

CONFEDERATED SALISH & KOOTENAI TRIBES FEASIBILITY STUDY

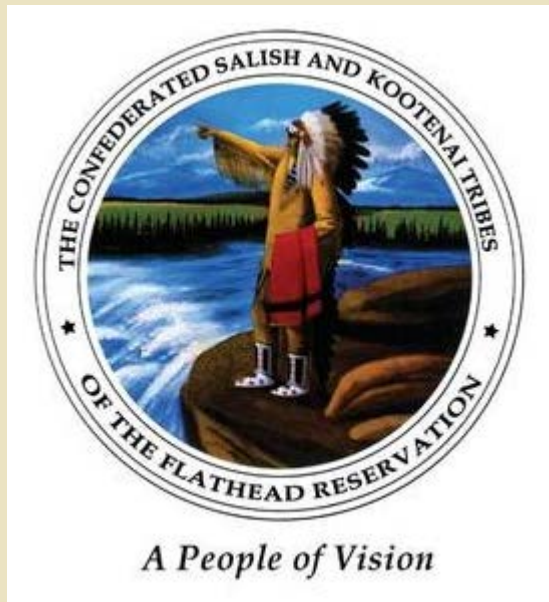
**To Identify Potential Reductions in Energy Use in 40 Tribal
Buildings**



Introduction

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Project Summary



CSKT Tribal
Headquarters

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



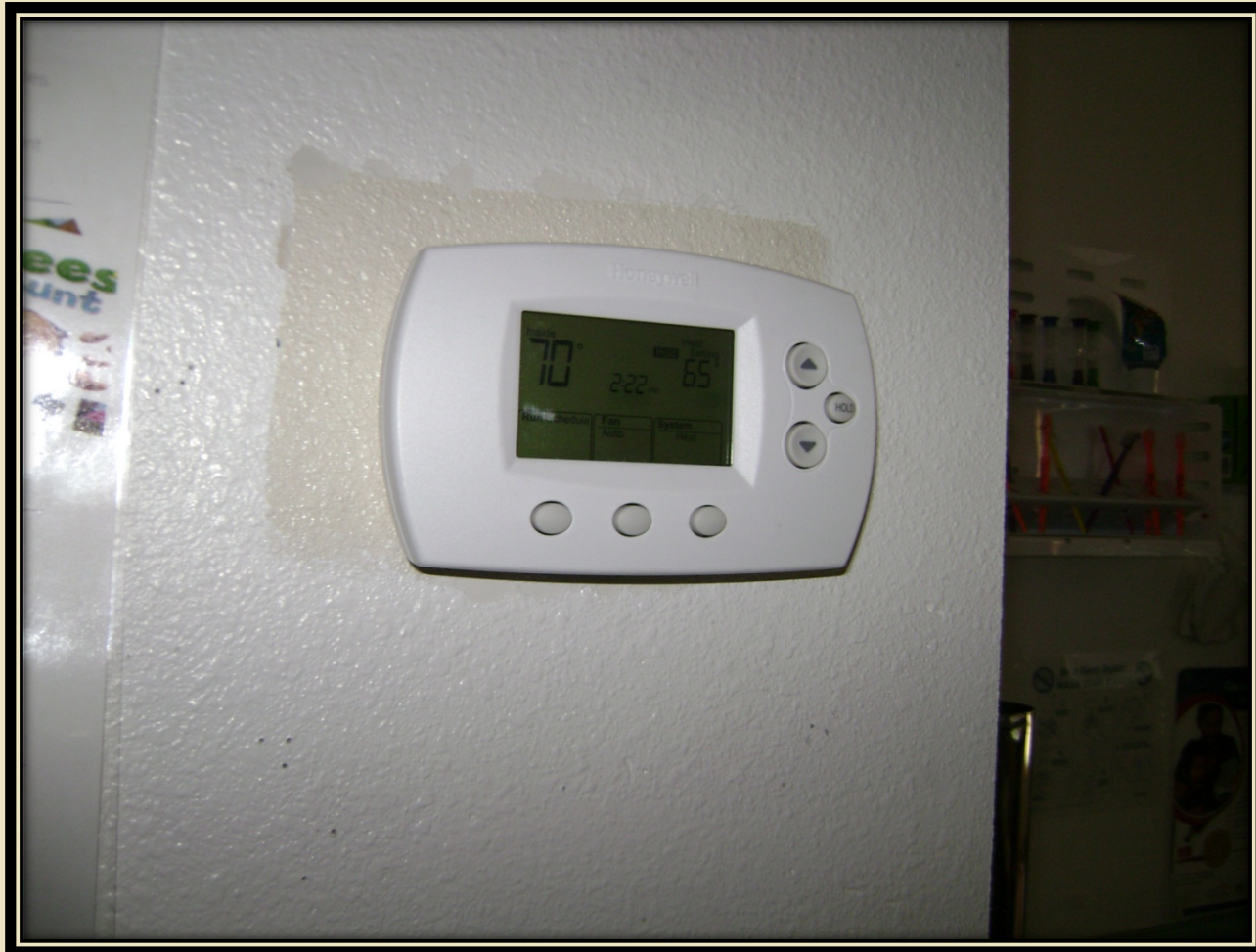
HVAC



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**

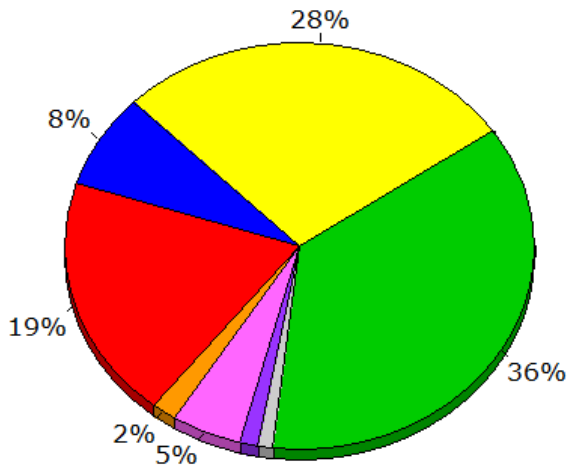
Energy Metrics

- ❖ **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**

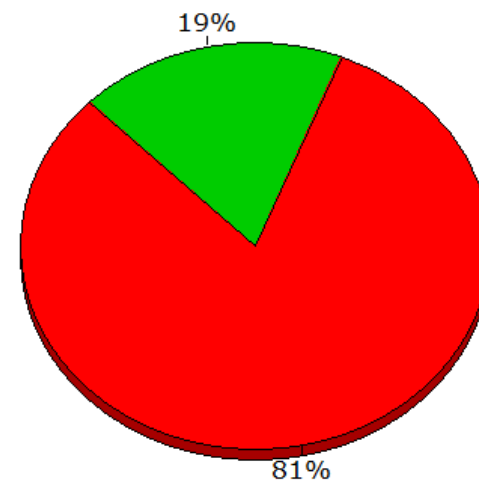
Identified Energy Consuming Systems

- ❖ 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 KOOTENAI TRIBES
FORESTRY

CONFEDERATED SALISH & KOOTENAI TRIBES
FORESTRY
DEPARTMENT

EXTRA LARGE
DOOR OPEN 24 HRS





TRIBAL OFFICES

TRIBAL POLICE

TRIBAL POLICE











Garco

Maintenance Department

Office

TRIAL
MAINTENANCE
EMPLOYEE
PARKING
ONLY

37.5

B

12058

NOTICE







Natural Resources Department

Natural Resources Department

VISION VIEW REALTY

SOLD

NO PARKING

3rd Street



301

Confederated Salish
& Kootenai Tribes
**Early
Childhood
Services**
676-4509





TRIBAL
HEALTH
CLINIC

TRIBAL
HEALTH
CLINIC



Wildlife
Fisheries



DANGER
AMMUNITION
STORAGE ROOM
UNAUTHORIZED PERSONS
KEEP OUT



Do not use
vacuum into a
vacuum bag in
the gray bag
is a filter bag
The white bag
is a filter bag
The yellow bag
is a filter bag
The red bag
is a filter bag
The blue bag
is a filter bag



ALL THIS
PROPERTY IS
THE PROPERTY OF
THE U.S. ARMY
AND IS TO BE
RETURNED TO
THE U.S. ARMY
WHEN IT IS
DISPOSED OF
OR DESTROYED
OR ABANDONED
OR OTHERWISE
REMOVED FROM
THE U.S. ARMY
PROPERTY

















FLATHEAD
PD-9042













Seniors
SENIOR CITIZENS CENTER



Handicapped
Parking

Handicapped
Parking

