

## II.2 ENERGY CONSERVATION - LIFE CYCLE ANALYSIS

Where practical, all new facilities are to be designed to meet the basic requirements of the adopted energy code. Each facility shall consider sustainable design and materials during each phase of the building's life from concept to occupancy.

Sustainable design shall address issues in all areas of the facility, but particularly site, water, energy, interior environment, waste, and construction materials. As a minimum, the Consultant shall evaluate the following elements of the project.

1. Site coordination, orientation and positioning.
2. Quantity and type of fenestration and glazing.
3. Optimization of the thermal characteristics of the building
4. Occupancy and HVAC operating conditions.
5. Illumination levels and controls; type of lighting.
6. Energy consuming equipment.
7. Electrical equipment systems.
8. Direct Digitally Controlled HVAC systems.
9. Sustainable materials or materials with low environmental impact
10. Potable and Non-Potable water usage and waste treatment, and site run off.

Using a nationally established sustainable buildings rating system, a report prepared by the consultant shall provide a baseline evaluation of the building's performance with regards to sustainability. The report shall outline alternatives compared and justification for recommendations based on engineering judgment, calculations and economic evaluation. The report shall include an analysis of the total energy required to construct the facility and operate the facility for one year, and shall estimate peak utility loads. The total annual energy need shall also be converted into cost by utility based on total current cost for new facilities and on incremental costs for projects in existing facilities. Energy conservation measures must be justified by a full life cycle analysis. Energy conservation equipment and systems being considered for existing facilities are required to have a pay-back of eight or fewer years to be incorporated into the project.

The Consultant is advised that UAF operates its own co-generation facility, and the actual cost of utilities (steam; electricity; water and sewer) shall be utilized in life cycle analyses. Current utility costs are set by Facilities Services, and may be obtained from the FS/DDC project manager during design.

Thermal Characteristics of each project shall include:

- Roof: Minimum R-60
- Exterior Walls: Minimum R-30
- Floors exposed to exterior: Minimum R-25
- Glazing: Minimum R-5 @center of pane