Office of the
Legislative Fiscal Analyst

FY 2002 Budget Recommendations

Joint Appropriations Subcommittee for
Capital Facilities and Administrative Services

Statewide Information Technology Review

Contents:

1.0 Summary: Statewide Information Technology Review

Information Technology has become an integral part of efficient and accurate governance. In FY 2000, IT accounted for nearly two and one-half percent of the State of Utah's budget. Recognizing the growing impact of information technology on state services, the Executive Appropriations Committee has resolved that the Capital Facilities and Administrative Services Subcommittee will specifically address major issues related to technology.

Upon approval of the Capital Facilities and Administrative Services Appropriations Subcommittee, all recommendations in this document shall be forwarded to presiding Appropriations Subcommittees for further consideration.

2.0 Issues: Statewide Information Technology Review

2.1 800 Megahertz Public Safety Radio Conversion (UCAN)

Due to Federal reallocation of radio spectrum, state and local entities are undertaking a joint venture to provide public safety radio service along the Wasatch Front. The venture is coordinated by the Utah Communications Agency Network and funded through service fees charged to member agencies. Should additional resources become available, the Analyst would recommend $1,152,500 one-time and $262,400 ongoing from the General Fund for 800 MHz Public Safety Radio Conversion. The Analyst would also recommend the intent language listed on page 9.

General Fund (tentative) $262,400
General Fund, One-time (tentative).....................$1,152,500

The Legislature included intent language outlining the allocation of last year's 800MHz funding in the *Annual Appropriations Act* (Senate Bill 1, 2000 General Session), page 26, Item 62. The State's Chief Information Officer's response to this language is included on page 8.

2.2 Department of Public Safety Sub-grant to UCAN

Since setting initial service fees, the Utah Communications Agency Network has received $11 million in unanticipated Federal funds. An additional $5 million is projected for FY 2002. These Federal funds have the potential to impact rates paid to UCAN by state agencies. The Analyst recommends intent language on page 11 regarding review of said rates.

Federal Funds $5,000,000

2.3 Information Technology Infrastructure Innovation Program

The Legislature created the Utah Technology Infrastructure Innovation Program (UTIIP) in 2000 to foster innovative investment in automated systems. It provided seed money for the program in FY 2000, assuming that the program would support itself in the future. According to the State's Chief Information Officer, the program is in its infancy and thus has not yet produced tangible returns. The CIO believes an additional $500,000 in FY 2002 would help assure the program's success (see page 12).

General Fund, One-time (tentative).........................**$500,000**

The Legislature included intent language regarding this program in the *Supplemental Appropriations Act* (House Bill 1, 2000 General Session), page 7, Item 31. The Chief Information Officer's response to this intent is included on page 13

2.4 Joint DWS/DHRM Recruitment Project

Both the Department of Human Resource Management (DHRM) and the Department of Workforce Services (DWS) are developing separate systems for posting job openings and collecting applicant data using the Internet. DWS' system serves all job seekers and employers in the state. DHRM's specifically serves state government and individuals seeking employment with the State. Yet, the two systems have common elements. The Analyst recommends coordination of the two systems through intent language included at page 15.

2.5 Selective Salary Increase for Information Technology Professionals

The State of Utah has had difficulty retaining experienced IT professionals. In FY 2000, the State experienced turn-over rates of 11% and vacancy rates of 16% in IT job classes. A selective salary increase costing $1.5 million from the General Fund and $469,700 from the Uniform School Fund would help stem this exodus. (See page 16.)

General Fund (tentative) **$1,500,000**
Uniform School Fund (tentative)...............................**469,700**

2.6 Higher Education Technology Initiative/IT Master Planning

The Utah System of Higher Education must upgrade its digital infrastructure to meet the demands of today's college students. Doing so requires thorough planning and coordination. Should additional funding become available, the Analyst would recommend $250,000 from Income Tax Revenue in FY 2002 to develop an up-to-date Higher Education Information Technology Master Plan. (See page 17.)

Income Tax, One-time (tentative) $250,000

2.7 Highway Patrol Mobile Technology

The Department of Public Safety continues to expand its use of mobile technology for law enforcement. Such technology has proven to reduce desk time and increase patrol time. Should additional funds become available, the Analyst would recommend $280,000 for Utah Highway Patrol mobile technology. (See page 19.)

General Fund, One-time (tentative).........................$280,000

2.8 Utah Education Network Capital Investment

At the same time the Utah Education Network (UEN) converts its television stations to digital transmission, it needs to improve its data and satellite networks. It has proposed a number of capital projects, totaling nearly $5 million, to expand capacity and improve reliability on its various systems. Should additional funding become available, the Analyst would recommend the following for UEN capital investment (see page 20):

Uniform School Fund (tentative)..........................$1,432,000
Uniform School Fund, One-time (tentative) $3,566,800

3.0 Programs: Statewide Information Technology Review

3.1 800 Megahertz Public Safety Radio Conversion

Recommendation   Should additional resources become available, the Analyst would recommend providing $1,152,500 in FY 2002 one-time General Fund resources to purchase additional public safety and law enforcement radios tuned to the 800 MHz frequency band. In addition, the Analyst would recommend a $262,400 ongoing allocation from the General Fund to cover service fees charged by the Utah Communications Agency Network (UCAN) for use of its trunked radio system. The Analyst would further recommend that new funding be appropriated to the Department of Administrative Services, Division of Finance to be allocated by the State's Chief Information Officer and Director of Information Technology Services.

Financing	2000 Actual	2001 Estimated	2002 Analyst	Est/Analyst Difference
General Fund		2,140,800		(2,140,800)
Total	$0	$2,140,800	$0	($2,140,800)
Expenditures				
Current Expense		2,140,800		(2,140,800)
Total	$0	$2,140,800	$0	($2,140,800)

Note: FY 1999, FY 2000 and FY 2001 base funding is appropriated to each individual agency. New FY 2002 General Funds will be appropriated to Finance - Mandated.

When combined with resources provided in previous years and Transportation funds being considered in the Transportation and Environmental Quality Appropriations Subcommittee, the tentatively recommended level would purchase all 3005 radios envisioned in the Legislature's 1999 funding plan. Additional radio needs are becoming apparent as state agencies realize the benefits of participation in the statewide radio system.

Purpose   As a result of Federal Communications Commission policy to reallocate public safety radio spectrum, the *Utah Communication Agency Network 800 MHz System* act (House Bill 187, 1997 General Session) created the quasi-governmental Utah Communications Agency Network (UCAN). UCAN's mission is to construct and operate a new public safety radio system in the 800 MHz frequency band. State, local, and private public safety organizations will use the new system in place of current radios operating in the 150 MHz and 450 MHz bands.

According to UCAN's master plan, UCAN Phase One will serve approximately 80 percent of the state's population by covering Davis, Morgan, Salt Lake, Summit, Tooele, Utah, Wasatch, and Weber counties. Local entities in each of the above mentioned counties will use the network. Network infrastructure, not including radios and dispatch consoles, will be built under contract with Motorola and financed by a combination of $16 million in Federal grants and bonding provided by Zion's Bank. Debt will be repaid with monthly service fees of $30 per radio for State agencies and $17.50 per radio for local governments and private entities.

FY 2002 is final year of three-year funding plan

The Legislature has funded UCAN Phase One over three years based on a cash-flow analysis developed by the Legislative Fiscal Analyst in 1999. In absence of accurate radio counts, the Legislature's analysis assumed that, in order for UCAN to be financially viable, the State would need to pay service fees on 3005 radios. The Legislature funded nearly 70 percent of the radios between FY 1999 and FY 2001, leaving 30% of the equipment to be funded in FY 2002. By providing $1,414,900 from the General Fund, combined with prior year nonlapsing balances and $266,700 from the Transportation Fund, the Legislature would accomplish its initial goal.

Comparison of Anticipated Costs and Recommended Funding				
Costs	**Number of Radios**	**Capital Costs**	**Estimated Service**	**Total**
Finance - Mandated	835	$1,320,400	$300,600	$1,621,000
Attorney General	2	3,600	1,300	$4,900
Corrections	948	1,498,800	597,200	$2,096,000
Facilities Mgt.*	74	117,000	46,600	$163,600
Health	5	7,900	3,200	$11,100
Human Services	25	39,500	15,800	$55,300
Natural Resources	226	357,300	142,400	$499,700
Public Safety	519	820,500	327,000	$1,147,500
Public Safety Consoles		289,700		$289,700
Tax Commission	34	53,800	21,400	$75,200
Transportation	337	532,600	187,400	$720,000
Total	3005	$5,041,100	$1,642,900	$6,684,000

Cumulative Appropriations	**FY 1999 Appropriated**	**FY 2000/2001 Appropriated**	**FY 2002 Analyst**	**Total**
Finance - Mandated			$1,414,900	$1,414,900
Attorney General*		$4,100	$700	$4,800
Corrections	$486,500	$1,458,200	432,400	2,377,100
Facilities Mgt.*	79,000	57,800	26,600	163,400
Health*		9,700	1,800	11,500
Human Services*		47,000	8,300	55,300
Natural Resources	277,400	136,500	56,500	470,400
Public Safety	354,400	610,100	142,200	1,106,700
Public Safety Consoles	289,700			289,700
Tax Commission		62,000	8,200	70,200
Transportation**	453,300		266,700	720,000
Total	$1,940,300	$2,385,400	$2,358,300	$6,684,000

*Funding for service fees to be derived from dedicated credits revenue.
**Transportation Funds will be considered in the Transportation Subcommittee.

Additional needs surface as UCAN matures	As expected, since the Analyst's plan was developed, state agencies have refined the number of radios they would require to accomplish their missions. They estimate that as much as $1 million more than the Analyst's recommendation could be used to purchase radios for existing law enforcement functions.	

Intent Language

The following intent language was included in Item 62 of the *Annual Appropriations Act* (Senate Bill 1, 2000 General Session), page 26.

> *It is the intent of the Legislature that funds provided for 800 MHz Conversion be allocated among State agencies by the Chief Information Officer in consultation with the Director of Information Technology Services according to the following criteria:*
>
> 1. *New ongoing funds shall be distributed to agencies such that total ongoing resources for each agency are sufficient to pay annual service fees on radios purchased with prior year appropriations;*
>
> 2. *One-time and remaining new ongoing funds shall be distributed to agencies for purchase of additional radios and payment of annual service fees.*

The Chief Information Officer allocated FY 2001 funds as follows:

	One-time Allocation	Ongoing Allocation
DAS - DFCM	37,800	
Attorney General	3,600	
DOC - APP	451,162	90,360
DOC - DIO	347,077	248,780
DOC - Law Enforcement	93,500	17,280
DOC - Other	71,086	12,960
Health	8,300	
DHS - ORS	9,384	
DHS - State Hosp	15,510	3,960
DHS - DYC	14,400	2,160
DNR - FFSL	57,950	14,400
DNR - Parks		12,080
DNR - Wildlife		6,960
DNR - Admin		1,080
DOS - UHP	262,518	88,560
DPS - CIB	92,240	16,560
DPS - Aero	4,070	720
DPS - Olympics	6,105	1,080
DPS - IA	6,105	1,080
DPS - Fire Marshall	8,140	1,440
DPS - CEM	20,350	(400)
DPS - Post	36,630	6,480
DPS - CIB	4,070	720
DPS - Hwy Safety	2,035	360
Tax	53,805	8,280
Total	$1,605,800	$534,900

The Analyst recommends the following similar intent language for inclusion in the Annual Appropriations Act:

> *It is the intent of the Legislature that funds provided for 800 MHz Conversion be allocated among State agencies by the Chief Information Officer in consultation with the Director of Information Technology Services according to the following criteria:*
>
> *1. New ongoing funds shall be distributed to agencies such that total ongoing resources for each agency are sufficient to pay annual service fees on radios purchased with prior year appropriations;*
>
> *2. One-time and remaining new ongoing funds shall be distributed to agencies for purchase of additional radios and payment of annual service fees.*
>
> *It is further the intent of the Legislature that funds provided to the Division of Finance for 800 MHz Conversion in previous years are nonlapsing and that those nonlapsing funds not used to pay service charges be used to purchase radio equipment.*

3.2 Department of Public Safety Sub-grant to Utah Communications Agency Network

Recommendation   The Analyst recommends authorization of $5,000,000 in FY 2002 Federal funds to support 800 MHz public safety radio conversion. The Analyst further recommends intent language listed on page 11.

	FY 2000	FY 2001	FY 2002
Financing	**Actual**	**Estimated**	**Analyst**
Federal Funds	$2,827,700	$5,000,000	$5,000,000
Total	$2,827,700	$5,000,000	$5,000,000
Expenditures			
Other Charges/Pass Thru	$2,827,700	$5,000,000	$5,000,000
Total	$2,827,700	$5,000,000	$5,000,000

Purpose   Over the past four years the Department of Public Safety has secured from the U.S. Department of Justice grants to convert public safety radio. The Department passes these grants to the Utah Communications Agency Network (UCAN) to finance construction of an 800 MHz trunked radio system.

As a quasi-governmental entity, UCAN has an independent board of directors that is responsible for overseeing its operations as well as setting its service fees. When the board set its rates in 1999, it assumed that UCAN's entire capital investment would need to be offset by service fees. It did not include capital depreciation in its rate setting calculations, assuming that additional bonds would finance system replacement after fifteen to twenty years. The board further assumed that State agencies would use a larger service area and should therefore pay more ($30 per month) than local entities ($17.50 per month). Finally, the board agreed that rates would be reexamined two years later.

Contrary to the UCAN board's assumptions, the Utah Department of Public Safety has provided UCAN $11 million in U.S. Department of Justice COPS program grants. The Department projects that $5 million in additional Federal funds will flow to UCAN in FY 2002.

While these Federal grants are certainly not a windfall for UCAN, they do present UCAN with options it did not have when it set its rates. The funds could supplant bond proceeds for acquiring capital equipment, whereby reducing debt service. Reduced debt service could in turn allow UCAN to finance a capital depreciation sinking fund, or it could result in lower user fees.

Accordingly, the Analyst recommends the following intent language for inclusion with the authorization of UCAN Federal funds for the Department of Public Safety:

It is the intent of the Legislature that the Utah Department of Public Safety shall not release Federal grant funds to the Utah Communications Agency Network until UCAN's Board reconsiders in light of unanticipated Federal grants the level of service fees charged to state agencies.

3.3 Information Technology Infrastructure Innovation Program

Recommendation   Should additional funds become available, the Analyst would recommend $500,000 in one-time General Funds for the Utah Technology Infrastructure Innovation Program (UTIIP). The Analyst would further recommend intent language shown on page 14

Financing	2000 Actual	2001 Estimated	2002 Analyst	Est/Analyst Difference
Transfers - ISF Retained Earnings	1,656,000			
Beginning Nonlapsing		1,000,000		(1,000,000)
Closing Nonlapsing	(1,000,000)			
Total	$656,000	$1,000,000	$0	($1,000,000)
Expenditures				
Other Charges/Pass Thru	656,000	1,000,000		(1,000,000)
Total	$656,000	$1,000,000	$0	($1,000,000)
FTE/Other				

Purpose   The *Information Technology Infrastructure Innovation Program* act (House Bill 167, 2000 General Session) created a mechanism that allows nimble response to ever changing technology. It authorized the State's Chief Information Officer (CIO) to provide grants to agencies for technology innovation projects that clearly provide return on investment, cost savings, or other measurable benefits to the State. It enumerated the following goals for the program: 1.) "streamline government processes;" 2.) "decrease costs of government through technology;" 3.) "provide greater efficiencies and better responsiveness by government to the citizens of the state."

The Legislature appropriated for the program $1,656,000 in FY 1999-2000 nonlapsing one-time funds from Division of Information Technology Services retained earnings (House Bill 1, 2000 General Session, Item 31).

The CIO allocated funding in two rounds as follows:

Utah Technology Infrastructure Innovation Program, FY 2000/2001

Round 1 Allocation:

Project Name	Department/Division	Expected Completion Date	Amount of Funding Allocated
COSMOS	Department of Insurance	15-Dec-00	$656,000
Web-Enable Project Drawing/Specs	Department of Administrative Services, Division of Facilities and Construction Management	15-Feb-01	$95,000
Utah State Building Energy Monitoring System	Department of Natural Resources, Administration Division	30-Jun-01	$14,300
Web Filing and Publication of Administrative Rules	Department of Administrative Services, Division of Administrative Rules	31-Oct-00	$93,000
Image Enable the Electronic Chart System (E-Chart+)	Department of Human Services, State Hospital Division	30-Jun-01	$100,000
Online New Employee Training Program	Department of Human Services, Office of Technology	31-Oct-00	$10,000
Total Funding, Round 1:			$968,300
	Round 2 Allocation:		
Child Care Licensing Improvement Project	Department of Health, Division of Health Systems Improvement	6/30/01	$50,000
NCIC 2000	Department of Public Safety, Bureau of Criminal Identification	11/1/01	$84,000
MO-TRACK	Department of Corrections	9-12 months from start date	$100,000
Payroll & Time and Attendance System	Department of Administrative Services, Division of Finance	1/1/02	$400,000
Government Information Locator Services Project	Department of Community and Economic Development, State Library Division	10/1/01	$30,000
Training Resource Center	Department of Administrative Services, Division of Information Technology Services	1/1/01	$23,700
Total Funding, Round 2			$687,700
Grand Total			$1,656,000

As noted above, allocation of the full $1.7 million required two rounds. Agency response to the first round was poor as agencies feared their budgets would be cut by the amount of savings they experiences under UTIIP.

Program benefits difficult to realize

The projects slated for completion before July 1, 2001 tout nearly $225,000 in annual savings. However, none of the projects has been operational for a full year, and thus savings have not been realized. Further, no mechanism has been developed to capture savings from various departmental budgets and return them to UTIIP.

While the Analyst remains skeptical about agencies' willingness and ability to realize savings without spending them on other priorities, the Analyst also recognizes that UTIIP is in its infancy, and thus cannot be expected to produce immediate returns. Therefore, the Analyst recommends the subcommittee consider adding to its funding priorities list $500,000 in one-time General Funds for UTIIP, subject to the intent language shown below.

Intent Language   The Legislature included the following intent language regarding this program in the *Supplemental Appropriations Act* (House Bill 1, 2000 General Session), Line 31, page 7:

> *It is the intent of the Legislature that funds provided for the Utah Technology Infrastructure Innovation Program are nonlapsing. It is further the intent of the Legislature that the Chief Information Officer report to the Executive Appropriations Committee and Information Technology Commission specific cost and benefit measures prior to releasing funds provided for the Utah Technology Infrastructure Innovation Program.*

The CIO testified regarding this issue before the Executive Appropriations Committee on two occasions, May 16, 2000 and August 15, 2000. He addressed the Information Technology Commission on July 13, 2000. His presentations included target implementation dates and general performance goals for each of the projects to which he allocated funding. A copy of his presentations is available upon request from the Fiscal Analyst's office.

To address concerns mentioned above, should funding for this program become available in FY 2002, the Analyst recommends the following intent language:

> *It is the intent of the Legislature that the Chief Information Officer report to the Office of the Legislative Fiscal Analyst specific cost and benefit measures as well as means by which to capture future benefits prior to releasing funds provided for the Utah Technology Infrastructure Innovation Program.*

3.4 Joint DWS/DHRM Data Collection Project

Recommendation
The Analyst recommends intent language encouraging further coordination of the Department of Human Resource Management's Utah Job Match project with the Department of Workforce Services' UWORKS project.

Purpose
The Department of Human Resource Management is implementing a new database – Utah Job Match – for classifying, recruiting, and filling job vacancies in state government. It has requested $84,000 for Sybase software licenses to enable the general public to apply for state job openings on-line. The recruitment and job seeker portions of the project are scheduled to come on-line in July, 2001.

At the same time, the Deparment of Workforce Services is designing a database that will allow it to better manage its caseload, but also allow all employers and job seekers in Utah to interact. DWS has requested no additional funding for its project – UWORKS. It has targeted fall, 2001 as a deadline for implementation.

Projects in two departments have common functions
While Utah Job Match and UWORKS each have functions specific to their purposes, they also have a common element – a database for collecting information about job seekers and disseminating information about job openings. According to officials in both departments, either system could, with some modification, accommodate both systems' data requirements.

Common elements should be leveraged
The Analyst believes that the State needs only one Web based recruitment and application tool. The Analyst therefore recommends the Legislature include the following intent language at the Department of Human Resource Management and Department of Workforce Services line items of the Annual Appropriations bill:

> *It is the intent of the Legislature that the Deparments of Human Resource Management and Workforce Services coordinate their Utah Job Match and UWORKS projects such that they leverage common elements and functions. It is further the intent of the Legislature that the agencies report to the Office of the Legislative Fiscal Analyst during the FY 2001 Interim results of their coordination efforts.*

3.5 Selective Salary Increase for Information Technology Professionals

Recommendation   Should additional funding become available, the Analyst would recommend $1,500,000 from the General Fund and $469,700 from the Uniform School Fund for information technology (IT) professional selective salary increases.

Financing	FY 2000 Actual	FY 2001 Estimated	FY 2002 Analyst	Est/Analyst Difference
General Fund			$1,500,000	$1,500,000
Uniform School Fund			469,700	469,700
Total	$0	$0	$1,969,700	$1,969,700
Expenditures				
Personal Services			$1,969,700	$1,969,700
Total	$0	$0	$1,969,700	$1,969,700

Purpose   The State of Utah is losing its experienced information technology professionals. In FY 2000, it experienced 11% turnover and 16% vacancy in IT classified jobs. It is also having difficulty hiring new technology workers. The State's entry-level IT salary is more than 11% below market average.

Utah is not unique in this phenomenon. The Federal government noted last year that only 10% of its information technology workforce was under 35 years of age. In response, it raised IT salaries by as much as 33% to attract younger, high-tech individuals.

The Department of Human Resource Management (DHRM) has proposed Market Comparability Adjustments to address recruitment of technology professionals. Under its plan, all job classes below midpoint in the salary range will be brought up to midpoint. This will bring entry-level salaries in line with market averages. However, it will also reward newer employees without addressing experienced workers in the upper half of the range.

Complicating matters is the fact that some of the State's older IT systems are written in computer languages no longer taught. Should the State lose its institutional memory regarding these systems, it would have to rewrite or replace them.

To retain experienced high-tech employees, the Analyst recommends placing $1,500,000 from the General Fund and $469,700 from the Uniform School Fund on the funding priorities list for IT professional selective salary increases.

16

3.6 Higher Education Technology Initiative

Recommendation
The Analyst recommends $2,600,000 from the General Fund for the Higher Education Technology Initiative as detailed in the table below. Should additional funds become available, the Analyst would recommend $250,000 in one-time Income Tax Funds to develop a system-wide IT master plan.

Financing	2000 Actual	2001 Estimated	2002 Analyst	Est/Analyst Difference
General Fund	2,600,000	2,600,000	2,600,000	
Transfers	(1,179,787)			
Total	$1,420,213	$2,600,000	$2,600,000	$0
Expenditures				
Current Expense	1,420,213	2,600,000	2,600,000	
Total	$1,420,213	$2,600,000	$2,600,000	$0

Purpose
The Higher Education Technology Initiative (HETI) funds investment in computer software and infrastructure at colleges and universities statewide. A portion of this program funds software master license agreements administered by the State Board of Regents. The remainder is allocated to Utah's nine higher education institutions.

As expectations increase regarding asynchronous, real-time information over the Internet, technology investment in higher education becomes paramount. Today's freshmen no longer accept entire days wasted in long lines at registration. Decision makers demand accountability in the form of accurate outcome based performance measures. Meeting these expectations will require thorough planning and extensive investment in information technology infrastructure.

Disparate data definitions across institutions hamper system-wide information
Currently, each institution designs, implements, and operates its own administrative and student services systems. Some use SCT Plus flat files, others have gone the next step to SCT Banner with an Oracle back-end. One runs a custom PeopleSoft system. None have commonly defined data elements. While these systems could be bridged technologically, the accumulated data would mix "apples" and "oranges".

The Analyst believes five elements are important in avoiding delays and cost overruns in developing new data processing systems to effectively serve the Utah System of Higher Education:

1. Central coordination and local control;
2. A master plan with clearly defined goals, milestones, and outcome measures;
3. Segmented projects with "bite size" individually operable modules;
4. Iterative development – similar to the "design-build" concept;
5. Early wins such as Internet based registration and information.

The Analyst further believes that elements one and two above must be in place prior to appropriation of additional state funds to upgrade higher education technology. Therefore, the Analyst recommends the subcommittee consider adding $250,000 to its funding priorities list for USHE Information Technology Master Planning.

3.7 Highway Patrol Mobile Technology

Recommendation   Should additional funds become available, the Analyst would recommend $280,000 from the General Fund for Highway Patrol mobile technology.

Financing	FY 2000 Actual	FY 2001 Estimated	FY 2002 Analyst	Est/Analyst Difference
General Fund, One-time		$250,000		($250,000)
Total	$0	$250,000	$0	($250,000)
Expenditures				
DP Capital Outlay		$250,000		($250,000)
Total	$0	$250,000	$0	($250,000)

Purpose   As demonstrated during the 2000 Interim legislative visit to Carbon and Emery Counties, Highway Patrol cars along the Wasatch Front carry laptop computers and cellular modems. This technology, known as the Mobile Data Collection System (MDCS) allows troopers to track activity, issue citations, and complete reports on traffic incidents, as well as check driver and vehicle data against central databases. According to a study performed by Weber State University, the computers allow Troopers to spend 39% less time doing paperwork, and thus more time on patrol.

An October 1999 performance audit done by the Legislative Auditor's office recommended wider use of incident based reporting to improve law enforcement data. MDCS includes an incident management program developed by DPS that provides consistent data for decision making. This system has been shared with local law enforcement, increasing the comparability of data across jurisdiction.

In past years, the Legislature provided funding to cover Weber, Davis, and Salt Lake Counties. Last year, the Legislature appropriated $250,000 for Trooper laptops in Utah and Juab Counties.

The Department of Public Safety has requested $280,000 in FY 2002 for additional laptop technology. The funds would expand MDCS to two additional Utah Highway Patrol sections. The Department's request includes funding for laptop computers, cellular modems, printers and vehicle mounts.

The Analyst recommends the subcommittee consider placing $280,000 in one-time General Funds on its funding priorities list for Highway Patrol mobile technology.

3.8 Utah Education Network Capital Investment

Recommendation   Should additional funds become available, the Analyst would recommend $1,432,000 ongoing and $3,566,800 one-time from the Uniform School Fund for FY 2002 Utah Education Network capital projects. The Analyst's recommendation includes funding for: digital television conversion; data network redundancy; fiber optic expansion; and satellite system expansion.

Purpose   The Utah Education Network provides television, two-way video conferencing, and asynchronous data services to public, higher, and applied technology education as well as access to the Internet for state government. Its services are provided via KUED Channel 7, KULC Channel 9, EdNet, UTAHLink, and UEN Satellite Services (UENSS).

Television broadcasts must be converted   As as result of the Federal Telecommunications Act of 1996, UEN and all other television broadcasters must convert their transmissions from less efficient analog methods to digital television (DTV). UEN requests the final installment of a three-year State funding plan for FY 2002. It proposes $773,700 to purchase production and testing equipment for KUED, and $1,426,300 to purchase transmission, production, and testing equipment for KULC.

Users demand data network reliability   UEN's users are putting increasing pressure on its data network. Peak utilization has maximized UEN's available Internet bandwidth, and mission critical applications like student registration and government services require its network to be up "24/7/365". To address these demands, UEN needs additional bandwidth within its wide area network, as well as redundant circuits both within its network and out to the Internet. The agency estimates the cost of this additional capacity and reliability at $1,200,000 ongoing and $750,000 one-time.

Network expansion will serve remote areas   Finally, UEN is seeking funding to expand its network through fiber optics and satellite. In conjunction with the State, the Utah Department of Transportation, and a private telecommunications provider, the Network plans to use newly laid fiber optics to reach as far as Green River. It estimates its cost of connecting and "lighting" this fiber at $250,000. Further, UEN proposes to add as many as twenty new satellite connections. The Network predicts such expansion will cost an additional $598,800.

The Analyst supports UEN's efforts to improve its infrastructure as a means of improving service to its customers. Therefore, the Analyst recommends the Higher Education Appropriations Subcommittee consider adding $1,432,000 ongoing Uniform School Funds, and $3,566,800 one-time Uniform School Funds to its funding priorities list.

4.0 Additional Information

4.1 Glossary of Information Technology Terminology

Analog A signal transmission in which voltage varies continuously with time as a representation of a physical quantity.

Applications A software program designed to enable end users to carry-out a specific task or function. Word processors, spreadsheets, graphics programs, and data managers are examples of applications.

Architecture The manner or structure in which hardware or software is constructed. An architecture defines how a system or program is structured, how various components and parts interact, as well as what protocols and interfaces are used for communications and cooperation between modules and components.

Asynchronous Characterized by not having a constant time interval between successive bits, characters, or events. Transmission generally uses one start and one stop bit for character element synchronization (often called start-stop transmission).

ATM **Asynchronous Transfer Mode:** A transfer mode in which the information is organized into cells. It is asynchronous in the sense that the recurrence of cells depends on the required or instantaneous bit rate. Statistical and deterministic values may also be used to qualify the transfer mode, e.g., the information can be framed within SONET frames or unframed.

Backbone Network A high-speed transmission facility, or an arrangement of such facilities, designed to interconnect lower-speed distribution channels or clusters of dispersed user devices.

Bandwidth The range of frequencies of bit rates that can pass over a given circuit. The bandwidth determines the rate at which information can be transmitted through the circuit. The greater the bandwidth, the more information can be sent through the circuit in a given period of time.

BIOS **Basic Input/Output System**: The I/O component of the IBM PC operating system that defines the interface between the operating system and the outside world. Accurate imitation of the IBM PC BIOS is the key to compatibility for clone vendors.

BIPS **Billion Instructions Per Second**: An approximate figure to denote a computer's raw processing power.

B-ISDN **Broadband-Integrated Services Digital Network**: A high-speed (greater than ISDN primary rate), asynchronous time-division multiplexed transmission facility, or an arrangement of such facilities, designed to provide a wide range of audio, video and data applications in the same network.

Bit/Byte	The smallest unit of information used in data processing. It has two possible states, usually called "O" and "I." Bit is a contraction of words "binary digit." A group of eight bits handled as a logical unit.
Broadband	The description for an analog circuit providing greater bandwidth than a voice-grade telephone line, I.e., operating at a bandwidth of 20KHz or higher. Broadband channels are used for many communications, radio and television broadcasting and some local-area networks. In the digital domain, speeds exceed ISDN primary rate. Also called wideband.
CAD/CAM	**Computer-aided Design/Computer-aided Manufacturing**: Interactive graphic programs which automate the methodologies of drafting and design layouts. A few programs are successful enough that it is difficult to justify designing the layouts manually (examples: integrated circuits and printed circuit boards).
CD-ROM	**Compact Disk-Read-Only Memory:** Optical storage based on the same technology and media used for audio CDS.
Client/Server Architecture - Client/Server Model	A concept of application deployment that functionally supports the notion of "application execution" as dispatchable units of work that is assigned to a network of servers (resources) that respond to the initiating client. Client/server embodies the general concepts of cooperative processing, distributed processing and networked processing. File print servers represent a crude form of the client/server model. In the full implementation, the client's server model provides a data processing and networking environment that offers:

▸ Hardware, software and network platform independence (i.e., transparency);
▸ Application delivery to an intelligent workstation (although an X-terminal-like device may suffice in some environments);
▸ A consistency of the user interface to the networked system (i.e., operational similarity; and Physical topology flexibility.

Compression	The application of any of several techniques that reduce the number of bits required to represent information in data transmission or storage, thereby conserving bandwidth and/or memory.
CPU	**Central Processing Unit**: The portion of a computer system that performs computations and contains the memory. It does not include peripherals such as tape, disk and terminals.
DASD	**Direct Access Storage Device**: DASD is a general term typically referring to a magnetic disk storage device. Like a very large hard drive.
Digital	A signal transmission technique in which data is conveyed by pulses of electromagnetic energy in a discrete (i.e., on/off) coded pattern representing, for example, bits in a data stream.

DSL   **Digital Subscriber Line:** A broadband transmission media offered by telecommunications companies on existing twisted-pair copper telephone lines. Offers 1.544 Mbps speed within 3 miles of telephone companies central office.

Fiber Optics   A high-bandwidth transmission media technology that uses light as a digital information carrier. Fiber telephone transmission media to carry hundreds of thousands of voice circuits. Fiber-optics cables (light guides) are a direct replacement for conventional coaxial cables and wire pairs. The glass-based transmission facilities occupy far less physical volume for an equivalent transmission capacity, which is a major advantage in crowed ducts, and the fibers are immune to electrical interference. In addition, cable manufacturing, installation and maintenance costs are lower.

File Server   A designated location containing files available to all users connected to a LAN. In some LANs, a microcomputer is designated as the file server, while in others a computer with a large disk drive and specialized software acts as the file server. Some file servers can also offer other resources such as gateways and protocol conversion.

Frame Relay   A system that is connected through different dynamic paths in a "cloud" to other computers in a network.

Gateway   A physical or logical network station that interconnects two otherwise incompatible networks, network nodes, subnetworks, or devices. Gateways perform protocol-conversion operations across a wide spectrum of communications functions or layers.

Hub   A device that connects computers together on a local area network.

LAN   **Local Area Network:** User and operated data transmission facility connecting a number of communicating devices (e.g., computers, terminals, word processors, printers and mass storage units) within a single building or campus of buildings. Examples are Ethernet and IBM's Token-Ring Network.

Mainframe   A computer system with a configuration price over $700,000. The configuration price includes the minimum set of peripherals sufficient to IPL the operating system.

MHz   **Megahertz:** A measure of electromagnetic frequency equal to one million cycles per second.

Multiplexer   A device that combines input from two or more terminals, computer ports or other multiplexers, and transmits the combined data stream over a single high-speed channel. At the receiving end, the high-speed channel is demultiplexed, either by another multiplexer or by software.

PBX   **Private Branch Exchange:** A telephone switch located on a customer's premises that primarily establishes voice-grade circuits (over tie lines to a telephone company central office) between individual users and the public-switched telephone network. The PBX also provides switching within the customer premises local area, and usually offers numerous enhanced features, including least-cost routing and call-detail recording.

Ring   A network topology in which stations are connected to one another in a closed logical circle, with access to the medium passing sequentially from one station to the next by means of polling from a master station, or by passing an access token from one station to another. Also, called a loop.

Router   A device that performs a function similar to a local or remote bride. It connects networks together.

Server   1. A processing environment that services the needs of an end-user or application community; may also refer to the software which runs on the server. Typically, a server will not include any direct end-user access to that processing environment, instead using logic within each user environment (such as a workstation to intercept requests to the operating system and transmit them to the common server for processing. To the application, all requests will appear to be processed locally (within the environment). Servers typically use more powerful processors because there is a "many to few" relationship between the community using the server and the server processing environment.

                           2. A system or program that is requested to perform some activities by "client" systems or programs to allow it to accomplish specific tasks.

STAR   A network topology in which each station is connected only to a central station by a point-to-point link and communicates with all other stations through the central station.

Synchronization   The function that ensures specific activities occur at the same point in time in two or more nodes. Typically performed by the operating system environment, synchronization is usually associated with updates to data files or databases; it is used to ensure all physical writing of information to the storage media occurs at the same point to avoid the possibility of one medium being updated, while the other is not due to a failure.

Synchronous   The description for transmission with a constant time interval between successive bits, characters or events. Synchronous transmission uses no redundant information to identify the beginning and end of characters, and thus is faster and more efficient than asynchronous transmission, which uses start and stop bits. The timing is achieved by transmitting sync characters before data; usually synchronization can be achieved in two or three character times.

24

T1	Digital carrier facility used to transmit digital signals at 1.544 MBPs using 24-channel pulse code modulation.
T2	A digital carrier facility used to transmit digital signals at 6.312 Mbps.
T3	A digital carrier facility used to transmit digital signals at 44.74 Mbps.
Token Ring	A local-area network access mechanism and topology in which all stations actively attached to the bus listen for a broadcast token or supervisory frame. It uses a ring-shaped layout and token-passing access method to carry data from device to device.
Topology	The logical or physical arrangement of stations on a network in relation to one another. Examples include bus, ring, star, and tree.
Twisted Pair	Two insulated wires twisted together and usually unshielded, (not covered with an outer metallic shield).
UNIX	A family of operating systems known for their relative hardware independence and portable applications interface; a time-sharing operating system widely used in technical and scientific computing applications.
WAN	**Wide-Area Network:** A user voice/data transmission facility connecting geographically dispersed sites via long-haul networking facilities.
X-25	An older standard of communicating from client-type computers with a mainframe.