Energy Savings Performance Contracting

Bonnie Rouse – Section Supervisor
Montana Dept. of Environmental Quality

Brian Solan, P.E. – Montana Business Leader
Ameresco, Inc.

What is Energy Performance Contracting

Well-established mechanism in the U.S. for delivering energy efficiency, implemented by the private sector

- Montana legislation that supports performance contracting activity.

Performance-based energy efficiency projects funded through private capital—energy savings ($) repay investment over time

- Projects occur in public and private sector buildings and facilities
- Projects save energy while providing for facility renewal often addressing deferred maintenance

Projects have contractual agreements with the private sector that guarantee energy savings

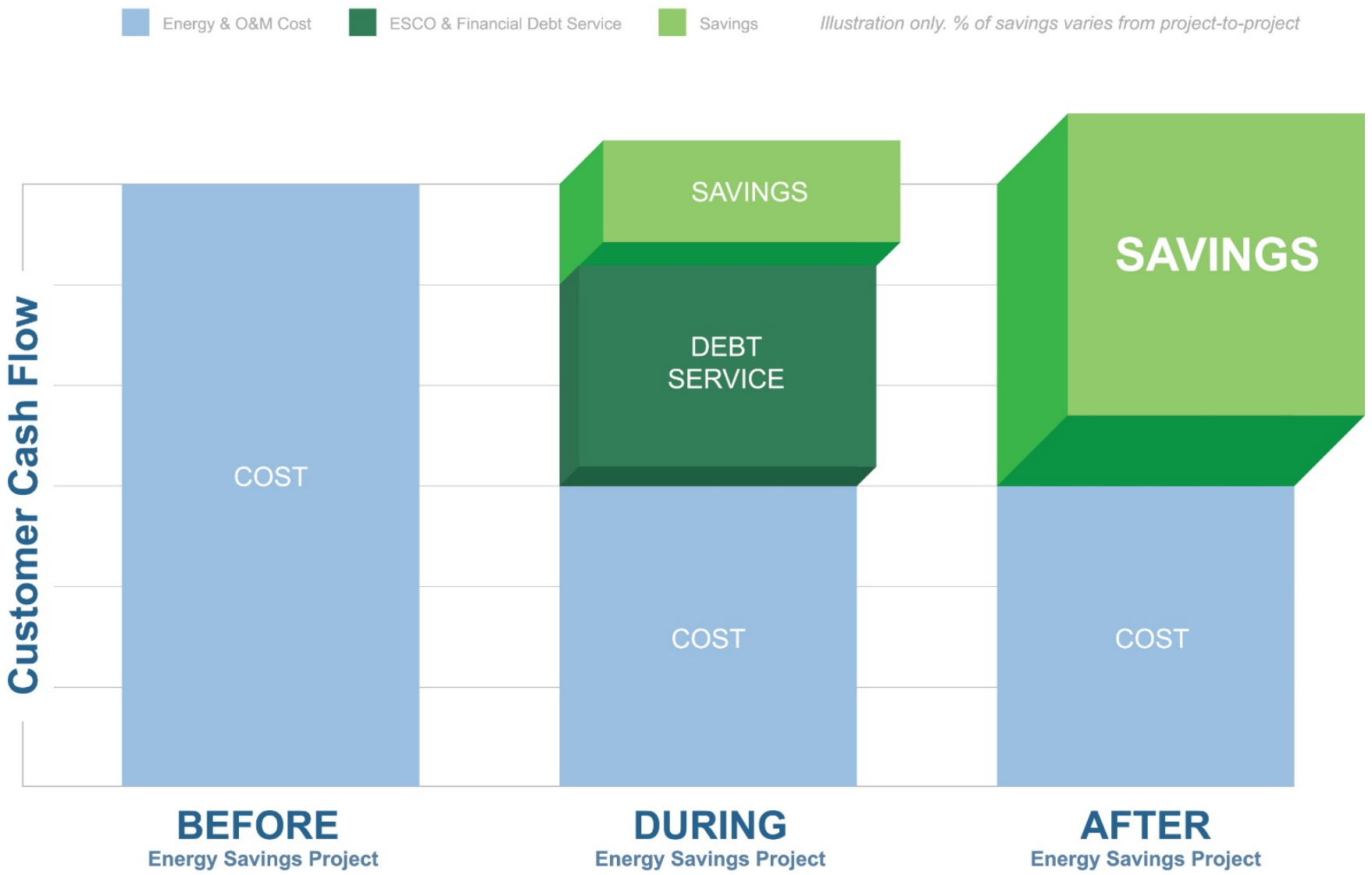
- Measurement and Verification (M&V) to verify project energy savings

DEQ MONTANA ENERGY OFFICE

AMERESCO

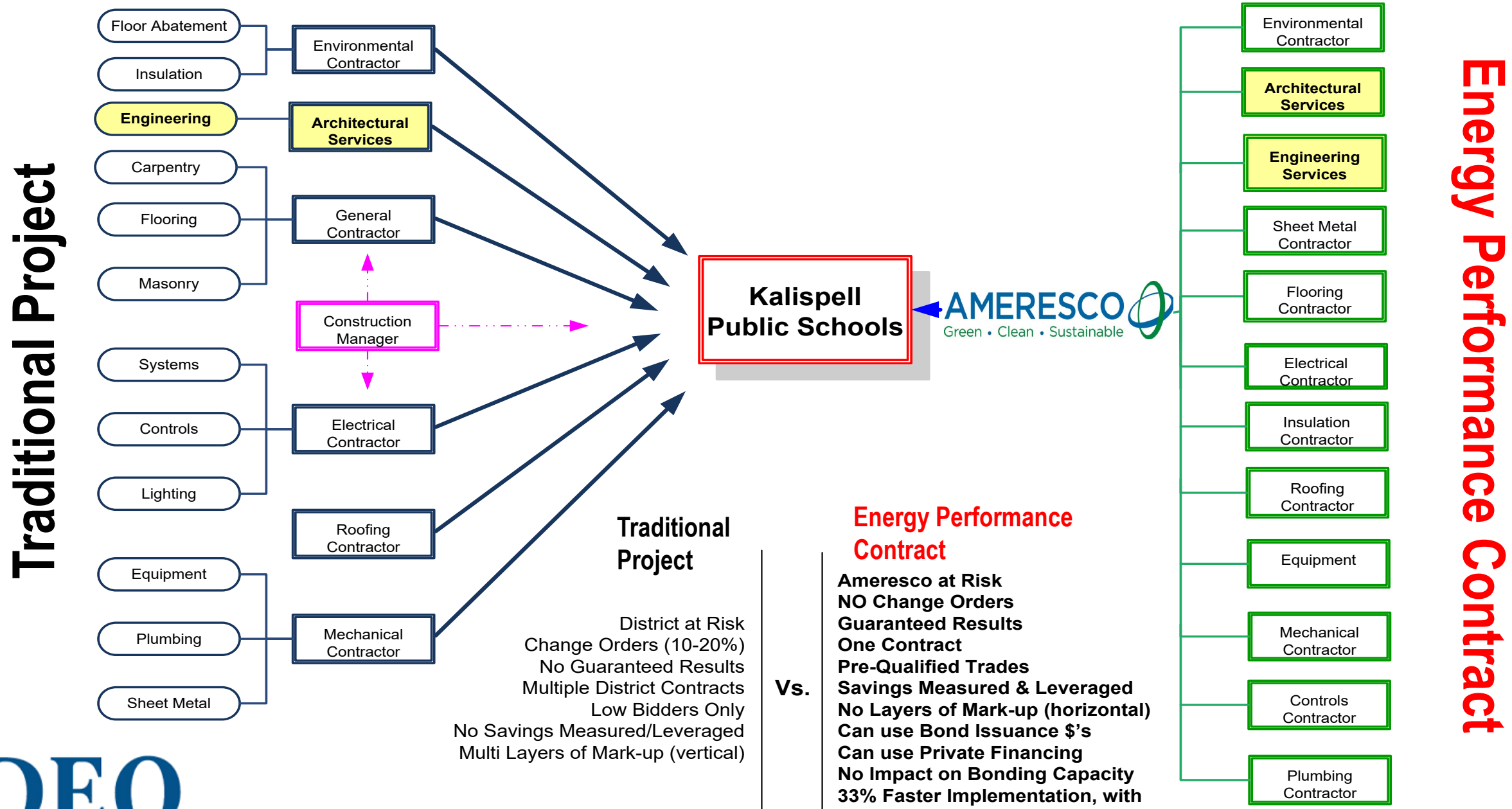
Performance Contracting: A Budget-Neutral Solution

Energy Services Agreements enable budget-neutral energy efficiency upgrades by guaranteeing a minimum level of energy savings over the term of the contract, and that the savings from the project will exceed the project costs. The customer can then repay the investment with their energy savings over time.



DEQ MONTANA ENERGY OFFICE

AMERESCO



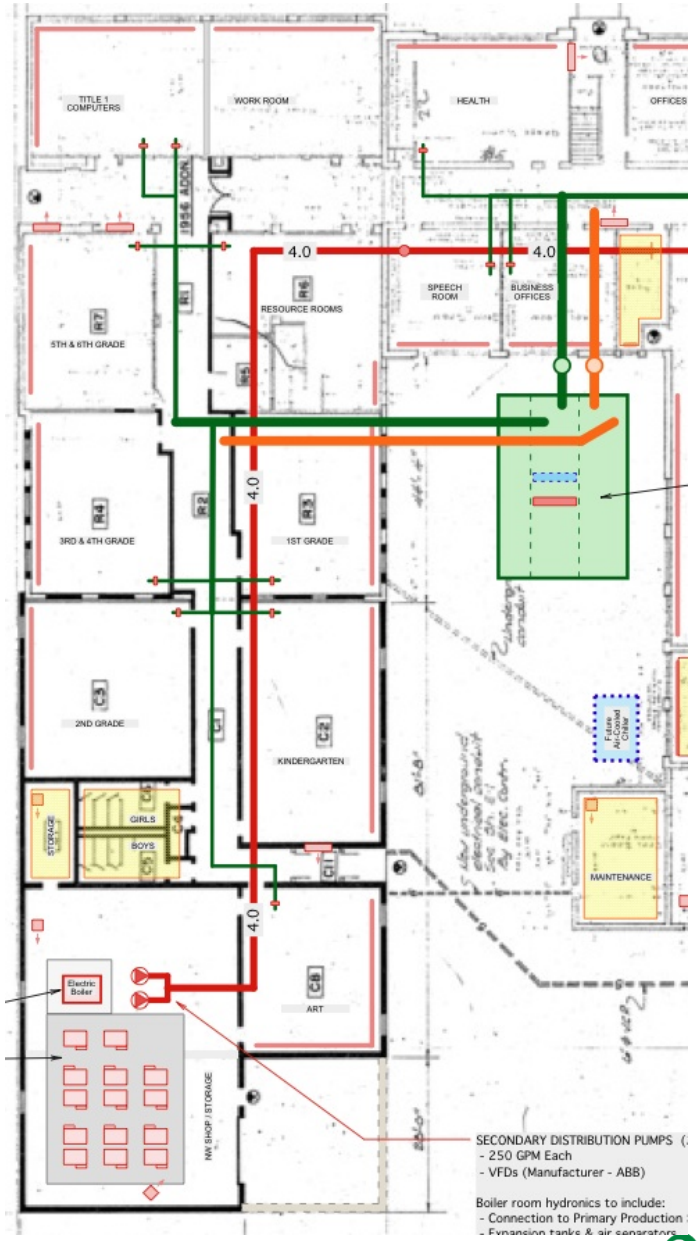
DEQ MONTANA ENERGY OFFICE

AMERESCO

* 1997 Construction Industry Institute study, in conjunction with Penn State University, 351 projects studied in 37 states

Engineering Focused Project Management

- **Identification of Your Needs & Goals**
  - ECMs = Energy Conservation Measures
  - FIMs = Facility Improvement Measures
- **Pre-Design & Budgeting**
  - Options Analyses & Reasonable Scope Selection
  - Possible Funding Sources
  - (ESPC / Deferred Maintenance / Other)
- **Engineering**
  - Detailed Design for Competitive Contractor Pricing
  - (As required for some funding sources)
- **Construction**
  - Management & Supervision
- **Commissioning**
  - Startup & Testing
  - Training



DEQ MONTANA ENERGY OFFICE

AMERESCO

The Process

Enabling Legislation MCA 90-4-1102 to 1114

90-4-1103. Authority to enter into energy performance contracts. (1) A governmental entity may enter into an energy performance contract. A governmental entity that enters into an energy performance contract shall do so in accordance with this part.

(2) Nothing in this part prevents a governmental entity from entering into a contract that is not an energy performance contract for conservation measures under any other legal authority.

90-4-1112. Selection of qualified energy service providers. (1) Before entering into an energy performance contract, a governmental entity shall solicit a request for proposals from a minimum of three qualified energy service providers. The governmental entity may award the performance contract to the qualified energy service provider determined by the governmental entity to best meet the needs of the governmental entity. The qualified energy service provider selected is not required to have submitted the proposal with the lowest cost.

DEQ MONTANA ENERGY OFFICE

AMERESCO

Key Terms

MCA 90-4-1102(2)

"**Cost-saving measure**" means a cost-effective facility improvement, repair, or alteration or equipment, fixtures, or furnishings added to or used in a facility and designed to reduce energy or water consumption or operation and maintenance costs. The term also includes vehicle acquisitions, changes to utility rate or tariff schedules, or fuel source changes that result in cost savings.

Key Terms

MCA 90-4-1102(1)

"**Cost-effective" or "cost-effectiveness**" means that the sum of guaranteed cost savings and, if and to the extent allowed by rules adopted pursuant to 90-4-1110(3)(d), unguaranteed energy cost savings attributable to utility unit price escalation are equal to or exceed any financing repayment obligation each year of a finance term.

Key Terms

MCA 904-1102(8)

"**Guaranteed cost savings**" means a guaranteed annual measurable monetary reduction in utility and operating and maintenance costs for each year of a guarantee period resulting from cost-saving measures. Guaranteed cost savings for utility cost savings must be calculated using mutually agreed on baseline utility rates in use at the time of an investment-grade energy audit. Guaranteed cost savings for operation and maintenance cost savings must be calculated using mutually agreed on baseline operation and maintenance costs at the time of an investment-grade energy audit.

Key Terms

MCA 90-4-1102(4)

"**Energy performance contract**" means a contract between a governmental entity and a qualified energy service provider for evaluation, recommendation, and implementation of one or more cost-saving measures, evaluation of cost-effectiveness, and guaranteed cost savings.

The 5 Step EPC Process

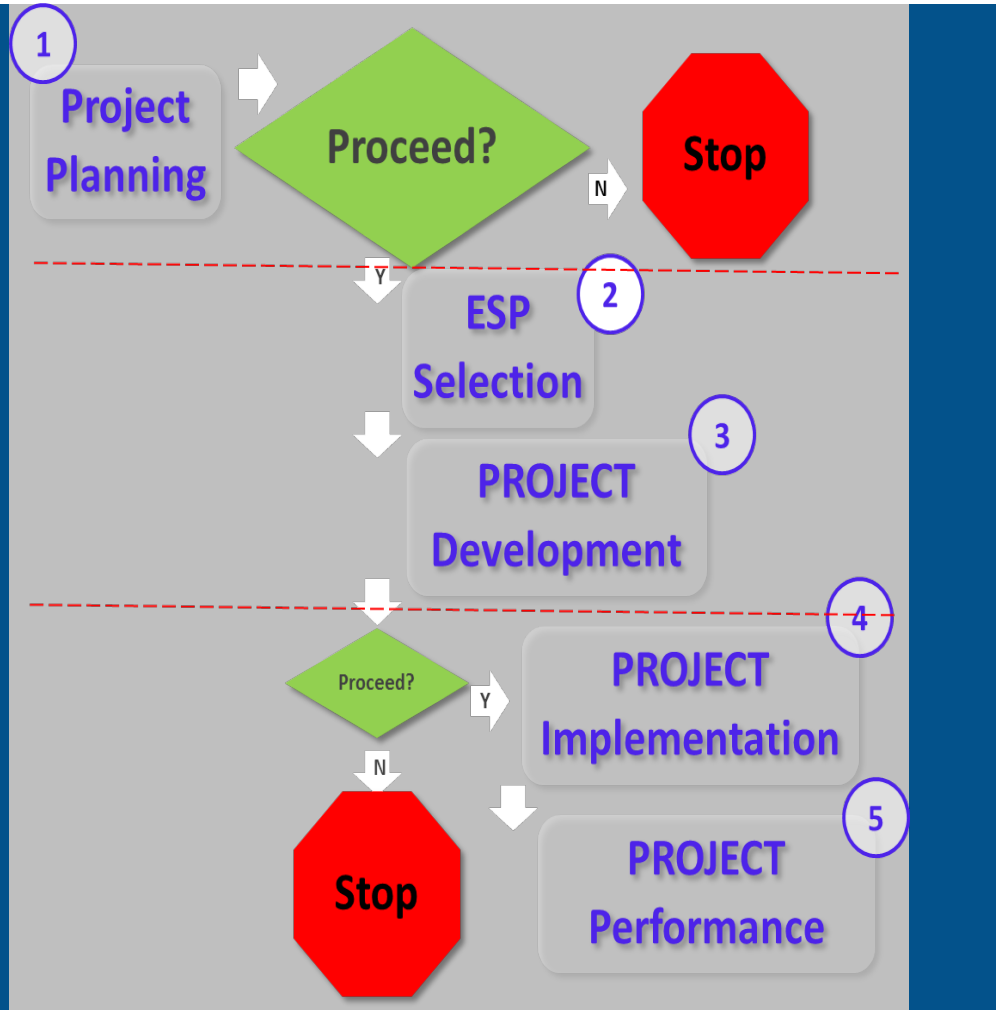
Step 1- Project Planning

Step 2 - Energy Service Provider (ESP) Selection Process

Step 3 - Project Development

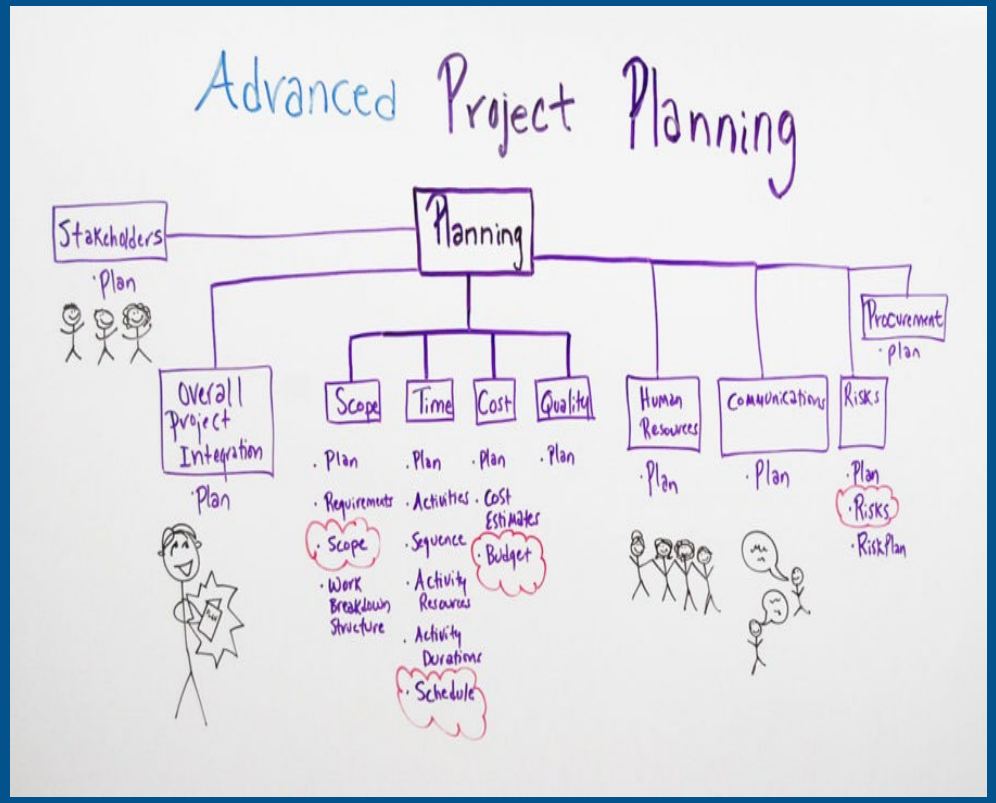
Step 4- Project Implementation

Step 5 - Project Performance



DEQ MONTANA ENERGY OFFICE

AMERESCO



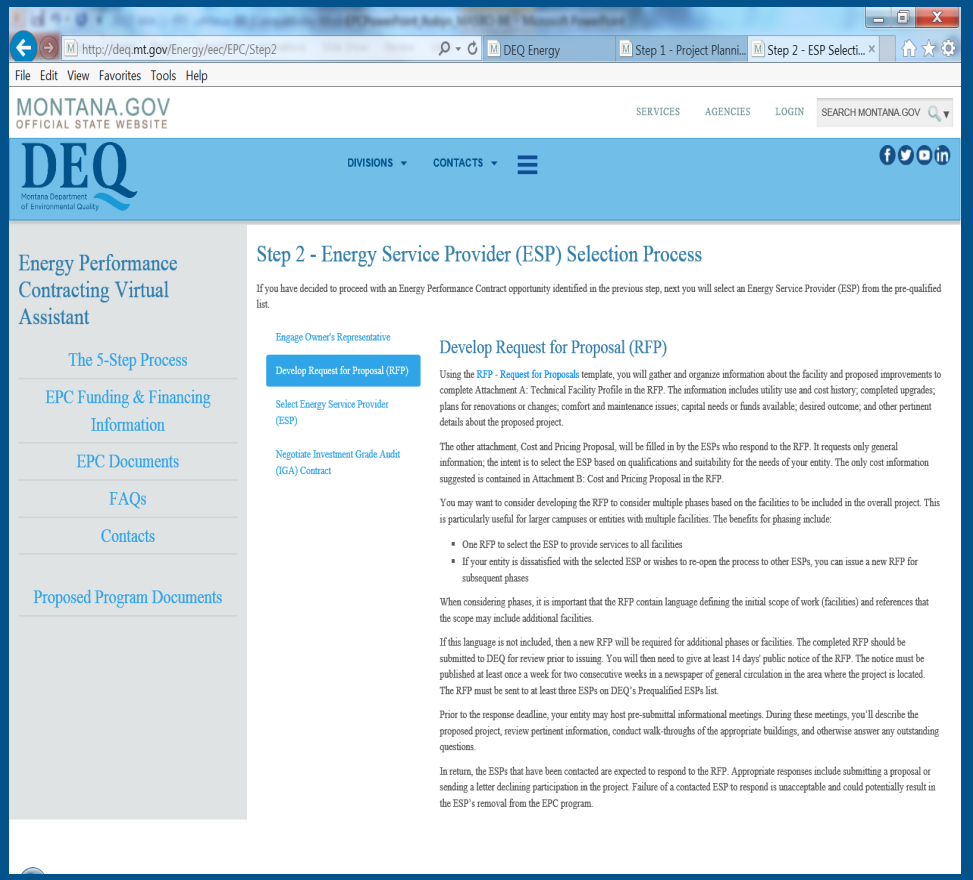
Step 1

Project Planning

- Learn about EPC resources available from DEQ
- Identify Potential Projects
- Begin Outreach to Key Stakeholders
- Define Project Goals
- Explore Financing Strategies
- Develop Scope of Potential Work
- Decide whether to move forward with selecting an Energy Service Provider to perform the Investment Grade Audit (IGA)

DEQ MONTANA ENERGY OFFICE

AMERESCO



Step 2

Energy Service Provider (ESP) Selection Process

- **Develop Request for Proposal**
- **Select Energy Service Provider (ESP)**
- **Negotiate Investment Grade Audit (IGA) Contract**
- **Consider Engaging an Owner's Representative for complicated projects**

-Someone who can help you navigate the EPC process, and who can potentially serve as a liaison between you and the ESP

DEQ MONTANA ENERGY OFFICE

AMERESCO

Step 3

Project Development

- **Investment Grade Audit (IGA) Project Proposal**
- **Decide to whether to continue** with the EPC or explore alternative means to complete the project
- **Decide on Scope of Project**
- **Decide on Funding and/or Financing**
- **Decide on Measurement and Verification (M&V) Plan**
  -to accurately measure whether the improvements are delivering the guaranteed energy savings.
- **Negotiate Contract with ESP**

DEQ MONTANA ENERGY OFFICE

AMERESCO

Step 4

Project Implementation

- **Cost Savings Measure Installation**
  -ESP will complete the design and retrofit work and move forward with install
- **Commissioning**
  -Quality control process to make sure that building is still operating optimally
- **Training** of facility staff on proper operation and maintenance.
- **Project Closeout**
- **Operational and Maintenance (O&M) Services** *(optional)*
  -ESP may offer (at a cost) to operate and maintain the equipment

DEQ MONTANA ENERGY OFFICE

AMERESCO

Step 5

Project Performance

- **Monitor Project Performance**

  -ESP will perform ongoing project monitoring for a minimum of 3 years per MT statute.

- **Measurement & Verification (M&V) Protocols on agreed-upon frequency basis**

  -ESP will submit the annual M&V report to you and DEQ for each year of the guaranteed period

DEQ MONTANA ENERGY OFFICE

AMERESCO

Project Overview – Kalispell Schools Phases 1 - 5

How Did We Get Here?

- 2013 – KSD Phase 1 Energy Performance Contract
- 2016 – KMS Phase 2 Energy Performance Amendment
- 2017 - Flathead Phase 2 – Steam to Hot Water Design/Build
- 2018 – Flathead Phase 3 – Steam to Hot Water Design/Build
- Budget Issues with other bond projects
  - Considered Excess Savings from Phase 1 ~$25k/year
- 2018/2019 - LED Lighting for Entire District
    - Conventional Energy Performance Financing

Kalispell Schools Phase 1 – EPC Project Review

TOTAL PROJECT

$3,287,495 – Energy Savings Performance Contract

Quality Schools Grant

~30%– Quality Schools Grant – HB 15

QZAB bonds using Energy Savings (~$116,000/year guaranteed)

~60% – QZAB's at 0% Financing

~5% Private Donation (Ameresco)

~5% District Cash

DEQ MONTANA ENERGY OFFICE

AMERESCO

Kalispell Schools Phase 1 – EPC Project Review

Focus on Flathead High

Lighting Upgrades – All Buildings (Standardize)

Building Envelope Improvements – All Buildings

Water Fixture Retrofits – Most Buildings

Boiler System Upgrades / Replacement – Flathead High

Domestic Hot Water Upgrade – Flathead High

HVAC System Upgrades – Flathead High, Edgerton

Asbestos Abatement – Flathead High

New Roof – Flathead High West Annex

DEQ MONTANA ENERGY OFFICE

AMERESCO

Comprehensive Project By Building

ECM #	Overall Project Savings & Costs - by ECM	Total Savings	Installed Cost
1	Flathead High School	$61,121	$ 2,502,651
2	Glacier High School	$2,258	$ 30,196
3	Kalispell Middle School	$16,280	$ 265,393
4	Edgerton	$12,590	$ 188,989
5	Hedges	$3,683	$ 51,824
6	Linderman	$3,310	$ 43,940
7	Russell	$3,087	$ 48,599
9	Peterson	$3,193	$ 41,528
10	Elrod	$4,338	$ 49,910
11	Vo-Ag	$3,228	$ 43,360
12	Administration	$925	$ 3,340
13	Central Supply	$212	$ 2,332
15	Maintenance	$2,559	$ 15,431
Project Totals		***$ 116,785***	***$ 3,287,495***

DEQ MONTANA ENERGY OFFICE

AMERESCO

Comprehensive Project By Energy Conservation Measure

ECM #	Overall Project Savings & Costs - by ECM	Total Savings	Installed Cost
1	Lighting Upgrades - Interior	$36,180	$ 469,678
2	Lighting Control Upgrades - Controls	$5,900	$ 94,594
3	Lighting Upgrades - Exterior	$2,128	$ 68,239
4	Building Envelope Improvements	$12,696	$ 150,891
5	Water Fixture Retrofits	$9,398	$ 109,539
6	Domestic Hot Water Upgrade	$5,521	$ 20,805
7	Boiler Plant Modifications	$11,287	$ 745,319
10	Temperature Control System Upgrades	$1,825	$ 8,014
13	VAV Upgrade	$13,473	$ 1,285,444
15	High Efficiency Transformer Replacement	$3,610	$ 75,567
16	Roof Replacement & Insulation	$750	$ 84,378
17	Retro-Commissioning	$14,017	$ 175,026
Project Totals		***$ 116,785***	***$ 3,287,495***

DEQ MONTANA ENERGY OFFICE

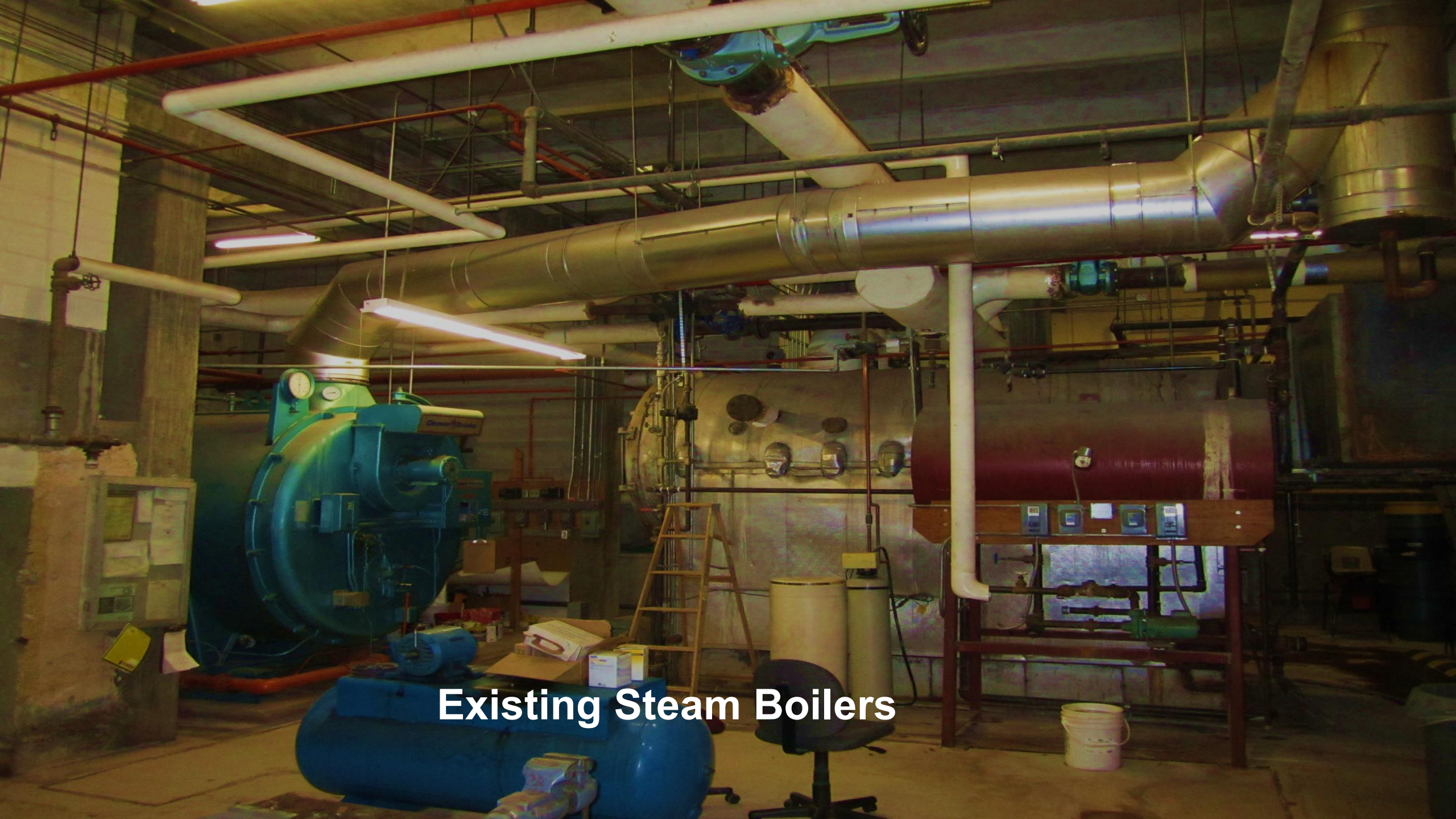
AMERESCO

Additional Costs – **No Change Orders** to Kalispell Schools

Kalispell Additional Work Summary			
Flathead High School	Miscellaneous Lighting	$	1,458
	Lighting for Room 215	$	1,444
	Exterior Lighting	$	21,072
	Mechanical/Boiler Room Stairway	$	53,859
	Cabinet Unit Heaters/piping/asbestos removal	$	73,552
	Vice Principal/Teachers Room Additional Heat	$	24,750
Kalispell Middle School	Additional ballasts (dual switching)	$	8,173
	Miscellaneous Lighting	$	2,021
	Exterior Lighting	$	4,758
Edgerton	Lighting - Coridor 1	$	10,010
	Exterior Lighting	$	3,431
Linderman	Additional Lighting	$	6,064
Elrod	Additional LIghting	$	3,031
Vocational Ag	Additional Lighting	$	5,844
Miscellaneous	Occupancy Sensor Changes various schools	$	11,969
	Measurement & Verification initial testing	$	2,475
	Northern Industrial Asbestos Inspections	$	11,034
	TOTAL	***$***	***244,943***
	Kalispell Contract Value	$	3,287,495
	Extra Costs (% of contract) covered by AMERESCO		**7.45%**

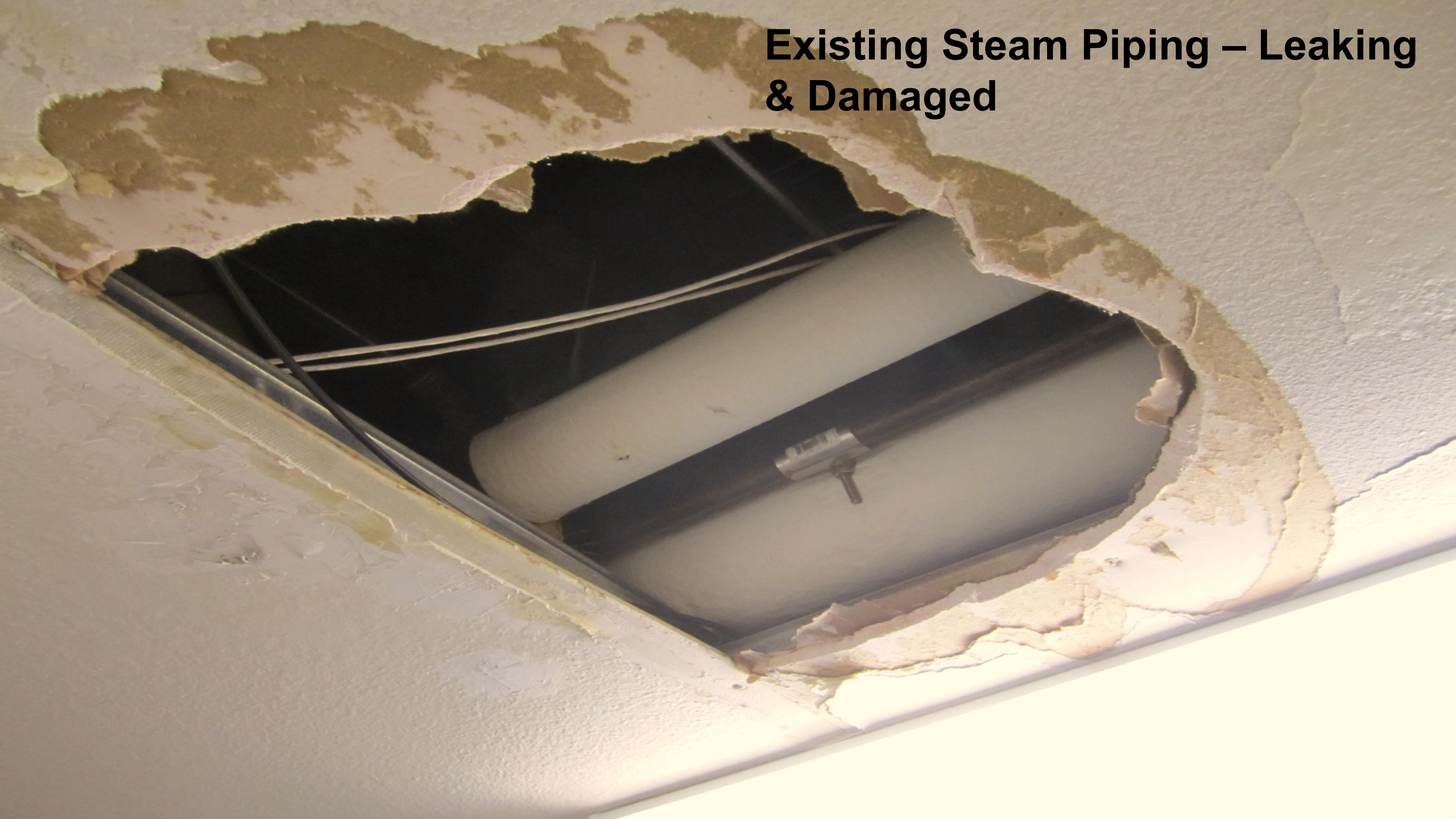
DEQ MONTANA ENERGY OFFICE

AMERESCO


Existing Steam Boilers

DEQ MONTANA ENERGY OFFICE

AMERESCO


Existing Steam Piping – Leaking
& Damaged

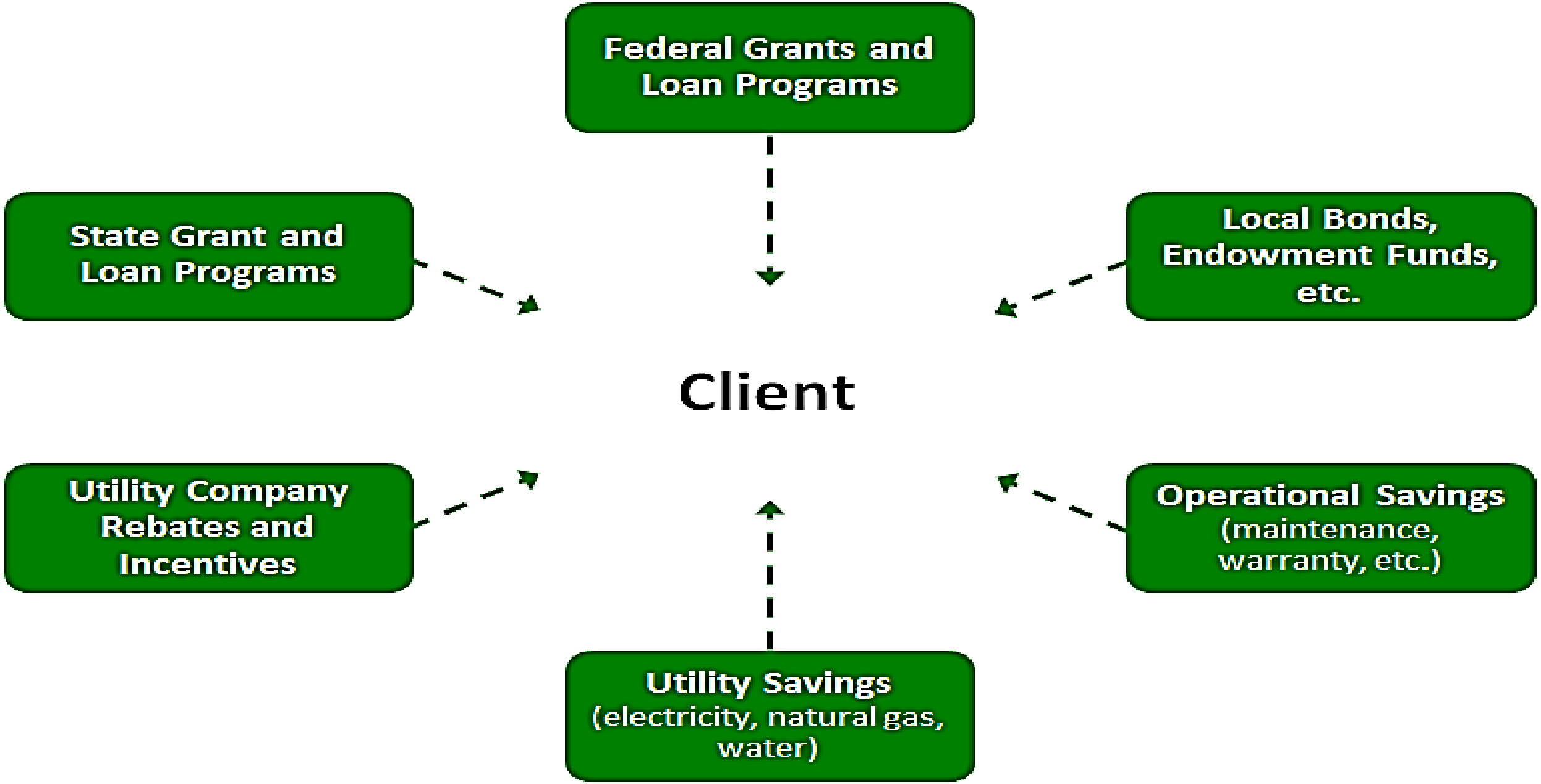

Existing Steam Piping – Leaking
& Damaged

DEQ MONTANA ENERGY OFFICE

New VAV Box, Controls and Hot Water Piping

AMERESCO

Funding Sources



Energy Savings Project Funding Sources

INTERCAP LOAN PROGRAM

- Administered By *Board of Investments*
- Variable Interest Rate – **3.37% Currently**
- Rate Re-set Annually in February
- 10 Year Average Interest Rate ~**2.3%**
- Overall Average Interest Rate ~**4.1%**
- Cap on Interest Rate – **16.5%**
- No Cost of Issuance
- No Pre-Payment Penalty
- Note is backed by Operation Budget & General Fund or Energy Savings
- Not subject to appropriation
- Required to have 15 years of M&V – *added burden to project*

TAX-EXEMPT LEASE

- Administered By *Private Lenders*
- Fixed Interest Rate
- Current Interest Rate – ~**4% Fixed**
- No Costs of Issuance
- Prepayment on any payment date with a Penalty of **1-2%**
- Subject to Annual Appropriation
- 3 years only Measurement & Verification required – *lessens burden to the project*
- Flexible payment schedule

Utility Rebates (<5%)

- Administered By Utility
- Limited Funds Available
- Electric Utility Structure currently not geared towards conservation

Reserve / Bond Election

- Taxpayer Liability
- Ameresco provides assistance & marketing for election
- Leverage funds for energy savings performance contract

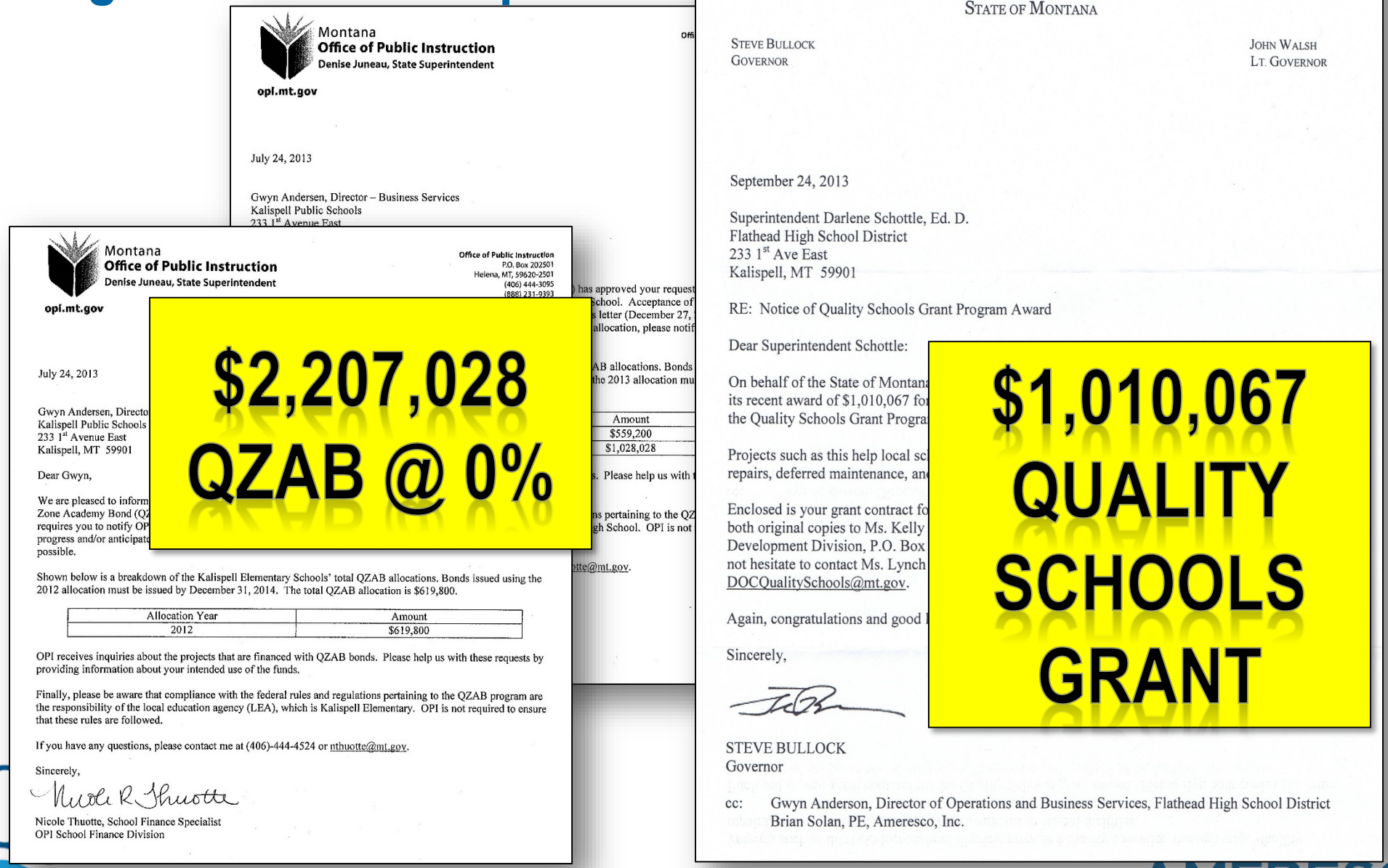
Grants

- Grant programs to buy down cost of finance

DEQ MONTANA ENERGY OFFICE

AMERESCO

Funding Sources - Kalispell



Montana
Office of Public Instruction
Denise Juneau, State Superintendent
opi.mt.gov

July 24, 2013

Gwyn Andersen, Director – Business Services
Kalispell Public Schools
233 1st Avenue East

Montana
Office of Public Instruction
Denise Juneau, State Superintendent
opi.mt.gov

Office of Public Instruction
P.O. Box 202501
Helena, MT, 59620-2501
(406) 444-3095
(888) 231-9393

July 24, 2013

Gwyn Andersen, Directo
Kalispell Public Schools
233 1st Avenue East
Kalispell, MT 59901

Dear Gwyn,

We are pleased to inform
Zone Academy Bond (QZ
requires you to notify OP
progress and/or anticipat
possible.

Shown below is a breakdown of the Kalispell Elementary Schools' total QZAB allocations. Bonds issued using the 2012 allocation must be issued by December 31, 2014. The total QZAB allocation is $619,800.

Allocation Year	Amount
2012	$619,800

OPI receives inquiries about the projects that are financed with QZAB bonds. Please help us with these requests by providing information about your intended use of the funds.

Finally, please be aware that compliance with the federal rules and regulations pertaining to the QZAB program are the responsibility of the local education agency (LEA), which is Kalispell Elementary. OPI is not required to ensure that these rules are followed.

If you have any questions, please contact me at (406)-444-4524 or nthuotte@mt.gov.

Sincerely,

Nicole R Thuotte

Nicole Thuotte, School Finance Specialist
OPI School Finance Division

has approved your request
School. Acceptance of
s letter (December 27,
allocation, please notif

AB allocations. Bonds
the 2013 allocation mu

Amount
$559,200
$1,028,028

s. Please help us with t

ns pertaining to the QZ
gh School. OPI is not

otte@mt.gov.

$2,207,028 QZAB @ 0%

OFFICE OF THE GOVERNOR
STATE OF MONTANA

STEVE BULLOCK
GOVERNOR

JOHN WALSH
LT. GOVERNOR

September 24, 2013

Superintendent Darlene Schottle, Ed. D.
Flathead High School District
233 1st Ave East
Kalispell, MT 59901

RE: Notice of Quality Schools Grant Program Award

Dear Superintendent Schottle:

On behalf of the State of Montana
its recent award of $1,010,067 fo
the Quality Schools Grant Progra

Projects such as this help local sc
repairs, deferred maintenance, an

Enclosed is your grant contract fo
both original copies to Ms. Kelly
Development Division, P.O. Box
not hesitate to contact Ms. Lynch
DOCQualitySchools@mt.gov.

Again, congratulations and good l

Sincerely,

STEVE BULLOCK
Governor

cc: Gwyn Anderson, Director of Operations and Business Services, Flathead High School District
Brian Solan, PE, Ameresco, Inc.

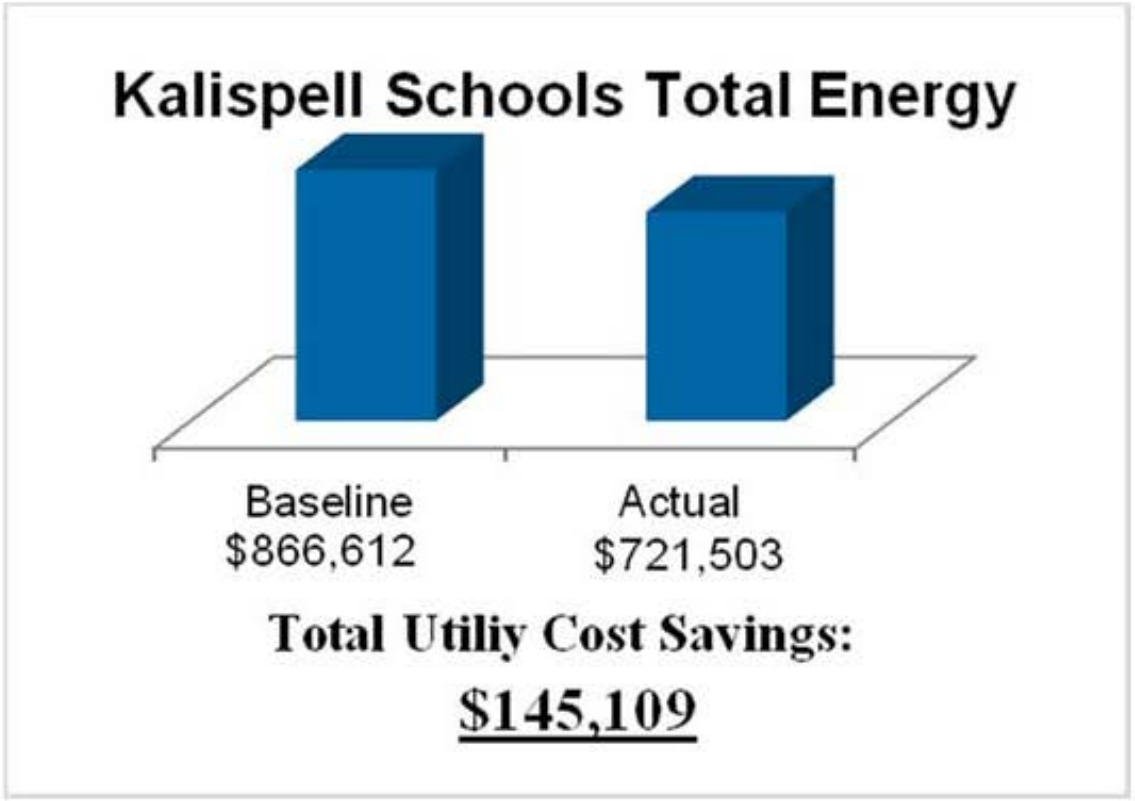
$1,010,067 QUALITY SCHOOLS GRANT

DEQ
MONTANA ENERGY OFFICE

AMERESCO

Results – Measurement & Verification

Summary of Guaranteed and Verified Energy and Cost Savings



The EPC guaranteed a total annual utility cost savings of $116,785.

In the absence of the EPC project, Kalispell Schools would have spent $866,612 in utility costs during this performance period.

The verified utility cost expenditure during this performance period was $721,503.

This represents a savings of $145,109 which is $28,324 greater than the guaranteed utility cost savings.

DEQ MONTANA ENERGY OFFICE

AMERESCO

Energy Use: HPS vs. LED

	100 watt HPS	LED Replacement [1]
Fixture Watts	130	33
Correlated Color Temperature (CCT)	2000K (orange)	4000K (white)
Color Rendering Index (CRI)	22	75
Initial Lumen Ouput	9,500	4,157
Lumens per Watt (efficacy)	73	126

1. LED replacement will range from 27-49 watts depending on pole height, spacing and illumination requirements.

DEQ MONTANA ENERGY OFFICE

AMERESCO

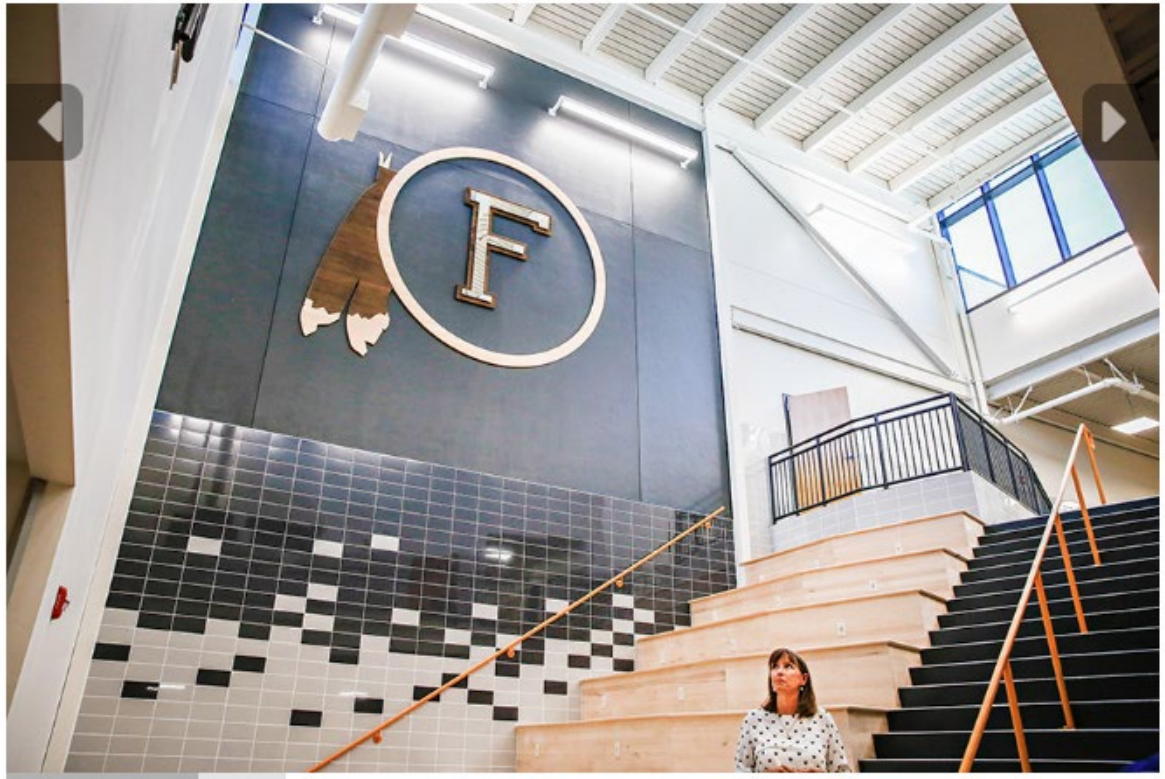
Phase 5 Project – Energy Performance (LED Lighting)

News & Features

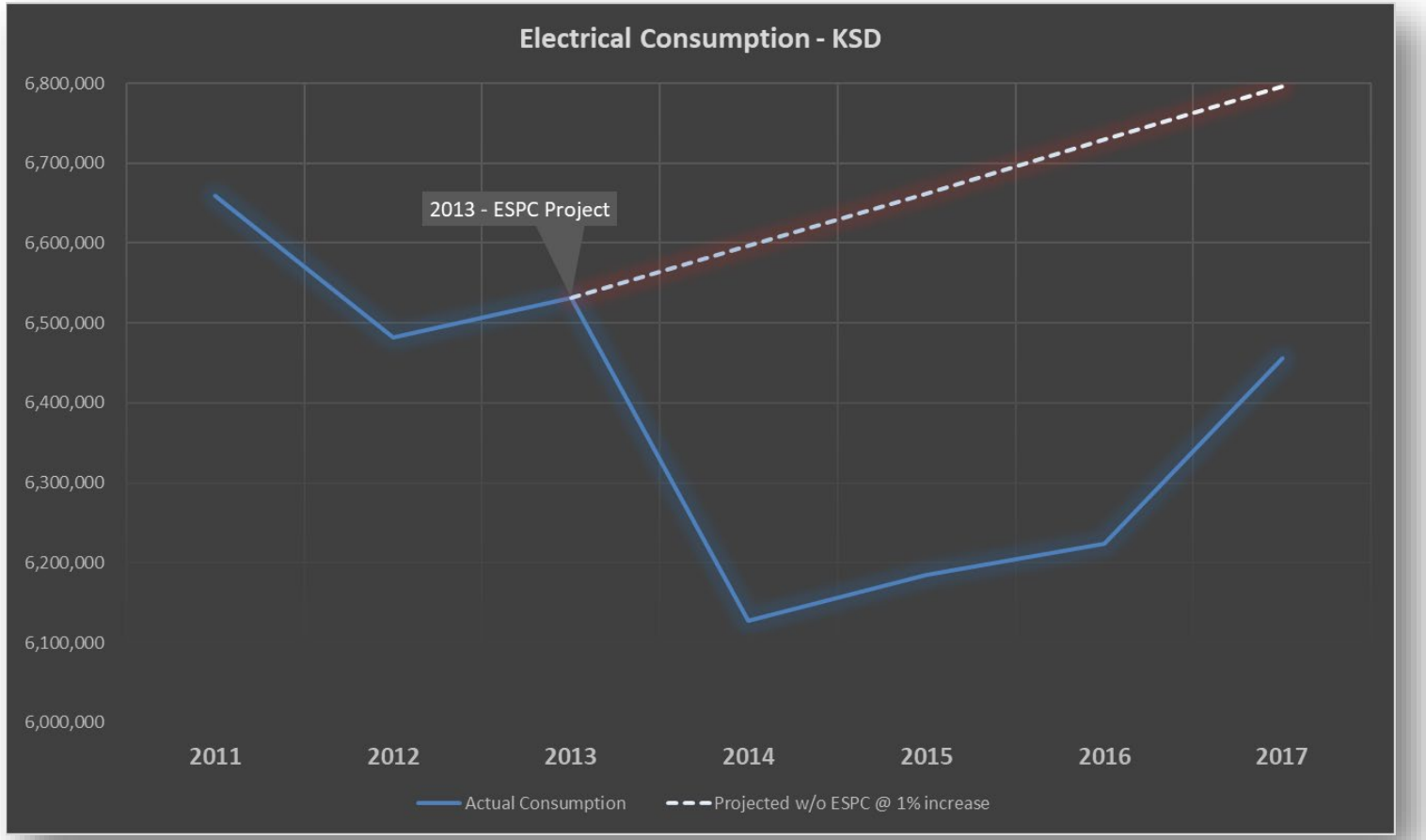
Kalispell School District to Unveil Revamped Flathead High

Major overhaul includes nearly 50,000 new square feet; other district schools also wrapping up construction projects

BY MYERS REECE // AUG 5, 2019



Measurement & Verification – Energy Performance (Lighting)



M&V Option A

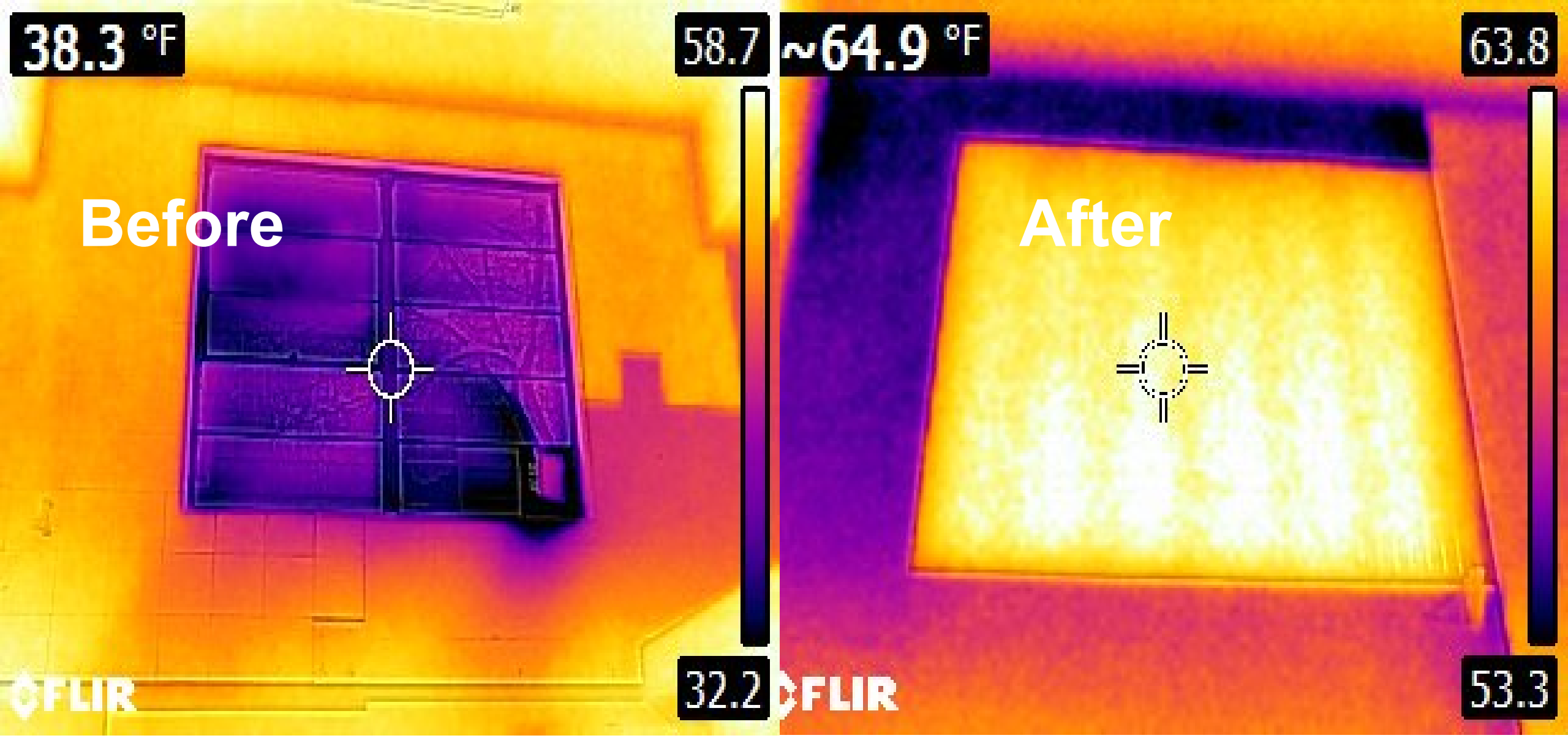
- Take pre-wattage measurement sample
- Take post-wattage measurement sample
- Run hours are estimated

Lighting

- ~37% of Total Electrical Consumption
- Other 63% - Variable

DEQ MONTANA ENERGY OFFICE

AMERESCO



Measurement & Verification

THANK YOU!

Montana Energy Office, MT DEQ

Bonnie Rouse, EPC Program Manager
406-444-6439, brouse@mt.gov

Ron Pecarina, Senior Energy Engineer
406-444-6590, rpecarina@mt.gov

AMERESCO

Brian Solan, MT Business Manager
406-461-7432,
bsolan@ameresco.com
www.ameresco.com

EPC Website http://deq.mt.gov/Energy/EPC