

U.S. Department of Education

Washington, D.C. 20202-5335



APPLICATION FOR GRANTS UNDER THE

STATEWIDE LONGITUDINAL DATA SYSTEMS

CFDA # 84.372A

PR/Award # R372A090017

Grants.gov Tracking#: GRANT10075973

OMB No. 1890-0004, Expiration Date:

Closing Date: SEP 25, 2008

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Application for Federal Assistance SF-424

Version 02

* 1. Type of Submission:

- ☐ Preapplication
☒ Application
☐ Changed/Corrected Application

* 2. Type of Application:

- ☒ New
☐ Continuation
☐ Revision

* If Revision, select appropriate letter(s):

* Other (Specify)

* 3. Date Received:

09/24/2008

4. Applicant Identifier:

5a. Federal Entity Identifier:

* 5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name:

Montana Office of Public Instruction

* b. Employer/Taxpayer Identification Number (EIN/TIN):

81-0302402

* c. Organizational DUNS:

809588700

d. Address:

* Street1:

1227 11th Ave

Street2:

* City:

Helena

County:

* State:

MT: Montana

Province:

* Country:

USA: UNITED STATES

* Zip / Postal Code:

59620

e. Organizational Unit:

Department Name:

Office of Public Instruction

Division Name:

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:

Ms.

* First Name:

Madalyn

Middle Name:

* Last Name:

Quinlan

Suffix:

Title:

Chief of Staff

Organizational Affiliation:

Office of the State Superintendent

* Telephone Number:

406-444-3168

Fax Number:

406-444-1369

* Email:

mquinlan@mt.gov

Application for Federal Assistance SF-424

Version 02

9. Type of Applicant 1: Select Applicant Type:

A: State Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

* 10. Name of Federal Agency:

U.S. Department of Education

11. Catalog of Federal Domestic Assistance Number:

84.372

CFDA Title:

Statewide Data Systems

* 12. Funding Opportunity Number:

ED-GRANTS-062608-001

* Title:

Statewide Longitudinal Data Systems Grant Program CFDA 84.372

13. Competition Identification Number:

84-372A2009-1

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

* 15. Descriptive Title of Applicant's Project:

Montana Data Warehouse: Foundation for a Longitudinal Data System

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

Application for Federal Assistance SF-424

Version 02

16. Congressional Districts Of:

* a. Applicant MT-001

* b. Program/Project MT-001

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

17. Proposed Project:

* a. Start Date: 03/02/2009

* b. End Date: 12/31/2013

18. Estimated Funding (\$):

* a. Federal	5,798,457.00
* b. Applicant	0.00
* c. State	917,871.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	6,716,328.00

* 19. Is Application Subject to Review By State Under Executive Order 12372 Process?

- ☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .
- ☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- ☒ c. Program is not covered by E.O. 12372.

* 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes", provide explanation.)

☐ Yes ☒ No

21. *By signing this application, I certify (1) to the statements contained in the list of certifications** and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: Ms. * First Name: Linda

Middle Name:

* Last Name: McCulloch

Suffix:

* Title: State Superintendent

* Telephone Number: 406-444-3168 Fax Number: 406-444-1369

* Email: mcuinlan@mt.gov

* Signature of Authorized Representative: Joan Anderson * Date Signed: 09/24/2008

Application for Federal Assistance SF-424

Version 02

*** Applicant Federal Debt Delinquency Explanation**

The following field should contain an explanation if the Applicant organization is delinquent on any Federal Debt. Maximum number of characters that can be entered is 4,000. Try and avoid extra spaces and carriage returns to maximize the availability of space.



U.S. DEPARTMENT OF EDUCATION

BUDGET INFORMATION

NON-CONSTRUCTION PROGRAMS

OMB Control Number: 1890-0004

Expiration Date: 06/30/2005

Name of Institution/Organization:
Montana Office of Public Instruc...

Applicants requesting funding for only one year should complete the column under "Project Year 1." Applicants requesting funding for multi-year grants should complete all applicable columns. Please read all instructions before completing form.

SECTION A - BUDGET SUMMARY
U.S. DEPARTMENT OF EDUCATION FUNDS

Budget Categories	Project Year 1(a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Project Year 5 (e)	Total (f)
1. Personnel	\$ 208,146	\$ 214,390	\$ 220,822	\$ 227,446	\$ 0	\$ 870,804
2. Fringe Benefits	\$ 64,392	\$ 67,225	\$ 70,197	\$ 73,316	\$ 0	\$ 275,130
3. Travel	\$ 2,814	\$ 4,464	\$ 6,114	\$ 6,114	\$ 0	\$ 19,506
4. Equipment	\$ 0	\$ 34,500	\$ 0	\$ 5,175	\$ 0	\$ 39,675
5. Supplies	\$ 8,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 0	\$ 26,000
6. Contractual	\$ 70,000	\$ 130,000	\$ 30,000	\$ 30,000	\$ 0	\$ 260,000
7. Construction	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
8. Other	\$ 18,320	\$ 3,523,920	\$ 157,920	\$ 18,100	\$ 0	\$ 3,718,260
9. Total Direct Costs (lines 1-8)	\$ 371,672	\$ 3,980,499	\$ 491,053	\$ 366,151	\$ 0	\$ 5,209,375
10. Indirect Costs*	\$ 12,759	\$ 517,004	\$ 27,165	\$ 9,154	\$ 0	\$ 566,082
11. Training Stipends	\$ 11,500	\$ 11,500	\$ 0	\$ 0	\$ 0	\$ 23,000
12. Total Costs (lines 9- 11)	\$ 395,931	\$ 4,509,003	\$ 518,218	\$ 375,305	\$ 0	\$ 5,798,457

***Indirect Cost Information (To Be Completed by Your Business Office):**

If you are requesting reimbursement for indirect costs on line 10, please answer the following questions:

(1) Do you have an Indirect Cost Rate Agreement approved by the Federal government? ☒ Yes ☐ No

(2) If yes, please provide the following information:

Period Covered by the Indirect Cost Rate Agreement: From: 7/1/2007 To: 6/30/2010 (mm/dd/yyyy)

Approving Federal agency: ☒ ED ☐ Other (please specify): _____

(3) For Restricted Rate Programs (check one) -- Are you using a restricted indirect cost rate that:

☒ Is included in your approved Indirect Cost Rate Agreement? or, ☐ Complies with 34 CFR 76.564(c)(2)?

**U.S. DEPARTMENT OF EDUCATION****BUDGET INFORMATION****NON-CONSTRUCTION PROGRAMS**

OMB Control Number: 1890-0004

Expiration Date: 06/30/2005

Name of Institution/Organization:
Montana Office of Public Instruc...

Applicants requesting funding for only one year should complete the column under "Project Year 1." Applicants requesting funding for multi-year grants should complete all applicable columns. Please read all instructions before completing form.

SECTION B - BUDGET SUMMARY**NON-FEDERAL FUNDS**

Budget Categories	Project Year 1(a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Project Year 5 (e)	Total (f)
1. Personnel	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2. Fringe Benefits	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
3. Travel	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
4. Equipment	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
5. Supplies	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
6. Contractual	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
7. Construction	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
8. Other	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
9. Total Direct Costs (lines 1-8)	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
10. Indirect Costs	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
11. Training Stipends	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
12. Total Costs (lines 9- 11)	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee- 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

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Prescribed by OMB Circular A-102

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.
10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

<p>* SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL</p> <p>Joan Anderson</p>	<p>* TITLE</p> <p>State Superintendent</p>
<p>* APPLICANT ORGANIZATION</p> <p>Montana Office of Public Instruction</p>	<p>* DATE SUBMITTED</p> <p>09/24/2008</p>

Standard Form 424B (Rev. 7-97) Back

CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

If any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions. Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

* APPLICANT'S ORGANIZATION

Montana Office of Public Instruction

* PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

Prefix: Ms.

* First Name: Linda

Middle Name:

* Last Name: McCulloch

Suffix:

* Title: State Superintendent

* SIGNATURE: Joan Anderson

* DATE: 09/24/2008

Close Form

**SUPPLEMENTAL INFORMATION
REQUIRED FOR
DEPARTMENT OF EDUCATION GRANTS**

1. Project Director:

Prefix:	* First Name:	Middle Name:	* Last Name:	Suffix:
Ms.	Madalyn		Quinlan	

Address:

* Street1:	1227 11th Ave
Street2:	
* City:	Helena
County:	
* State:	MT: Montana
* Zip Code:	59620
* Country:	USA: UNITED STATES

* Phone Number (give area code) Fax Number (give area code)

406-444-3168

406-444-1369

Email Address:

mquinlan@mt.gov

2. Applicant Experience:

Novice Applicant ☐ Yes ☐ No ☒ Not applicable to this program

3. Human Subjects Research

Are any research activities involving human subjects planned at any time during the proposed project Period?

☐ Yes ☒ No

Are ALL the research activities proposed designated to be exempt from the regulations?

☐ Yes Provide Exemption(s) #:

☐ No Provide Assurance #, if available:

Please attach an explanation Narrative:

Add Attachment

Delete Attachment

View Attachment

Project Narrative

Abstract Narrative

Attachment 1:

Title: Pages: Uploaded File: 1234-Project abstract.pdf

Project Abstract

Title: Montana Data Warehouse: Foundation for a Longitudinal Data System

Description of Project:

The Montana Office of Public Instruction (OPI) seeks a \$5,798,457 grant from IES to establish a data warehouse. This four year grant will lay the foundation for a longitudinal data system by accomplishing five objectives related to the data warehouse, each with its own benefits to Montana.

In this project, OPI will: (1) create an enterprise-wide data architecture to map the future for Montana's educational data system, (2) create a data governance structure, (3) establish a data warehouse, (4) migrate data from numerous legacy data systems to the data warehouse, and (5) implement business intelligence tools to make the data accessible for many different users.

Expected outcomes:

The establishment of a data warehouse and the accomplishment of the related objectives will lay the foundation for a longitudinal data system with long-lasting benefits for public education in Montana. The creation of an enterprise-wide architecture will provide a blueprint for the data warehouse and for the consolidation, coordination and expanded use of the entire K12 educational data system. It will also chart the way to facilitate interoperability with pre-Kindergarten and post-secondary data systems.

As data is migrated to the data warehouse from 17 different major databases currently in use, this coordination will allow greater security of all the data. More important, it will allow the data to be combined and queried in ways that are now extremely labor intensive and therefore infrequently used.

Timely and accurate data and the powerful analyses made possible by the business intelligence tools will be invaluable for the State Superintendent and OPI, the Governor and the legislature, the Montana Board of Public Education (K12), boards of trustees, administrators and teachers. It will assist in policy and resource allocation decisions.

The data warehouse is the backbone of a longitudinal data system. Such a system makes it possible to use growth models both for school accountability and for improving instruction of individual students. It will facilitate federal and state reporting, and it will allow more individualized tracking, instruction and intervention with students by teachers and administrators.

In the future, this foundation will make possible parental tracking of student progress and greater public transparency of what is happening in schools. The foundation of all these beneficial outcomes for the Montana educational system is a data warehouse that makes possible a longitudinal data system.

Project Narrative

Project Narrative

Attachment 1:

Title: Pages: Uploaded File: 1239-Project Narrative.pdf

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Project Narrative

Need for the Project

The Montana Office of Public Instruction (OPI) requests IES assistance to establish a data warehouse as the foundation for a longitudinal data system. It will do this by (1) creating an enterprise-wide data architecture, (2) creating a data governance structure, (3) establishing a data warehouse, (4) migrating data from numerous legacy data systems to the data warehouse, and (5) implementing a business intelligence product.

This mission of OPI is "to improve teaching and learning through communication, collaboration, advocacy and accountability to those we serve." Of the five goals of the agency, this grant will assist OPI with Goal 3: "Provide access to and management of information and data related to K-12 school improvement."

Status and Limitations of the Current System

OPI has made significant advancements in the collection and storage of student level data since the initial deployment of its student information system in 2006, but the system's limitations prevent its ease of use in providing longitudinal data analysis. In order to allow accurate and robust longitudinal analysis of the data, a true data warehouse is needed. The warehouse is needed because important organizational and student data are currently stored in multiple locations, systems and formats. There are 17 major data bases currently in use by the Office of Public Instruction, in addition to multiple data bases in use by the 831 schools in the state. Many of these data bases do not have enough information on which to base important business decisions without combining the information with data from other sources.

Retrieving data from the different data bases ranges from difficult to "must have a programmer." Education leaders, policy analysts, program managers and other users (and potential users) need easier access to information in order to make better decisions, improve service quality or improve operational efficiency. Easy but powerful query capacity will be a benefit from the state (Superintendent, OPI, Governor, legislature, Board of Public Education) to the local level (boards of trustees, administrators, teachers, parents and the public.) OPI, in particular, has a need to mine the data when considering different state initiatives. Centralized data with easy reporting capability is essential for responding to current and future federal laws such as FERPA. All of this needs to happen under the privacy restraints of FERPA and the Montana Constitution's Right to Privacy (Article II, Section 10.)

The Challenges:

Montana faces several challenges to building the necessary foundation for a statewide longitudinal data system.

(1) Lack of Funding due to (a) small population, (b) large area and (c) low income levels.

(a) Small Population

Many of the attributes which make Montana a great place to live and raise children are complicating factors when it comes to creating interoperable statewide data systems. In terms of population size, Montana is a state with approximately the same number of inhabitants as San Jose, California. Forty-seven of Montana's fifty-six counties meet Popper's (1986) definition of "the American frontier" with a population of fewer than six persons per square mile. Eighty-four percent of Montana schools fit the Secure Rural Schools Act definition of "rural schools." The infrastructure of a computer data warehouse is an expensive proposition, and the cost is not scaled down proportionately because there are fewer students involved.

(b) Large Area

Montana is the fourth largest state. It is 21,000 square miles larger than South Carolina, West Virginia, Maryland, Hawaii, Massachusetts, Vermont, New Hampshire, New Jersey, Connecticut, Delaware, Rhode Island, and the District of Columbia combined. If you drive from Alzada, Montana, to Yaak, Montana, you drive 127 miles farther than if you drove from Washington, D.C., to Chicago. Montana's 831 schools are spread out over that area, which adds great expense when having meetings and makes it difficult to share resources that are not on-line. A full 320 Montana schools have fewer than 50 students (including 53 one-room schoolhouses!), but they still have computer access needs. This adds expense statewide.

(c) Low Income Levels

As a traditional resource-based economy, Montana has experienced a boom and bust economic cycle. The current energy resource boom has catapulted Montana from 50th up to 41st in median family income, according to 2007 U.S. Census data, but still far below the national average. Even so, Montana spends approximately \$8,581 per student on education -- according to the U.S. Census Bureau's 2006 numbers -- making it 24th in the nation. This is far below the wealthier states, and \$557 below the national average, but much higher than would be predicted by the low income in the state. This indicates the positive value Montanans place on education, but also the funding problems inherent in the economy.

(2) Local control of schools

Enshrined in the Montana Constitution is the strong culture of local control. Each of the 433 Montana school districts has its own board of trustees. In addition, Montana has seven Indian reservations that are now home to twelve tribal nations that have lived in Montana for thousands of years. Schools on the reservations operate under tribal laws as well as U.S. and state statutes. While all of this local control is a source of pride for Montana residents, it can be a source of potential difficulty when it comes to cooperating on large data projects.

(3) Multiple legacy databases.

The 17 major databases in use by the Office of Public Instruction have evolved over time to meet various data needs, and many of these data systems have their own constituents directly concerned with the data.

OPI struggles to provide the required reports due to the number of system linkages needed for reporting, the lack of common codes among systems, the quality of the data housed in the systems, the timing of data collections, the use of changing transactional collection systems to extract data for accountability and financial purposes, and the lack of formal governance policy to guide in this coordination.

To better illustrate the issues facing the agency, the following are three examples of reports that will be dramatically eased with the implementation of the objectives of the grant:

- The Quality Educator Loan Forgiveness program is a Montana-based program to provide direct repayment of educational loans for educators that are teaching in difficult-to-fill teaching areas in high need schools. In order to implement the program, the OPI must incorporate data among five different OPI data systems. Data must be merged from school personnel assignments stored in the Annual Data Collection database, educator licensure data from the Educator Licensure system, the free and reduced lunch information from the Child Nutrition Program, student information system stored in AIM, and locale codes stored in our school directory system. The process also involves passing data between state agencies.
- In order to make AYP determinations and post the NCLB report cards, the OPI must link data among four data systems. The process includes merging assessment scores from the testing contractor with information in the AIM student information system, the Title I database and the school directory information systems.
- A component of Montana state school funding is based on a count of "quality educator" professional staff FTE by district. In order to obtain the needed information, the OPI must combine data from the Annual Data Collection database, the Educator Licensure system, and the Professional Licensing system at the Department of Labor. The results of the analysis must then be input into the School Financial System (MAEFIRS) for inclusion in the school district budget the following year.

(4) Lack of resources for cooperative ventures among pre-school, K12 and higher education sectors.

Due to lack of staff and IT resources, there have been fewer successful data sharing ventures between K12 and its post-secondary education partners than is desirable. The legislature and Governor have appointed a P20 committee to examine the way forward, but communication at present occurs mostly around "transition" policy issues between K12 and higher education such as educator preparation programs and dual credit. The OPI and the University of Montana are in discussions for a pilot project with six school districts for electronic student transcripts from high school to college. This project has progressed slowly due to lack of human resources dedicated to the effort.

Pre-school has not yet been a major push by the State of Montana, since full-day kindergarten was just passed by the legislature after a lengthy campaign by the Superintendent in 2007. There is no question that an expansion of pre-school activity by the state and federal government will soon require data connections made possible by the data warehouse.

Positive Factors:

In addition to challenges, there are some positive factors pointing toward the successful construction and wise use of a data warehouse.

(a) Strong leadership

Montana elects the Superintendent of Public Instruction. While term limits prohibit the current Superintendent from being re-elected a third time, Montana has a tradition of electing people who are strong advocates for public education. Linda McCulloch, the current Superintendent, is a proponent of growth models and knows that the lack of a data warehouse prohibits the current use of such models. McCulloch has been a strong advocate for education funding and for providing resources to allow everyone from teachers and administrators to superintendents and legislators access to information upon which child-centered decisions can be made.

In addition, Governor Brian Schweitzer, who is running for re-election, was instrumental in passing a major increase in public education funding. This followed years of decline of in the share of education funding provided by the state and a successful lawsuit in 2004 against the State of Montana, filed on behalf of schools, parent groups and teacher groups. Governor Schweitzer also supported the original \$2.8 million appropriation which launched the statewide student information system.

(b) A clear directive from the legislature

As part of the 2004 court order in the school funding lawsuit, the state legislature was charged with the task of defining a basic system of a free quality public education during the 2005 legislative session. The legislature adopted a definition of a basic system, which included eight characteristics. One of these defining characteristics is the inclusion of “a procedure to assess and track student achievement.” The Montana legislature appropriated funding in that year to support work on a statewide student information system.

(c) A start toward a unified data system

Much work has been done by the Office of Public Instruction staff to define the business processes and data cleansing procedures associated with the statewide student information system. Unfortunately, the OPI contract with Infinite Campus did not result in a data warehouse as had been envisioned. However, much technical and planning work has gone in to making that possible.

(d) A strong desire for more access to usable data by local and state decision-makers

There is a growing consensus among partners in the Montana education community that Montana needs multiple measures to gauge school progress, and that individual student growth measures must be included. No matter what happens with the reauthorization of the Elementary and Secondary Education Act/No Child Left Behind Act in the near future, Montana will have its own need for detailed information beyond what is required by the federal government. While it will take effort to get all the parties to cooperate, there already exists the desire for more timely, accurate, and detailed data on a variety of issues. Only with such information can wise decisions be made about how best to educate our children with limited resources.

What Will be Gained by Work on this Grant?

The achievement of the five specific and measurable objectives of the grant will provide a strong foundation for Montana's education information systems and remove barriers to obtaining data in a usable form for decision-makers who need it. It will make possible future reliance on timely, accurate data for a variety of educational purposes including longitudinal studies for growth models, resource allocations, and data mining for information critical for education decisions by the State Superintendent and OPI, the Governor and legislature, the Board of Public Education, school districts, teachers, and even the public.

Montana will use this grant to develop a blueprint that will serve as the basis for organizing longitudinal data on each student. This will allow the development of growth models for tracking individual and school progress using multiple measures on each student. OPI has been unable to apply to be a growth model pilot state under US Education Department guidelines due a lack of a foundational system to handle longitudinal data.

Montana will also use the grant resources to develop and implement a plan for the consolidation of its 17 different data bases where the consolidation enhances the utility of the data. The business intelligence product will support federal, state and local reporting requirements. The business intelligence product will help with the development of a standard set of reports which will be identified based on the information requests that OPI receives most often. It will also develop the capacity to create ad hoc reports to meet other requests for information from OPI staff, other agencies, Local Education Agencies (LEAs), the legislature and the public.

This foundation will eventually allow OPI to provide access to student and school data that is currently unavailable to most people at the district and school level. It will allow accurate and transparent data to serve as the basis for wise decisions on education policy and practice by the boards of trustees and administrators of local districts and schools.

This grant will provide the foundation necessary for tracking the educational achievements of all Montanans from pre-school through post-secondary. There is currently very limited sharing of such data among pre-school providers, K12 schools both public and private, and the higher education institutions in the state, both public and private.

Most importantly, this project will create an enterprise-wide architecture that allows for future expansion, such as allowing teachers to track and plan for individual students and providing a portal for parents to track their children's progress, or for desirable uses not currently imagined.

Objectives for the Project

The Office of Public Instruction has made significant advancements in the collection and storage of student level data since the initial deployment of the student information system in 2006, but the implemented system has limitations that prevent its ease of use in providing analysis of longitudinal data. In order to allow accurate and robust longitudinal analysis of the data, a true data warehouse is needed.

This grant is requested in order to build a strong foundation for the Montana OPI. It will provide data necessary for improving education in Montana in a timely, accurate, secure and usable form. Toward that end, this project has five objectives:

1) Enterprise-Wide Data Architecture

As with many mature organizations, the data architecture of OPI grew organically as needs arose over a number of years, so OPI does not have a formalized Enterprise-wide Data Architecture. In order to fully leverage the data collected throughout the agency and to easily enforce data integrity and quality standards, a true Enterprise-wide Architecture is needed. Prior to starting a major project such as the establishment of a data warehouse, an organized effort to develop a proposed end state architecture and a roadmap as to how the final architecture will be achieved needs to be completed.

2) Data Governance

OPI does not have a formal governance structure in place. This grant will help to develop such an organizational structure which will define roles for its members, create data policies, procedures and plans for implementing the data warehouse and ensuring data quality. The data governance team will be responsible for data collection, ownership, data management and storage as well as data quality. Training will be provided to members of the team and job-specific competencies will be established to ensure the team members skills are brought up to date. There will be an office-wide effort to develop common practices for all data systems at OPI.

3) Establish the data warehouse

The existing student information system lacks the data management and retrieval functionality necessary to be considered a data warehouse. This results in difficulties with analyzing data over time. OPI has established an interim method to collect and store critical student data, but the method employed is time consuming, involves many work-arounds, and requires an exhausting number of quality assurance checks each time a work-around is performed. In particular, a formal analysis of the table structure was not conducted, which has resulted in a structure that is not optimized for the analysis of data. The implemented system also lacks a robust extract, transform, load (ETL) process. This shortcoming can contribute to data interpretation and data quality issues as OPI moves forward, as well as the potential of errors in reporting data to various entities.

4) Migrate data from numerous legacy data systems to the data warehouse

The primary data store for data used for federal reporting is the Student Information System, but certain key information is stored outside of this structure. A robust data warehouse will provide OPI the ability to pool all required information into one data store in a controlled environment. By putting all data in one central data store, the interpretation and use of the data can be more easily controlled which in turn will reduce the risk of improperly disclosed information and/or the creation of data quality issues.

5) Implement business intelligence tools

OPI does not currently utilize a true business intelligence (BI) tool. Analysis is completed using common office automation tools such as Excel and Access. The lack of a tool that can easily mine and extract data limits the wide availability and analysis of the data. A BI product will enable OPI easily to develop and store analysis for use by a broad community as well as providing the ability to put powerful analysis capabilities into the hands of key individuals within OPI and the LEAs.

PROJECT DESIGN

The first phase of OPI's project includes objective 1 of this grant proposal, which is the development of an enterprise-wide data architecture to fully leverage data collected throughout the agency and to enforce data integrity and quality standards. Before a data warehouse can be established, OPI must develop a proposed end state architecture and a roadmap as to how the final architecture will be defined. OPI intends to contract with a consultant to help define the requirements and lay out the roadmap for the enterprise-wide data architecture. Additional staff are needed to meet OPI's objectives, including a project manager and database administrator dedicated to the implementation of this project. The current database administrator (DBA) will be available as a resource for the new DBA OPI will hire from grant funds to provide guidance and any other assistance needed.

Another part of the first phase will be the implementation of a data governance structure which is objective 2 of this grant proposal. Funds from this grant will be used to hire a business analyst to assist staff with the development of the governance policies and processes as well as the designation of appropriate staff to be part of this team. OPI will contract with a data architect on a short-term basis (approximately six months) to help define the data collection, transformation, distribution, and loading. The architect will also help define the data models that are the foundation of the warehouse. Phase I also includes data warehouse training for OPI staff.

During phase II, OPI plans to address objective 3 of this grant proposal, which is to establish the data warehouse. This includes acquiring and implementing a data warehouse that allows data to be collected, archived, and analyzed. The warehouse will support federal, state, and local reporting requirements and business needs. A consultant will be hired to help OPI staff prepare the RFP and define the data warehouse requirements. Phase II will also address objective 4 of this grant proposal which includes the migration of data from the numerous OPI legacy data systems into the data warehouse. An interface to transform and load data into the warehouse will

need to be created. Once the interface is in place data will be cleansed and loaded into the warehouse. The warehouse will need to be tuned. Once tuned, data can continue to be loaded from the OPI legacy systems. This process will begin in year 3 and continue on through year 4 and beyond.

Phase III includes objective 5 of this grant application to implement business intelligence tools. These tools will help OPI develop a standard set of reports that are requested most often. In addition, OPI will create ad hoc reports to meet other requests for information from OPI staff, other agencies, stakeholders, the legislature, and the LEAs. A second business analyst will be hired to help develop business processes that ensure the warehouse fulfills the enterprise's strategic objectives and to identify and define the warehouse purpose and target user groups. Both business analysts mentioned above will help provide training to OPI staff and the LEAs. Training will include information on data quality as well as how to use the business intelligence tools.

Please refer to the project timeline for a complete list of milestones and timelines for this grant proposal.

Governance and Policy Requirements

Current Status

The success of this project relies on the partnerships among OPI and a host of entities including Infinite Campus (current vendor for OPI's student information system), local schools and districts throughout Montana, and other state level agencies that have an interest in longitudinal data and analysis as a result of their mission. In order to ensure the ongoing involvement of diverse stakeholders, an advisory group that is already in place will continue in this role for the purposes of this project. The School Advisory Group of Educators (SAGE) is currently comprised of 13 members that represent schools of various sizes, geographical locations, resources, and current approaches in terms of student information systems. Current members are identified in the following table.

Current Members of the School Advisory Group of Educators (SAGE)

Name/Role	Representation	SIS Software
Barbara Ridgway, Technology Informative Services Administrator	Helena Public Schools	SASI/Tetra Data
Dennis Parman, Superintendent	Havre Public Schools	Infinite Campus
Jule Walker, Superintendent	Plevna K-12 Schools	School Master
Ivan Small, Superintendent	Poplar Public Schools	
Teri Wing, Superintendent	Somers Elementary	Power School
Cal Johnson, Superintendent	Belt Public Schools	Power School
Jerry Scott, County Supt	Carbon County Supt.	None
Scott Dubbs, HS Principal	Lewistown Public Schools	School Master
Linda Sims, Data Manager	Missoula Public Schools	C-Innovations
Ron LaFerriere, Coop Director	Gallatin/Madison Coop	

Emilie Anderson, Sp. Ed. Director	Target Range SD; President of Council of Administrators of Special Education	
Jules Waber, Co. Superintendent	Powell County Supt.	School Master
John Daugherty, Chief Information Officer	Dept of Corrections	None

OPI has developed naming standards and identified data stewards for most of the data elements collected at OPI. Stewards are responsible for assisting with determining the data collection requirements, the design of validations, testing of validations once they are in place, writing and reviewing definitions for the data dictionary, assisting with communication with end-users to ensure they understand what is being asked for, checking of the data for accuracy once it is collected, and final verification of reports before submittal to other agencies or publication.

The OPI staff have worked with the Tennessee Department of Education in order to find out more about their data governance structure and to educate themselves about the processes that need to be in place, lessons learned, issues concerning data quality, and roles and responsibilities of the data governance team members. OPI has also requested and received training plans from the Kansas Department of Education and plans on adopting some of these tools for use in Montana. Several members of the OPI Measurement and Accountability and the Information Technology Services Divisions have also attended presentations on data governance put on by Kansas and Tennessee at national conferences.

The OPI staff have been educating the LEAs on techniques to improve data quality and the importance of having quality data. The training sessions are designed to help the LEAs develop and improve their skills in this area. Much of the information presented in these training sessions are adopted from the National Forum on Education Statistics (2004), Forum Guide to Building a Culture of Quality Data: A School District Resource. U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Needs and Uses

OPI recognizes the importance of data governance and will use a portion of the funds provided from this grant to implement a data governance structure. OPI does not have a formal governance structure in place. This grant will help to develop such an organizational structure which will define roles for its members, create data policies, procedures and plans for implementing the data warehouse and ensuring data quality. The data governance team will be responsible for data collection, ownership, data management and storage as well as data quality. Training will be provided to members of the team and job-specific competencies will be established to ensure the team members skills are brought up to date. There will be an office-wide effort to develop common practices for all data systems at OPI.

Since the effort is to be driven from the top, OPI's Chief of Staff will play an important role in overseeing the governance structure and driving data governance policies. This key position will foster communication and collaboration across the agency among all program managers and stakeholders inside and outside the agency, and will work closely with the Chief Information

Officer to establish a communication plan to keep all informed about the development of the data warehouse and the rules governing it.

One of the business analysts hired from grant funds will be assigned to design and lead the governance process. A data management committee will be established which will include all program managers, data quality director, chief of staff, data stewards, and representatives from school districts (SAGE group), higher education, and other state departments. This committee will develop a plan to strategically develop and integrate any data collection and ensure data collections are necessary, adequately defined and supported.

With this grant, OPI intends to formalize and enhance the role of these stewards as part of our data governance process. OPI plans to assign data stewards to all of the data elements OPI collects and have better quality assurance on all data exports and reporting. Data stewards will be responsible for knowing the data collection processes, the purpose for which the data is collected, and other appropriate uses of the data. The data stewards will work with programmers to design extracts.

Please refer to objective 2 of this grant application and to the OPI project timeline for an overview of our data governance objective and a list of major milestones and timelines for data governance.

Institutional Support

There is significant commitment from the Office of Public Instruction, the Governor's Office and the Office of the Commissioner of Higher Education to link data among K-12 and post-secondary data systems. Among many of the policy leaders, there is also an unrealistic expectation that these linkages are more easily established than is actually the case. Conversations about the importance of linking data, and the business intelligence to be derived from establishing these linkages, have not been enough to make these data sharing projects happen. Individuals in all three offices that work with the education information systems understand that a more detailed planning process is required and human resources need to be committed to planning for the enterprise-wide data architecture and implementing a data warehouse.

To date, only limited human and other resources have been available to undertake the crucial planning processes necessary to lay the foundation for a successful data warehouse. With the resources from this grant, a comprehensive planning process can produce an education data model that will direct the application of resources (human, IT, and other) in the future. With a good plan in place, one that reflects consensus among the P20 community about the decision support tools that are needed to foster sound policy decisions, the technical staff can move forward with budget justifications to the Governor's Office and the legislature.

As stated previously in this grant application, the Governor's Office has encouraged and supported the initiatives presented by the Office of Public Instruction to improve its information systems. In 2005, the Governor proposed (and the legislature authorized) funding for the statewide student information system and the K12 electronic grants management system. In

2007, the Governor and the legislature provided on-going support for these projects and for the design of a school staffing module. During the appropriation hearings for OPI's information systems request, the State's Chief Information Officer appeared as a proponent and commended the agency for its efforts. In the upcoming 2009 session, the Governor's Office has indicated that it is likely to propose funding for the Office of Public Instruction's joint venture with the Office of the Commissioner of Higher Education to implement electronic student transcripts.

Montana Governor Brian Schweitzer has signed the National Governors Association's (NGA) Graduation Counts Compact. His office, through his education policy advisor, has monitored the progress that the SEA and LEAs are making in preparing to use the NGA graduation rate.

The preceding discussion is intended to demonstrate evidence of the executive and legislative branch support that OPI has received for its longitudinal data system requests in the past. The interest and commitment to the proposed objectives and outcomes of this project are well-established. The challenge that OPI faces is how to use resources wisely to develop a comprehensive education information system that serves the policymaking and decision support needs of the education community. By using the IES grant resources to develop a blueprint for an enterprise-wide data architecture and by defining the information system tools needed for implementing the data warehouse, OPI will be in a strong position to request and justify funding from the Governor and the legislature for the maintenance and enhancements of its systems.

Sustainability

Within the Office of Public Instruction, the staff from the Measurement and Accountability and the Information Technology Divisions currently support the OPI production systems, including AIM (Achievement in Montana), the statewide student information system. The Measurement and Accountability Division includes 10 staff positions, three of which are specifically dedicated to the AIM system. These three positions include the AIM Data Resource Administrator and two Student Record Managers. In addition, the Measurement and Accountability Division includes four Research and Analysis Managers that draw heavily from the AIM data and other OPI production systems to extract data, provide analysis and complete reports. The IT Division's System Development Bureau includes, a bureau chief, five programmers and a Database Administrator, all of whom are available to support the project. The division also includes the division administrator, network administrators, help desk staff, and two positions dedicated to the electronic grants management system. Finally, the Office of the State Superintendent provides the sponsorship and project management support for the longitudinal data system projects.

Current Staff to Support the Project	Staff Positions
Measurement and Accountability Division	
Division Administrator	1
AIM Unit (statewide student information system)	3
Research and Analysis Managers	4
Information Services Division	
Division Administrator	1
Systems Development Bureau Chief	1

Programmers (System Development Bureau)	5
Database Administrator (System Development Bureau)	1
Office of the State Superintendent	
Chief of Staff Project Sponsor's Delegated Representative	1
Project Manager	1

The OPI staff are located in three buildings, all within a block of each other. These facilities house the OPI network servers, storage area network and the infrastructure necessary to support the existing OPI network. Due to the large storage capacity and processor needs for this project, OPI will contract with the state Department of Administration, Information Technology Services Division to host this application. The infrastructure at that location includes backup generators, secure physical access, fire suppression, disaster recovery, and the resources necessary to support the hardware needs of this project.

As indicated in other sections of this grant application, the Office of Public Instruction needs to acquire the technical expertise to design an enterprise-wide data architecture and to implement a data warehouse. Our expectation is that our planning process will identify the resources necessary to sustain the project including staffing needs, job-related IT competencies, the data governance structure and processes, and data quality controls and training for SEA and LEA users of the information systems.

OPI currently uses a regional services delivery model for training in five areas around the state. Video and web conferencing as well as hands-on and on-line training sessions are currently being used extensively to provide training to the LEAs. OPI frequently uses school district facilities to provide hands-on training about our data systems.

As one outcome of the collaborative efforts described in this grant application, OPI will prepare a future funding request to the state legislature to continue the funding of the four new FTEs described so that OPI will be able to continue to support the systems once they are in place.

In meeting the objectives of this project, OPI will be promoting a sustainable IT infrastructure that accommodates the long-term management and storage of data. OPI will monitor the usages of the system and note any deficiencies that need to be improved or updated. Given the significant focus of the proposed project on OPI internal processes, and given the inclusion of stakeholders in the planning process, we believe the project will be sustained. OPI expects to make significant changes in its business practices as a result of this project and has made a commitment to sustain these practices.

TECHNICAL REQUIREMENTS FOR PROJECT DESIGN

Federal and State Reporting

Current Status

Our student information system, Achievement in Montana (AIM,) was deployed in 2006. Since that time OPI has made great strides in collecting student data. Our system currently contains most of the fields of data that are needed to report student data to EDEN, however, there is no easy way for us to report that data as of a specific date or to compare the data over time. Other data elements required for EDEN are collected in various legacy systems and must be manually extracted and combined with data from several systems in order to submit the data to EDEN.

Combining data from different systems for federal and state reporting can very challenging due to conflicting timelines/deadlines for collecting and reporting out of a system. For example, the state distributes payments to school districts based on the number of licensed full-time equivalent educators employed by the district. To produce this payment, a state quality educator file, based on a count of appropriately licensed professionals for each district, is extracted from the Annual Data Collection at the end of February to populate school district budgets for the upcoming school year. However, the state accreditation process, which includes appeals from school districts to make changes to the Annual Data Collection staffing, is usually not complete until after the Board of Public Education meeting in March. Therefore, the count of licensed staff extracted in February may not match the count of licensed staff extracted from the same system in April.

Most of our systems have incorporated a "freeze" or "snapshot" process to enable consistent reporting of the data, but the methods OPI uses to create these snapshots have been clumsy and inelegant in their execution. They are sorely in need of a governance process to determine when the data is ready to be "frozen" and how and/or if edits will be made after the "freeze" occurs. Snapshots exist within the various collection systems, or in files that end up outside the formal collection system (i.e. excel spreadsheets), rather than being loaded into a central repository enabling integration between the systems.

Although OPI staff do their best to incorporate data validations at the point of data entry, there have ongoing issues with data quality staff receive from the different systems. The clean-up takes place through ad-hoc queries of the data.

A data warehouse and formal ETL process is needed resolve these current issues and to ensure all of the fields collected as part of the reporting process contain clean data.

Needs and Uses

Currently the OPI does not have a data warehouse in place to support data analysis and reporting required by NCLB and EDEN. In addition to federal reporting requirements, OPI must respond to many internal demands for data and data analysis. State reporting requirements, demands for comparison data from LEAs, and departmental demands for management data are all on the

increase. The range of requests for data and data analysis includes fiscal accounting reports, student performance data, organizational reports, and other specialized reporting looking at past trends and future projections. The lack of a data warehouse and business intelligence tools makes it difficult to meet all of these demands.

Data sharing and reporting for state and federal purposes will be streamlined through the reliance on a single source of data. Information reported to state policymakers and other state agencies will be consistent with data reported to EDEN. Built-in quality assurance features will provide greater confidence in the accuracy and consistency of our data, allowing SEA staff to spend more time on data analysis and reporting and less time on data clean-up. A further benefit is improved planning for all of our federal, state, and local education partners. With a solid foundation in place, more staff resources can be allocated to anticipating future uses of and changes to the system.

Using the information and analysis tools available from an integrated longitudinal data system, OPI has better information for answering a range of policy questions. Our current system (Infinite Campus) does not contain a true data warehouse. Therefore, we are unable to answer these questions easily or to gather and report data over time.

Privacy Protection and Data Accessibility

Current Status

In order to protect against releasing data that could possibly identify individual students, OPI has implemented a student records confidentiality policy. To date, the following processes and policies have been put into place in an effort to comply with FERPA and industry data security best practices.

OPI has adopted a Student Records Confidentiality Policy and has trained all internal staff on the policy. LEAs will be trained on the policy during the fall and winter of 2008. The training will be available through video streaming as well as instructor-led training provided to the districts as part of their student information system training. The policy is based on guidelines from FERPA, the OPI Network Acceptable Use Policy, OPI and Secretary of State's Records Management Policies, the Montana School Accreditation Standards and Procedures Manual, Public Law 103-448, Section 9 and 108, as well as the State of Montana Network, Internet, and Security Policies.

OPI has developed a method for handling requests for data that contains student level records or data that is potentially personally identifiable. Requests are reviewed by the OPI Data Privacy and Security Committee on a case-by-case basis. Data is not released until a research proposal has been submitted for review by the committee. If the request is approved, a confidentiality agreement is signed and returned to OPI. All OPI staff who need access to confidential data are required to submit a request for the data that is signed by their supervisor. If the request is approved, the OPI staff person must sign a confidentiality agreement.

The OPI student information system is hosted by the State of Montana Department of Administration, Information Technology Services Division (ITSD). The facilities there provide continuously controlled temperature and humidity, backup and recovery of database, capacity planning, continuous monitoring, database support, database hosting hardware and software to support AIM, fire protection and suppression systems, batch job scheduling, output services, physical security, quality assurance and disaster recovery services. All systems are in compliance with applicable state standards and adhere to state policies. ITSD has equipment maintenance agreements that require vendors to replace equipment within 24 hours. Application backups are maintained on-site and off-site. The ITSD computer center is staffed 24 hours a day, seven days a week. In the event of an extended outage requiring cutover to a hot site, OPI and ITSD have a contract with SunGard to provide the necessary hardware and facilities to bring the system back online. OPI will enter into a separate contract with ITSD to host the data warehouse. The current hosting contract for AIM and the partnership OPI has developed with ITSD have been very successful and we expect the same to be true if they host this application.

The OPI student information system uses role-based secure access to the data at all levels within the State and local educational agencies.

The State of Montana has adopted a secure single sign-on system called ePass Montana. This system allows access to all authorized eGovernment services with one username and password and grants users access into federal government services for which they are authorized. This is an enterprise-wide initiative that improves overall security of online services by having one entry point, decreases human factor security breaches, and focuses on one solution for oversight and auditing purposes. ePass Montana will be the login portal for members of the public who need access to reports and other data.

OPI's servers and desktops are patched with critical updates upon release of information from ITSD. Patches are applied using a Windows Security Update Services (WSUS) server upon approval of the patch management team. Virus scan software is updated automatically by the OPI's ESet Server.

Needs and Uses

OPI has not identified significant needs in security because of the existing infrastructure and data hosting contract we have in place with ITSD. This environment is explained in the previous section, Current Status. Our Student Records and Confidentiality Policy currently addresses personally identifiable information, directory information, confidentiality, and data requests. Additional policies will need to be created as more data becomes available to stakeholders.

The OPI will need to define security guidelines as to what type of information will be available to staff, stakeholders, and the general public. The availability of information will need to be assessed based on business and regulatory requirements as well as information privacy and confidentiality.

Data Quality

The Office of Public Instruction employs numerous methods to ensure the integrity, security and quality of its data. Data security is addressed in the Technical Requirements of this grant application in the section titled "Privacy Protection and Data Accessibility." As mentioned in the Governance and Policy Requirements section of this grant application, OPI will use a portion of the grant funds to implement a data governance structure. Full details of this plan can be found in that section of this grant application.

Current Status

The Office of Public Instruction uses numerous tools for training school district staff in the use of our data systems.

- Annual Training: For our largest data collection systems, including the school finance (MAEFIRS), the school accreditation (ADC), the student information system (AIM), and the e-grants collections we provide regional in-person training sessions around the state timed to coincide with the beginning of the collection periods. We also maintain an in-house training room where we can bring district staff in to demonstrate systems.
- Other Training Opportunities: The AIM system offers web conferences and online training sessions throughout the year to inform users of changes to the collection and for ongoing communication. Web conferences will be employed by other OPI systems in the fall of 2008. OPI also maintains in-house teleconferencing facilities to enable face-to-face communication and system demonstrations with district users.
- User Manuals: For the large collections, OPI annually updates and publishes user manuals, quick reference guides, and FAQ's. All information is posted on-line for quick reference by end-users.

The Office of Public Instruction is in the process of developing an office-wide glossary to ensure all stakeholders in the collection and reporting processes at OPI are using the same definitions or understand the differences in definitions that are used for data elements we collect. Additionally, the AIM system publishes its own system-specific data dictionary. The OPI data dictionary is posted on the OPI AIM web site and contains definitions for all fields of data currently collected in our student information system.

Telephone support is available for all systems, especially during critical data collection periods, for both technical help through an office-wide help desk and also program-specific help through the program people familiar with the collection needs and the collection process. All Office of Public Instruction data stewards foster relationships with users in the field to ensure ongoing communication between districts and the state regarding collections. These relationships are enhanced by providing annual, regional, in-person trainings to school districts. All collection systems have an on-line "get help" button where users may type in questions 24 hours a day that are directed to OPI staff. Some of our data systems have online help built directly into the collection system. The OPI help desk staff are available to respond to questions between the

hours of 7:00 a.m. and 5:00 p.m. Monday through Friday. Call received outside of the normal working hours are responded to promptly.

The Office of Public Instruction data collection systems incorporate data validations into the data entry process wherever possible. A primary goal of all collection systems is to get data right at the point of entry. Additionally, with the ADC and MAEFAIRS Systems, an edit process exists that checks relationships among fields and prior year submissions to find errors before the data can be submitted to OPI. These systems employ both critical error checks, where the data must be fixed before submittal to OPI, and warning error checks, that allow submittal, but notify users of possible problems.

Once data has been submitted to OPI staff, it goes through a data review process with data stewards before the information is published and reported. The stewards compare the current year collection from a district to the results from the prior year collection, check for missing or incomplete data, check for elements outside the range of expected values, and check to see if what has been received makes sense in to context of what was collected. The data stewards contact districts to correct data integrity issues before the data set is finalized.

Although OPI has identified stewards, we have a difficult time getting them to take full responsibility for checking the quality and accuracy and for ensuring timely reporting of the data to the EDFacts and other reporting systems. The primary reasons for these difficulties are lack of understanding about how to apply data quality checks, lack of proficiency in using data management tools such as Excel, and lack of clarification of roles and responsibilities by both the data stewards and their supervisors.

The analysis tools currently available for stewards to use in the reporting process do not match the skill level and needs of the stewards to enable them adequately to do the quality assurance checks they should do before submittal. The stewards also have difficulty providing adequate user acceptance testing before new collection systems go live. Training will need to be provided to members of the team and job-specific competencies will be established to ensure that team members skills are brought up to date.

OPI annually publishes an "Auditor Letter" where we request independent school district auditors to review specific items as part of their audit process. Data elements associated with school funding are incorporated into the audit checks.

Needs and Uses

OPI will need to develop a formal training plan for the OPI staff and the LEAs that includes data governance and certification, much like the programs in place at the Kansas and Tennessee Departments of Education. Training will need to be provided to all members of the OPI data governance team and job-specific competencies will be established to ensure the team members skills are brought up to date.

The data governance team will help define the data elements that OPI collects in each of the various data collections as well as defining the business processes for each of the data elements.

The team will help identify data elements collected, identify business processes, and edit checks for data collected. We currently do not have enough data stewards to keep up with the volume of data that needs to be checked and verified. As part of the development of a data governance structure, OPI will need to define and assign roles for each team member. The data governance team will develop policies specifying who is accountable for the data's accuracy, accessibility, consistency, and completeness. The team will also define processes about how the data is to be stored, archived, backed up and secured.

The two business analysts who will be hired from these grant funds will provide training to the OPI and LEA staff. Training will help reduce the number of help desk calls received at OPI.

This grant will help the OPI staff to implement a formal edit, transform and load process to insure the integrity and quality of all elements as they enter the data warehouse.

Interoperability

Current Status

Many of the Montana Office of Public Instruction data systems that will be data sources for information to be stored in the data warehouse are currently used to exchange information with other agencies and educational entities. We anticipate the demand to provide and receive information from other systems and agencies will increase exponentially in the future. Below is a summary of areas where we currently exchange data:

- a. The Achievement in Montana (AIM) student information system incorporates a data syncing process to transfer data from end users who use a district edition of the AIM product for their student information system directly to the state edition of the AIM product. When the data is entered at the district level, it automatically populates the fields required by the state.
 - o Beginning with the 2009-2010 year, all school districts in the state will be required to use the district edition or condensed version of the district edition (Montana Edition) for their special education IEP reporting and, if they choose, as their student information system. This version of the AIM product will include the interoperability for records exchange between the district and state and from district to district.
 - o The AIM product allows for the automatic electronic transfer of selected enrollment information for students between schools and districts. Some items automatically transfer with the student record, while other items are available in a pdf format.
 - o Districts that continue to use a local student information system other than the Infinite Campus product, are able to extract and then upload text files that meet defined file specifications using a file upload process included in the AIM product. The upload process contains the same data validations as the user interface. This ensures data validity through each method of data entry.

- OPI sends and receives files from Measured Progress, our statewide Criterion Referenced Test contractor, and Questar, our current English Language Proficiency test coordinator, using data extracts and file uploads.
- OPI also provides student demographic information to the data system that is used to track 21st Century Learning Center grant information and provides enrollment and program participation information to the United States Department of Education, Education Data Exchange Network, used in the *EdFacts* system, using data extracts.
- b. The School Nutrition Program provides data to school foods vendors using file extracts.
- c. The Annual Data Collection (ADC) is the system used for collecting staff assignments.
 - ADC is directly linked to the Montana Department of Labor's professional licensing database and is used to verify licenses for professional staff reported as employed by schools and districts within the ADC program.
 - ADC is directly linked to our Educator Licensing system to verify the educator licenses of staff.
 - It extracts data to provide employment information to Montana's Teachers Retirement agency to verify that employment of retired teachers does not exceed legal requirements.
 - This program extracts data to provide staff information to the United States Department of Education and the Education Data Exchange Network. This data is used in the *EdFacts* system.
- d. Migrant Student Information Exchange (MSIX) is a data exchange program that allows educators across the United States to record efficiently and effectively the progress of migrant students through the educational process. This system does the following:
 - It captures educational and health data on migrant students,
 - It allows educators to record the movement of migrant students through the educational process by producing on-line records of a student's educational progress and health profile,
 - It allows educators to generate a student transfer document to facilitate academic placement as the student transfers schools, and
 - It allows educators to generate various student-level, management and Office of Migrant Education performance reports.

Needs and Uses

All of the above data is located in various legacy systems throughout OPI. Without a data warehouse and business intelligence tools it is difficult to gather all of the data elements needed to meet reporting requirements. In addition, OPI is not able easily to gather longitudinal data that could be used as a basis for decision-making on educational policies and issues.

When the objectives of this grant are met, OPI will be able to improve our ability to exchange data in the future and to facilitate the interoperability between systems and agencies.

Currently no districts exchange data with AIM using the SIF method and the state has not employed zone servers to facilitate this exchange. In order to address the interoperability problems between the OPI legacy systems and other stakeholders, SIF standards must be put in place.

OPI does not have the staffing and resources to address the technical issues involved with interoperability, SIF, and data architecture. Therefore, some of the grant funds will be used to hire a contractor to help define the needs and address the technical requirements.

Enterprise-wide Data Architecture (EDA)

Current Status

We currently do not have an enterprise-wide data architecture that can link records across information systems and data elements across time that will allow for longitudinal data analysis. In essence, we have a number of isolated databases that do not communicate effectively nor allow for easy cross-reference of data. While we have assigned unique student identifiers, created a data dictionary and put many business rules in place, these practices are not followed uniformly among all databases. There are many different processes linking data among systems and many of these processes require the export of files which are then combined using Excel, Access, and/or SQL. Not all of the systems use the same main key (i.e. student identifier) so hand processing is often required. While we have been able to produce EDFacts reports, it is often a time-consuming process gathering the information from so many separate systems.

Needs and Uses

Funds from this grant will assist OPI with the development of an enterprise-wide data architecture. This architecture will define how and in which systems data will be stored and will establish a common methodology for linking these systems. It will also include expanding and refining the data dictionary, business rules, and processes for data collections using the guidance of the data governance team. Additionally, the enterprise-wide architecture will facilitate the creation of a data warehouse so that data from the various information systems at OPI can be linked and stored as needed. An EDA will help OPI design and implement a solid foundation of core data elements and entities from which to derive accurate, integrated, and reliable information.

The Superintendent of the Office of Public Instruction is committed to the implementation of an integrated, cross-functional EDA and will ensure that OPI staff are directly involved in the planning of this objective. The consultant hired to help OPI staff with the EDA will ensure the office has a well-defined scope, design stability and a logical data model that will produce physical tables independent of their physical implementation on current hardware and systems software. As the underlying technology changes over time, the EDA's logical data structures need to remain valid. The integration of data across all business areas is the EDA's primary value of building the data once and sharing it many times across many systems to many stakeholders.

An EDA will help solve the data integrity problems where identical queries often yield different answers because each functional area has its own data. By creating an EDA, OPI will have the fundamental data building blocks to provide a foundation on which to respond to the various requests for data from OPI staff, federal and state entities, and various stakeholders.

PROJECT MANAGEMENT PLAN

All phases of this project will be managed by the OPI project manager. The project manager reports directly to the OPI Chief of Staff. The Superintendent of the Office of Public Instruction will be the project sponsor. If this grant proposal is approved, a project leadership team and project team will be formed. The leadership team will be responsible for providing guidance to the project team on policy issues, defining and managing the scope of the project, managing risks, and resolving issues that may arise during the course of the project. The project team will be performing most of the hands-on work throughout the project.

There are also resources available to OPI through the Department of Administration's project management office. The department has a project management model in place which OPI has used on previous projects and has proven to be a successful tool. Included in the model are planning documents for change control management, communications, governance, issue management, project charter, risk evaluation, and a risk plan. The Department of Administration provides oversight to all state agencies on large projects. OPI is required to provide them with a quarterly update for all major projects. The Department of Administration also assists agencies with the development and issuance of Requests for Proposal (RFPs) and offers project management training to state employees.

Year 1 of the OPI project management plan includes hiring staff and consultants to assist with the technical and business requirements and technical design of the enterprise-wide data architecture. Work on the data governance plan, policies, procedures, and training will also take place in the first year.

Year 2 of the plan includes continued work on the technical design for the enterprise-wide data architecture as well as the data governance plan. A consultant will be hired to assist OPI staff with writing and evaluating the RFP and selecting a vendor. OPI will then negotiate a contract with the successful vendor. Hardware and software will be ordered. The data hosting environment will be set up using a contract with the Montana Department of Administration, Information Technology Services Division. Business intelligence tool training will take place in year 2.

Year 3 will include defining the data warehouse structure and creating an interface to transform and load data into the warehouse. OPI will load initial data and resolve data inconsistencies. Staff will install a business intelligence tool(s) and develop reports.

The final year of the project will include loading the data, validating the accuracy of the data and tuning the data warehouse. Year 4 also includes testing and validating reports and continued training for OPI staff, LEAs, and other stakeholders.

The complete list of major milestones and timelines are identified in the project timeline included as part of this grant application.

Project Personnel, Role, and Time Commitments

Name	Position	Role in Grant	FTE
Madalyn Quinlan	Chief of Staff	Principal Investigator; serves as a single decision-making point of contact for the Project Manager with ability to commit organizational resources in support of the project, member of the AIM Leadership Team	.10*
Donna O'Neill	Administrator-Measurement and Accountability Division	Project Coordination, Partner with the OPI Project Manager, assists in the coordination of and provides business process information, member of the AIM Leadership Team, chair of the data governance process	.25*
Gale Kramlick	Information Technology Services Division Administrator	Helps with IT integration, policies, security, Partner with the OPI Project Manager, assists in the coordination of and provides business process information, member of the AIM Leadership Team, responsible for supervision and oversight of IT projects for the OPI	.25*
Jim Gietzen	Systems Development Bureau Chief	Helps with IT integration, data standards, policies, supervises Database Administrator positions and systems development staff, works with IT staff to test data warehouse tools and assess the need for expansion	.25*
Sharon Burt	Database Administrator (DBA)	Coordinates transfer of data from legacy systems to AIM, coordinates submittal of data from AIM to EDEN, Partner with new DBA, assists with naming standards, database design, data dictionary, and disaster recovery planning; participates in data governance	.50*

Sara Loewen	Data Resource Administrator	Helps with file specifications, data dictionary, documentation, training, maintains META Data, manages all stakeholder groups, acts as “public face” between the use community and OPI, member of the AIM project leadership team, participates in data governance	.50*
Linda Atwood	Operations Research Analyst	Assists business analyst with defining business roles and processes, mapping data and defining data elements, participates in data governance	.50*
Bob Runkel	Assistant Superintendent	Special education component of AIM; Partner with the OPI Project Manager, assists in the coordination of the IEP and Special Education tools implementation and provides business process information, member of the Project Leadership Team	.25*
New FTE	Project Manager	Oversees project from conception through implementation, develops project plans and timelines, works with existing OPI project manager to learn OPI business processes and state contract management and negotiation processes	1
New FTE	Business Analyst	Develops business processes that ensure warehouse fulfills the enterprise's strategic objectives; identifies and defines warehouse purpose and target user groups, develops data quality processes and policies, is responsible for training stakeholders and OPI staff	1
New FTE	Business Analyst	Develops governance policies and processes, sets up training plan for school districts and OPI staff, convenes data stewards on regular basis, develops governance certification program, assists with training stakeholders and OPI staff	1

New FTE	Database Administrator	Responsible for naming standards, database design, data dictionary, performance analysis and tuning, and disaster recovery planning. Works with existing OPI DBA.	1
FTE supported by Grant Funds: 4 In-Kind FTE: 2.60 Total Project FTE: 6.60			

* FTE is provided as in-kind support to project.

Contracted Personnel, Role, and Time Commitments

Name	Role in Grant	Time Commitment
Data Warehouse Architect	Defines data collection, transformation, distribution and loading. Defines the data models that are the foundation of the warehouse	Approximately 6 months
Consultant	Assists the OPI staff with the development of the RFP for the data warehouse and business intelligence product	Approximately 40 days
Consultant	Develops business requirements for the project and lays out the road map for the enterprise wide data architecture	Approximately 50 days
Total of 3 Contracted Positions supported by grant funds		

Project Narrative

Other Narrative

Attachment 1:

Title: Pages: Uploaded File: 1236-Project Timeline.pdf

Attachment 2:

Title: Pages: Uploaded File: 1237-Appendix A-comb.pdf

Attachment 3:

Title: Pages: Uploaded File: 1238-Appendix B_comb.pdf

Project Timeline
Montana Data Warehouse: Foundation for a Longitudinal Data System

Objective 1: Develop an Enterprise Wide Data Architecture																
Activities	Year 1				Year 2				Year 3				Year 4			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1.1 Hire Project Manager		X														
1.2 Hire Consultant to assist with requirements gathering		X														
1.3 Hire business analyst		X														
1.4 Hire database administrator		X														
1.5 Develop business requirements		X	X													
1.6 Data warehouse 101 training for staff		X														
1.7 Hire Data Architect			X													
1.8 Develop technical requirements, needs, data and systems inventory			X	X												
1.9 Develop technical design				X	X											

Objective 2: Data Governance																
Activities	Year 1				Year 2				Year 3				Year 4			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.1 Hire business analyst	X															
2.2 Define mission & goals	X															
2.3 Identify team members	X															
2.4 Define policies & procedures		X	X													
2.5 Provide training for team			X													
2.6 Provide training for LEAs				X	X	X	X	X	X	X	X	X	X	X	X	X
2.7 Hold regularly scheduled meetings			X	X	X	X	X	X	X	X	X	X	X	X	X	X

Objective 3: Establish the Data Warehouse																
Activities	Year 1				Year 2				Year 3				Year 4			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
3.1 Hire Consultant to assist with RFP				X												
3.2 Write RFP including data warehouse & business intelligence product & solicit responses					X											
3.3 Evaluate RFP Responses						X										
3.4 Select Vendor, Negotiate & Award Contract						X										
3.5 Prepare project plan for building & loading data warehouse & migration of data into warehouse								X								
3.6 Develop data hosting agreement & plan						X										
3.7 Order & install hardware & software							X	X								

Objective 4: Migrate data from numerous legacy data systems to the data warehouse																
Activities	Year 1				Year 2				Year 3				Year 4			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
4.1 Identify data to be stored in data warehouse					X											
4.2 Define data warehouse structure									X							
4.3 Create interface to transform and load data into warehouse									X							
4.4 Transform data (cleanse data & resolve data inconsistencies)											X	X				
4.5 Load data & validate accuracy													X			
4.6 Tune data warehouse														X		
4.7 Continue loading data from legacy systems														X	X	X

Objective 5: Implement business intelligence tools																
Activities	Year 1				Year 2				Year 3				Year 4			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
5.1 Business Intelligence Tool training				X												
5.2 Refine business requirements for reporting data										X						
5.3 Install business intelligence tool										X						
5.4 Develop reports										X	X					
5.5 Test & validate reports												X	X			
5.6 Train staff, LEAs, & other stakeholders													X	X	X	X
5.7 Implement reports into production														X	X	X

Appendix A
Montana Data Warehouse:
Foundation for a Longitudinal Data System

Detailed Budget A-2

In-Kind FTE..... A-4

Letters of Support A-6

Detailed Budget Appendix A

Montana Office of Public Instruction

Detailed Budget Appendix A

Montana Office of Public Instruction

Appendix A

Montana Office of Public Instruction

Appendix A

Montana Office of Public Instruction

Letters of Support

For

**Montana Data Warehouse:
Foundation for a Longitudinal Data System**

OFFICE OF THE GOVERNOR
STATE OF MONTANA

BRIAN SCHWEITZER
GOVERNOR



JOHN BOHLINGER
LT. GOVERNOR

September 2008

Dear Superintendent McCulloch:

As you know, I strongly support the concept of "Education for Life" and have consistently promoted efforts to see that all Montana students are afforded a quality education. To that end, I am pleased to write in support of your agency's application for a grant from the Institute of Education Sciences at the U.S. Department of Education. The grant will allow the Office of Public Instruction to establish a data warehouse and to develop other tools to ensure a more seamless transition for Montana's students as they move through the education pipeline.

The ability to track students' progress as they make these transitions is essential for maintaining a top-rate educational system. You and I recognize the challenges in designing and implementing an education data system that meets today's needs that is also a foundation for the future. The proposed data system by the OPI will make it possible for Montana to calculate graduation rates using the model developed and adopted by the National Governor's Association.

Among its other benefits, this longitudinal data system will make it easier for the OPI and Commissioner's Office of Higher Education to bridge the K-12 and Higher Education data system. It will provide valuable, timely and accurate information to me, the legislature, and the education community; and it will facilitate cooperation between educators and workforce development leaders.

I endorse the efforts of the Office of Public Instruction to secure this grant that will improve Montana's ability to use the right data at the right time for making the right decisions. I wish you success in this grant application.

Sincerely,

A handwritten signature in black ink, appearing to read "B. Schweitzer", with a stylized flourish at the end.

BRIAN SCHWEITZER
Governor



MONTANA UNIVERSITY SYSTEM
Office of the Commissioner of Higher Education

46 N Last Chance Gulch ♦ PO Box 203201 ♦ Helena, Montana 59620-3201
(406)444-6570 ♦ FAX (406)444-1469

September 16, 2008

State Superintendent Linda McCulloch
Montana Office of Public Instruction
PO Box 202501
Helena, MT 59620-2501

Dear Superintendent McCulloch:

On behalf of the Montana University System and the Commissioner of Higher Education, I am pleased to provide this letter of support for the Montana Office of Public Instruction's application for development a data warehouse and a business intelligence product that will further their efforts in creating a longitudinal data system. Montana University System is committed to partnering with OPI to develop better, statewide data systems and we believe that this grant request is an excellent vehicle to accomplish this task.

It is critical that the P-20 educational community work together to develop robust data systems capable of exchanging information in order to promote informed decision making and continual quality improvement. Efforts are being made to draw links that better depict student experiences and success, not only within the educational system, but throughout Montana's workforce. This stream of information begins with K-12 data and we recognize the challenges and importance of developing a strong, multi-faceted data system that not only meets the needs of numerous school districts, but also provides the foundation for statewide research and data linkages.

The Montana University System fully supports the efforts of the Office of Public Instruction in seeking resources to improve Montana's education policymaking tools. We look forward to partnering with OPI in this important statewide effort.

Sincerely,

Tyler Trevor
Associate Commissioner
Montana University System



Board of Public Education

PO Box 200601
Helena, Montana 59620-0601
(406) 444-6576
www.bpe.mt.gov

BOARD MEMBERS

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Great Falls

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Commissioner of
Higher Education

Linda McCulloch,
Superintendent of
Public Instruction

Brian Schweitzer, Governor

EXECUTIVE SECRETARY:

Steve Meloy

September 18, 2008

Linda McCulloch, State Superintendent
Office of Public Instruction
1227 11th Ave
Helena, MT 59620-2501

Dear Superintendent McCulloch:

I am pleased to provide this letter of support for the Montana Office of Public Instruction's (OPI) application for the establishment of a data warehouse. Please add us to the list of educational organizations that will be grateful to the Institute of Education Sciences of the U.S. Department of Education if they will provide a grant for this important foundation for a longitudinal data system.

We believe that Montana's grant request will provide necessary resources for the state education agency to involve Montana school districts, and its partners in P-20 education, in the development of an education decision support system. The system will eventually reduce the time burden on school districts, while enabling better policy decisions through the exchange of accurate and timely educational information among school districts and the educational community.

The establishment of a data warehouse will incorporate the legacy databases now required for many different programs at OPI. This will allow decision makers at OPI, here at the Board of Public Education, and in local school districts to have access to accurate and timely information. It will permit federal reporting to implement the National Governors' Association graduation rate, which is not now possible in Montana due to the lack of a longitudinal system.

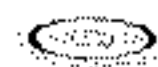
Perhaps even more important for the long term, this will lay the foundation for a system to link numerous public service agencies that are part of the P-20 educational system in Montana. Data-driven decision making can only occur when there is accurate and timely data on which to base those decisions.

The Montana Board of Public Education endorses the efforts of the Office of Public Instruction in seeking resources to improve Montana's education policymaking tools.

Sincerely,

A handwritten signature in cursive script that reads "Patty Myers".

Chairperson, Board of Public Education



~~Eric Feaver~~
President



September 19, 2008

Linda McCulloch, Superintendent
Office of Public Instruction
PO Box 202501
Helena MT 59620-2501

Dear Superintendent McCulloch:

Thank you for your leadership in applying for a grant from the Institute of Education Sciences of the U.S. Department of Education for the establishment of a data warehouse. We need the foundation for a longitudinal data system.

We see at least three key aspects of Montana's public education system that will benefit. First, MTSBA continues to work with our 1500 locally elected volunteer trustees across the state to use data-driven decision making as they make important policy decisions. This requires timely and accurate data that is now difficult to retrieve from multiple sources. While a data warehouse will not solve all our problems, it is the necessary foundation for providing the data they need, when they need it.

Second, the enterprise-wide architecture that is part of this grant will involve our organization and our members in helping plan for a system that meets our current needs and can be adapted for future applications that we are not now using. That will make possible a future quantum leap in the data management capabilities of local school districts.

Finally, this K12 grant will provide the foundation for interoperability with the higher education community and with all of the different agencies working on economic development. Education is the key to our future, and having the timely and accurate data when we need it is the key to wise decision making.

We strongly endorse your efforts and those of the Office of Public Instruction in seeking to improve Montana's educational tools for policymaking. The Montana School Board Association understands the importance of this collaborative effort and stands ready to do anything we can to assist you in this regard.

Sincerely,

Lance L. Melton
Executive Director

Montana School Boards Association 863 Great Northern Blvd., Suite 301, Helena, Montana 59601
(406) 442-2180 -- (406) 442-2194 (FAX) -- www.mtsba.org
Lance L. Melton, Executive Director

Appendix B
Montana Data Warehouse:
Foundation for a Longitudinal Data System

Resumes of Key Personnel

Madalyn Quinlan

(b)(6)

QUALIFICATIONS: Over 13 years of experience in a leadership position in the state education agency, supervising the agency's communication functions, legislative agenda, personnel, and student assessment functions; and overseeing and providing management support for several of OPI's data collection and reporting efforts.

EDUCATION:

B.A. Public Administration, Georgetown University, Washington, DC, 1979.

Masters Program in Economics, University of Montana, Missoula, Montana, 1982-1984. 2 years full-time in graduate program. All but dissertation.

EMPLOYMENT:

Office of Public Instruction (1995-present), Chief of Staff

Management and leadership responsibilities in the Superintendent's Office include the coordination of OPI's legislative agenda, including requests for K-12 funding; communicating with schools and the public about Montana's K-12 education system; overseeing and providing management support for several of OPI's data collection and reporting efforts; supervising the personnel functions of the state office; and working closely with the office's State Assessment Director. Supervises the Measurement and Accountability Division within the OPI.

Areas of expertise include the school funding in Montana and how it works, taxation to support public education, and the fiscal and non-fiscal data collection and management efforts of the Office of Public Instruction.

Represents the state education agency on the National Forum of Education Statistics and the Education Information Management Advisory Consortium of the Council of Chief State School Officers.

Participated in task forces that developed the following National Forum for Education Statistics publications:

- *Accounting for Every Student: A Taxonomy for Standard Student Exit Codes*, April 2006
- *Managing an Identity Crisis: Forum Guide to Implementing New Federal Race and Ethnicity Categories*, September 2008

Office of Public Instruction (1990-1995), Revenue Analyst

Analyzed data and authored reports on all aspects of school funding to education policy makers. Shared a leadership role in the development of OPI's legislative proposals. Staffed the State Superintendent on issues related to the State Land Board.

Office of the Legislative Fiscal Analyst (1984-1990), Associate Analyst

Prepared revenue estimates for state general fund revenues and revenues to the school equalization aid account; staffed legislative committees on school funding and long range building; built her understanding of school funding, taxation, and the legislative process.

VITAE

Robert W. Runkel
Office of Public Instruction
PO Box 202501
Helena, Montana 59620-2501
Phone: (406) 444-4429 (W)

(b)(6)

I. EDUCATIONAL BACKGROUND

Bachelor of Arts/Psychology University of Wisconsin-Stout, Menomonie, Wisconsin
Master of Science Degree in Education University of Wisconsin-Stout 1975
Post Master Degree Courses
University of Wisconsin-Stout
University of Montana
Montana State University-Bozeman
Montana State University-Billings
Western Montana College
University of California Riverside

II. EMPLOYMENT HISTORY

*May 1987-Present Administrator, Division of Special Education
Office of Public Instruction*

Since 1987, Bob has served as administrator for the Division of Special Education of the Montana Office of Public Instruction. He has served as a member of the Board of Directors of the National Association of State Directors of Special Education (NASDSE) since 1996 and is currently President of NASDSE. Bob's background and training are in the field of school psychology. He holds educator licenses in the state of Montana as a supervisor of special education P-12, special education teacher P-12, secondary teacher of psychology 7-12, and school psychologist K-12.

- Licensed lobbyist to the Montana Legislature representing the Office of Public Instruction on a full range of educational issues affecting the public education of all children

July 1984 May 1987, Education Specialist, Monitor, State of Montana, Helena, Montana

August 1977 June 1984, Regional Services and Cooperative School Psychologist for Helena Area Schools, Helena, Montana

August 1976 June 1977, Regional Services School Psychologist for Rural Schools, Wolf Point, Montana

January 1973 May 1976, Teaching Assistant, University of Wisconsin-Stout

III. PROFESSIONAL AFFILIATIONS

National Association of State Directors of Special Education
National Association of School Psychologists
Montana Association of School Psychologists
Mental Health Association of Montana
Learning Disabilities Association
Montana Head Injury Association
Council for Exceptional Children

IV. OFFICES

2002 – 2003—Past President, National Association of State Directors of Special Education
2001 – 2002—President, National Association of State Directors of Special Education
2000 – 2001, President-Elect, National Association of State Directors of Special Education
1998 – 2000, Secretary/Treasurer, National Association of State Directors of Special Education
1996 – Present, Member, Board of Directors, National Association of State Directors of Special Education
1997 – Present, Member, School Improvement Executive Team
1997 – Present, Member, Department of Public Health and Human Services Advisory Council
1986 – 2000, Member, Developmental Disabilities Planning and Advisory Council
1993-1996, Founding Member, Board of Directors Managing Resources Montana
1988, Founding Member, Montana Youth Initiative
1983 – 1985, Delegate, National Association of School Psychologists
1983 – 1984, Member, State Special Education Advisory Panel
1981 – 1982, President, Montana Association of School Psychologists
1979 – 1980, Chairman, Internship Committee, Montana Association of School Psychologists
1975 – 1976, President, Library Board, City of Independence, Wisconsin
Elected in 1972 at age 19, Re-elected 1974, 1976 Alderman, Fourth Ward, City of Independence, Wisconsin
1974 – 1976, Chairman, Law Enforcement and Health and Sanitation Committees, City of Independence, Wisconsin

V. HONORS

1996, *Guardian Angel Award* Parents, Let's Unite for Kids
1996, *Distinguished Service Award* Montana Council of Administrators of Special Education
1996, *Award of Excellence* Montana State University-Billings
1990, *School Psychologist of the Year* Montana Association of School Psychologists
1973 and 1974, *Chancellor's Award for Academic Excellence* University of Wisconsin-Stout

Donna M. O'Neill

(b)(6)

QUALIFICATIONS:

Over 23 years of combined experience in leadership, program management, research, analysis, planning, design, implementation, and evaluation where working with accurate and timely data elements are used to drive policy and decision making which is critical to the success of the organizations I serve.

EDUCATION:

University of Maryland Graduate Certificate Program – Large Scale Assessment
Montana College of Mineral Science and Technology - Business Management and Information Technology
University of California, Berkeley – Resource Planning in Competitive Markets
Edmonds College, Seattle WA – Engineering, Demand Side Management Impacts
Colorado School of Mines – Economic Evaluation and Investment Decision Methods

EMPLOYMENT:

Division Administrator, Unit Manager, Measurement and Accountability (2003 – present)

Direct the Measurement and Accountability Division during the development and implementation of the State's Student Information System. Responsible for the development of the accountability tracking system for calculating school performance in Montana. Give direction, guidance and support in data collections and analyses for federal and state reporting requirements. This includes reporting for student disaggregated enrollment, highly qualified teacher information, Common Core of Data and EDEN files. Oversee other reporting requirements and analyses in collections such as home-school information, graduation, completion, drop-out and assessment data.

Direct the implementation of Montana's participation in the NAEP assessment where Montana students can demonstrate their achievement levels in the "Nation's Reportcard." Participated on national boards and advisory committees, presentations delivered at national meetings, advisory positions to state education agencies, in-depth studies and understandings of state assessments, designing, overseeing and carrying out analyses in various ways, equating studies, validity studies, sampling plans and statistical analyses.

Performance Measurement Officer (8/98-3/03)

Designed and developed the performance measurement system for the Montana Department of Revenue which stated goals and objectives and reported progress on a quarterly basis. The key indicators used to measure success was developed with a balanced approach in mind. As a consultant to the Leadership team, I recommended key indicators in the areas of learning & growth, customer service, internal business

processes and financial gains. This balanced approach kept the department focused on long-term commitment and growth.

I gave direction and guidance in reviewing policies and procedures between the State's Simplified Tax and Wage Reporting System (STAWRS) Program and the Internal Revenue Service in safeguarding activity reports when handling federal data. My management and supervisory experience started from leading teams on critical and specialized projects while working at the Department of Revenue, Property Tax Division. I led teams and was very good at it. By utilizing the keys of team concepts and facilitations skills, I was able to keep teams and individuals focused, helping individuals work closely together on defined projects in defined time frames, and I usually led several teams at one time. I provided a creative outlook to many of my teams by participating in discussions and respecting others opinions and ideas. By utilizing communication skills, analyzing techniques, evaluating and research skills, I have found making sound business decision to be a fact based on facts. I understand these techniques and utilize them in strategic planning, where end results are defining goals and objectives and laying the groundwork for implementing changes in an environment where teams can and need to be successful. I utilize work plans where goals, objectives and major milestones are identified with timeframes to be completed by and a measurement system implemented to track improvements.

Developed the procedures manual for the Property Tax Division and developed the quality assurance testing and reporting for the Property Valuation Process. In each new area of operation I facilitated the development of baseline documentation and testing, utilized best practice comparisons, reported progress made between reporting periods and made recommendations for improvements and targeted development and training. As team leader I drove the development of the Workload Statistics Study for Property from which many business decisions were made including reorganization of the department and the work load of 341 employees. I was the team leader for Quality Assurance for Property and also team leader for the Workplanning/Workreporting. As team leader in Taxpayer Information, I developed plans and tools to communicate to property owners of Montana what Property Assessment is all about. This included 100,000 brochures, filming videos, press releases and news spots on this critical and sensitive subject. I also evaluated the efforts of the communications when completed for improvements to the next outreach program.

Montana Power Company, Analyst (9/91-8/98)

Designed and developed a statewide database tracking system in energy conservation for Montana Power Company (MPC). Performed research, data collection, analyses and reporting for MPC's conservation programs and was considered the company's expert in conservation evaluation. I developed defensible estimates and testimony on potential penetration & acquisition rates on new conservation technologies. I served as member in the Northwest Utilities Evaluation Experts in the northwestern states. As a member of that group, we evaluated energy needs for Idaho, Washington, Oregon, California and Montana and recommended alternative solutions to meet those needs and lessen the burden of the energy crisis in the 1990's.

Continuing Education

Certificates of Completion

Leadership Dimension Training
Conflict Resolution
Administrative Rules
JCL
Trainer's Training
Service Plus
Creating Satisfied Customers
Balanced Scorecard
Benchmarking for Improved Performance
Monitoring & Tracking Systems
Process & Impact Evaluation

Awards

Innovators Award – EPRI
MPC Suggestion Award – Addressing and making policy changes for handling accounting procedures (cash incentive)
Governor's Award for Excellence

GALE KRAMLICK

(b)(6)

(b)(6)

(406) 444-4411 (work)

QUALIFICATIONS: More than 27 years experience in state government with 18 years experience at the Montana Office of Public Instruction. Over 8 years of experience in a management position in information technology. Responsible for overseeing the work of networking, programming, web services staff, and help desk staff.

Sixteen years experience in network administration, eighteen years experience developing and teaching information technology classes and seventeen years of developing information technology related policies.

EDUCATION:

AAS, Computer Networking, Helena College of Technology of the University of Montana
Essentials of Management
Basics of Management
Working with Difficult People
Managing Conflict
Performance Appraisals
Effective Presentations
Myers Briggs Type Indicator
Competency-Based Performance Management
Managing and Deploying Windows Server
Windows Server Security
Network Administration
Understanding Windows Registry
Powerful Communication Skills for Women
Computer Applications in Business

EMPLOYMENT:

Jul 1990 - Present Office of Public Instruction (OPI), Helena, MT
2004-Present IT Division Administrator
2000-2004, Technology Services Unit Director
1990-2000, Network Administrator

Held three different positions at the OPI starting as a Network Administrator and advancing to IT Division Administrator. Responsible for oversight of the OPI network, web services, programming, and help desk staff. Establish IT procedures and policies, prepares IT strategic plan, and disaster recovery plan, coordinates IT projects overseeing the development and implementation of technology services.

Feb 1990 - Jul 1990 Network Administrator, Montana Department of Fish, Wildlife and Parks, Helena, MT

Responsible for installation and maintenance of agency servers and desktops as well as application and server software, setting up server security and access, backup and disaster recovery. Responsible for providing IT training covering a variety of topics such as software applications, security, and policies/

Jan 1987 - Feb 1990 Microcomputer Specialist, Department of Administration, Helena, MT

Responsible for installation of desktop hardware and software, end user support, and IT training to end users.

Jan 1985 - Jan 1987 Microcomputer Specialist, Department of Commerce, Helena, MT

Responsible for installation of desktop hardware and software, end user support, and IT training to end users.

Jan 1980 - Jan 1990 SSG - U.S. Army Reserve - Supervisor of Personnel Section
Supervise administrative support personnel. Responsible for in processing and out processing soldiers, install desktop hardware and software, train staff on the use of software applications.

AWARDS/MEDALS:

Governor's Award

Department of Administration Employee Recognition Award (2)

OPI Employee Recognition Award

Meritorious Service Medal

Army Commendation Medal

Army Achievement Medal (2)

Soldier of the Quarter

James J. Gietzen

(b)(6)

PROFILE:

Information Technology Manager with extensive experience in the financial services industry. Strong program and project management background with experience in application development management, team building and coaching. Proven successful in the development of technology solutions that enable strategic business objectives. Consummate team player that strives to meet the goals of the organization. Selected areas of strength include:

Program Management:	Proven track record in managing project portfolios in excess of \$15MM per annum. Disciplined in the project lifecycle including; developing project scope, defining required resources, negotiating contractual arrangements, estimating time and cost of projects and monitoring project performance.
Strategic Planning:	Able to assess current technology, understand business strategies and work with business unit managers and executive teams to develop technology plans, priorities and budgets.
Applications Development:	Experienced with the management of large development teams in financial systems. Strong problem solving, communication and interpersonal skills have provided the ability to effectively oversee the on time and on budget delivery of complex systems that meet the client's needs.
Client Relationship Building:	Able to develop solid relationships with internal and external clients in order to assure the delivery of systems that achieve business objectives.

PROFESSIONAL EXPERIENCE:

STATE OF MONTANA, Helena, Montana

Current

Systems Development Bureau Chief, Office of Public Instruction (11/2007 – Current)

Directs daily operations of the bureau; analyzing workflow, establishing priorities, developing standards, policies, and information technology plans, providing for data security and control, disaster recovery, and setting deadlines. Assign and review the work of the computer system analysts; monitor budget; create work plans and training plans for the bureau. Works with private consultants and systems development service providers to arrange contracts for services, provide information, and to serve as contractual liaison for the office. Develops materials for and solicits "Requests for Proposals" from private contractors, evaluates proposals, negotiates terms, awards, and monitors contracts for large, complex systems design and development projects.

ABN AMRO NORTH AMERICA, Chicago, Illinois

1980 – 2007

LaSalle Bank NA and North American subsidiaries of ABN AMRO Bank NV, a top 20 global bank with assets of more than \$1 trillion and 105,000 employees in 53 countries. Standard Federal Bank was acquired by LaSalle Bank in 1997.

Senior Program Manager, First Vice President, LaSalle Bank, Chicago, Illinois (06/2006 – 06/2007)

Responsible for Personal Financial Services program with annual IT budget of \$15MM. Provided leadership and day-to-day management of a team of up to 24 project managers including hiring, resource assignments, prioritization, issues escalation, customer communication and senior management reports. Worked with onshore and off-shore partners to effectively staff and deliver projects on time and on budget.

- Successfully reorganized a team that had been without a manager for six months. Established stricter adherence to process and procedure which resulted in improved project performance and monitoring.
- Met the challenge of maximizing resource allocations during a period of budget cuts without impacting project performance.
- Used ability to navigate in a highly matrixed organization to drive quick escalation and resolution of issues which improved customer service and kept projects on time and within budgets.

First Vice President, LaSalle Bank, Chicago, Illinois (09/2005 – 06/2006)

Interim role responsible for overseeing the transfer of existing policies and procedures to newly selected off-shore partners. Worked with multiple development, support and infrastructure teams to identify a comprehensive list of existing processes and validate the accuracy via detailed reviews. Supervised the updating of the documentation, insured that processes were understood by the new team and that roles and responsibilities were well defined.

Client Executive, First Vice President, LaSalle Bank, Troy, Michigan (05/2003 – 09/2005)

Represented all IT services to the ABN AMRO Mortgage Group (AAMG), a division of LaSalle Bank and a top 10 national wholesale mortgage lender. Managed an annual IT project budget of \$22MM. Provided leadership and management to a team located in five metropolitan areas across three states that included six Account Managers and up to twenty-four matrixed project managers and their development teams. Responsibilities included: internal client liaison, project portfolio management, demand planning for six month book of business, process improvement initiatives, financial management and reporting.

- Hired and trained original Account Management team and established all reporting and processes required for successful client support.
- Worked closely with the president of AAMG to monitor project budgets and successfully increased and decreased monthly run rate in accordance with organizational business plans.
- Was an early adopter of using offshore resources to complement in-house staff in order to adequately meet the business' changing demands.

PMO Manager, Vice President, LaSalle Bank, Troy, Michigan (02/2000 – 05/2003)

Managed the AAMG PMO with annual project budget of \$15MM. Led team of 12 project managers. Responsible for project lifecycle management including financials, requirements, issue resolution, testing, and implementation. Management accountability included oversight of the PMO budget, matrixed project teams, applicant interviews, hiring, resource allocation and team organization at multiple job sites.

- Assumed control of a PMO that had an underutilized project methodology and a poor track record of controlling projects. As part of a global initiative, volunteered to be the pilot area to learn the Capability Maturity Model (CMM) methodologies and successfully instituted CMM based processes that resulted in higher project predictability.
- Instituted regular meetings with senior management in the client organization to insure project performance was clearly understood.
- Built relationships and cross-functional teamwork that enabled the integration of the PMO fully into the IT team.

Development Manager, Vice President, Standard Federal Bank, Troy, Michigan (1984 – 02/2000)

Oversaw support and development of mortgage systems for number one single-family mortgage lender in Michigan. Managed application development teams that grew in size and complexity. Responsible for day to day management of the team including hiring, resource assignments, prioritization, problem solving, strategic planning, internal client relationship management and reporting to senior management. Direct report to the CIO.

- Built development/support team from a small group of individuals to a large, multi-disciplined team able to handle multiple, complex projects concurrently.
- Oversaw mortgage portion of 12 bank mergers, multiple loan sales and the creation of processes and programs to sell loans into the secondary market.

EDUCATION:**George Washington University**

Masters Certificate in Project Management, 2002

Oakland University, Rochester Michigan

Bachelor of Science, Computer Information Sciences, 1980

Sara Loewen

(b)(6)

QUALIFICATIONS:

Over ten years working directly with public schools in Montana. This includes teaching at the elementary level in both single and combined level classrooms. Managed statewide service programs, and provided leadership in both training and policy development.

EDUCATION:

Undergraduate courses

1992 - 1993 Northwest Community College, Powell WY

- Emphasis in Computer Science and Elementary Education

1993 - 1997 Montana State University Billings, Billings MT

- Bachelor of Science in Education, Major in Elementary Education, and Secondary Education History

Graduate courses

1998 – 2002 Blackfeet Community College, Browning MT

Montana State University Bozeman, Bozeman MT

University of Montana Northern, Havre, MT

Montana State University Billings, Billings MT

University of Montana Great Falls, Great Falls, MT

EMPLOYMENT:

- Data Resource Administrator 9/06 to present
Office of Public Instruction • 1300 11th Avenue • Helena, MT 59620

Oversee a large, highly complex data warehouse and statewide student information system. I am responsible for ensuring the accuracy, consistency, integrity, and validity of the data. Work with all OPI divisions concerning data needs and databases involved in the data warehouse. Responsible for planning, communicating, and monitoring data resource management policies and procedures to ensure that the organization's meta data are accurate, and reliable. Maintain a record of the business rules and flow charts for data elements entered into the warehouse. Develop documentation, training, and other materials as needed by customers of the data warehouse and provide end-user training. Organize the steering committee (with special interest groups) and data management meetings (with key program and technical staff from local districts) to ensure that all the operational aspects and end users needs are being met. I facilitate policy-making and establish priorities that affect the overall operation of the OPI and school systems statewide.

- Human Services Program Officer 9/05 to 9/06
MT Dept of Public Health and Human Services • Health Resources Div • 1400 Broadway • Helena, MT 59620

I was responsible for the daily and long term administration of the statewide Medicaid Dental, Transportation, Private Duty Nursing, Nutrition, Chiropractic and Respiratory Therapy Programs. I responded to client and provider inquiries by applying program guidelines within applicable state administrative rules, laws and federal regulations. Worked with other state agencies and staff to coordinate client benefits. Collaboratively worked with other department staff and contracted personnel to process claims, including determining eligibility status, procedure limits, and special handling requests. Continually monitored and assessed program policies in order to evaluate the

effectiveness of the services being provided and recommend changes to applicable Administrative Rules. Additionally I updated and revised provider manuals and notices, documenting program changes as needed. I prepared both broad and specific objectives for each program based on input from Department staff, providers, clients and legislators.

- Human Services Specialist, Program Officer 5/04 to 9/05
MT Dept of Public Health and Human Services-Health Resources Div-1400 Broadway-Helena, MT 59620

The Montana Medicaid Administrative Claiming (MAC) Program in cooperation with OPI, reimburses school districts and cooperatives some of the costs associated with the administration of school-based health services as well as outreach activities. As the state-wide Program Officer, I coordinated a quarterly time study for over 1500 participants from 70 school districts. I analyzed participant responses to ensure appropriate reimbursable activity codes were applied to time study results. I monitored individual school district and overall state program compliance with Federal regulations and audit requirements. I calculated the Federal reimbursement amount due each district or cooperative. I was responsible for training each district and the ongoing technical assistance to school personnel in the operation of the MAC program. I oversaw all aspects of this state-wide program including, contract management, budget analysis, coordination with other state agencies, and compliance with state and Federal laws and regulations.

- 5th and 6th Grade Classroom Teacher 8/02 to 5/04
Saco Public School • 321 Hwy 243, PO Box 298 • Saco, MT 59261

Using the curriculum as my guide, I developed and implemented lesson plans in all content areas to meet and integrate the various needs and interests of students in my multi-grade classroom. Emphasized student responsibility and maintained a classroom atmosphere conducive to effective learning. Member of team to evaluate and review school wide information and technology systems. Involved in professional committees and organizations. Supervised paraprofessionals in and out of classroom, and high school student aides.

- 1st Grade Classroom Teacher 8/98 to 5/02
Harlowton Public Schools • 500 B Ave NE • Harlowton, MT 59036

Responsible for designing and implementing lessons in all content areas with major emphasis on reading and math skills. Implemented and revised curriculum standards and various assessment methods to meet district and state guidelines. Developed and maintained classroom environment conducive to effective learning. Developed and revised technology curriculum and implemented school wide development programs. Supervised classroom students, parent and community volunteers, high school aides, and reading program trainees.

- 2nd Grade Classroom Teacher 8/97 to 6/98
Browning Public School • P.O. Box 610 • Browning, MT 59417

Worked in a school district, which, due to economic and educational standards, was termed at risk. Cooperatively worked with other 2nd grade teachers to meet and revise established curriculum goals and objectives, and developed lessons and activities to meet individual classroom and student needs. I developed and implemented lessons that were cross-cultural, bringing in Native American traditions and beliefs, and developed an understanding of customs and language. Effectively worked in team teaching situations and developed themes to enhance curriculum. Promoted student success and achievement through ongoing analysis of programs and individual personal support. I also worked with behavior management and special services for three students with special needs. Actively involved in committees and presented two computer technology workshops to other staff members.

Sharon M. Burt
Database Administrator
Montana Office of Public Instruction
(406) 444-1625

QUALIFICATIONS:

System Administration. Extensive experience in the tasks necessary for configuring and maintaining a system for day-to-day operation, including allocating hardware and software resources; and troubleshooting user, operator, and system errors. Experience in Local Area Network (LAN) support. System/database administration training on Microsoft SQL Server, Prime mainframe and a Sun workstation.

Database design. Designed and maintained several databases, using fourth generation programming languages to produce the necessary programs to run each. Efficient in relational database software and Structured Query Language (SQL) for database design and utilization.

Programming languages. Knowledge of many software packages, including Microsoft SQL Server, Visual Basic, Visual Basic.Net, Microsoft Access, Turbo Pascal, Turbo C++, various communication and graphic packages.

Geographical Information Systems (GIS). Knowledge of Arc/Info and ArcView GIS systems. Created many different coverages, worked with Triangulated Irregular Network (TIN), and built libraries. Knowledge of various Global Position System (GPS) units and software.

EDUCATION:

Montana College of Mineral Science and Technology, 1992, Butte, MT
Bachelor of Science in Computer Science/Information Systems.
GPA 3.319; (Graduated with Honors).

EMPLOYMENT:

Office of Public Instruction (2001 – present).

Database Administrator (March 2001 – present) Responsible for the system/database administration duties on three Microsoft SQL Servers. Monitor the database servers over time to indicate trends in performance and utilization. Also serve as a programmer/analyst creating applications for a multi-user environment. Currently serving as the EdFact Coordinator. This position is responsible for all the data reporting to the US Department of Education.

Montana Department of Environmental Quality (1993 - 2001).

Information Services Section Manger (August 1997 – March 2001) Supervisor of the Information Services Section. Managed the activities of individuals and teams who design, develop, implement and managed information systems that served the needs of the Remediation Division. Served as the divisions' local area network liaison to Centralizes Services Division and was responsible for general support of automated data management and office automation equipment.

Database Specialist (July 1993 – August 1993) Responsible for the Remediation Division's information systems. Duties include design, development, implementation and management of the information systems. Provide user support and serve various additional office automation needs, including the Local Area Network. Create and maintain several complex database systems. Designed and maintain the division's web page.

Montana Bureau of Mines and Geology (1984 - 1993).

Assistant Manager Computer Services (1991 - July 1993) Worked as acting manager as manager worked only 3/4 time. Responsible for the database system management, maintaining and updating many databases. System Administrator of the Prime computer system and Sun workstation. Assisted staff to identify and define computer needs. Trained Bureau staff in proper uses of computer equipment. Lead worker in many GIS projects, responsible for obtaining and creating GIS coverages to produce maps for project requirements.

Linda Atwood

(b)(6)

Employment

Montana Office of Public Instruction (OPI)

1990-Current

- Research and Analysis Data Manager, Measurement and Accountability Division, 2004- Current
 - I verify, clean and report non-fiscal education data to the federal government, state legislature, office staff and the general public. This requires high level skills in using tools to query OPI databases to ensure the accuracy of reports and to perform data analysis.
 - I have extensive knowledge of the OPI databases, including data collection techniques, database design, system file structures, data definitions and security policies.
 - I participate on project teams that design and implement data collection systems. Team roles include clarifying office policy, formulating business rules, designing database system requirements, writing Requests for Proposals, testing the database systems, and training end-users at the school districts.
 - I am the Montana Non-fiscal Coordinator for the National Center for Education Statistics.
 - I work with our Montana EDFacts Coordinator. We submit Montana data files to the United States Department of Education using the Education Data Exchange Network (EDEN) system.
- Applications Coach, Software Development Bureau, 1998 – 2004
 - I taught OPI staff classes in Microsoft Excel and Access
 - I offered one-on-one assistance to with querying and problem-solving related to database projects to agency staff.
 - I participated on software development teams, including tracking requirements, writing software user manuals for both school district and OPI staff use, and documenting business rules.
 - I calculated grant allocations to school districts, including allocations for the grants in the Federal Consolidated Application.
 - I did software development.
 - I worked with a wide range of personnel across the agency and am familiar with major office data collection systems.
- Fiscal Officer, School Finance Division, 1995-1998
 - I collected, reviewed, cleaned and analyzed electronic submissions of annual school district financial statements.
 - I monitored and reviewed school district audits from independent auditors.
 - Data I managed was reported to the United States Department of Education, the National Center for Education Statistics, the Montana state legislature, tax payers, and the general public. This information was also used for state education funding.
 - I provided annual training to school district personnel in both how to complete the financial reports required by our office for content and how to submit the data electronically using software developed by Office of Public Instruction staff.
 - I was a member of the software development team that manages the school financial data system. The team implements annual changes, tests the system after changes are made, writes user manuals, and trains school district staff.

- Transportation Specialist, School Finance Division, 1993-1995
I administered all aspects of the state program for reimbursement to school districts for pupil transportation.
- Word Processing/Data Processing, Operations Division, 1990-1993
I entered data into numerous OPI data systems.

Other Employment

1979-1990

- Marketing Secretary, Keystone Resort, Keystone, Colorado, 1988-1989
- Research Secretary, Computing Research Laboratory, Electrical Engineering and Computer Science Department, University of Michigan, Ann Arbor, Michigan, 1986-1988
- Part-time Secretary, Center for Quantitative Science, University of Washington, 1984-1985
- Tour Guide, Challis National Forest, Challis, Idaho, Summer of 1984
- Computer Programmer (1985-86) and Accounting Clerk (1982-84), Helsell, Fetterman, Martin, Todd and Hokanson Law Firm, Seattle, Washington
- Data Entry Clerk, Industrial Testing, Inc., Eugene, Oregon 1979-1981

Education

- B.A. Business Administration, University of Washington, Seattle, Washington, 1985
- University of Oregon, Eugene, Oregon, 1979-1981

My degree included courses in accounting, management, economics, finance, operations management, business communications, business law, calculus, discrete mathematics and computer science

Professional Development

- Attendance at National Center for Education Statistics Management Information Services (five conferences) and STATS DC conferences (six conferences)
- Attendance at Edfacts/Eden Training Workshops
- Project Management Class, State of Montana, Information Technology Services Division
- Conducting Effective Surveys Workshop, Helena, Montana
- Week long courses in Microsoft SQL 7, Access 2000 Programming, Dreamweaver web design, from consultants hired by the Office of Public Instruction
- Oracle Development, and Visual Basic, Helena College of Technology
- Introduction to Arcview Workshop, Montana GIS Conference
- Introduction to Logic, Philosophy Course, Washtenaw Community College, Ann Arbor, Michigan

Awards

2007 – I received the **Governor's Award for Excellence in State Government**. The award letter stated, Linda resolves "complex problems requiring a high level of expertise and skill to assemble and analyze education data from many different sources and formats. She is sought out by her colleagues as a problem solver and a collaborator who understands how technical systems interact and consistently designs solutions that work for all."

2004 - Office of Public Instruction, **Incentive Award**, for exceptional work in supporting our in-house programmers with my work on software development teams.

1995 - Office of Public Instruction, **Incentive Award**, for streamlining the paperwork involved in the school transportation reimbursement process.

Budget Narrative

Budget Narrative

Attachment 1:

Title: Pages: Uploaded File: 1235-Budget Narrative 2008.pdf

CFDA 84.372 – Statewide Longitudinal Data Systems Grants – 9/25/08
Montana Data Warehouse: Foundation for a Longitudinal Data System
Budget Narrative

Personal Services

Portions of eight full-time staff positions at the OPI will be provided as in-kind support to this grant. The eight personnel who will provide in-kind support total 2.6 FTE with salary and benefits totaling \$917,871 for the 4 year period of the grant.

This proposal includes funding four new FTE for the 4 year grant period for a total cost of \$1,145,934. A summary of the salaries for these FTE is shown in the table below. A complete breakdown of salaries and benefits for each year of the grant proposal is shown in the budget information document and the budget projections documents included in Appendix A.

Position	FTE	Base Salary	Grant Year 1 (Total Personal Services)	Grant Year 2 (Total Personal Services)	Grant Year 3 (Total Personal Services)	Grant Year 4 (Total Personal Services)
Data Base Admin	1.0	\$59,357	\$76,663	\$79,188	\$81,803	\$84,510
Project Manager	1.0	\$58,339	\$75,476	\$77,966	\$80,544	\$83,213
Business Analyst	1.0	\$45,225	\$60,199	\$62,230	\$64,336	\$66,520
Business Analyst	1.0	\$45,225	\$60,199	\$62,230	\$64,336	\$66,520
Total	4.0	\$208,146	\$272,538	\$281,615	\$291,019	\$300,763

The personnel, their role, and time commitments are described in the Project Narrative Section of this grant application titled "Project Personnel, Role, and Time Commitments."

The Project Manager will oversee the project from conception through implementation; develop project plans and timelines; help with the development, scoring, and negotiation of all RFPs as well as contract management and negotiations.

The Database Administrator will be responsible for naming standards, database design, data dictionary, performance analysis and tuning, backup and restores, and disaster recovery.

One Business Analyst will develop business processes that ensure the data warehouse fulfills the enterprise's strategic objectives; identify and define the warehouse purpose and target user groups, develop data quality processes and policies, and be responsible for training stakeholders and OPI staff.

The second Business Analyst will develop governance policies and processes, set up a training plan for school districts and OPI staff, convene data stewards on a regular basis, develop a governance certification program, and assist the other business analyst with training stakeholders and OPI staff.

Salary and fringe benefit costs are calculated based on current year salaries and benefits inflated by 3 percent in each year of the grant period. For the current year, fringe benefits are calculated at 16.5% of salary plus \$7,512 for the employer contribution to health insurance. The complete breakdown of salary, benefits, and health insurance are included in the budget document provided as part of this grant application.

All of these positions will be funded from the grant for the duration of the grant period.

Travel

Travel costs are estimated as follows:

- 1) 2 days of mandatory training in Washington, D.C. for each of the business analysts as required by the terms of this grant application. High cost lodging, per diem, car rental, and airfare for 2 staff. One trip required for each year of the grant.
- 2) 10 days of in-state travel each year for the two business analysts who will provide training to the SEAs. The average cost per day for mileage, per diem and lodging is estimated to be \$165. The estimate shows no travel the first year, five days the second year, and 10 days the 3rd and 4th years. This totals \$1650 the 2nd year and \$3300 in years 3 and 4 for staff to provide regional trainings and technical assistance to schools.

Training

Training costs are estimated as follows:

- 1) 2 day data warehouse 101 workshop where an on-site instructor would be brought on-site to train up to 15 students at \$5,000/day + travel expenses for the instructor at approximately \$1500). This training would occur in year 1.
- 2) 2 day workshop on using business intelligence tools using the same estimates as in item 1. Training would occur in year 2.

Hardware

Hardware costs include a database server cluster with disk array, multiple processors, additional memory, and a UPS. Estimated costs are \$30,000 for 2 database servers and 1 web server, data storage, multiple processors, and additional memory. A UPS is estimated to cost \$4500. These costs would be incurred in year 2. Hardware is normally covered with a 3 year warranty. In year 4 the OPI would need to enter into a maintenance contract. The estimated cost is 15% of the total cost of the hardware. The total would be \$5,175.

Software

Estimated cost for the data warehouse is \$3 ½ million which includes the site license, the data warehouse and 4 years of support and maintenance. In addition, estimated cost of server maintenance for year 4 would be approximately \$4500. Windows & SQL server licenses and backup software are estimated at \$16,000. A Business Intelligence Tool is estimated at \$150,000. These expenses would be incurred in years 2 and 3. Software costs are included in the

"Other" line item of the budget information. A more detailed breakdown is included in the budget projections document included in the optional attachments in Appendix A.

Other

Rent, office furnishings, phone, minor equipment, office supplies, and network fees are estimated at \$3,200 annually per FTE (for 4 FTE). Computers for each of the 4 new FTE would be approximately \$1400 each for a total of \$5600 in year 1. Phone charges are estimated at \$480 annually per FTE (for 4 FTE) for years 1 through 3 and \$600 annually per FTE due to projected increases in costs in year 4. A complete breakdown of rent, desk, computers, and phone expenses is included in the budget projections document included in the optional attachments in Appendix A.

Contractual

The Office of Public Instruction would negotiate contracts to hire a Data Architect for approximately 6 months in year 1 to assist with defining data collection, transformation, distribution, and loading as well as the data models that are the foundation of the warehouse. The estimated cost of this person is \$100,000 in year 1. This is based on \$100/hour and includes travel, per diem, and lodging for this person.

Other budgeted contractual costs include:

- 1) \$50,000 for a consultant to help develop business requirements for the project in year 1. This cost is based on an average of \$1000 per day for 50 days.
- 2) \$20,000 for a consultant to help develop specifications and requirements for the RFP in year 1. This cost is based on an average of \$500 per day for 40 days.
- 3) \$30,000 for data hosting services provided by the State of Montana Department of Administration, Information Technology Services Division (ITSD) in years 2 through 4 of the project. This cost estimate is based on the current contract the OPI has for data hosting services with ITSD for our student information system.

Indirect Costs

The current indirect cost rate for the Montana Office of Public Instruction is 14%. This rate is effective from July 1, 2007 to June 30, 2010. This indirect cost rate has been applied to all direct costs of this grant, with the exception of contractual services. OPI only applies the indirect cost rate to the first \$25,000 of a contract.