

CONFEDERATED SALISH & KOOTENAI TRIBES FEASIBILITY STUDY

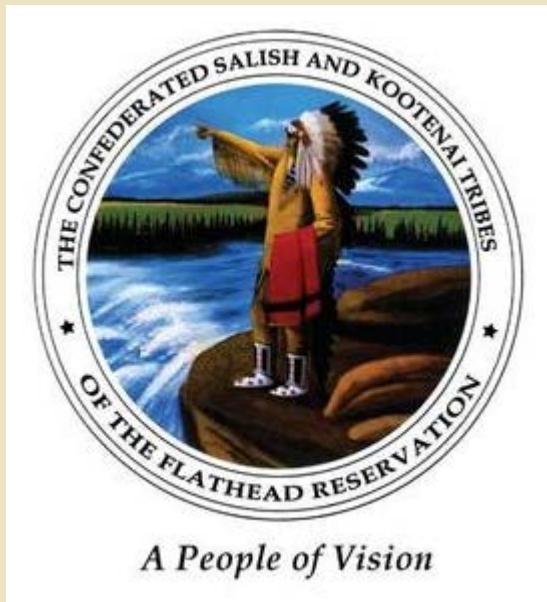
**To Identify Potential Reductions in Energy Use in 40 Tribal
Buildings**



Introduction

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Project Summary



Objectives

- ❖ **Conduct Site Audit**
- ❖ **Identify Energy Enduses**
- ❖ **Tabulate Energy Consumption (kBtu/H's and Dollars)**
- ❖ **Present Most Promising Energy Conservation Measures (ECM's)**
- ❖ **High Level Review Buildings for Compliance w/ Codes and Life Safety Issues**

Audit Process Summary

- ❖ **Visit Each Building**
- ❖ **Compile Energy Consumption Data for Each Building**
- ❖ **Identify Energy Consuming Systems**
- ❖ **Identify ECM's (Energy Conservation Measures)**
- ❖ **Predict Energy Savings using eQuest**
- ❖ **Estimate Costs to Implement ECM's**
- ❖ **Calculate Payback for Each ECM**

Site Visit

- ❖ **Create As Built Drawings**
 - ❖ **Field Measurements**
 - ❖ **Architectural Plans when Available**
- ❖ **Building Condition**
- ❖ **Insulation Levels**
- ❖ **Mechanical Systems**
- ❖ **Lighting**
- ❖ **Gathered Occupant Input**
 - ❖ **Building Schedule, Comfort Levels**

Site Observations



Insulation



HVAC



Lighting



Controls



Compiled Energy Data

- ❖ Electricity
 - ❖ Mission Valley Power
- ❖ Propane
 - ❖ Dumontier Oil, Amerigas, Polson Propane
- ❖ Fuel Oil
 - ❖ Johns Fuel Farm and Mountain View Coop
- ❖ Obtained 1-3 Years of Data of each Fuel Source for Each Building – Type, Usage and Cost

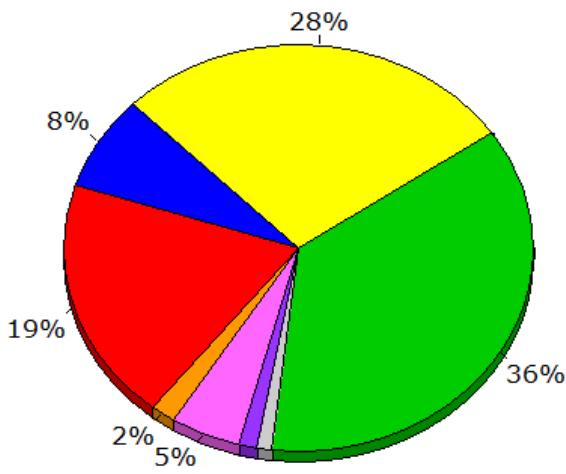
Energy Metrics

- ❖ **Cost Per square Foot**
 - ❖ **Total Money Spent on Electricity, Fuel Oil, and/or Propane in a Calendar Year divided by the Square Footage of the Building**
- ❖ **Energy Usage Per Square Foot**
 - ❖ **Total Energy Consumed from all Fuel Sources Divided by the Square Footage of the Building**
- ❖ **Total Energy Usage**
 - ❖ **Total Electricity, Fuel Oil, and/or Propane Consumed in a Calendar Year Converted to kBTUs**

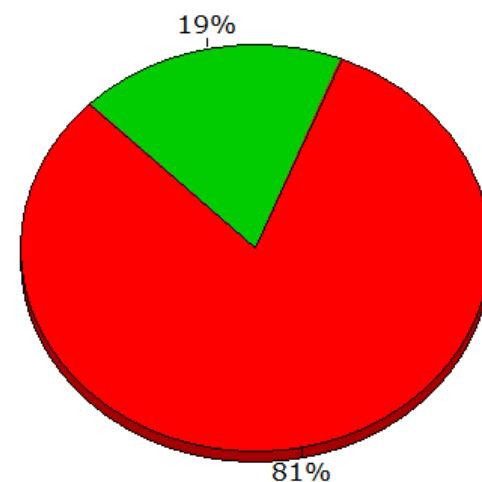
Identified Energy Consuming Systems

- ❖ **Heating System**
- ❖ **Cooling System**
- ❖ **Ventilation Fans**
- ❖ **Lighting**
- ❖ **Plug Loads**
- ❖ **Domestic Water Heating**
- ❖ **Miscellaneous Loads**

Energy Consuming End Uses - Administration Building



Electricity



Natural Gas

Identify Energy Conservation Measures (ECMs)

- ❖ **HVAC System Upgrade**
 - ❖ Heat Pumps, Energy Recovery Ventilators
- ❖ **Lighting**
 - ❖ T12 versus T8 versus LED
- ❖ **Controls**
 - ❖ Standalone Programmable versus Globally Controlled
- ❖ **Building Envelope Improvements**
 - ❖ Windows, Insulation

Predict Energy Savings Using Energy Modeling Software

- ❖ eQUEST - Energy Modeling Software
- ❖ Model Building Using Information Gathered During Site Visit
- ❖ Use Bin Weather Data
- ❖ Use Current Energy Rates
 - ❖ Fuel Oil, Propane, and Electricity
- ❖ Actual Occupancy Schedules
- ❖ Equipment Efficiency

Estimate Cost to Implement Proposed ECMs

- ❖ **Equipment Cost Provided by Vendor**
- ❖ **Installation Costs Were Estimated off Current Labor Rate Structure**
- ❖ **Mechanical, Electrical, Controls, and General Contractor Costs**

Payback Analysis for Each ECM

- ❖ **Simple Payback**
 - ❖ Cost to Implement versus Projected Annual Savings
- ❖ **Life Cycle Cost**
 - ❖ Includes Maintenance Costs
- ❖ **Each ECM was Evaluated as a Standalone Measure**

Summary

- ❖ 40 Buildings Were Surveyed
- ❖ ECMS were Established
- ❖ Savings were Calculated
- ❖ Cost to Implement were Established
- ❖ Paybacks were Determined
- ❖ Final Report with Findings

Recommendations

- ❖ Standardization of HVAC Equipment
 - ❖ Heat Pump
 - ❖ Controls
- ❖ Set Goals for Energy Reduction
 - ❖ For Example – 20% by 2016
 - ❖ Provide Incentive to Building Manager to reach Energy Reduction Goals
- ❖ Benchmark Buildings
 - ❖ Continually Monitor Energy Usage



CONFEDERATED
SALISH AND KOTENAI TRIBES
FORESTRY







TRIBAL OFFICES













37.5

12068

WARNING
NOTICE
A DANGER





301

Confederated Salish
& Kootenai Tribes

**Early
Childhood
Services**

676-4509





TRIBAL
HEALTH
CLINIC

TRIBAL
HEALTH
CLINIC





John
Rober
10/21



DANGER
AMMUNITION
STORAGE ROOM
UNAUTHORIZED PERSONS
KEEP OUT

Big fins were
vacuumed into a
vacuum tube, in
and the spray they
is a filter easily.
The water doesn't
get sprayed out,
please make sure you
don't spray to cold
the water will freeze
immediately.



SON

willcopy

















EMERGENCY
EXIT ONLY



Flathead
P13-1042













