article 8C is **not** complied with, plus operating costs for the first 10 years including 3<sup>rd</sup> party certification costs before and after construction. (NonSB668 Bldg)
- 2) If (1a) is **more** than (1b) then owner does not have to comply with the requirements of Article 8C. If (1a) is **less** than (1b) then owner does have to comply with the requirements of Article 8C.
- 3) The owner may voluntarily incorporate performance standards of Article 8C regardless of cost analysis required by SL 2013-242.

(1a) is **less** than (1b) then owner does have to comply with the requirements of Article 8C.

- 3) The owner may voluntarily incorporate performance standards of Article 8C regardless of cost analysis required by SL 2013-242.

Mailing Address:  
1307 Mail Service Center  
Raleigh, NC 27699-1307

Telephone (919)807-4100  
Fax (919)807-4110  
State Courier #56-02-01

Location:  
301 N. Wilmington St. Suite 450  
Raleigh, North Carolina 27601

# HB 628 Compliance

- Alternate Path: The using agency may voluntarily incorporate the performance standards of SB 668.



# HB 628 Compliance



State Construction Office  
DEC 16 2013

November 12, 2013

Mr. Ryan Scruggs  
State Construction Office  
Department of Administration  
1307 Mail Service Center  
Raleigh, N.C. 27699-1307

Facilities Management  
Associate Vice Chancellor: 704/687-2181  
Administration: 704/687-2154  
Capital Projects: 704/687-6280  
Engineering Services: 704/687-2605  
Housekeeping and Recycling: 704/687-3099  
Maintenance & Operations: 704/687-2150  
Planning: 704/687-2838  
Fax: 704/687-3171

Project: The University of North Carolina at Charlotte  
Residence Hall Phase XIV  
Code 41226 Item 309

Subject: Advance Planning Contract Request

Dear Mr. Scruggs:

This letter is to formally request the State Construction Office to negotiate with The FWA Group for advance planning of the subject project. The advance planning proposal for \$250,313 is attached for your consideration. We

UNC Charlotte is formally stating our commitment to comply with the Performance Standards for Sustainable, Energy-Efficient Public Buildings (Article 8C). We have selected a commissioning agent for the project and are requesting that Article 15-1 be incorporated into the standard design contract in lieu of performing the Net Savings Required cost analysis during the Advance Planning phase.

Current funding and budget information is as follows:

CAPSTAT Authorization (AP only)	\$3,171,120
---------------------------------	-------------

If there are any questions, I may be reached at 704/687-0519; or the designer, Gary Lang can be reached at (704) 332-7004.

Sincerely,

John A. Fessler, P.E.  
Director, Capital Projects

JAF/jc  
Enclosure (Proposal)

c: Gary Lang, The FWA Group

# HB 628 Compliance



State Commission Office  
DEC 16 2013

November 12, 2013

Mr. Ryan Scruggs  
State Construction Office  
Department of Administration  
1307 Mail Service Center  
Raleigh, N.C. 27699-1307

Facilities Management  
Associate Vice Chancellor: 704/687-2181  
Administration: 704/687-2154  
Capital Projects: 704/687-6280  
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Project: The University of North Carolina at Charlotte  
Residence Hall Phase XIV  
Code 41226 Item 309

Subject: Advance Planning Contract Request

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CAPSTAT Authorization (AP only)

\$3,171,120

If there are any questions, I may be reached at 704/687-0519; or the designer, Gary Lang can be reached at (704) 332-7004.

Sincerely,

Handwritten signature of John A. Fessler in black ink.

John A. Fessler, P.E.  
Director, Capital Projects

JAF/jc  
Enclosure (Proposal)

c: Gary Lang, The FWA Group

# HB 628 Compliance



December 12, 2013

State Construction Office  
DEC 16 2013

2420.01

Mr. Latif Kaid, PE  
Assistant Director  
State Construction Office  
Suite 450  
301 N. Wilmington Street  
Raleigh, NC 27601

Re: Programming Design Submittal  
Student Housing Phase XIV – Advance Planning  
University of North Carolina at Charlotte  
SCO File # 12-10117-01

Dear Mr. Kaid:  
Please find attached one copy of the Programming Manual dated December 12, 2013 for the above referenced project for your review. We are also submitting these documents directly to the University of North Carolina at Charlotte for their review.

The program identifies the total project construction cost to be approximately \$37,000,000 GMP. The project costs have been identified by KBR Construction

The Owner has decided to voluntarily incorporate performance standards of article 8C regardless of cost analysis required by SL 2013-242. See the attached letter from UNC Charlotte.

The University is currently negotiating the building commissioning component of the project. This information will be forwarded on by the University once negotiations are complete.

Please let us know if you have any questions, or require additional information. We look forward to your review.

Sincerely,  
The FWA Group

A handwritten signature in black ink, appearing to read 'Gary Lang'.

Gary Lang, AIA, LEEDAP

cc: Mr. Brian Kugler; UNC Charlotte

Charlotte Office  
500 East Boulevard  
Charlotte, NC 28203  
(704) 332-7004  
(704) 332-6829 fax

WWW.FWAGROUP.COM • CHARLOTTE, NC • DURHAM, NC • HILTON HEAD ISLAND, SC • FORT COLLINS, CO

SCO Conference 2014



# HB 628 Compliance



December 12, 2013

State Construction Office  
DEC 16 2013

2420.01

Mr. Cliff Kaid,  
Plant Director  
State Construction Office  
Suite 50  
301 N. Wilmington Street  
Raleigh, NC 27601

Re: Programming Design Submittal  
Student Housing Phase XIV – Advance Planning  
University of North Carolina at Charlotte  
SCO File # 12-10117-01

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Sincerely,  
The FWA Group

Gary Lang, AIA, LEEDAP

cc: Mr. Brian Kugler; UNC Charlotte

Charlotte Office  
500 East Boulevard  
Charlotte, NC 28203  
(704) 332-7004  
(704) 332-6829 fax

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# HB 628 Compliance

- Submit two LCCA's with the Advance Planning Phase submission
  - Each LCCA is for a 10 year period:
    1. LCCA for a SB 668 building
    2. LCCA for a non SB 668 building
  - Building with lowest LCC wins

OR

- Voluntary Compliance with SB 668

# SB 668 – *JUDGMENT DAY*

## Questions?

Leonard Thagard, PE

[leonard.thagard@doa.nc.gov](mailto:leonard.thagard@doa.nc.gov)

919-807-4093

<http://www.nc-sco.com/>