Granlibakken Tahoe Energy Retrofit

Placer County m-Power Showcase Project

Sierra Business Council

Granlibakken Management Company

2012-2016

Granlibakken and ‘Greenlibakken’

- 1995-present: Sustainable food choices
- 1997-present: Water quality management and hotel conservation
- 2002: Waste stream reduction: Eliminated styrofoam in March 2003
- 2002-present: Water conservation in partnership with TCPUD
- 2003-present: Sustainable purchasing policy
- 2003: Lighting upgrades to conference center
- 2004-2007 (ongoing): Forest management – NTFPD model
- 2003-present: Condo upgrades for heat, hot water, lighting, windows
- 2006-present: Pool complex heating system upgrades
- 2014-present: Building upgrades with sustainable practices
- 2015: Composting trials with TTSD

Continually evolving and learning – Green business is good business

Project Conception to Completion

- May 2012 - summit on Property Assessed Clean Energy program (PACE) scheduled for September
  - “highlighting Granlibakken as a useful case study in the conference”

- May 2016 – Installing final control systems

Placer County Project Objectives

- Placer County has joined the DOE's Better Buildings Challenge
- Forming a collaboration with the local utilities, local vendors and contractors and businesses to gain energy efficiencies; showcasing the unique nature of Granlibakken as an opportunity for a scale-able and long-term energy efficiency project.
- This process gave SBC and mPOWER qualifying information from two local and two national energy services companies.
- Making Progress on County greenhouse emission goals in partnership with county businesses

Assessor Placer County

mPOWER

Sierra Business Council Objectives

- Identify a Sierra Nevada Mountain community process for achieving energy efficiency in older buildings
- Demonstrate the mPower/PACE process for SBC constituents
- Assist Placer County in rolling out the mPower model for commercial properties
- Access to Capital for Energy projects in Eastern Placer County

SIERRA BUSINESS COUNCIL

Granlibakken Objectives

- Education and informed investing
- Overcome ageing building infrastructure
  - High maintenance costs
  - Failing systems
  - No capital improvement funds
- Reduce Operating costs in ‘extreme conditions’
  - Utility costs
  - Maintenance costs
  - ‘Down time’
- Reduce impact on environment
- Improve on sustainability message

The Proposal Process

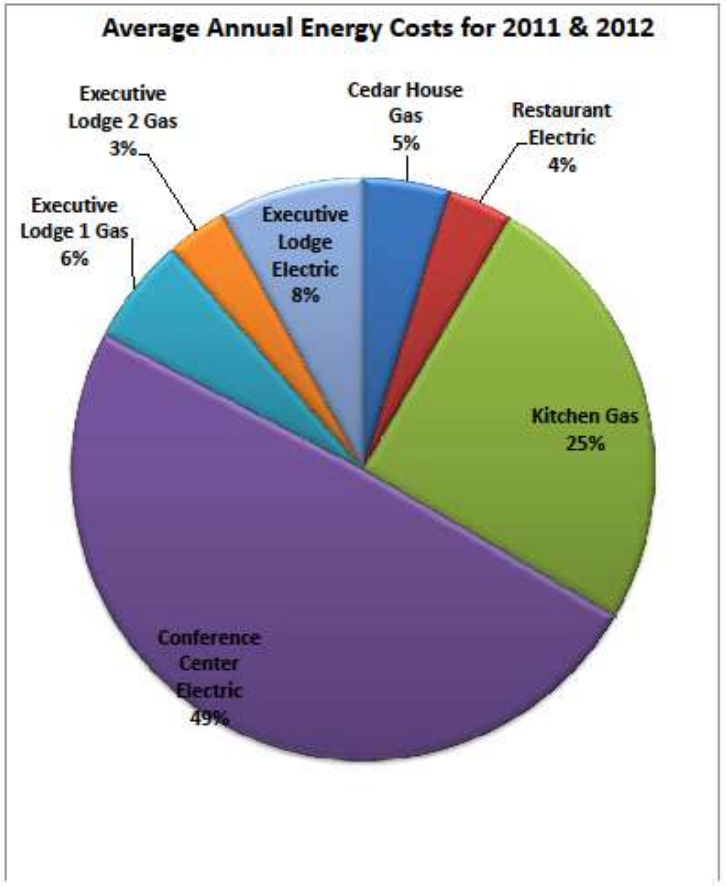
- List of measures identified to meet required levels of financial benefit with a detailed summary of the scope of each measure
- Summary of the expected energy savings attributable to each measure
- Estimate of the cost to implement each measure, including equipment, materials & labor
- Proposed implementation process
- Cash flow estimate
- Potential rebates and their sources

Selection of Contractors

- Based on preliminary estimated project cost, energy savings potential, and approach, Granlibakken chose Sustainable Energy Services above the others.
  - Performance of the Detailed Energy Study;
  - Establishment an Energy Service Agreement; and
  - Perform Measurement & Verification
- a project cost of approximately $238,000 with a payback of 6.4 years
  - adjusted after a detailed ASHRE Level II energy study was conducted.
- October 2014,
  - one large general construction project morphed into 7 unique sub-projects with 6 unique sub-contractors.
  - Granlibakken staff assumed oversight of the total project; scheduling sub-project timelines, sequencing of equipment demolition & delivery, and coordinating sub-contracts with all associated equipment and installation suppliers

Most Opportunity
Conference Center and Kitchen

Meter Name	Average Annual Energy Costs 2011+2012	After ECM
Cedar House Gas	6,700.35	6,365.33
Restaurant Electric	5,014.93	4,764.18
Kitchen Gas	34,851.10	29,623.43
Conference Center Electric	68,686.86	65,252.51
Executive Lodge 1 Gas	8,295.35	7,465.81
Executive Lodge 2 Gas	4,700.21	4,230.18
Executive Lodge Electric	11,197.49	10,973.54
Total	$ 139,446.27	$ 128,674.99
Total Floor Area	48,850 sq. ft	
Energy Cost Index	$ 2.85 $/sq. foot	
Energy Utilization Index	104.7 kBtu/sq. ft	



- 70+% energy
- Existing lighting upgrades
- 25 year old systems
- High maintenance costs
- Old refrigeration

Project Components

- HVAC: Air Handlers, condensing units (12), fan coil units
- Kitchen:
  - Hood and Make-up Air (intelli-hood)
  - Refrigeration (4 systems)
  - Dishwasher
- Hot Water:
  - Condensing boilers (2)
  - High efficiency domestic hot water tank
  - Variable speed pumps
- Controls: Replace existing and add components
- Lighting: LED replacements

- Eliminated: Power generation and Windows
- Cost: $676K (size 14,684 sqft)

Forecasted Numbers

- ***Annual Energy Use***
- Baseline: 544,910 kWh, 36,383 therms
- Expected: 322,406 kWh, 19,082 therms
- Actual: To be monitored in the coming year.
- Expected Energy Savings:
  - 222,504 kWh
  - 17,301 therms

- ***Annual Energy Cost***
- Baseline: $104,767
- Expected: $60,955
- Actual: To be monitored in the coming year.
- Expected Savings: $43,812/year

Energy Conservation Measures	Electric Reduction	NG Reduction	Cost Savings	Payback
	[kWhr/yr]	[Therms/yr]	[$/yr]	[yr]
Heating	18,753	15,000	$15,188.00	15.5
Cooling	69,282	-	$9,006.00	17.3
Building Automation	29,747	-	$3,762.00	9.3
New Refrigeration Compressors & Ecm Evap	16,104	-	$2,093.00	21.5
New Dishwasher	73,173	-	$9,512.00	4.4
Melink Intelli-Hood	10,200	1,983	$3,328.00	6.6
Lighting	2,745	-	$330.00	11.8
Windows	2,500	318	$593.00	25.5
Totals	222,504	17,301	$43,812.00	14.0

Liberty Utilities Rebate: $11,511

Marketing Benefits

- Granlibakken Tahoe is very concerned about the environment. Our business is inextricably tied to a healthy environment globally and at Lake Tahoe. Snow, Lake and Forest are part of our brand.

- We can tell our story, but awards add credibility:
  - Cool California: Climate Leader Award
  - NSAA Environmental Award: Finalists for the 2016 Golden Eagle Awards

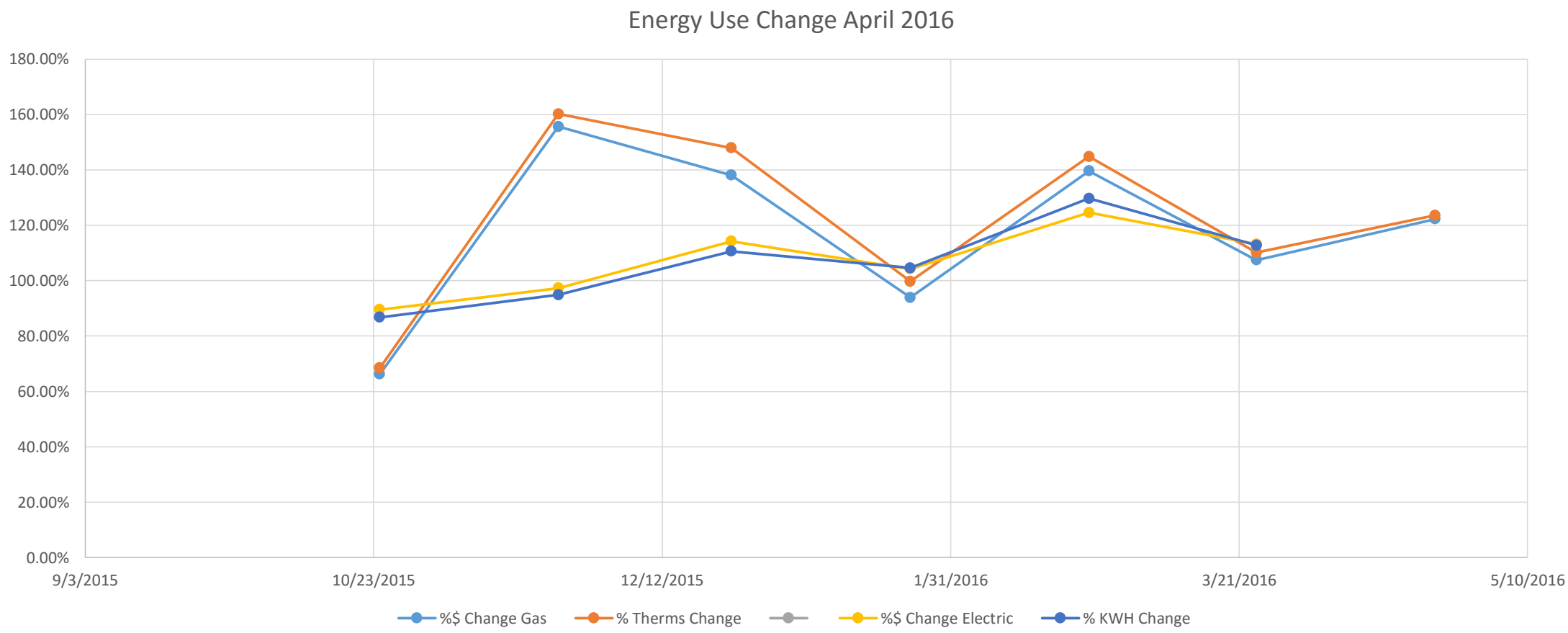
NATIONAL SKI AREAS ASSOCIATION

NSAA

SMALL BUSINESS AWARDS CoolCalifornia.org

CoolCalifornia.org CLIMATE LEADER

Energy Comparison – So Far



Granlibakken Lessons

- ‘It’ is not easy
- Energy evaluation made possible by Placer County process
- Contractor selection continues through entire process
- Engineering never stops
- ‘Vision’ is not reality – promises change when the math gets right
- We’re not ‘there’ yet and never will be – environmental responsibility is a forever commitment
- PACE funding was the enabler for this project

This project was good on many levels and we continue to learn