

(E)(2) Building or enhancing an early learning data system to improve instruction, practices, services, and policies.

The extent to which the State has a High-Quality Plan to enhance the State's existing Statewide Longitudinal Data System or to build or enhance a separate, coordinated, early learning data system that aligns and is interoperable with the Statewide Longitudinal Data System, and that either data system--

- (a) Has all of the Essential Data Elements;
- (b) Enables uniform data collection and easy entry of the Essential Data Elements by Participating State Agencies and Participating Programs;
- (c) Facilitates the exchange of data among Participating State Agencies by using standard data structures, data formats, and data definitions such as Common Education Data Standards to ensure interoperability among the various levels and types of data;
- (d) Generates information that is timely, relevant, accessible, and easy for Early Learning and Development Programs and Early Childhood Educators to use for continuous improvement and decision making; and
- (e) Meets the Data System Oversight Requirements and complies with the requirements of Federal, State, and local privacy laws.

*If the State chooses to respond to this selection criterion, the State shall write its full response in the text box below. The State may also include any additional information it believes will be helpful to peer reviewers. If the State has included relevant attachments in the Appendix, these should be described in the narrative below and clearly cross-referenced to allow the reviewers to locate them easily.*

*In scoring the selection criterion, peer reviewers will determine, based on the evidence the State submits, whether each element of the selection criterion is implemented or planned; the quality of the implementation or plan (see the definition of a High-Quality Plan for the components reviewers will be judging); the extent to which the different types of Early Learning and Development Programs in the State are included and addressed; and the extent to which the unique needs of the State's special populations of Children with High Needs are considered and addressed. The State is responsible for providing clear and detailed information to assist the peer reviewers in making these determinations.*

**(E)(2) Building or enhancing an early learning data system to improve instruction, practices, services, and policies.**

Minnesota's State Plan for data linkages expands the state's data capacity to include critical early childhood information in a statewide, interoperable, enterprise-level data collection, reporting, and analysis system that provides information from birth to workforce entry. Minnesota's vision for a linkable early learning data system builds upon initial successes of the state's P-20 Longitudinal Data System, which tracks student information from K-12 to postsecondary and workforce. We will add more early childhood data elements into this system by increasing the number of ELD Programs that use a to-be-determined case/child information management software program to identify leading indicators for continuous improvement and decision-making. We intend for this program to populate the statewide data warehouse with lagging indicators, while also being timely, relevant, accessible, and easy for ELD Programs and providers to use. Finally, fostering an analytic environment in programs and agencies that serve birth to five-year-olds will enable the creation of benchmarks to inform practice and policy.

**High-Quality Plan for Data Linkages**

Minnesota has a number of robust data systems, including child-, program- and provider-level data, beginning at birth and continuing through the K-12 years. By creating solid data-sharing connections across state agencies, this Plan will leverage current data sets to create actionable information that is specifically related to Early Learning and Development (ELD) services and outcomes. By developing new data collections for local programs that target Children with High Needs, Minnesota will realize the comprehensive early childhood longitudinal data system that is necessary to support evidence-based decisions for successful school and life outcomes for children and families. Minnesota is basing this Plan on insights gained from successful work to date with the P-20 Council and the implementation of the Statewide Longitudinal Education Data System. The Data System is led by the Department of Education, which coordinates services between the Office of Higher Education and the Department of Employment and Economic Development (see Appendices 46-47 for P-20 By-Laws, SLEDS Governance Structure, and Table A1-13).

**Key Goals**

This Plan includes the following goals, focused on ensuring the quality, privacy, and integrity of Minnesota's early learning and development data:

1. Develop an early learning data collection system for selected programs targeted to at-risk students.
2. Create a linkable Early Childhood Longitudinal Data System (ECLDS), managed by the Department of Education, to organize and analyze early learning data. The ECLDS will house selected data elements from Minnesota state agencies that support early childhood initiatives.
3. Create data analytic tools for early childhood research and evaluation to provide timely and relevant answers to questions about Minnesota's School Readiness Report Card for early childhood and the early learning goals set forth in the Governor's Seven Point Plan. The activities addressed in the next section describe the implementation of these goals.

### **Key Activities**

There are five key activities to be undertaken to meet the goal of creating and implementing an early learning data system: 1) establish a data governance structure; 2) identify specific data elements within existing data collections; 3) upgrade selected early childhood data collections; 4) build an interagency early childhood data warehouse; and 5) develop targeted analytic tools for policymakers, analysts, educators, and parents. The Department of Education will act as the lead agency under the direction of the Office of Early Learning Leadership Team (A3; the Office of Early Learning Director, the Deputy Health Commissioner, and the Assistant Commissioner of Human Services for the Office of Children and Family Services) to leverage institutional knowledge and successes from similar work with P-20 data sets toward continuous improvement.

### **CREATE EARLY LEARNING DATA GOVERNANCE (Goals 1-3)—E2b, E2c and E2e**

The most complex barrier in linking and sharing data is gaining and maintaining stakeholder agreements. Solid data governance processes and structures are needed to establish responsibility for interagency early childhood data collection and sharing. Minnesota will build an Early Childhood Longitudinal Data System (ECLDS) governance structure to systematically create and enforce policies, roles, and responsibilities, including procedures for collecting, sharing, and publishing data in a manner that meets Data System Oversight Requirements and complies with requirements of federal, state and local privacy laws. It will provide a structure for collaborative efforts to continuously improve data quality in a new interagency data warehouse.

The detailed plan to establish this governance process will be created through the Office of Early Learning Leadership Team, based on input from the Early Learning Council. Decision-making authority lies with the Children's Cabinet, comprised of the Commissioners of the Departments of Education, Health, and Human Services.

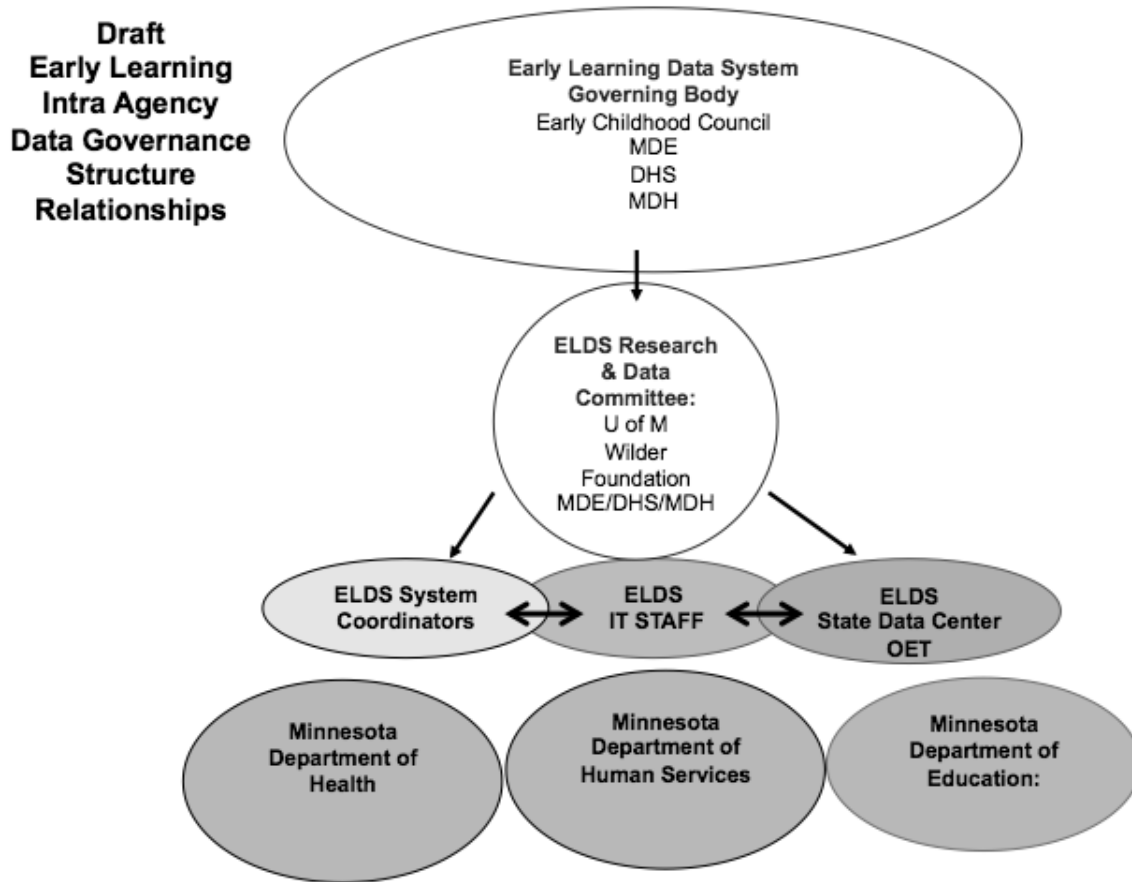
The ECLDS governance structure will include two key groups: 1) a Governing Committee, which includes the Children's Cabinet, Office of Early Learning Leadership Team, and the Chair of the Early Learning Council (or their designee), and 2) a Research and Data Committee comprised of experts in early learning data, research, and evaluation; and community stakeholders with interest in ELD-related policy questions. The Research and Data Committee will be charged with implementing the direction provided by the Governing Committee. See Figure E-2, below. Together, these two ECLDS committees will engage stakeholders, identify "data champions," and ensure the identification of key policies and questions to be addressed through the system.

The Office of Early Learning Leadership Team will articulate specific parameters for the Minnesota interagency early childhood data system, as authorized in state law (Minnesota Statutes 124D.141, subdivision 2.ix). This statute directs the Office of Learning to "develop and manage an effective data collection system to support the necessary functions of a coordinated system of early childhood education and child care in order to enable accurate evaluation of its impact." The ECLDS Research and Data Committee will identify the specific data sets across state agencies that contain information necessary to answer policy questions identified by the ECLDS Governing Committee. They will target specific data elements within those data sets for inclusion in the ECLDS warehouse. In addition, the governing body is responsible for identifying the key policy questions to be answered through the system.

The Research and Data Committee will make specific recommendations to develop the data-sharing agreements necessary to secure selected data elements for inclusion in the ECLDS from the Departments of Education, Health, and Human Services, in accordance with the Memoranda of Understanding included in the Appendix and described in Selection Criteria A3. The Committee will work with the Minnesota Office of Enterprise Technology to ensure that policies are created to enforce Family Educational Rights and Privacy Act (FERPA) and Health Insurance Portability and Accountability Act (HIPAA) requirements and other data privacy laws.

Transparency in decision making will be ensured by stakeholder involvement in the ECLDS governance structure as well as by maintaining a reporting relationship with the Early Learning Council, whose membership includes legislators, parents, and Commissioners’ designees (for complete list, see Appendix 7).

**Figure E-2: ELDS Governance Structure**



**IDENTIFY DATA ELEMENTS WITHIN EXISTING DATA SETS (Goals 1-3)—E2a, E2b and E2c**

Minnesota has identified ten early childhood data sets across state agencies that currently collect data in a variety of structures (see Table A1-13). Activities to enhance these data sets are described in Sections B3, D1 and E1 of this application. These data sets provide a starting point for enhancing Minnesota’s holistic understanding of the school readiness and health of young children.

Data collected from the Department of Health focuses on birth certificates; Women, Infants and Children (WIC); and other health-related services. Data collected from the Department of Human Services focuses on child care programs. Data collected from the Department of Education focuses on children served through state-funded pre-kindergarten (School Readiness), Head Start, Early Head Start, and K-12 systems.

At the direction of the ECLDS Data and Research Committee, the ECLDS system coordinators at respective agencies will evaluate the structure, reliability, and validity of data elements in the context of the driving early childhood research, policy and practice questions. Potential “seed” data elements will be identified for inclusion in the ECLDS warehouse. Upon selection of these specific elements, data-sharing agreements will be developed with appropriate agencies.

Minnesota has been working with the Common Education Data Standards (CEDs) to categorize existing K-12 data elements. As additional early learning data, including all the Essential Data Elements, are targeted for inclusion, these Standards will be used to increase comparability of data elements across disparate sources (Table E-3 below). Minnesota is collaborating with the Council of Chief State School Officers to extend this classification system to early learning data and will leverage that work for this effort.

**Table E-3: Minnesota’s Implementation of Essential Data Elements**

Essential Data Element	Minnesota Implementation
a) A unique statewide child identifier or another highly accurate, proven method to link data on that child, including Kindergarten Entry Assessment data, to and from the Statewide Longitudinal Data System and the coordinated early learning data system (if applicable)	Minnesota has a unique identifier for all PreK-12 data systems. We validate this ID through the use of a non-public core ID. Student data can only be submitted if it matches the information we have in the Core ID system. If it does not match, districts must update records prior to submission.
b) A unique statewide Early Childhood Educator identifier	We use this same technology for the PreK-12 Core ID system, along with record-matching software, to link student records from statewide early child hood data systems that may each have a distinct ID.

	We use a series of algorithms either to match a known individual within the statewide system or create a new individual.
c) A unique program site identifier	All PreK-12 programs are part of a single directory. As we move forward with SLDS modifications, we will be able to incorporate any early childhood programs into the new directory structure. All programs that contribute data to a statewide early childhood data system will be part of the statewide directory structure.
d) Child and family demographic information	Child and family demographic data are maintained as part of the student record. This information will be utilized to assist in resolving student identities as new data is submitted to the system for each child or student.
e) Early Childhood Educator demographic information, including data on educational attainment and state credential or licenses held, as well as professional development information;	All PreK-12 staff data are maintained in STAR, which includes demographic, education and professional data. These data will be linked to child care provider information maintained in the Registry, using the identity resolution process used for students.
f) Program-level data on the program's structure, quality, child suspension and expulsion rates, staff retention, staff compensation, work environment, and all applicable data reported as part of the state's Tiered Quality Rating and Improvement System	The data linkage work will pair data from Parent Aware to MDE and DHS data sets. In addition, program-level data from MDE programs are maintained across several existing systems for Early Intervention and Early Childhood Special Education. ECFE, School Readiness, Early Head Start and Head Start will be building on the existing systems for each of these variables.
(g) Child-level program participation and attendance data	ECFE, School Readiness, Early Head Start, and Head Start will be reporting enrollment and attendance rates in a manner similar to the current practice for Early Intervention and

	Early Childhood Special Education. Child level information from DHS will include the amount of time a child is participating at a uniquely identified site.
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**UPGRADE SELECTED EARLY LEARNING PROGRAM DATA COLLECTIONS (Goal 1)—E2a, E2b and E2d**

Minnesota has a wealth of data about children and their health at birth. However, the state lacks systematically collected information about children in ELD Programs. To meet this need using a streamlined approach, this Plan proposes new data collection be established for information about Children with High Needs and the ELD Programs in Minnesota that serve them. A new database infrastructure is needed to implement valid and reliable data management processes.

Through a formal Request for Information (RFI) process, the Department of Education, in coordination with the Department of Human Services, will seek information about automated, real-time, customizable case/child information management software options to offer a complete service cycle from intake to outcome in support of continuous improvement. The system will be closely coordinated with the TQRIS database (B3). Information resulting from the RFI will be used to issue a formal Request for Proposal (RFP) in order to select a vendor who will efficiently and effectively create a data system, building on the strengths of existing systems within each agency while developing a coordinated cross-agency solution. With Early Learning Challenge funding, Minnesota will provide ELD Programs serving Children with High Needs with a software solution to manage data and information, beginning in the Early Learning Challenge Target Communities (Target Communities).

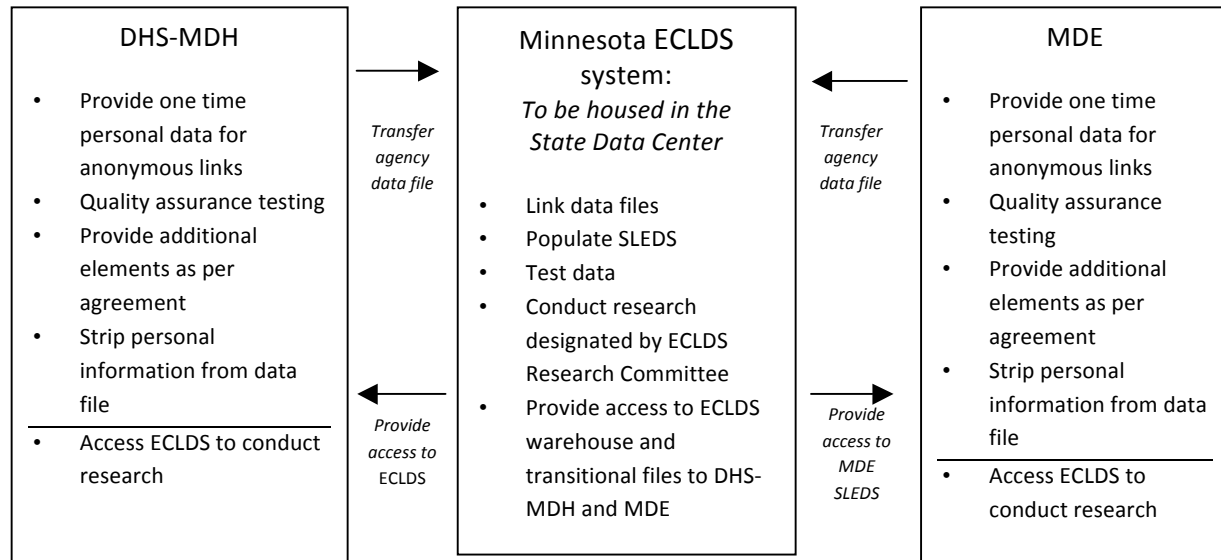
One software option that could meet Minnesota's needs or provide an example for meeting them is ChildPlus. ChildPlus is a child information software system that maintains child-level administrative information (selection, enrollment/attendance, transportation, health, and family services). It also coordinates assessment system data, including child outcomes. Information systems such as ChildPlus provide users with the ability to make real-time decisions as they relate to the children in their classroom, the families they are supporting, and the programmatic decisions that impact delivery. The system operates on a user-defined dashboard

to ensure all federally regulated performance indicators, and state and locally designated regulations and priorities are maintained in real time across multiple organizational levels. Federal and state reports are also customizable to meet local needs. As part of its pricing structure, ChildPlus includes permanent archival data at the local level, which helps inform program improvement across years. ChildPlus is currently being used by a tribal Head Start/Child Care partnership in Michigan. Based on their experience, Minnesota will explore the feasibility of using it in child care settings. Selected student- and teacher- level data elements, including Essential Data Elements, will be collected from this system for inclusion in the ECLDS warehouse.

**DEVELOP A DATA WAREHOUSE TO CONTAIN EARLY CHILDHOOD DATA ELEMENTS (Goal 2)—E2c, E2d**

Under the supervision of its three state agencies, Minnesota has early childhood data in a variety of operational warehouses and data stores. Each collection is designed to meet its mandated needs. Since none of these respective program areas or agencies has the funding or support to fundamentally restructure their data collections, this Plan focuses on filling the need for an interoperable solution to turn disparate data elements into useable information on ELD Programs, participants, and others interested in outcomes. This Plan seeks funding to create a linkable interagency warehouse to store selected data elements collected through each partner agency's operational data system. The warehouse will incorporate new data elements as they become available. This interagency early childhood data warehouse will allow Minnesota to access timely, accurate information needed for evidence-based decision-making towards continuous improvement at multiple levels.

This Plan will use a multi-step process to link these various data sets. Initially, only directory information for records will be exchanged between the ECLDS team and the contributing agency. The Department of Education will use the data record linking software to create random, anonymous identification numbers that will be returned to the requesting agency within 24 hours.

**Figure E-3. Data Linkage Between State Departments**

Individual records will be de-identified and assigned a unique ECLDS identification number. The new ECLDS identifiers will create known children in the ECLDS warehouse data model for use in future linking efforts. Partner agencies will attach demographic or program information to the ECLDS identifiers to maintain privacy within the warehouse. All data will be defined in the ECLDS data dictionary, based on the Department of Education prototype. Full functionality and user documentation and training will be developed for this product.

### **DEVELOP DATA ANALYTIC TOOLS (Goal 3)—E2d**

Minnesota is a classic data-rich, information-poor state. Current analytic tools tend to support compliance rather than actionable steps for improved services and outcomes. This Plan focuses on the need to: 1) leverage Minnesota's current investment in a K-12 business intelligence tool; and 2) create a new Minnesota Early Learning Information Portal to analyze ELD data for continuous improvement. This portal will provide user-friendly, web-based dashboards and reports tailored to educators, administrators, and parents, based on specific data sets, such as teachers linked to students or assessments linked to attendance.

This activity will leverage the security framework and the expertise developed over the past several years within the Identify Management System at the Department of Education. This Plan will add graphic information system (GIS) display capacity to this product line. GIS will visually juxtapose location with statistics such as equitable distribution of early childhood

educators, child and student demographics, school readiness and K-12 test scores, and early childhood educator retention.

An example of a potential research study to result from this new data system is an evaluation of grade three reading and math outcomes for children whose families have accessed Child Care Assistance Program through the Minnesota Electronic Child Care Payment and Eligibility System (MEC2) data system. MEC2 is an operational system that was developed at the Department of Human Services for the purpose of determining Child Care Assistance Program eligibility and for making payments to participants. The system now contains approximately one year of data, and the Department of Human Services is beginning to do basic analysis of the data for program planning. The new data system would enable us to match MEC2 with education data (such as third grade reading scores), to better understand the relationship between experiences prior to kindergarten as well as experiences up to age 12.

In summary, this High-Quality Plan will support Minnesota’s commitment to data-driven decision making for continuous improvement at multiple levels. The streamlined early learning data collection system will support local decision making for teachers and local administrators. The Early Childhood Longitudinal Data System will organize data across the Departments of Education, Health, and Human Services to answer ongoing, policy-driven questions at the state level. The data analytic tools will provide timely and relevant information to a number of work products, including the state School Readiness Report Card.

**Realistic Timeline**

	2012				2013				2014				2015			
<b>E2. Early Learning Data System</b>	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Activity 1: Create Early Learning Data Governance Structure</b>																
1.1 Appoint Governing Committee																
1.2 Appoint Research and Data Committee																
1.3 Articulate parameters for Data System																
1.4 Identify data sets with ELD information																
1.5 Recommendations for data-sharing agreements																

	2012				2013				2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>E2. Early Learning Data System</b>																
<b>Activity 2: Identify Data Elements</b>																
2.1 Identify seed data elements				■	■	■	■	■								
2.2 Execute data-sharing agreements							■	■	■	■						
<b>Activity 3: Upgrade Selected Early Learning Data Collections</b>																
3.1 Issue RFI	■	■														
3.2 Issue RFP			■	■												
3.3 Select vendor				■												
3.4 Develop system				■												
3.4 Implement system in Target Communities					■	■	■	■	■	■	■	■	■	■	■	■
3.5 Implement system in ELD Programs statewide					■	■	■	■	■	■	■	■	■	■	■	■
<b>Activity 4: Develop ECLDS Data Warehouse</b>																
4.1 Define system requirements				■	■	■	■	■								
4.2 Issue RFP						■	■	■	■	■	■					
4.3 Select vendor											■					
4.4 Develop ECLDS Warehouse												■	■			
4.5 Implement ECLDS warehouse													■	■	■	■
<b>Activity 5: Develop Data Analytic Tools</b>																
5.1 Define data elements				■	■	■	■	■	■	■	■	■				
5.2 Develop dashboards						■	■	■	■	■	■	■				
5.3 Create training and support materials						■	■	■	■	■	■	■				
5.4 Implement dashboards												■	■	■	■	■

**Responsible Parties**

Activity 1 will be managed by the Director of the Office of Early Learning, who will work with the Governing Committee, Research and Data Committee (which will link to the P-20

Research and Development Committee, the Technical Project manager and the Data Systems Coordinators at the Departments of Human Services, Health and Education. Activity 2, Identifying Data Elements, will be managed by the Technical Project Manager and the Data System Coordinators at the three agencies, with staff support from analysts at the three agencies. Activity 3 will be managed by the Technical Project Manager, with support from the Healthy Development & Early Learning staff from all three agencies. The Data Warehouse (Activity 4) will be managed by the Technical Project Manager, working with the Data Warehouse & Analytics Vendor and analysts from all three agencies. Finally, Activity 5, Analytics, will be managed by the Technical Project Manager, who will work with the Data Warehouse & Analytics Vendor, with input from analysts and Healthy Development & Early Learning staff from the three agencies.

### **Appropriate Financial Resources**

**\$300,000 Public Funds (SLDS grant funding)**

**\$7,720,642 ELC Grant Funds**

**\$8,020,642 TOTAL 4 Year Project Cost**

For more detail on this budget, please see A4 and related budget spreadsheets.

### **Supporting Evidence**

- Appendix 46: P-20 By-Laws
- Appendix 47: SLEDS Governance Structure
- Appendix: Early Learning Challenge MOUs
- Appendix 7: Early Learning Council Membership

### **Addressing Needs of Different Types of ELD Programs and Meeting Needs of Children with High Needs (Including Special Populations)**

This system will give, for the first time, the state and each individual program a longitudinal view of the duration and intensity of children's experiences in education, health, and human services programs prior to kindergarten. This information will provide the state and its research partners with a unique opportunity to assess the impact and interaction of program interventions on the educational and career readiness of young children in Minnesota. The increase in the number of programs that use a case/child information management software program will identify leading indicators for continuous improvement and decision-making. The data system (ECLDS) will allow Minnesota not only to make decisions in the aggregate, but also

allow for analysis of subgroups of Children with High Needs, from special education to new immigrant communities.

The state will also work with user groups in ECFE, School Readiness, and Head Start to support adoption of effective software management systems, ensuring representation from geographically and demographically different programs. Working with targeted focus groups from program areas, data elements will be identified for inclusion in the ECLDS warehouse and the reports to be produced from Activity 5—Analytics.

Programs of all kinds will be able to revise their approaches to targeting different populations for intervention, track the impact of regional intervention strategies, and find new ways to collaborate across currently disparate policy and information technology systems. While local collaborations currently exist, some are not implemented with consistency and fidelity. Improving collaborations and providing accurate information will clarify trends in child outcomes. Researchers will be able to identify strengths and challenges based on the data submitted, leading to improvement strategies that are designed from the ground up. The governance structure will enable open and ongoing support of exploring additional data sets and research questions.