

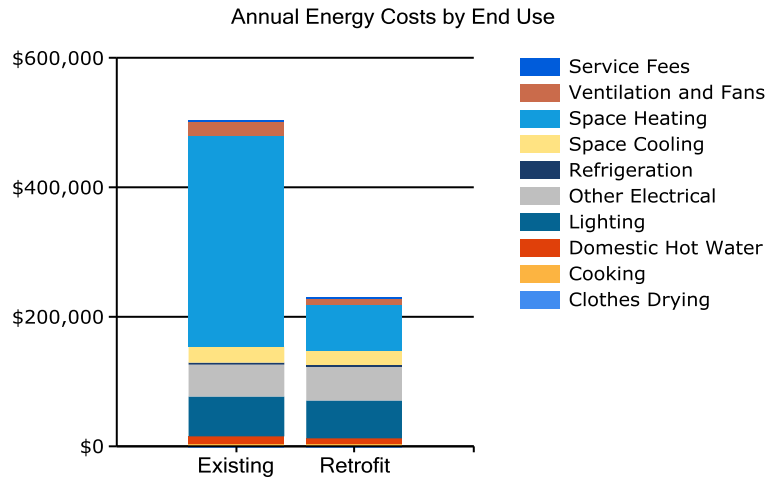


MSBSD Redington Jr/Sr High School – Case Study



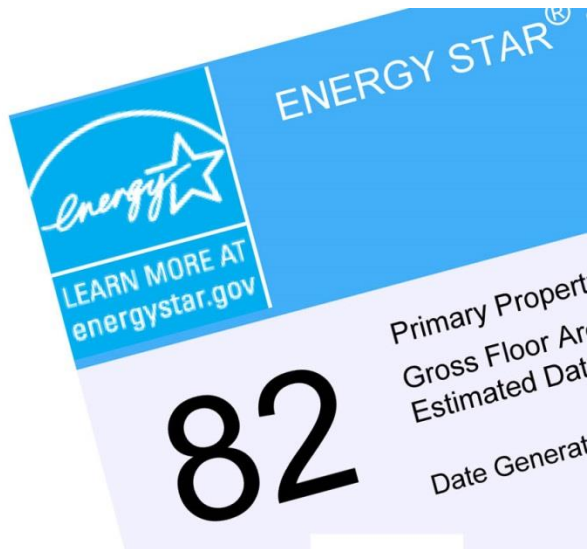
Jason Collins, AIA CEA LEED AP **Wolf Architecture**

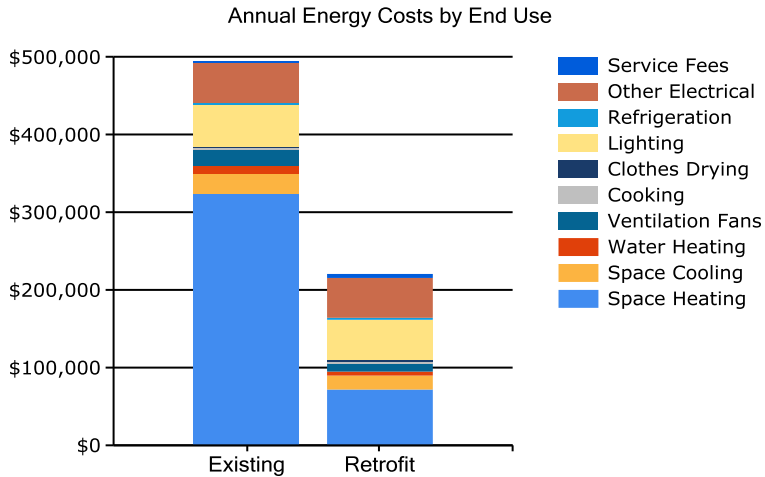
- Palmer, AK
 - Incorporated in 2000
 - 6 Architects
- Commercial design projects
 - Mostly south-central
- Role of Architect in Energy
 - Guide - process
 - Coordination - engineers
 - Oversight - construction



Our Design Process

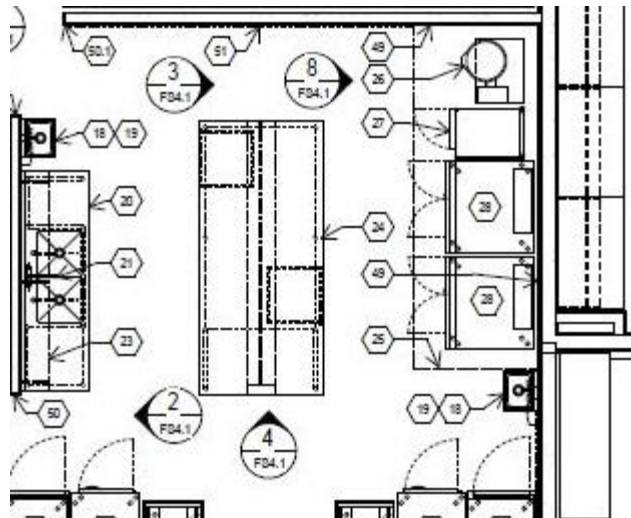
- Start with Program assumptions
 - Square Footage
 - Building Occupancy
- Build up a preliminary energy model – AkWarm
- Compare to Energy Star





Our Documentation Process

- Use energy model as a guide as we progress design
- Revised energy model – Construction Documents
- Input all specified equipment
- Confirm assumptions for Owner equipment





Our Construction Process

- Verify product quality and performance on submittals
- Check insulation and air sealing with infrared camera
 - Before vapor barrier
 - After vapor barrier
- Small projects do commercial blower door test

Over 90%
TOTAL PAST DUE

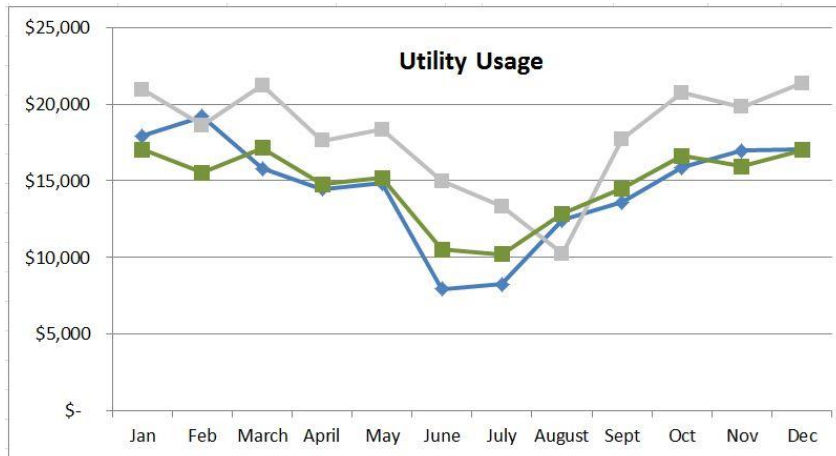
Thank you for...

HISTORICAL INFORMATION						
AVG. TEMPERATURE MAY NOT REFLECT TEMPERATURE AT YOUR SERVICE LOCATION						
BILL MONTH	NO. OF DAYS	KILOWATT HOURS USED	AVG KWH PER DAY	KW DEMAND	AVG. TEMP	
	17	55840	3284	235.200	60	
AUG-15	29	44960	1550	217.600	61	
JUL-15	30	46400	1546	216.000	54	
JUN-15	32	40640	1270	124.800	45	
MAY-15	30	34560	1152	121.600	37	
APR-15	27	23200	859	89.600	25	
MAR-15	33	21120	640	60.800	16	
FEB-15	30	12000	400	51.200	25	
JAN-15	33	17120	518	36.800	30	
DEC-14	20	0	0	32.000	29	
NOV-14						

Budge
SEI
CU

Our Verification Process

- Check on initial month's energy bills
- Compare bills to projected energy model
- Check on a full year energy bills compared to energy model
- Verify building hours, equipment, usage





MSBSD REDINGTON JR/SR HIGH SCHOOL

LEADERSHIP IN **E**NERGY AND **E**NVIRONMENTAL **D**ESIGN

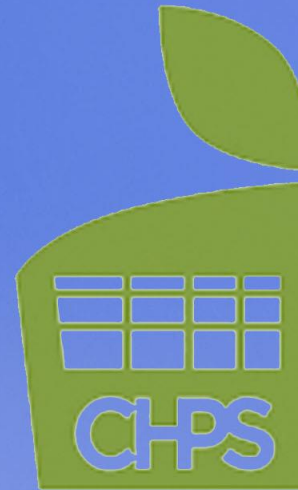


MSBSD Redington Jr/Sr High is the first LEED Gold School in Alaska!



MSBSD REDINGTON JR/SR HIGH SCHOOL

LEADERSHIP IN **E**NERGY AND **E**NVIRONMENTAL **D**ESIGN



COLLABORATIVE FOR
HIGH PERFORMANCE
SCHOOLS®



MSBSD Redington Jr/Sr High is the first CHPS School in Alaska!



MSBSD REDINGTON JR/SR HIGH SCHOOL LEADERSHIP IN **E**NERGY AND **E**NVIRONMENTAL **D**ESIGN



First building in Alaska to be “Designed to Meet the Energy Star”!



MSBSD REDINGTON JR/SR HIGH SCHOOL

LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN



COLLABORATIVE FOR
HIGH PERFORMANCE
SCHOOLS.



What are these Certifications?

LEED – Leadership in Energy and Environmental Design

- US Green Building Council
- International Standards
- MSB Legislation, 10,000sf

CHPS - Collaborative for High Performing Schools

- National program
- Focus on Schools

Energy Star

- Similar to appliance ratings



MSBSD REDINGTON JR/SR HIGH SCHOOL

LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

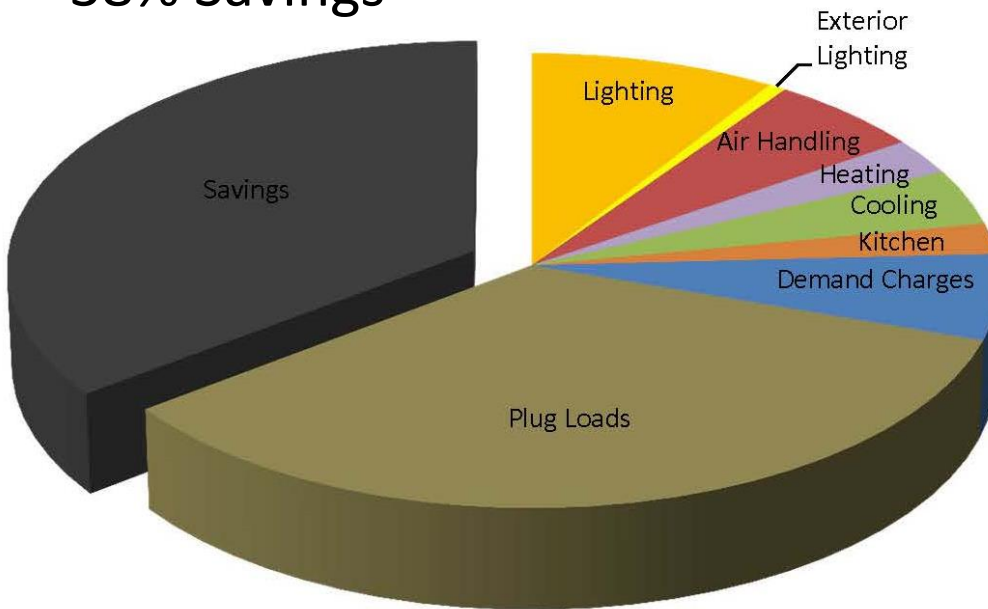




ENERGY EFFICIENCY

Why is it important?

38% Savings



1. Save money
Annual Savings - \$150,500
20 Year - \$3million
50 Year - \$7.5million
2. Lower maintenance
3. Reduce emissions
Annual CO2 – 157 tons



MSBSD REDINGTON JR/SR HIGH SCHOOL

LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN



ENERGY EFFICIENCY

1. Insulation

- R34 Walls w/ ext. rigid
- R45 avg. Roof Insulation
- Windows - daylight

2. Mechanical

1. High Eff. Boiler
2. AHUs w/ heat recovery
3. VAVs and CO2 sensors

3. Electrical

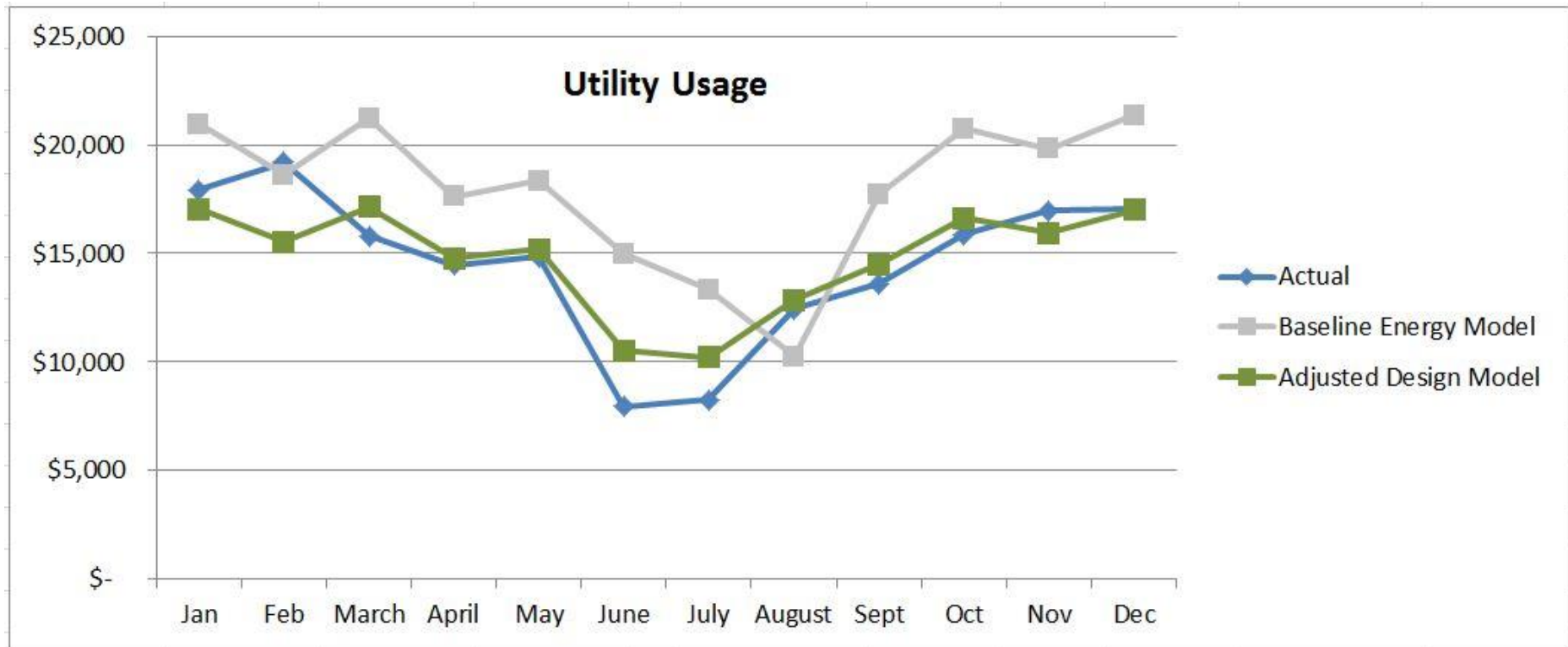
1. LED Ext./Int. Lighting
2. High Eff. Equipment

4. Energy Star Appliances



MSBSD REDINGTON JR/SR HIGH SCHOOL

LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN



Notes:

Actual - This is actual utility data for the 2016 calendar year.

Baseline Energy Model - This is the reference ASHRAE 90.1 standard model.

Adjusted Design Model - This is the design model adjusted for the increased occupied hours and higher number of computers.



Lessons Learned

1. Keep your eye on the ball

- Submittal Reviews for energy use
- Exhaust fans, lights, controls – some rejected for wattage
- Had language in Specification to reject Submittal based on higher energy usage



Lessons Learned

2. Value Engineering

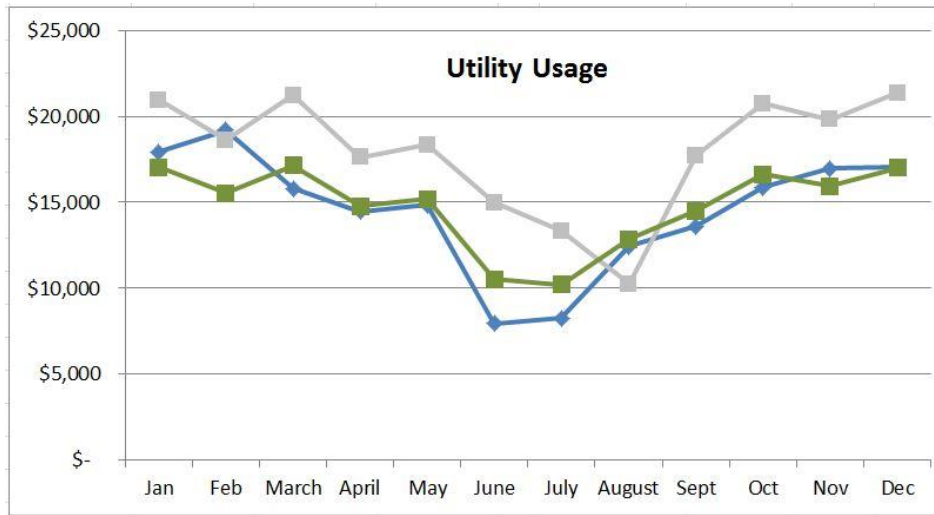
- It has its place in providing a cost effective project.
- Verify impacts on energy model.
- Some Heat Recovery wheels were removed



Lessons Learned

3. Commissioning

- LEED Flush Out
- Review process before, during and after
- Contractor and Owner were surprised by August bills but had forgotten that's when we had done flush-out



Lessons Learned

4. Actual Energy Usage

- Check first month bills
- Check model assumptions
- Check first winter bills
- Check whole year
- Check with Owner on changes in building use and schedules

Over 90 -
TOTAL PAST DUE

Thank you

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NOV-14	20				29

Budget

SET

CU



MSBSD REDINGTON JR/SR HIGH SCHOOL LEADERSHIP IN **E**NERGY AND **E**NVIRONMENTAL **D**ESIGN



MSBSD Redington Jr/Sr High is the first School in Alaska to meet these!
Thanks to the **MSBSD, MSB, Collins Construction**
NAC Architecture and **RSA Engineering** for making this possible!