

CHANGE REQUEST for FY 08-09 BUDGET REQUEST CYCLE

Department:	Natural Resources
Priority Number:	11 of 18
Change Request Title:	Avalanche Safety Program

SELECT ONE (click on box):

- Decision Item FY 08-09
- Base Reduction Item FY 08-09
- Supplemental Request FY 07-08
- Budget Request Amendment FY 08-09

SELECT ONE (click on box):

Supplemental or Budget Request Amendment Criterion:

- Not a Supplemental or Budget Request Amendment
- An emergency
- A technical error which has a substantial effect on the operation of the program
- New data resulting in substantial changes in funding needs
- Unforeseen contingency such as a significant workload change

Short Summary of Request:

This request is for an increase in cash spending authority of \$25,553 and an increase of 0.4 FTE. This increase in FTE will allow two existing employees to both work two additional months each year. These employees will repair and maintain the Colorado Avalanche Information Center's remote weather station network and develop forecasting tools and education materials during the summer months.

Background and Appropriation History:

Colorado is the most avalanche-prone state in the U.S. with the highest number of avalanche deaths in the last 50 years. The Colorado Avalanche Information Center (CAIC) was created in 1983 as a program within the Colorado Geological Survey (Department of Natural Resources) and is responsible for promoting safety by reducing the impact of avalanches on recreation, industry, and transportation through a program of forecasting, education and research. The CAIC is primarily a cash-funded program. During the 2006 fiscal year the CAIC funding sources were: 51% contracts with CDOT, 25% Severance Tax, 14% private donations, 5% ski industry donations, 4% federal, 1% county and city governments.

Funding in the CAIC long bill line item has increased slightly in the last few years. In FY00 severance tax was added as a cash fund source to replace the loss of a sizable federal grant from the U.S. Geological Survey. In FY06, CAIC was allotted a \$13,000 increase in Severance Tax funds specifically to provide avalanche education at no charge. (This allocation will continue to be used to provide free avalanche training to public and not-for-profit groups.) FTE for CAIC have not increased since FY94, when the FTE increased from 6.8 to 7.3.

The CAIC owns eleven remote weather stations and operates a network that includes these and seven additional stations (owned by other organizations). This network provides data essential to the avalanche forecasting program for Colorado's highways and backcountry area. The data from this network is also used by the National Weather Service forecast offices and a variety of public and private sectors groups. Program staffers are unable to complete all of the maintenance necessary to operate this network due to the following complications:

- 1) The stations are in high-elevation and remote locations that are often too dangerous to visit in the winter time.
- 2) The workload in the winter has increased so that all available time is spent issuing avalanche and weather forecasts and teaching courses.
- 3) The program does not have enough FTE to allow staff to work in the summer months.

Accurate avalanche forecasts require data from the area where avalanches initiate. The CAIC's weather stations are located in such areas and traveling to them during the winter requires crossing steep, snow-covered mountain slopes or using helicopters. The stations are composed of high quality equipment that is designed to perform in a harsh alpine environment; however, the equipment still requires regular maintenance. The program cannot perform the necessary maintenance in the winter months due to the following issues:

- 1) It is often too dangerous to travel to these sites on foot,
- 2) Helicopter time is expensive and therefore very limited,
- 3) It is unwise to perform maintenance during the operational forecasting period (winter) due to the risk of inadvertently disrupting an operating system. Such a

disruption could affect the accuracy of the forecasts and would then require a second visit to correct.

As traffic on Colorado highways and backcountry recreation increase, so does the demand for accurate and detailed avalanche forecasts. To address these demands, the CAIC has added two seasonal positions and reorganized the responsibility of its seven offices. To meet the rising demand for forecasts, the main office in Boulder issued twenty one forecasts each day in FY07-08. This was up from seven forecasts per day in FY01-02. The demand for avalanche education also increases each year and the Center has made every effort to address this increase (Figure 1). This steady increase in the winter workload means that there is only time to forecast and teach courses during the winter months. Important tasks such as maintaining equipment, quality control of long-datasets, development of education materials, and development of tools to improve the efficiency of the program can only be accomplished in the summer months.

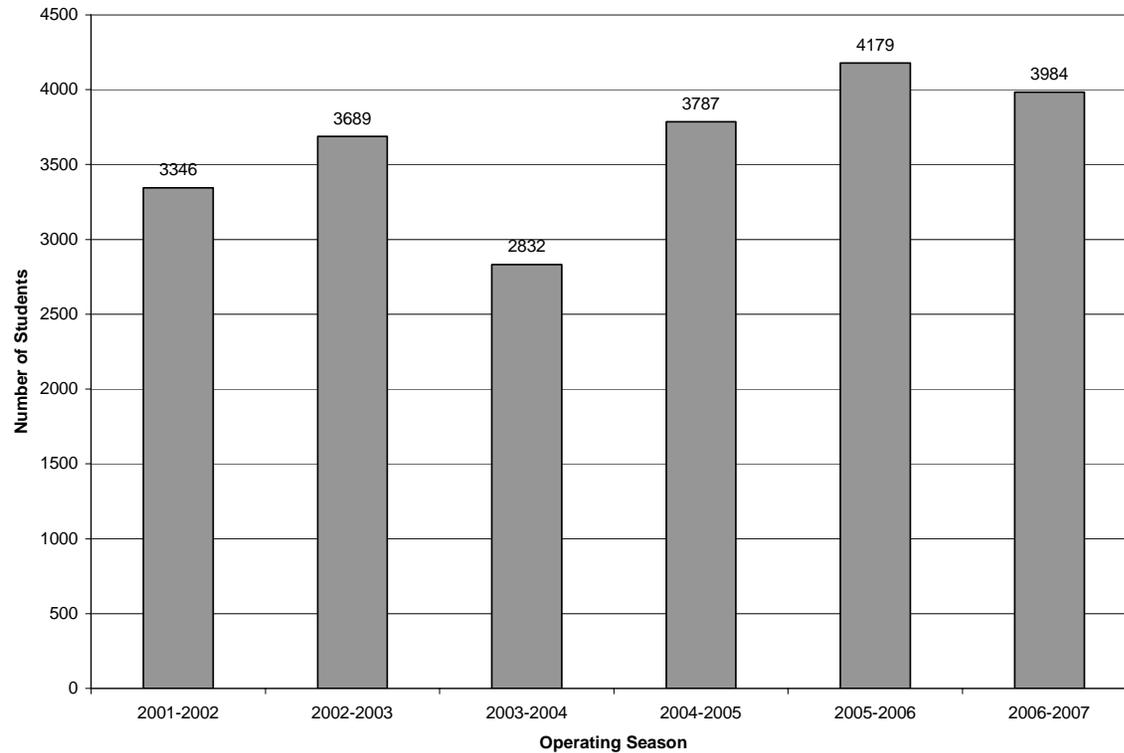


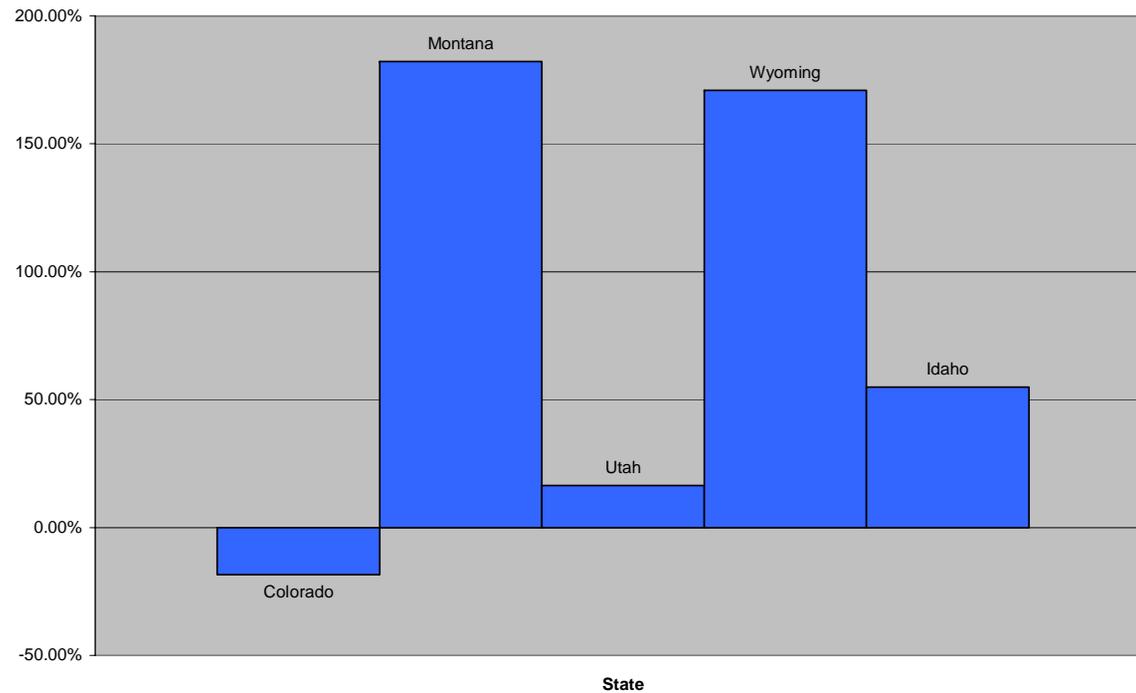
Figure 1: Number of students in avalanche safety courses taught by CAIC staff (2001-2007).

The CAIC has 7.3 FTE and a staff of fifteen full-time workers from November through April. Ten of the staff members are permanent employees and five are temporary employees. Temporary employees can only work six months in a twelve-month period and are not counted as FTE. Seven of the permanent staff work full-time six months each year (November-April) and a limited number of hours the remaining six months. The remaining three staff members work full-time 10 months each year and a limited number of hours the remaining two months. Although the majority of the avalanche center's work

takes place in the winter months when there is adequate staff, the summer staff of less than three is not enough to complete the necessary summer tasks.

Colorado, through the work performed by the CAIC, has reduced the absolute number of deaths whereas comparative states have all increased. And likewise, Colorado deaths per 100,000 have decreased whereas neighboring states have all increased.

Percent Change in Avalanche Deaths per 100,000 Population



State	Percent Change in Absolute Deaths
Colorado	-31.1%
Montana	92.9%
Utah	43.8%
Idaho	260.0%
Wyoming	62.5%

Note: A negative change indicates a decrease in the number of deaths.

The CAIC is unique in the United States. It is a statewide program that addresses threats from avalanches to both recreation and transportation. Other states have avalanche programs, but they are fragmented between agencies which results in incomplete coverage. Colorado has one program that coordinates avalanche forecasting and education throughout the entire state for all entities. The CAIC is a very successful program in part because it is one organization and does not need to duplicate resources at several locations within the state. The structure also promotes operational efficiency because a single entity is collecting, recording, and reporting avalanche information statewide.

General Description of Request:

This request is for an increase of 0.4 FTE and \$25,085 in cash spending authority to fund the increased FTE. This will allow two existing employees to work an additional two months each summer and the corresponding travel to conduct that work. The additional cash revenue needed will be raised through the CAIC's education program.

The CAIC provides education for a wide array of groups. These groups include, but are not limited to, Boy Scouts, elementary and secondary school classes, university courses, recreationalists, volunteer rescue groups, ski areas, backcountry guides, government staff, scientists and professional groups that work in avalanche areas. Many of these organizations need avalanche education but do not have the resources to pay for the programs. Some of these groups also need avalanche education, but can pay for the programs through their training budgets and have expressed a willingness to do so.

During the 2005-2006 budget cycle, the CAIC was allocated a \$13,000 increase in Severance Tax funds specifically to provide avalanche education at no charge. This training is so popular that during fiscal years 2005-06 and 2006-07 the CAIC spent in excess of \$25,000 providing avalanche education (Table 1). The Severance Tax funding will continue to be used to provide education at no charge to public and not-for-profit groups such as public schools and Boy Scout troops. All for-profit groups will be asked to reimburse the State for the cost providing the educational program. In the past, some of these groups have charged participants a fee for the training that CAIC is providing free of charge.

Table 1: Education Costs for the CAIC

	Hours Spent on Education *	CAIC Staff Average Hourly Rate **	CAIC Education Costs	Courses Taught	Students Taught
2004-2005	1,126	\$21.97	\$24,736.66	92	3,787
2005-2006	1,378	\$22.65	\$31,197.92	115	4,179
2006-2007	1,129	\$23.35	\$26,360.46	92***	3,984***

*Hours paid for by the contract with CDOT are not included.

**This is the averaged staff hourly wage and not the cost to government.

***The reduction in course and students taught in 2006-2007 was a result of two factors. First, a new policy was implemented that staff would not travel to teach classes of less than 15 people. Second, several courses were canceled for insurance and permit issues.

The CAIC will use the revenue from the new policy and the increased cash spending authority to pay for the FTE and associated expenses requested in this proposal. An estimated \$15,000-\$25,000 will be generated annually through this program. If this estimate proves accurate, the revenue will be used to allow two employees to work eight months each year instead of the six that they currently work. If the revenue is insufficient, then the staff will only work six months.

During the extra time made available by this request, staff will work to maintain the network of weather stations and develop new training or forecasting tools. The CAIC's network of remote weather stations is constantly exposed to harsh environments and is

often damaged in the form of general wear and tear. Depending on the instrument, the manufacturer recommends they be removed, calibrated and repaired every two to three years. The stations can also sustain damage from extreme weather events. Lightening in the spring of 2005 damaged the equipment at Copper Mountain Ski Resort and disrupted the data feed from the station on Vail Pass.

Consequences if Not Funded:

Without the resources requested in this proposal, the CAIC's network of remote weather stations will continue to degrade. This can occur slowly in the form of general wear and tear. Depending on the instrument, the manufacturer recommends they be removed, calibrated and repaired every two to three years.

The stations can also sustain damage from extreme weather events. Lightening in the spring of 2005 damaged our equipment at Copper Mountain Ski Resort and disrupted the data feed from our station on Vail Pass. This station provides data for the avalanche forecasting program on I-70. The Denver Post estimates¹ that a one hour closure of the mountainous portion of I-70 results in an economic loss of over \$800,000 to Colorado's ski industry. In March of 2007 a wind gust in excess of 100 miles per hour damaged two weather stations along US550 near Silverton. These weather stations provide data for the avalanche forecasting programs on Red Mountains and Molas Passes. US550 is the major transportation route north of Durango and provides the only winter access to the town of Silverton. If this road is closed, all transportation of goods and services into, out of and through Silverton comes to a halt.

The weather station network also provides vital information for the CAIC's backcountry forecasting program. Each year an average of six people die in avalanches in Colorado's mountains. These deaths have an enormous, and incalculable, affect on the families and communities of these people. Without more staff time in the summer months the network of weather stations may go without proper maintenance, thereby reducing the accuracy of forecasts and increasing the chance of negative impacts from avalanches on towns and visitors in the mountains.

¹ "Better Safe than Sorry", Denver Post, February 20, 2007

Calculations for Request:

Summary of Request FY 08-09	Total Funds	General Fund	Cash Funds	Cash Funds Exempt	Federal Funds	FTE
Total Request	\$25,553	\$0	\$25,553	\$0	\$0	0.4
Salary	\$19,910	\$0	\$19,910	\$0	\$0	
PERA	\$2,021	\$0	\$2,021	\$0	\$0	
FICA	\$289	\$0	\$289	\$0	\$0	
Amortization Equalization Disbursement (AED)	\$318	\$0	\$318	\$0	\$0	
Supplemental Amortization Equalization Disbursement (SAED)	\$150	\$0	\$150	\$0	\$0	
Travel and Lodging Expenses	\$2,865	\$0	\$2,865	\$0	\$0	

Summary of Request FY 09-10	Total Funds	General Fund	Cash Funds	Cash Funds Exempt	Federal Funds	FTE
Total Request	\$25,652	\$0	\$25,652	\$0	\$0	0.4
Salary	\$19,910	\$0	\$19,910	\$0	\$0	
PERA	\$2,021	\$0	\$2,021	\$0	\$0	
FICA	\$289	\$0	\$289	\$0	\$0	
Amortization Equalization Disbursement (AED)	\$318	\$0	\$318	\$0	\$0	
Supplemental Amortization Equalization Disbursement (SAED)	\$99	\$0	\$99	\$0	\$0	

Summary of Request FY 09-10	Total Funds	General Fund	Cash Funds	Cash Funds Exempt	Federal Funds	FTE
Prior Year SAED	\$150	\$0	\$150	\$0	\$0	
Travel and Lodging Expenses	\$2,865	\$0	\$2,865	\$0	\$0	

Assumptions for Calculations:

Salary calculations:

Title	Monthly Salary	# of months	Total Salary
PSR/S I	\$4,721	2.00	\$9,442
PSR/S II	\$5,234	2.00	\$10,468
Subtotal, Salaries			\$19,910
PERA	10.15%		\$2,021
FICA	1.45%		\$289
Total Salaries			\$22,220

Travel cost calculations:

Category	Rate	Multiplier	Cost per FTE	Cost for 2 FTE
Lodging	\$ 60.00	10 nights	\$600	\$1,200
Per Diem	\$ 54.00	10 days	\$540	\$1,080
Mileage	\$ 0.39	1,500 miles	\$ 585	\$ 585
Total Travel Costs			\$2,865	\$2,865

FTE Calculation:

Title	# of months	FTE
PSR/S I	2.0	0.17

PSR/S II 2.0 0.17

Total FTE Requested* 0.34

** FTE rounded to 0.4, per OSPB Budget instructions, Chapter 6 "Change Requests," page 6-13*

The Fee Schedule is designed to reimburse the State for the actual cost of providing the service (See Statutory Authority section of this proposal). An hourly rate will be charged for preparation, travel and instruction time as well as travel costs of \$0.39/mile when a state vehicle is not available. There are a range of salaries within the CAIC so the billing rate will depend on which staff member is performing the service. The table below shows the hourly rates for FY07-08 and the number of hours the CAIC could have charged for in FY06-07 under the proposed policy. No travel costs are included in this estimate of potential revenue.

Proposed Fee Schedule				
Position		Hourly Rate FY07-08	Chargeable Hours (For- Profit Entities) FY06-07	Potential Funds Raised
Location	Title			
Boulder	Director	\$53.85	47.3	\$2,547
Boulder	Forecaster	\$38.48	30	\$1,154
Boulder	Forecaster	\$34.57	130	\$4,494
Boulder	Forecaster	\$40.51	37	\$1,498
5 Seasonal Positions	Backcountry Forecasters and Educator	\$30.48	565	\$17,221
			Total	\$26,914

Impact on Other Government Agencies: Not applicable.

Cost Benefit Analysis:

In the fall of 2006, the Denver Post estimated that a one-hour closure of the mountainous portion of I-70 results in an economic loss to the ski industry of over \$800,000 (“Better Safe than Sorry”, Denver Post, February 20, 2007).

Benefit	Cost	Ratio
Assumption: that the maintenance of the weather stations keeps the I-70 corridor from being closed for one hour.	The total amount that is requested is \$25,085	Benefit/Cost Ratio is: \$800,000/\$25,085 = 31.9 to 1

In addition to the above, the CAIC also benefits the citizens of Colorado by reducing the number of avalanche deaths of backcountry recreationalists. Historically more people are killed in Colorado by avalanches than any other state in the United States (256 from 1900-2006). During the CAIC’s existence, the fatality rate in Colorado has decreased. During the first ten years, an average of 6.8 people died in avalanches each year (1983-1992). The average number of people killed in avalanches has dropped to 5.5 per year during the last ten years (1997-2006). The number of avalanche fatalities per 100,000 Colorado residents has also decreased in the last ten years. In order to maintain these trends, the CAIC needs the staff time to maintain its tools and develop new techniques and materials.

Implementation Schedule:

Task	Month/Year
Internal Research/Planning Period	Complete
Start-Up Date	July 1, 2008

Statutory and Federal Authority:

Section 34-1-101, C.R.S. (2006) Geological survey created - purpose - avalanche information center.

(1) There is hereby established the Colorado geological survey, which is a division of the department of natural resources. The purpose of the survey is to coordinate and encourage by use of appropriate means the full development of the state's natural resources, as the same are related to the geological processes that affect realistic

development of human and mineral utilization and conservation practices and needs in the state of Colorado, all of which are designed to result in an ultimate benefit to the citizens of the state.

(2) There is hereby created, within the Colorado geological survey, the Colorado avalanche information center to carry out a program of avalanche forecasting and education.

Section 34-1-105, C.R.S. (2006) Fees – fee adjustments – geological survey cash fund – created

(1) (a) The Colorado geological survey is authorized to enter into agreements to provide services to the general public, industries, and units of local government and to establish and collect fees to recover direct costs of providing said services pursuant to sections 24-65.1-302 and 30-28-136, C.R.S., and section 34-1-103 or pursuant to agreement; except that this provision shall apply only to those services rendered upon items which a unit of local government is required by statute to submit for review or for such other services as are requested pursuant to an agreement

Performance Measures:

The CAIC’s outcome-based and workload-based performance measures are based on the number of fatal accidents involving avalanches and the number of students taught in avalanche courses. This request is for time to support the existing program and can be judged by the existing performance measures. CAIC will continue to track the number of students that are contacted each year to make sure the policy change does not adversely affect CAIC’s ability to disseminate avalanche safety information. CAIC will also continue to track the number of people killed in avalanches each year as the primary outcome-based performance measure for the Avalanche Information Center. This request will help keep the performance measure at levels achieved in the past.

<u>Performance Measure:</u>	<u>Outcome</u>	<u>FY 05-06</u> <u>Actual</u>	<u>FY 06-07</u> <u>Actual</u>	<u>FY 07-08</u> <u>Approp.</u>	<u>FY 08-09</u> <u>Request</u>
Make winter travel and recreation in the Colorado mountains safer through avalanche safety training and forecasting as measured by the number of avalanche deaths per 100,000	Benchmark	0.122	0.122	0.122	0.122
	Actual	0.087	0.1072		

population per year					
<u>Workload Measure</u>					
	<u>Unit</u>	<u>FY 05-06</u> <u>Actual</u>	<u>FY 06-07</u> <u>Actual</u>	<u>FY 07-08</u> <u>Est.</u>	<u>FY 08-09</u> <u>Est.</u>
Number of avalanche courses offered during the winter	Number of courses taught	115	92	125	128

We expect that implementation of this decision item will positively impact the performance measure of reducing avalanche deaths, and will increase the number of avalanche courses offered during the winter.