

# **Southern Alberta Institute of Technology**

**CAMPUS OPERATIONS AND  
MAINTENANCE DEPARTMENT**

**1301 - 16 Avenue N.W  
Calgary, AB. Canada T2M 0L4**

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The Energy Innovators Office  
Natural Resources Canada  
580 Booth Street  
Ottawa, Ontario K1A 0E4

Dear Sir/Madam:

Attached is a summary of the projects that SAIT has undertaken as an Energy Innovator, along with an outline our future plans. I understand that this information will be included in the climate change Voluntary Challenge and Registry (VCR).

Yours sincerely,

E.J. Tickle, Director  
Campus Operations and Maintenance  
Southern Alberta Institute of Technology

## ENERGY INNOVATOR GOALS AND ACCOMPLISHMENTS

Note that all information presented on this form will be included in a public registry for the Voluntary Challenge and Registry on Climate Change. The registry will be available through the Internet World Wide Web. Please do not provide proprietary information or any other information that your organisation does not want to be made public.

**Name of Energy Innovator** Southern Alberta Institute of  
Technology  
**Address:** 1301-16 Avenue N.W.  
Calgary  
AB  
T2M 0L4

**Innovator Registration Date:**  
9/1/95

**VCR Registration Date:**  
9/19/95

**Key Contact:** Mr. Edward J. Tickles  
**Tel:** 403-284-8436      **Fax:** 403-284-8437

### Current Status

**Number of Buildings** 12

**Area (Sq. Met)** 226,766

**Energy Consumed in 1995: Please complete the following table in as much detail as possible. If the information is not available in this format, please provide the total energy consumption figures.**

Electrical Demand kW	Electricity (kWh)	Natural Gas (m3)	Propane (m3)	Oil (l)	Water (m3)	Total (\$)
	42,000,000				\$545,000	
	\$1,705,000	\$1,007,104			\$345,000	\$3,057,104

### General Energy Efficiency Objectives

**Motivation: why take on energy efficiency activities (environmental savings, financial savings, fits into ongoing facility improvements, right thing to do, etc.)?**

The Southern Alberta Institute of Technology is an environmentally responsible institute where energy efficiency measures are implemented in a systematic fashion where it is profitable as a means of preventing environmental pollution.

**Energy Efficiency Target Areas: areas targetted for improvement (specific type of facility / operation, type of improvements (e.g., lighting, HVAC, controls, envelope), energy substitution, peak reduction, employee awareness, etc.)**

Lighting, HVAC, control systems, peak demand control.

**Specific Targets (see table below, provide as much detail as possible - where information is not available, provide a general target, e.g. "Overall reduction of 20% in energy consumed by 1999"):**

Alberta is currently reviewing both Natural Gas and Electrical rates. In the next year, it is expected that SAIT will be using a different rate structure based on 1996 consumption / costs.

**Target Values are for Calendar Year.** 1997

Electrical Demand kW	Electricity (kWh)	Natural Gas (m3)	Propane (m3)	Oil (l)	Water (m3)	Total (\$)
	41,000,000	14,309,074			\$589,000	
	\$1,801,000	\$920,000			\$405,000	\$3,126,000

### **Progress to Date**

**History: How long have energy retrofits been ongoing?**

For 6 years.

**Project Activity: what type of projects have been undertaken (specific type of facility/operation, type of improvement (eg. lighting, HVAC, controls, envelope, etc.) energy substitution, peak reduction, employee awareness, etc.)?**

A seven year plan was begun in 1990. Load shedding during peak demand periods was implemented and lighting fixtures were reduced, relocated and relamped. Some campus areas have undergone a 50% fixture reduction as the overall system has been upgraded to current lighting standards. Exit lighting has been converted to low wattage fluorescent lighting, and 60 watt incandescent lamps were replaced with 15 watt fluorescent lamps. Power factor correction equipment has been installed, and a system of electronic controls has been installed on our boilers. Although small by industry standards, SAIT undertakes cogeneration during peak demand periods. A second 500 kW steam turbine is being installed, for peak demand controlling. Two variable speed variable frequency drives have been installed, to upgrade the system to Variable Volume Control. This system will be monitored for energy savings and comfort control during the next year. Isolation valves have been installed in the chilled water loop reducing leaks. Tests and studies are being undertaken to further optimize the chilled water system. The Power Plant centrifugal chiller operation has been enhanced through the installation of microprocessor controls. Water costs for the irrigation system have been reduced by approximately 56% through the installation of water meters and the subsequent elimination of sewer charges for irrigation water.

**Savings: What level of savings have been achieved to date?**

Annual savings so far amount to \$754,000.

**Future plans (1 to 3 year time frame):**

**Planned or ongoing projects. Type of project, area of improvement, expected results, potential achievement with respect to overall targets, time frame, etc.**

An extensive exterior lighting conversion program is underway where mercury vapor and fluorescent lighting is being replaced by efficient high pressure sodium lighting. Where the conversion has occurred in the Parkade and exterior parking lots, timers have been installed to reduce lighting levels by 50% between midnight and 5:00 am. All new installations will be of the high pressure sodium variety, resulting in both energy and reduced maintenance costs. In 1995-96, 886 magnetic ballasts were replaced with electronic ballasts and 2260 T-12 tubes were replaced with T-8 fluorescent tubes. For the next year there should be 330 ballasts replaced with 700 tubes. Additionally, a plan has been developed for the systematic utility metering of campus facilities. The net result of this activity should be the further reduction of energy consumption and costs. A plan is also in place for the systematic replacement of the existing constant velocity Building Management (HVAC) system with a variable air velocity / variable frequency drive system. Resulting potential energy saving in 1995 Dollars is \$500,000.