

# Energy Management Meeting 07/26/16

*The mission of the Facilities Energy Management Committee is to identify, investigate, and improve the University's utilization of energy*

*Our goal is to reduce the consumption of non-renewable resources and manage the associated utility costs in support of ETSU's vision, mission and goals.*



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# AGENDA

- Utility Price Update
- Weather Trends
- Utility Database
  - Billing Discrepancies
- Meter Database Update



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# AGENDA

- ECM Updates
  - Lighting Projects
    - Database
  - Retro Cx
    - Burgen Dossett
  - Library Unit
  - Valleybrook
    - Chiller
- MiniDome
  - Lighting
  - Dryers
- Chilled Water Distribution
  - Electric Meters
- Utility Account Changes



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# Utility Prices

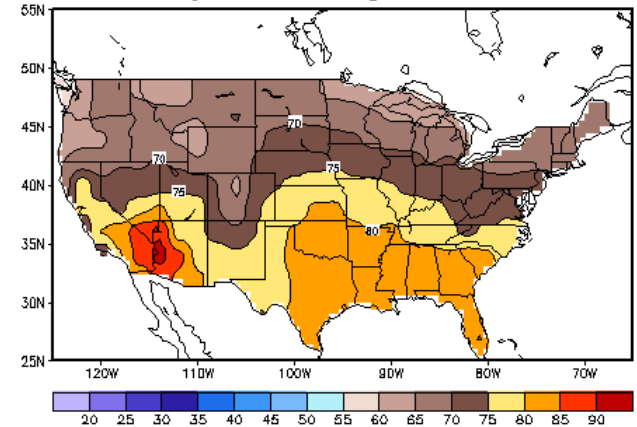
- Natural Gas

Near-month natural gas futures prices (Nymex)

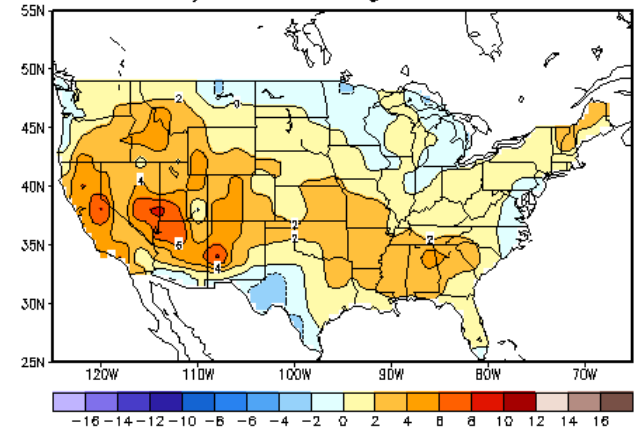


eia Source: Natural Gas Intelligence

Mean Temperature (F)  
7-day mean ending Jun 30 2016



Mean Temp (F) Anomaly  
7-day mean ending Jun 30 2016



# Hedged ETSU Volumes

**Rising temperatures boost cooling demand for natural gas.** Temperatures in the Lower 48 states averaged 75°F during the storage report week. Temperatures during the report week were above normal throughout most of the Lower 48 states, on average by 3%, and were 3% above last year at this time. This week marked the fifth week in a row that cooling degree-days in the Lower 48 states exceeded the normal level. Cooling degree-days in the Lower 48 states since the beginning of the refill season on April 1 were 19% above normal.

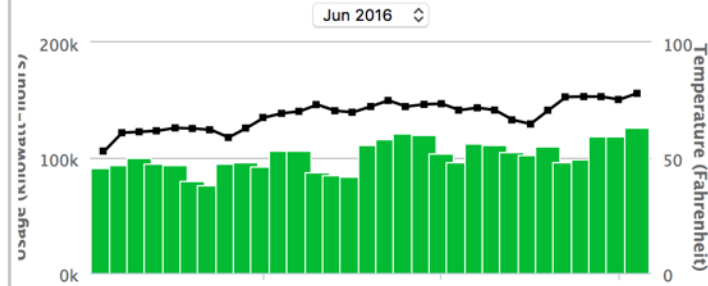
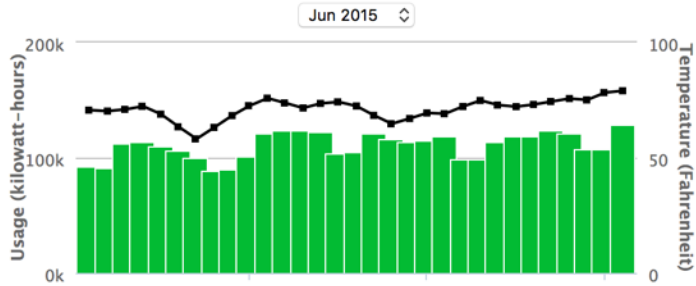
Hedging against increasing NYMEX prices, ETSU locked in Natural Gas volumes for the boiler plant and Valleybrook at \$3.16 per through December 2017.



# Electricity

Select an Account/Service Location to View:

10116001 - J L SEEHORN JR RD NEAR JOHN ROB | GYM



Billing Periods	Jun 2015	Jun 2016	Difference
Billing Days:	05/16/2015 to 06/16/2015	05/16/2016 to 06/16/2016	.
Days in Period:	31	31	0
Total Usage Charge:	\$168,543.66	\$158,828.40	-\$9,715.26
Total Monthly Charges:	\$325,679.68	\$267,393.93	-\$58,285.75
Total Usage:	3,471,548.00	3,201,566.00	-269,982
Average Daily Usage:	111,985.42	103,276.32	-8,709.097
Max Temperature:	92°F	94°F	2°F
Min Temperature:	44°F	38°F	-6°F
Avg Temperature:	71°F	69°F	-2°F



# ETSU Electrical Costs

MAIN CAMPUS ELECTRIC BILL

BillID	AccountNumber	BillRateClass	BillingMonth	Days
<input type="text" value="15"/>	<input type="text" value="E-10116 001"/>	<input type="text" value="2015-36"/>	<input type="text" value="6/1/2016"/>	<input type="text" value="31"/>
			<input type="text" value="Summer"/>	


<a href="#">MeterData</a>	<a href="#">ItemizedData</a>	<a href="#">InvoiceData</a>	<a href="#">SummaryData</a>
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Monthly Bill Data			Annual Data		
MonthlyDemandCost	<input type="text" value="\$14.88"/>	\$/kW	AverageDemandCostkW	<input type="text" value="\$16.38"/>	\$/kW
This Bill's OffPeak Cost per kWh	<input type="text" value="\$0.0557"/>	\$/kWh	This Rate Class AverageOffPeak	<input type="text" value="\$0.055"/>	\$/kWh
This Bill's OnPeak Cost per kWh	<input type="text" value="\$0.1883"/>	\$/kWh	This Rate Class AverageOnPeak	<input type="text" value="\$0.118"/>	\$/kWh
This Bill's Average Cost per kWh	<input type="text" value="\$0.0835"/>	\$/kWh	AverageCostperkWh	<input type="text" value="\$0.082"/>	\$/kWh
			SumAnnualCost	<input type="text" value="\$3,320,032.94"/>	

SumAnnualOnPeakkWh	<input type="text" value="17,002,026"/>	MaxOnPeakkW	<input type="text" value="7,258"/>	MinOnPeakkW	<input type="text" value="5,156"/>
SumAnnualOffPeakkWh	<input type="text" value="23,661,158"/>	MaxOffPeakkW	<input type="text" value="6,710"/>	MinOffPeakkW	<input type="text" value="0"/>
SumAnnualkWh	<input type="text" value="40,663,184"/>				

Invoice



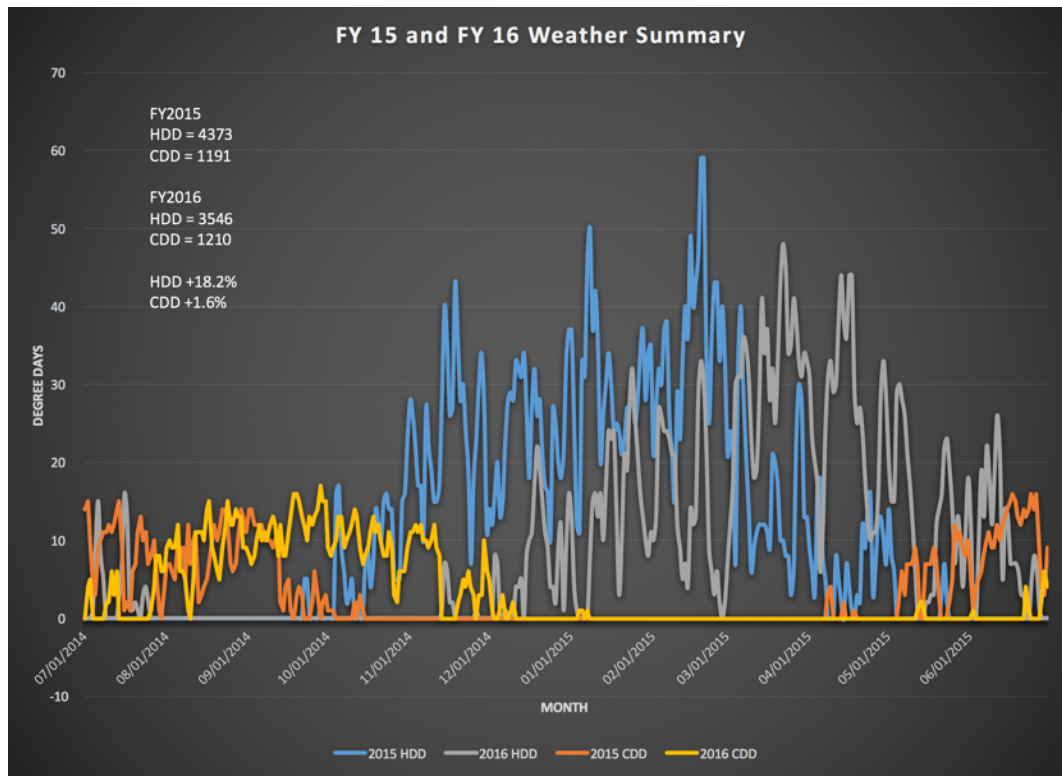
Electric - Jun 2016 - various locations.pdf



# FY 15 to FY 16 Weather

**HDD + 18.2%**

**CDD + 1.6%**





# Utility Bill Database

- 168 billing sites / accounts
- 171 meters / sub-meters
- 4,138 days of weather data
- 441 water bills
- 628 electric bills
- 552 natural gas bills
- 46 utility rates
- 1 energy savings project table
- 4 monthly reports



# Meter Database Update

- Chiller Plant
- Building sub-meters
- 3 new Utility smart meters

You can't manage what you don't measure



# Account Change Update

- Buc Ridge
  - \$ 7,500 for meter
  - \$ 300 for phone line
  - Annual Saving \$55,000 per year
  - SPB - 2 months - meter installed today
  
- Mountain Home - VA
  - \$ 7,500 for meter
  - \$ 300 for phone line
  - Annual Saving \$145,000 per year
  - SPB - <1 month - meter install date



# ECM Updates

## Lighting Projects

- Roger Stout
- Lot 22
- Exterior Lighting
- Mini Dome
- Committee's Safety Issues

## RCx Projects

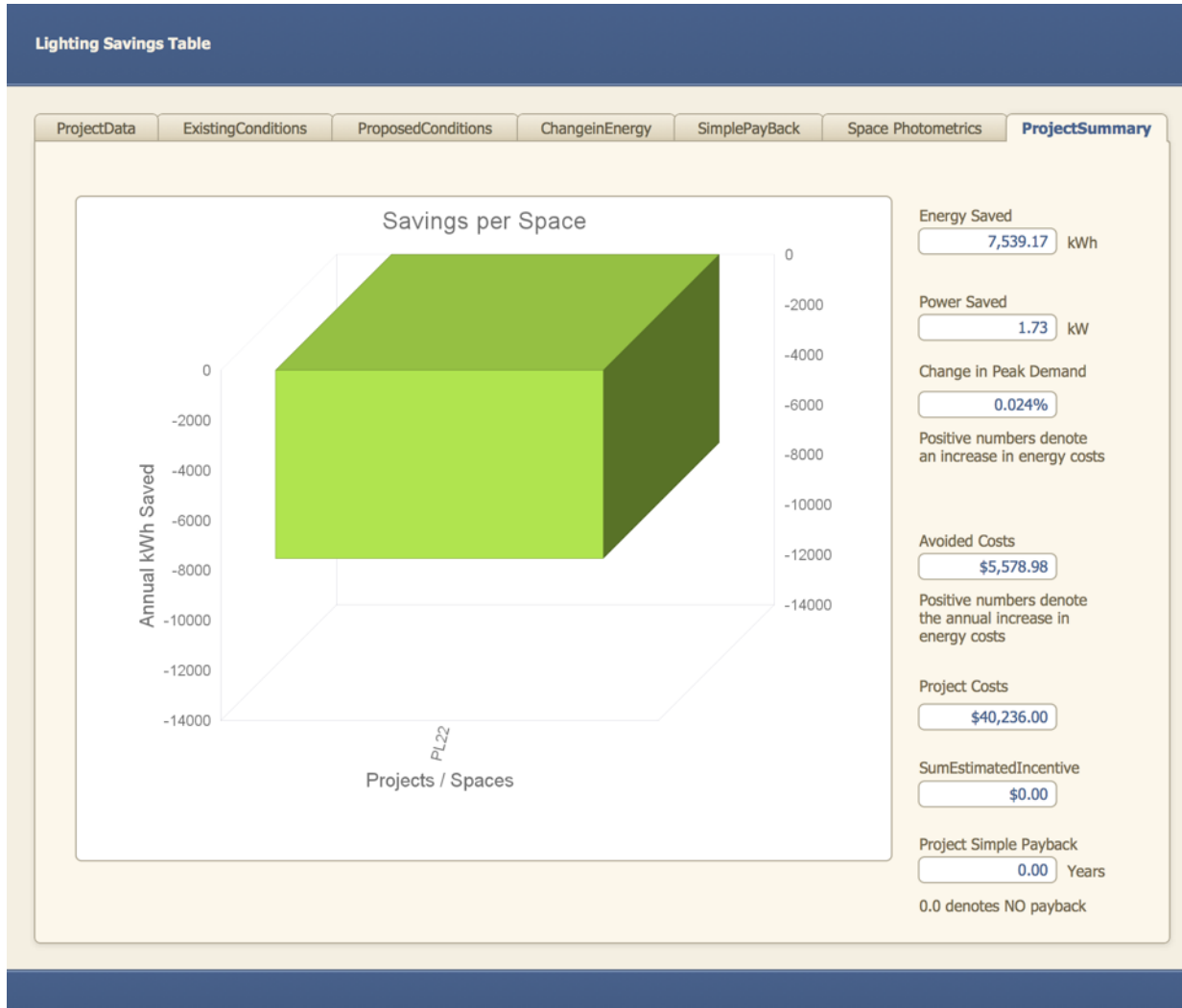
- Burgen Dossett

## Mechanical Projects

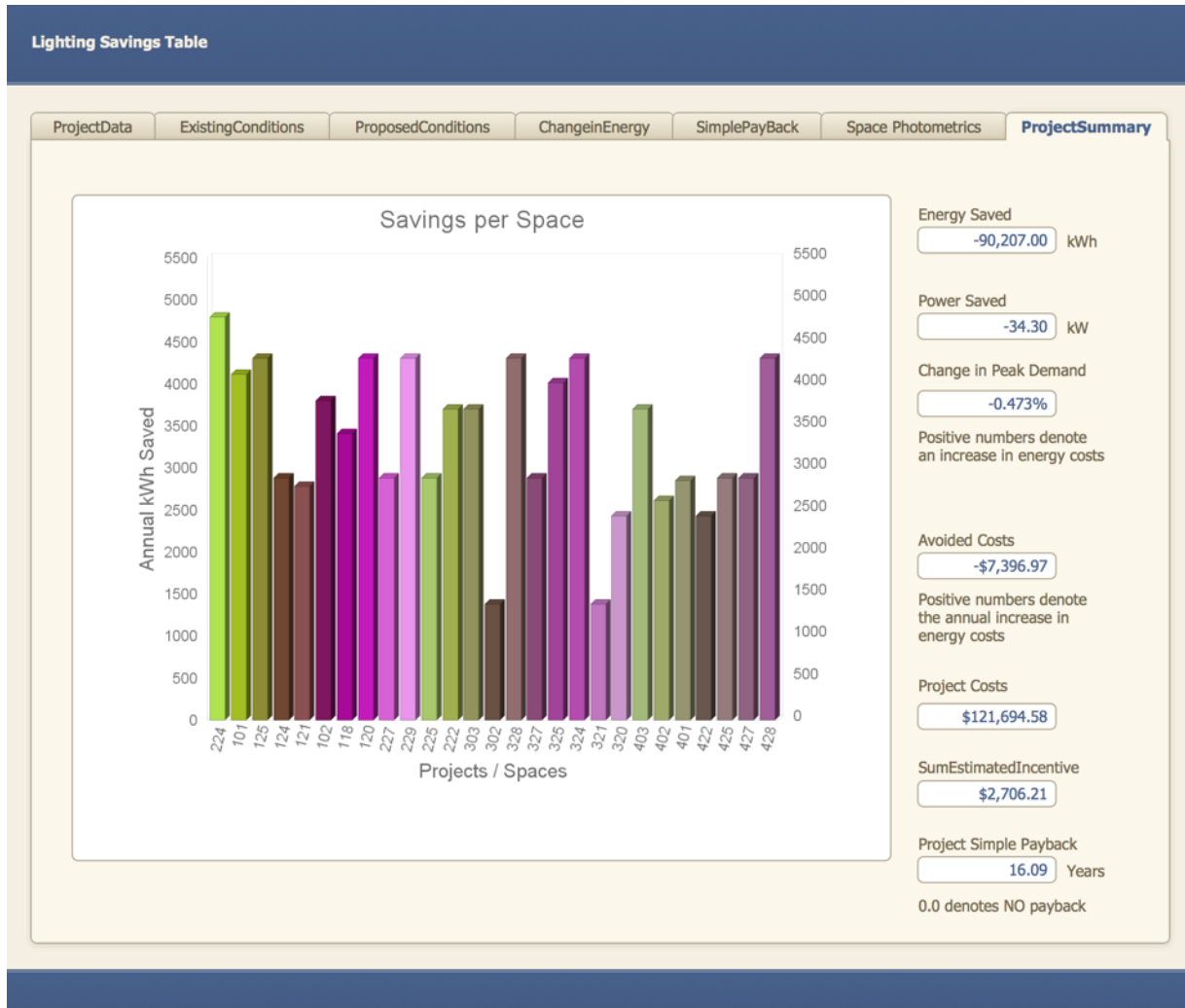
- Archive Room
- Mini Dome Laundry
- Valleybrook Chiller
- Chilled Water Distribution System



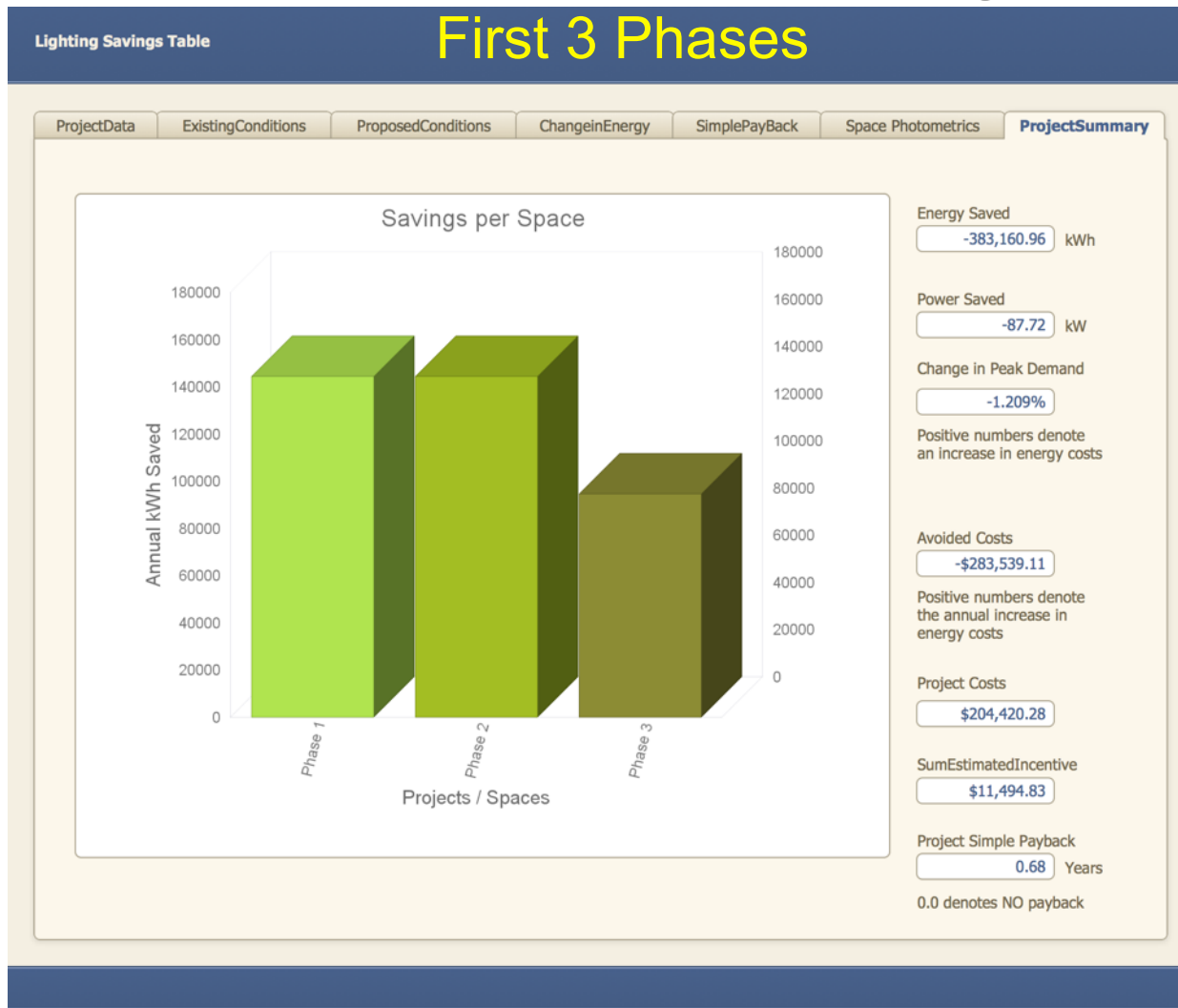
# Lot 22 Lighting



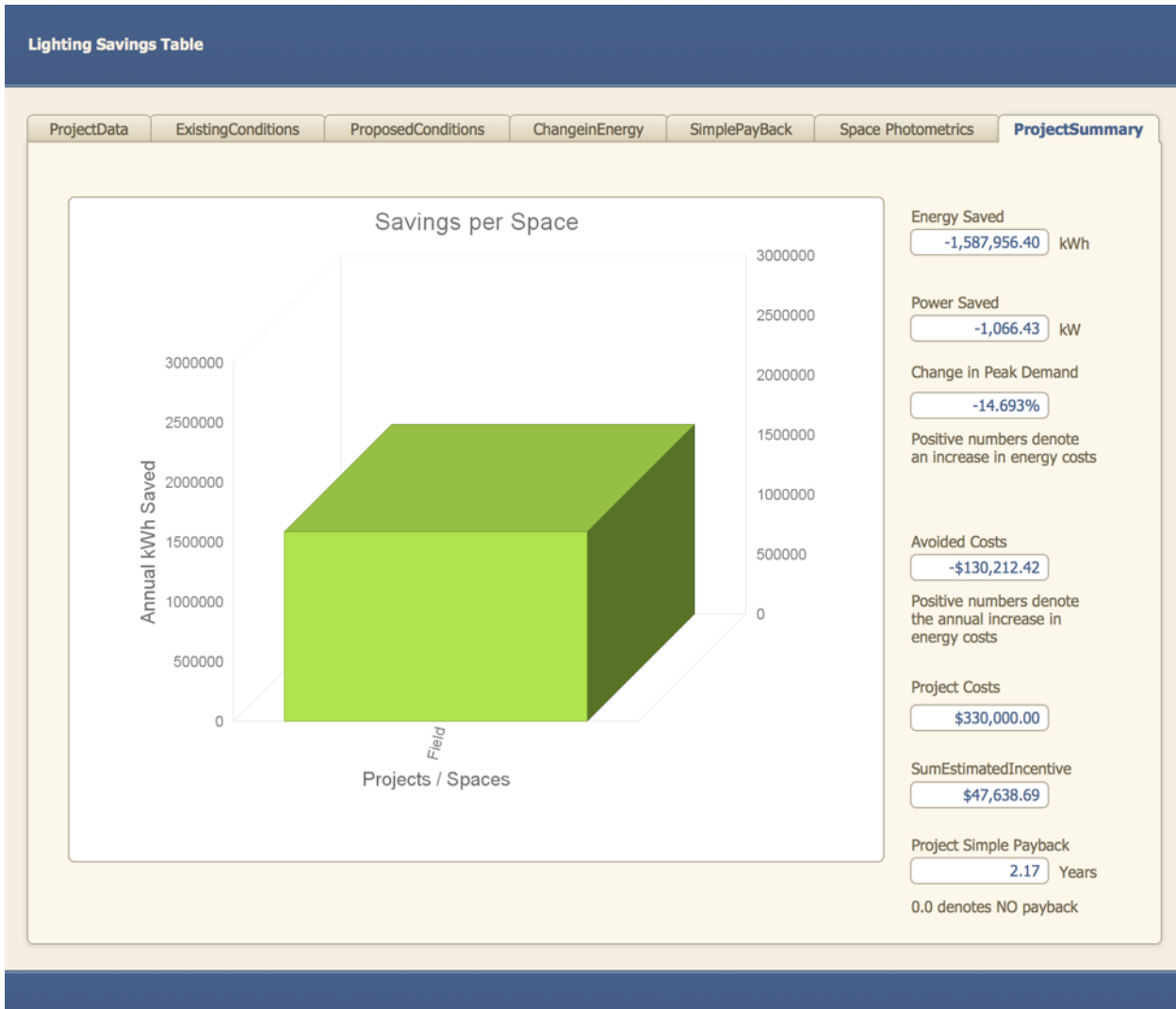
# Roger Stout Lighting



# Exterior Shoebox Lighting



# Mini Dome Lighting





# Sum of Lighting Projects



# TVA Lighting Project Incentives

TVA will pay \$0.03 to \$0.06 per kWh of avoided energy

Estimated lighting kWh savings - 2,200,000 kWh

Incentive range - \$65,000 to \$130,000 depending on application  
and program limits

Need to apply - ASAP so pre and post evaluations can be made



# Thanks EM Team!

\$200,000 in Rate Changes

17% reduction in Peak Demand

\$65,000 to \$130,000 in lighting incentives

Burgen Dossett flow rates

Condensate pipe replacement

\$427,000 in lighting saving

Library Archive 75% reduction on kW

\$650,000 + in potential annual savings

VFD repairs - Library, & BD

# Next Meeting

September 20, 2016

- Year End Utility Summaries
- ECM Updates
- Sub-meter Calibration
- Sport Field lighting (314 1500 W MH)
- Valleybrook HVAC
- Chilled Water System Evaluation
- CPA lighting



# Congratulations

Jason is a Professional Energy Manager



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