SECTION B: WISCONSIN LDS PROJECT—PROJECT NARRATIVE

(A) NEED FOR PROJECT

Through the support of previous State Longitudinal Data System (SLDS) grants, the Wisconsin Department of Public Instruction (DPI) developed and maintains the Wisconsin Information System for Education (WISE), a wide-ranging data system that provides Wisconsin educators with high-quality, relevant student data to support administrative reporting, research, data inquiry, and continuous improvement planning.

In this proposal, we describe the current state of our longitudinal data system, WISEdash, and its complementary components. Next, we describe the need for more work to integrate several key systems into the WISE suite, including our Education Choice systems, the primary mechanism for distributing the vast majority of our school aids, and the underlying enterprise database which feeds nearly all information systems at DPI. In addition, we describe how we plan to institutionalize a research-practice partnership with researchers from the University of Wisconsin-Madison (UW-Madison) to expand DPI's research and evaluation efforts to include the additional local education agency (LEA) types (including those associated with Education Choice programs) and financial data that will be available as a result of the proposed integration projects. To accomplish these tasks, we request funding under the Education Choice Priority.

Current Capabilities

The Wisconsin Information System for Education (WISE) is comprised of multiple tools designed and implemented to contribute to the Department of Public Instruction's (DPI) vision and mission: ensuring all students graduate from high school college and career ready. These tools support state and federal district and school reporting requirements through ID generation and data collection. They inform education research and data analysis through dashboard and reporting tools to better understand and improve educational outcomes for Wisconsin students. These systems ensure data privacy and high data quality through security policies and standards and data quality review processes. All of these tools were developed with the support of four prior Statewide Longitudinal Data Systems (SLDS) grants from the Institute for Education Sciences (IES), and they were developed to serve multiple stakeholders: educators, district and school officials, DPI staff, partner researchers, and parents and community members. Please see Appendix B for a summary of current SLDS capabilities.

Our project proposal seeks to further integrate these data systems and tools with the Education Choice business operations within DPI. The proposal also extends research-practice partnerships nurtured with previous SLDS grants so these newly integrated data can better inform practices and policies, including those pertaining to education choice.

Overview of DPI Data Systems

DPI currently has the capacity to issue a statewide unique person identifier, the WISEid, to all students in public and choice schools (i.e., those schools participating in the statewide, publicly-funded voucher program) as well as all school district staff. WISEid is the basis for the WISEdata system, i.e., the collection of data related to student-level enrollment, demographics, attendance, coursework, career education, discipline, and program participation. WISEdata enables greater understanding of key PK-12 data, including transfers in and out of schools, school completion, and dropout status.

Data Governance and Policy Requirements

Governance

DPI has implemented a robust data governance structure[1] that aligns with the Privacy and Technical Assistance Center (PTAC) checklist. This structure includes a data governance hierarchy modeled after the "triangle" structure found in most data governance guidance documents. The foundation level is comprised of DPI data stewards for each data topic in the data system. Data stewards are identified for each of three perspectives: policy, quality assurance/testing, and EDFacts reporting. A Data Contacts Inventory[2] allows for easy, frequent collaboration with stewards about new data elements, business rules, data definitions, and data review. The middle tier is comprised of the IT Management team, which reviews related IT policies and procedures. The top tier is the WISE Steering Committee - comprised of leadership from most teams in the agency - which reviews, edits, and approves policy and confidential data requests.

Need and Uses

In order to ensure data in the SLDS meets the needs of a variety of users, DPI has multiple tools that leverage the data warehouse architecture to provide meaningful information to users. The largest of these is the state dashboard tool known as WISEdash. WISEdash has both secure and public reporting components, both of which draw on data in the data warehouse.

The WISEdash Public Portal, released in 2013, displays relevant information to anyone online about the demographics, student outcomes, and enrollment trends of schools and districts within the state. The data in the public portal are summarized and redacted to protect student privacy. The design of WISEdash Public Portal was informed by extensive user testing that included parents, researchers, education organizations, businesses, and nonprofits.

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[1] The Project Governance slideshow included in Appendix C contains an overview of DPI's data governance structure.

[2] A copy of DPI's Data Contacts Inventory is included in Appendix C.

WISEdash for Districts, DPI's secure reporting tool, uses a role-based security model to provide authorized users within school districts access to unredacted data on their students. WISEdash for Districts was initially launched in 2012 with a focus on having data and dashboards in a single location to inform improvement planning, and has since been expanded to include more data and dashboards, including early warning, data quality, and snapshot reporting[3]. Over 1,830 schools across the state use WISEdash to conduct data quality reviews, outcome analysis, and to inform decision-making.

WISEdash for Districts features include:

- Over 25 data topics and multiple dashboards, including absenteeism, early warning (separate for dropout, and college and career readiness), Free Application for Federal Student Aid (FAFSA) completion, student growth percentile reports, and data reporting preparation;

- School and student cohorts, allowing users to create and monitor specific, self-defined groups;

- The Data Inquiry Journal (DIJ), a simple-to-use tool to document the continuous improvement planning process (CIP);

- The ability to compare outcomes to school and statewide groups; and

- Student profile pages, which present myriad longitudinal data for individual students.

DPI recently released a new version of WISEdash for Districts to provide users with an updated, cleaner user experience and tools to better facilitate local student data analysis and continuous school improvement. The update includes new menus, navigation, and analysis capabilities. Charts and graphs are modernized, too, ensuring a mobile responsive design. Multiple improvements and additions to the DIJ were released as well.

Institutional Support and Sustainability

The Data Warehouse and Decision Support team (DWDS) was established at DPI in 2011 specifically to tend to the details of SLDS-related objectives and integration projects within the agency. This team establishes the look and feel of the WISEdash portal and identifies, along with stakeholders, projects, additions, and enhancements that would be useful for future development. Using an Agile development process with a customer-service focus, this team engages routinely with program areas to assure that the products of our reporting system are relevant and useful to internal and external stakeholders alike.

Data governance for the data warehouse is overseen by the Director of DWDS, who works with data owners and data stewards, documented in the Data Contacts Inventory, to ensure that all data warehouse decisions are communicated and made with input of key internal and external

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[3] See the WISEdash promotional flyer included in Appendix A.

stakeholders. This role also leverages existing DPI committees and workgroups of internal and external stakeholders to gather feedback on which enhancements to pursue and to provide updates on any changes or proposed modifications to the data warehouse or applications impacted by the data warehouse.

DPI fosters key external partnerships through the State Superintendent's Education Data Advisory Committee (SSEDAC), chaired by Kurt Kiefer, DPI's Chief Information Officer (CIO) and the Principal Investigator (PI) for the current proposal. SSEDAC includes district superintendents, assessment directors, IT directors, and representatives from the Cooperative Educational Service Agencies (CESA), Wisconsin Education Association Council (WEAC), and school boards. Project roadmaps are routinely shared with SSEDAC, and the group directly advises the State Superintendent and Cabinet.

State statutory authority and funding further support sustainability of this important work. Wisconsin Statute § 115.297[4] requires that state agencies "establish and maintain a longitudinal data system of student data that links such data from preschool programs to postsecondary education programs, describes the process by which the data system will be established and maintained, and ensures its interoperability with workforce data systems [...]." The ability to use this data for research and evaluation is explicitly protected in statute Wis. Stat. § 115.297 (2).

Wisconsin funds the requirements above through two separate budget appropriations: one appropriation funds the continued maintenance and improvement of the data warehouse [Wis Stat. § 20.255 (ek)]. The other appropriation funds work that improves data collection and eases LEA reporting burdens. [Wis Stat. § 20.255 (e)]. This open data collection initiative, known as WISEdata, is designed specifically to reduce the collection burden and yet increase the frequency that data are reported to DPI from districts and charter schools. State statute (115.383, Wis. Stat.) also requires private schools participating in most of the state's voucher programs to engage WISEdata for purposes of collecting the data needed for DPI to produce state accountability report cards for every school in the state that receives public funding. Combined, these funds represent an annual investment of nearly $7,000,000.

Technical Requirements

Federal Reporting

DPI's capacity to fulfill federal reporting requirements has directly benefited from previous SLDS grant awards. The 2005 SLDS grant funded the development of Wisconsin's first individual student enrollment and reporting systems and, ultimately, the longitudinal data system that serves as a foundation for our current data warehouse. DPI satisfies federal reporting through a combination of collection and reporting systems.

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[4] Copies of supporting state statutes are included in Appendix D.

The data collection is a real-time process powered by the implementation of the Ed-Fi Alliance application programming interface (API) solution. Data collection applications, including WISEdata, implement data validation procedures at the point of collection. The secure WISEdata Portal is accessed by authorized district and school staff and presents data validation warnings and errors which trigger local work to improve data quality. This enables reliability and quality checks by data owners in the teams responsible for data submission.

DPI further ensures federal submissions have high data quality through an internal, cross-agency data quality process that involves internal data review for identification of data anomalies, and customized communications and customer service support to districts to help them identify what needs to be reviewed prior to the "snapshot."

Data flowing through the WISEdata API are loaded nightly to the data warehouse and each year a data "snapshot" captures data to be submitted for state and federal reporting requirements. WISEdata is the primary source for the Every Student Succeeds Act (ESSA), the Individuals with Disabilities Education Act (IDEA), and - in just the last year - Carl D. Perkins grant reporting.

In addition to incorporating Carl D. Perkins grant data into WISEdata, we will utilize WISEdata to report on Homeless Enrollment, which will not only remove the need to collect aggregate data from school districts on this topic, but also ensure that other files that report by Homeless status (e.g., Chronic Absenteeism) will align with the Homeless Enrollment file. In addition, the student enrollment data required by Title I Part A will largely be sourced from WISEdata for the 2018-19 reporting year, replacing the aggregate data collection from districts that was used in prior years.

WISEdata also improves IDEA reporting. Utilizing the Reason Exited field in the Ed-Fi data model allows DPI to better track the reasons why students were exiting, a critically important piece of information, especially when a student's exit reason is is a transfer back to regular education.

In addition to enabling high quality federal reporting through EDFacts, WISEdata is the source of most of the quality public reporting in the WISEdash Public Portal, a key tool for ensuring transparency of data for all public stakeholders. This includes data and dashboards to meet ESSA public reporting requirements (i.e. the ESEA Report Card). Some other data topics available on the public portal include enrollment, attendance, assessment results and participation, high school completion and dropout information, and postsecondary enrollment. DPI reports National Student Clearinghouse (NSC) data to capture the postsecondary pathways of individual students, including timing of transition from secondary to postsecondary education, type of institution, and location (in-state, out-of-state).. Additionally, the Advanced Postsecondary Infrastructure (APSI) project of our 2009 SLDS ARRA grant resulted in the capacity to communicate with

higher education data systems in the state, including the University of Wisconsin System (UWS) and the Wisconsin Technical College System (WTCS).

Privacy Protection and Data Accessibility

Privacy of student records is critical to the integrity of any data system. DPI has implemented policies, processes, and procedures to protect the privacy and confidentiality of data. Examples include aligning our state standards for data classification [Federal Information Processing Standards (FIPS) -199 standards] and our security framework [National Institute of Standards and Technology (NIST) 800-53], updating and revising our Internal Data Access Request process and our Data Request process, and ensuring that strict suppression rules for public reporting are used when reporting data on the public portal and disseminating artifacts from a confidential data request. The Director of the DWDS Team and the Director of the Information Technology Services Team share data security and privacy responsibilities for implementing these policies and processes.

Security and access to SLDS data are role-based with authorization and authentication occurring at the individual user level. Only authorized users have access to confidential data. Role assignments are made by the school district, giving authorized local staff complete control over who in their organization has access to what level of student data.

Data quality

DPI has taken several steps to ensure the reliability and validity of data stored in the longitudinal data system. Data quality efforts begin with data collection, continue with agency-wide data verification procedures, and extend to all data collections whether collected externally or internally. A Customer Service Team explicitly focuses on providing documentation, communication, policy and procedure, and technical assistance related to DPI's data collection efforts. As a standard part of every data collection, DPI publishes written documentation defining the data elements for that collection, including a list of acceptable values. Automated web applications have built in validation and edit checks to prevent data mismatches from being submitted. This also ensures that data is collected in a consistent manner across the state.

Data quality training is available to districts and schools through a variety of formats including on-site training, user manuals, and multimedia presentations posted on the DPI website. Technical Support Staff conduct biweekly teleconferences with vendors and districts during the data reporting collection periods. These efforts supplement DPI's day-to-day Help Desk service.

As a part of DPI's data collection protocols, districts are able to review data submitted prior to final submission. Internal DPI staff also review summary reports to enhance data quality, looking for reasonability and comparing to prior years' data. DPI contacts superintendents from districts with data anomalies. Districts are given a sufficient window of opportunity to revise the data, and the window of time is announced to districts well in advance of the verification period. DPI

has dedicated staff members who address problem WISEids, including one position devoted to detecting and correcting duplicate student identification numbers.

Efforts are underway to increase the number of trainings and professional development opportunities designed to strengthen the data skills of agency staff, highlight the importance of data quality, and teach how data may be used for decision-making. DPI has a dedicated WISE help desk known as WISEsupport to meet users' support needs. WISEsupport is supported by contracted staff from CESAs, regional education service agencies. A user can submit a WISE help ticket at any time and receive a prompt response with additional information and advice.

WISEsupport hosts training sessions each fall to give district users a better idea of data collected through the WISEdata application, what data are available for analysis, and how data may be reviewed for accuracy. DPI staff offer frequent WISE user group calls to give updates, perform demonstrations, receive user feedback, and answer questions on the latest features released to the WISE system suite. An annual WISEdata Conference brings users together to learn about WISE applications and discuss best practices around data use and reporting. Several ongoing advisory groups and vendor user groups provide additional opportunities for district users to engage with DPI and their data.

DPI continuously aims to increase and improve customer support. For example, the WISE helpdesk and other IT support staff have worked closely with large districts and new Choice schools to provide more clarity around WISEdata work. New Choice schools for 2019-20 received full-day, on-site training on the basics of WISE. Large districts have been gathering regionally for updates, training, and discussion of common practices. DPI offers several workshops that focus on particular data topics and help users better understand the rules and tools to make their jobs easier. Other data resources to improve users' work processes and performance include: e-learning courses for in-depth data submission guidance, mini tutorials for quick topical help, hundreds of webpages on data submission guidelines and pertinent FAQs, as well as knowledge base articles covering data validation suggestions for reviewing and correcting submitted data.

Interoperability

While DPI's WISEdata system currently serves as the main tool used for collecting required state and federal data elements, and feeds the WISEdash system with quality data, DPI sees an opportunity to extend the system as the main vehicle to drive interoperability needs within the state. DPI's WISEdata system is based on the Ed-Fi data standard, where the underlying Ed-Fi data model and Ed-Fi API are fully implemented. The Ed-Fi physical data model is based on the Common Education Data Standard (CEDS) logical data model. The CEDS and Ed-Fi data models are tightly aligned and compatible with each other.

DPI and its higher education partners have agreed on the adoption of the CEDS 2.0 standards for the purposes of data sharing; DPI has conducted test exchanges with UWS, WTCS, and the

Wisconsin Association of Independent Colleges and Universities (WAICU). In addition, the system integration implementation of the Ed-Fi API between the WISEdata system and local student information system (SIS) vendors further improves interoperability by connecting educational data systems used at the district and school level to the Wisconsin SLDS platforms.

DPI has been an active participant in the Council of Chief State School Officers (CCSSO) Educational Information Management Advisory Council (EIMAC) and the CIO Network. These groups are focused on cross-state collaboration in the areas of standards-based data sharing and software development interoperability. Ed-Fi is a leading example of this cross-state collaboration and is a focus topic for our CCSSO work. CCSSO supports our application because of our pledge to continue this collaboration. These groups are important as they provide direction and guidance in defining where interoperability is critical to the effective use of education data.

DPI's WISEdata initiative is designed to leverage our data warehouse architecture, the data collection system via the Ed-Fi API, and collaboration with educational data systems implemented in schools. This strategy eliminates the need for manual submission from school districts. Further, it results in improved data quality and usefulness for the field. Wisconsin benefits from the technical assets inherent in the Ed-Fi framework and tools, and is actively engaged in and contributes to the Ed-Fi Alliance Community.

While challenging work remains, the WISEdata system now provides the pipeline needed to make the goal of streamlining data flow across multiple educational systems obtainable. This system allows users to access necessary education data to improve student learning outcomes. Our extension of this effort into Education Choice continues that interoperability strategy through system integration.

Enterprise-wide Data Architecture[5]

Student IDs - DPI assigns each student and educator a WISEid, a unique, permanent, and unduplicated identifier. This 10-digit numeric field is required for all reported students and for educators who are reported in WISEdata. WISEid does not require birth certificates or other documentation. WISEid recommends, but does not require, additional data (e.g., place of birth; nicknames; additional parent/guardian names). These additional data points help to ensure that WISEids are unique and that existing WISEids are retained when students or staff move between schools. No personal contact information, such as addresses, phone numbers, or social security numbers, is collected or used by the system.

Data Management - DPI recognizes the importance of open and transparent data governance, including data stewardship, management, confidentiality, and access. Extensive data documentation is publicly available online via our WISE pages. WISEdata pages provide

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[5] A graphic representation of the WISE system data flow is included in Appendix A.

explanation of all collected data elements and include definitions, use cases, and potential error messages. Additional "About the Data" pages explain in great detail the data accessible within both public and secure WISEdash. Data Inventories, or Data Dictionaries, are published on our website as well. DPI has also built rigor into our communication with internal and external stakeholders. Roadmaps are published for review with the WISE Steering Committee as well as monthly project reports.

Data Use Requirements

Managing Application and Data Security

DPI has invested substantially in policies and procedures that ensure secure and appropriate access to data. The core piece of this infrastructure is the Application Security Manager (ASM), built with funds from the SLDS 2009 grant. ASM enables school districts to decide who has access to secure applications including WISEid, WISEdata, and WISEdash, and lets them assign and manage roles. The security hierarchy in each district starts with the District Administrator or a delegate who is assigned the role of the District Security Administrator (DSA). The DSA assigns Application Administrators from their district for each secure DPI application. Those Application Administrators then assign individual users to an application role.

DPI has instituted role-based security for agency staff as well. DPI established an internal access request process that requires program area staff to demonstrate their legitimate access need. The request requires supervisor approval for secure applications and supervisor approval in addition to product owner approval for database access. Completion of training on pupil privacy, certified by the supervisor, is a prerequisite. Various roles are available to users of secure tools. For example, WISEdash for Districts users can be assigned one of four roles: (1) student detail including economic indicators; (2) student detail without economic indicators; (3) student detail with FAFSA information; and (4) a restricted role only able to see aggregated but unredacted data.

To facilitate appropriate external usage of state data, DPI has a well-documented public online application for researchers to submit data requests. This process tracks both non-confidential and confidential data requests for research. Research staff on the Policy and Budget Team reviews all requests to ensure they align with agency priorities and DPI's research agenda, takes them to the WISE Steering Committee for approval on a monthly basis, creates and monitors all data-sharing agreements, and delivers data to the researcher(s) via a secure transfer protocol. This process ensures that data requests are processed in an objective and timely manner and allows DPI staff to audit who possesses what data at any moment.

This process has grown out of many fruitful partnerships between DPI and external researcher organizations. To manage these partnerships and advise the state on relations with the education research community, DPI established the Wisconsin Education Research Advisory Council (WERAC) in October of 2011. The committee is currently chaired by Dr. Carl Frederick, a DPI

research analyst. WERAC serves as a space where researchers and practitioners meet to advise DPI on education-related research, craft DPI's internal research agenda, discuss issues related to data sharing and collection, and explore new projects. DPI's investment in research capacity allows DPI's in-house researchers to identify high-quality external researchers and work with them collaboratively to craft research projects that are mutually beneficial. In addition, through the Early Childhood Race to the Top grant, DPI has participated in cross-agency research projects collaboratively with research analysts at the Wisconsin Department of Children and Families and the Wisconsin Department of Health Services.

As we will demonstrate below, DPI proposes to use the funds from this grant to expand and deepen our relationships to the external research community. Our specific focus will be dissemination of high-quality research produced by internal and external researchers, driven by demand from education practitioners in Wisconsin, with an aim to inform and improve instructional practices.

WISEdash

DPI has made a significant investment of time and staff to develop, deploy, train, and sustain dashboard environments that facilitate transparency about public education, support evaluation of policies and programs, and ultimately inform local decision making with a focus on improving outcomes for students. Three separate instances of WISEdash support the work above. As described in the introductory section, WISE tools were developed in service of multiple stakeholders: educators, district and school officials, DPI staff, partner researchers, and parents and community members. These latter stakeholders - parents and community members - as well as the media and researchers, benefit in particular from WISEdash - DPI's robust statewide data warehouse and dashboard system which includes public and secure reporting portals.

WISEdash Public Portal - The WISEdash Public Portal is the front door for parents and community members to discover all types of data about Wisconsin schools and districts. As noted earlier, data in the portal are available at student group, school, district, and state levels, and redacted to protect student privacy. Certified data can be displayed for multiple years and it can be grouped and filtered by a variety of demographics including grade level, gender, race/ethnicity, economic status, disability, English proficiency, and migrant status. Certified data is used for most state and federal reporting requirements. Data download files are available to supplement dashboard metrics. As a public reporting tool, WISEdash Public Portal is used by districts, schools, parents, researchers, media, and other community members to view data published by DPI.

WISEdash for Districts - This version of WISEdash is used by authorized school district staff. Data are near real-time for many data elements, e.g., enrollment, or refreshed based on when they become available, e.g., test scores. This tool is particularly useful for local school and district improvement planning, and for identifying needs for individual or groups of students.

WISEdash Local - The WISExplore project is built around a common inquiry process that is meant to be applicable regardless of which local data systems a school district chooses to use. Initial WISExplore trainings, however, uncovered a need for expanding the SLDS; a consistent request from the field is for further inclusion of data elements that are more relevant and useful for classroom educators. In response to this feedback, WISEdash was expanded in 2014 to allow school districts to add local data to an instance of WISEdash separate from DPI's data warehouse, one that would house locally determined data for member districts. This instance is called WISEdash Local.

As of August 2019, 27 districts are using WISEdash Local to support their data inquiry work. Together, representatives from these districts compose the WISEdash Local Consortium, the non-profit entity that governs the development and management of the WISEdash Local instance. Decisions are made at monthly public board meetings, and a virtual option is always available to ensure consortium districts can participate regardless of their location in the state.

Consortium members derive several benefits from the WISEdash Local instance. First, they gain access to an environment where they can analyze and display local data in the WISEdash reporting structure. This, in turn, lowers the barrier of entry for schools and districts to engage in meaningful data inquiry by centralizing and standardizing the data that is most relevant to their needs. Another important benefit is immediacy, as the local data is not subject to the lag time of state reporting and can be visualized in dashboards next-day. DPI also benefits as the WISEdash Local instance allows the agency to encourage, and provide another option to support data-informed continuous improvement in local districts without increasing state-required data collections that may undermine the quality of data that must meet state and federal reporting requirements.

WISExplore and Continuous Improvement Planning

DPI's WISEdash data warehouse and reporting solutions form a strong foundation in support of data-informed improvement planning. DPI builds upon this foundation by extending the audience of the system into the classroom. This involves significant investment to build a professional learning infrastructure that helps both identify desired features and additions to WISEdash and create a common language of data-informed inquiry for educators across the state. This training effort is known as WISExplore and includes resources in WISEdash.

WISExplore represents the DPI training efforts around SLDS data. Since 2013, nearly 1,300 school district staff representing over 180 school districts have participated in WISExplore data retreats across the state. A combined mix of CESA and internal DPI staff, the WISExplore team collaborates with key educational programs in Wisconsin including Title programs, Special Education, Response to Intervention (RtI), Educator Development and Supports, state leadership organizations, and research partners at the University of Wisconsin-Madison.

The purpose of the WISExplore Project is to design, develop, pilot, and disseminate a consistent and collaborative process for teams to engage in data inquiry and continuous improvement planning. DPI staff, CESAs, school boards, administrators, and classroom educators can all use the WISExplore Project in their efforts to improve student achievement in Wisconsin. Utilizing the data within WISEdash, the WISExplore team trains educators in the data inquiry process and helps grow their capacity to thoughtfully design and implement school improvement plans based on their inquiries. The process is supported by e-learning modules, supplemental materials located in the WISELearn resource repository (described below), and in person training. All are free to Wisconsin educators and the WISExplore team routinely gathers feedback on the trainings and tools to inform their work and refine the resources and assistance they provide.

In 2014, the WISExplore and WISEdash teams worked collaboratively to create a tool, embedded directly within WISEdash, that facilitates the WISExplore data inquiry process. The tool - called the Data Inquiry Journal (DIJ) - steps school improvement teams through the process of student outcome inquiry and practices inquiry. The framework for both types of inquiry is 1) question; 2) data investigation; 3) clarify findings; and 4) hypothesize to inform action plans and evaluation. By embedding these steps within the data analysis tool, the data inquiry process is simplified for school staff, eliminating barriers of extra effort that would otherwise be required in accessing, analyzing, and displaying their data stories.

The process outlined above is aligned to the state's Continuous Improvement Process Criteria and Rubric. The Continuous Improvement Process Criteria and Rubric is research-based and was collaboratively and thoughtfully created by representatives from DPI, CESAs, districts, and schools. Educational equity, multi-level systems of support, and implementation science are all embedded within the criteria and rubric to ensure a solid educational foundation. Because of this foundation, the Continuous Improvement Criteria and Rubric and the Data Inquiry Journals have been approved by DPI for use in school and district improvement: Schools identified under ESSA and districts identified under IDEA may use the Continuous Improvement Process Criteria and Rubric and the DIJ and be confident they are using tools that satisfy the legal requirements for school improvement.

WISELearn

With WISEdash, the tools are in place for districts to access data. With WISExplore, the infrastructure for data literacy and training is in place. DPI also operates and maintains an educator resource portal known as WISELearn. It is designed to be a "one-stop shop" for Wisconsin educators searching for instructional content and professional learning resources. The portal has three components: 1) a learning management system focused on virtual professional learning opportunities; 2) a content repository of tagged instructional resources; and 3) a social network platform to facilitate virtual professional learning communities. DPI has a dedicated position assigned the role of advancing and maintaining the WISELearn platform.

WISELearn was created to address two needs for Wisconsin educators: first, they need equitable access to high-quality tools and resources. Whether from the largest or smallest school district, in a metropolitan area or in rural northern Wisconsin, educators need access to the right tools and information. Second, they need personalized, applied, and engaged learning to maximize each person's learning potential.

WISELearn addresses these needs by ensuring all educators can find top quality resources in one easy-to-use portal. The development and population of WISELearn draws upon the expertise of educators in Wisconsin, integrating both existing and new content. Further, WISELearn breaks down barriers to engaged learning by uniformly addressing infrastructure, professional development, curriculum, assessment, and leadership needs. Through previous SLDS grants DPI has integrated the WISEdash and WISELearn tools in order to better facilitate the use of data to the point of instructional decision making in schools and classrooms.

In 2014, DPI used state funds to coordinate digital content curation workshops in partnership with CESAs. To ensure consistent and high quality content reviews, the curation process followed the Achieve program rubric protocols. This curation process, which was expanded with the latest SLDS grant, also allows for digital content sharing via the U.S. Department of Education Learning Registry protocol. During the curation process, digital content was tagged according to the Learning Resource Metadata Initiative (LRMI) standards. These same standards have been leveraged by many states participating in the CCSSO's Educational Information Management Advisory Committee (EIMAC) work focused on instructional improvement systems. The adoption of these standards and protocols assures that the work performed by Wisconsin can be shared across every state.

Evaluation and Research

A final investment by DPI has been to increase internal research and evaluation capacity to meet the needs of our agency, policymakers, schools, and districts. DPI maintains two agency-wide research analysts tasked with developing and carrying out the agency's research agenda. Data from the SLDS form the core of this research and evaluation work. For example, DPI's research staff have leveraged the SLDS to help school administrators use predictive analytics to support their students and district planning efforts by building and maintaining a nationally-recognized and fully open-source Dropout Early Warning System, as well as deploying the College and Career Readiness Early Warning system. A system to predict enrollment and success in Advanced Placement courses is also in development.

DPI's internal research agenda process is the way by which the agency prioritizes the use of its finite internal research and evaluation capacity. This process is aligned to agency-wide strategic goals of increasing equity and ensuring that all students graduate from high school ready for college and career. DPI's current research agenda was developed by agency leadership in order to ensure coherence with agency vision. DPI's Cabinet meets with Policy and Budget team

research analysts at least once a year to review progress and determine project prioritization. Projects from the 2018-19 research agenda that have been or are nearly completed include:

- A predictive analytics tool to identify students that should have success in Advanced Placement (AP) courses and AP end-of-course exams;

- An Interactive Geographic Information System-based tool that shows administrators, board members, and the general public indicators of socioeconomic and demographic context for schools and districts;

- An examination of how required teacher preparation exams relate to student outcomes; and

- An examination of differences between Wisconsin's state accountability ratings and third-party published school ratings.

DPI has actively promoted cross-state collaboration of research staff at state and local education agencies. For example, the source code for Wisconsin's Dropout Early Warning System (DEWS) is freely available and has been adapted for use in a number of early warning implementations across the country. Another example is DPI's R User Group, a monthly workgroup of researchers and other analysts from across four Wisconsin state agencies who use the R statistical software package.

DPI also invests in its relationship with university-based researchers to supplement the internal research work being done and extend our capacity to inform a broad, cross-agency research agenda. DPI has leveraged the expertise at the Wisconsin Evaluation Collaborative (WEC) for multiple evaluations, including the ongoing evaluation of our Educator Effectiveness (EE) system. To help ensure that work done in higher education reflects the needs of our local education agencies (LEAs), DPI has also partially funded the The Network at the University of Wisconsin-Madison (UW-Madison) School of Education, an office dedicated to facilitating relationships among researchers, policymakers, educators and communities for the purpose of driving teaching and learning innovation.

DPI used the SLDS 2015 grant to accelerate this partnership work and forge stronger, more institutionalized relationships with a wider group of university researchers, as well as to disseminate the resulting research findings widely throughout DPI. Grant-funded activities that were particularly enabling in this mission were: large-scale research projects to identify equity-promoting practices and better understand how economic status impacts student outcomes; researcher-led brown bags and policy briefings; and monthly meetings with DPI staff and the researchers funded by the grant. This proposal will allow DPI to continue the momentum and further institutionalize this partnership. Specifically, it will allow DPI to continue and expand engagement activities that align research to need and, later, increase the uptake of results so they form the basis on which decisions are made at the classroom, school, district, and State Education Agency (SEA)-level.

Wisconsin Education Choice Programs

Wisconsin has experienced substantial growth in families taking advantage of the many education choice options available to them: open enrollment to any district in the state, attending a non-district authorized charter school, or enrolling in one of the parental choice programs that provide state-funded tuition for eligible students.

Compared to 2008-09, when DPI last updated its open enrollment application and tracking system, data from 2017-18 show that annual applications have increased 45 percent (21,000 to 38,700), the number of open-enrolled students has more than doubled (28,000 to 60,800) and annual transfer payments have nearly tripled ($151 million to $419 million). From 2008-09 through 2018-19, student enrollment in non-district authorized charter schools increased by almost 50 percent (5,300 to 8,500) as have the number of schools (16 to 23) and the money spent ($47.6 million to $72.8 million). Private school parental choice programs have increased from one to three (one each for Milwaukee and Racine and one for the rest of Wisconsin), the number of choice students has increased by almost 100 percent (19,400 to 38,200), the number of choice schools has more than doubled (127 to 279), and the money spent has more than doubled from $127 million to $303 million). To put this growth into perspective, these programs accounted for nearly 100,000 students combined, which is roughly 10 percent of Wisconsin's school aged population, and more than $750 million, which is 13.3 percent of total state aid for the 2017-18 school year.[6]

Summary of Current Status and Relationship to Proposal Goals

The primary objective of DPI's proposal is to integrate several key systems into the WISE suite, including our Education Choice systems, the primary mechanism for distributing the vast majority of school aids, and the underlying enterprise database which feeds nearly all information systems at DPI. These systems and tools are all inextricably linked from a business process flow, and the integration upgrades will benefit LEA and SEA staff by streamlining efforts and addressing data quality issues that exist due to the current non-integrated approach. The project will enhance the parent experience through better system integration and an even higher level of data privacy and security. This integration of data systems in our proposal also increases DPI's range of research and evaluation efforts to include other LEA types (including those associated with Education Choice programs) and the financial data that will be incorporated by integrating the Membership system. Last, the deliberate and intentional relationship between DPI and researchers proposed here will build on our success in previous grants and will result in greater uptake of evidence-based practices to impact policy, schools, and classrooms.

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[6] Total state aid is defined as the total general plus categorical state aid. Supporting documentation for the numbers and amounts described in this paragraph are included in Appendix A.

(B) PROJECT OUTCOMES

As stated in Section A, DPI has made significant progress over the last several years through release cycles and continuous improvement of the WISE systems and product suite. The WISE products have not only improved data quality at the state level, but at the local school district level as well. The implementation of the WISEdata product, based on the Ed-Fi data model and API technologies, now provides real interoperability for educational data systems that benefits both the state and LEAs. What is currently implemented is a foundation upon which future products can build. A need remains to further extend interoperability to integrate state systems not currently part of WISE , extending data quality improvements, updating product infrastructure and technologies, and making more systems interoperable. Extending the state's WISE systems implementation improves user experiences and provides value for public school districts, charter schools, private schools, private choice schools, and parents.

OUTCOME 1 - Rebuild Enterprise Database and School Directory Application

DPI's Enterprise system is the master database from which all DPI applications pull school directory information and contact information. The Enterprise system stores the master records for all information concerning public and private education organizations and contacts within each organization in the state. Examples include characteristics of all public schools and districts as well contact records for superintendents, special education directors, and school principals. Entities in the Enterprise system include (but are not limited to) non-district charter schools, state schools for the blind and hearing impaired, all private schools, and private schools in the state choice program.

The current Enterprise system has been in place for over 15 years. It requires new functionality, and is no longer capable of supporting future requirements that must be in place to meet known interoperability and system integration goals. As a result of this outcome the agency will save money on software licensing costs, provide the flexibility to adapt to future changes, improve data quality, and provide value to public and choice schools through a flexible system that supports the changing needs of schools and their supporting networks.

DPI's proposal to rebuild the Enterprise Database and School Directory application will directly increase data quality for EDFacts, allowing DPI to collect individual grades offered from agencies instead of only a low-high range, as well as simplifying the process to create the EDFacts Directory and Grades Offered files each year.

Outcomes and Subtasks

Outcome 1 will result in an upgraded enterprise system architecture and technical infrastructure in order to dynamically accommodate choice organizations and associations. Annually, DPI receives multiple requests from public and private choice schools to align schools into different organizations, associations, or partnerships related to accountability and system reporting

scenarios. This outcome involves conducting the proper analysis, development, implementation, training, and support to implement these requested changes.

Deliverables:

1.1. Create a workflow process to use for considering and implementing requested school alignment policies, requests for new schools, school changes, or schools closures.

1.2. Create a workflow process that is used to determine how schools are related to each other, such as organizations, associations, and partnerships.

1.3. Create system architecture and database design that allows systems to establish multiple association types between schools and the ability for integrated systems to read and obtain these associations.

1.4. Implement an automated workflow to authenticate and update records in the enterprise system for new schools, inactive schools, and changes to schools including organizations and partnerships.

1.5. Implement an upgraded enterprise architecture and technical infrastructure. Migrate the current enterprise system from Oracle to Microsoft SQL Server.

1.6. Create a new School Directory software application using modern application technology development practices and tools to record agency data and contacts, including the recording and display of school relationships as defined in outcome 1.2. This would include the ability to automate the updating of education choice data elements and property attributes, removing the need to manually process multiple files annually to update choice status.

1.7. Provide the capability for private schools and choice schools to update school directory information through the School Directory software application, replacing the current process of using a survey tool to capture directory and contact data. This would replace the current PI-1207 report.

1.8. Improve interoperability, which can include services provided by API technology available for future system integration needs for both internal and external consumers.

1.9. Create and deliver training materials through the enterprise customer support framework.

OUTCOME 2 - Integration of DPI's Education Choice Systems

The purpose of this project is to improve currently existing infrastructure and develop new infrastructure to improve data collection, data interoperability, data quality, and use of education data in at least four statewide education choice programs - three Private Education Choice Programs (Milwaukee, Racine, and Statewide) and the Public School Open Enrollment Program. Currently, the private and public choice programs have separate software applications that parents, schools, districts, auditors, and agency staff use to manage student applications,

enrollments, and payments. These applications are not linked to any other DPI data systems. These disconnects create inefficiencies in business processes.

The Private Education Choice Programs software application includes an online application for parents and guardians to apply to private schools participating in one or more of three state-mandated, private education choice programs. The software application includes the Online Application System (OAS), which participating private schools use to complete and track enrollment, payments, and certain statutory requirements. Department staff use OAS to track student applications, complete a random selection of eligible applications, track enrollments, calculate payments, ensure statutory requirements are met, and audit student eligibility and payments. External auditors hired by participating private schools also use the data from OAS to complete their statutorily required audit requirements. In the 2018-19 school year, 279 private schools participated in at least one of the three Private Education Choice programs, over 68,000 student applications were submitted for the programs, and over 39,000 students participated in a program. In the 2018-19 school year, over $310 million in payments were processed using OAS. The number of private schools, student applications, and students participating increases every year.

The Public School Open Enrollment Program software application is called Open Enrollment Application Log (OPAL) and is used to manage student applications, track students and calculate over $400 million in current-year open enrollment aid transfer amounts. OPAL's online features include: (1) a parent application system; (2) the application management system; (3) a student tracking system; (4) a communication system for districts; and (5) a historical data storage system. OPAL is used by all 421 Wisconsin school districts, as well as by internal DPI staff. In 2017-18 over 26,000 student applications were processed during the online spring application period; over 12,000 alternative applications were entered into OPAL; and over 60,000 open-enrolled students were tracked and managed by districts and DPI. The total number of open-enrolled students is increasing each year.

Integrating these systems into the overall WISEdata system increases the efficiency of all associated business processes, improves data quality, and allows resources to be targeted more directly to students and parents.

Outcomes and Subtasks

In order to integrate the DPI choice systems with the WISE system suite, in-depth analysis is needed to determine the feasible scope and extension of system integration improvement into the existing technical infrastructure and enterprise architecture.

In this outcome we plan to create a Public School Open Enrollment Transportation Reimbursement software application to allow low-income parents participating in the Public School Open Enrollment Program to submit claims for transportation reimbursement. Currently, the department receives 1,800 claims annually. This software application would allow parents to

submit an application for reimbursement, then verify income eligibility by linking to WISEdata and finally link to the existing payment system to generate payments to parents.

The final component of this outcome area is the creation of a software application for parents to submit an application for the Public School Open Enrollment Program. In 2017-18, over 12,000 paper alternative applications were submitted by parents to school districts. School districts then manually entered the data from the paper applications into OPAL. This new software application would allow parents to submit an application online, which would create numerous efficiencies for parents, school districts, and DPI.

Deliverables:

2.1　　Review Online Application System (OAS) and create documentation of current system workflow, policies, and business rules.

2.2　　Identify where gap analysis is needed in order to connect to the WISE system.

2.3　　Identify and document data dependencies from choice systems that are required by connected DPI systems, such as the WISEdata and Pupil Membership systems.

2.4　　Evaluate legal requirements, business rules, and data management and governance policies and practices to determine how data would be collected using WISEdata.

2.5　　Establish the minimum viable product requirements for the new choice software system functionality.

2.6　　Create an external facing application that automates a business process workflow that replaces the current survey tool parents and LEAs use.

2.7　　Build choice program system integration to WISEdata to determine program eligibility.

2.8　　Build a basic framework and infrastructure based on business requirements on which future private/choice systems can be built.

2.9　　Analyze and review differences in requirements between the regular and alternative parent application processes and identify ways to streamline similar processes.

2.10　Architect a parent application software system infrastructure that reuses common agency frameworks to provide user experience and integrates DPI WISE systems. Specifically, the WISE system should be used to integrate unique student IDs.

2.11　Leverage our Agile development approach to build a backlog of future system improvements for user enhancements, as well as technical infrastructure improvements for the associated projects.

2.12　Provide training and technical assistance for public school districts to support their use of the parent application system.

OUTCOME 3 - Streamlining the PI-1563 Membership Collection

Another goal of the project is to allow the DPI School Financial Services (SFS) team to obtain membership and other student counts used for fiscal purposes from the WISEdata student data collection system. This would eliminate duplicate data collections, streamlining processes to save time and improve data quality.

Much of Wisconsin school funding is tied to membership, which is the count of resident students of a district deemed in law to be financially responsible provision of education. Over $5 billion in state aids are determined using membership and other student counts. Membership is also the basis for the state's method of limiting school boards' authority to levy property taxes.

Due to the methods Wisconsin has enacted to fund the expansion of public and private choice, building the data systems necessary to connect those programs with pupil membership is vital. Further, with minor expansions of scope, the updated data model and system architecture resulting from this Outcome could replace several other student fiscal data collections, such as those used to pay state aids for transportation and students in juvenile detention.

Outcomes and Subtasks

For this outcome DPI will perform a detailed analysis to determine new data definitions and/or modifications to meet student fiscal data collection requirements through the Ed-Fi data model. We plan to implement student data collection elements for pupil membership using the WISEdata Ed-Fi API.

Deliverables:

3.1. Map the Ed-Fi data model to determine if new Ed-Fi extensions are needed.

3.2. Evaluate legal requirements, business rules, data management and governance policies in order to determine how pupil membership for finance would be collected using WISEdata.

3.3. Develop a system architecture that integrates the WISEdata system with the relevant school finance systems, including systems related to public and private education choice.

3.4. Develop validation rules that need to be in place in order to meet business rules and improve data quality.

3.5. Modify the WISEdata student data collection application to include membership elements via the Ed-Fi API.

3.6. Conduct and coordinate vendor integration testing of the interoperable WISEdata system.

3.7. Develop software applications and tools for LEA personnel to review the quality of student fiscal data compiled.

3.8. Develop validations and extract-transform-load (ETL) procedures for student fiscal data collections.

3.9. Provide training and technical assistance to users.

Outcome 4 - Institutionalized partnership structure between DPI and UW-Madison connecting research, evaluation, and practice

Building on the partnership structures and processes established between DPI and UW-Madison through the last SLDS award, we propose to use new funds under this award to further institutionalize this partnership through a research, evaluation, and practice ("REP") working group, which would leverage new data infrastructure elements and relationships to address problems of practice identified by DPI and educators and, by doing so, ultimately supporting educational equity and quality improvement in the state.

The REP working group would consist of team leaders and program staff from relevant offices within DPI and UW-Madison researchers and evaluators who regularly partner with DPI on projects. The group would represent different disciplines and methodologies, as well as a diversity of identities across race, ethnicity, gender, etc.. The REP working group would meet monthly to coordinate and strategize to (1) implement projects aligned to the goals of the SLDS 2019 grant, DPI research agenda, and needs of educators within the continuous improvement process (CIP), and (2) disseminate learnings from shared research and evaluation work.

This work will not only leverage the governance structure and relationships established in the previous SLDS award, but also existing structures within UW-Madison to conduct "rapid response" research and evaluation projects aligned to the priorities established by the REP working group. These projects would align to the priorities of this larger grant proposal (data infrastructure and education choice) and the DPI research agenda, as well as the needs of educators as expressed through the CIP.

Although this is primarily a data infrastructure grant, the infrastructure is always in support of educational improvement and equity. Under the last round of SLDS we partnered with UW-Madison to produce a truly expansive set of research products touching on early childhood education, personalized learning, community schools, and college access and success in the state among other things. We believe we can sustain this momentum by funding smaller and carefully selected projects to engage UW-Madison collaborators in DPI's core mission. The projects chosen will be responsive to the needs of the students and families DPI serves.

The Wisconsin Evaluation Collaborative (WEC) would be the coordinating body from UW-Madison in the REP group, directing the work across both deliverables 4.1 and 4.2 described below, but would be joined by a pool of UW-Madison researchers, evaluators, and graduate students. This would include representation from the Institute for Research on Poverty (IRP), which will provide support to partnership activities with a particular focus on

cross-systems research, bringing to bear its trusted relationships as knowledge brokers with other state agencies, experience in combining administrative data across agencies to inform policy and practice, and expertise regarding vulnerable populations (e.g., children from low-income families, who are or have been homeless, or in the child welfare or juvenile justice systems).

Outcomes and Subtasks

As tangible reflections and products of the REP working group, we propose regular convenings to ensure progress on our shared work plan and disseminate learnings from the research and evaluation projects. All three components of Deliverable 4.1 were previously established and/or piloted under the previous (2015) SLDS award. Development would be relatively straightforward and feasible to implement within the first project year.

Academic research in the educational sciences is increasingly attuned to the need to address real problems of practice to support equitable educational improvement and to do so in a way that is accessible and actionable by policymakers and educators. We are fortunate to have cultivated a strong relationship with groups at UW-Madison who were early adopters of this approach. We will leverage those relationships with this proposed project. In particular, DPI will collaborate with and build upon the:

- Wisconsin Center for Education Research (WCER) Clinical Program, where graduate students in the School of Education take part in bi-weekly seminars on evaluation or policy and are matched with applied, community-based projects;
- Interdisciplinary Training Program (ITP), an IES funded pre-doctoral training program housed in WCER; and
- WCER Fellows Program, which is an intensive fellowship in educational research focused on supporting underrepresented students.

Scholars from these three programs will be under the supervision of Dr. Annalee Good (Director of the WCER Clinical Program), Dr. Percival Matthews (Co-Director of the WCER Fellows Program) and Dr. Eric Grodsky (Internship Coordinator for ITP).

In order to build both the capacity of the REP working group to carry out its research and evaluation priorities (i.e., building an evidence base for high-quality and equitable practices in Wisconsin), we will leverage these existing UW-Madison infrastructures to complete "rapid response" research or evaluation projects in direct response to DPI and educator needs. Graduate students will complete small, specific, and bounded projects based on research or evaluation questions posed by DPI related to data infrastructures for choice schools, the DPI research agenda, and specific needs expressed by educators within the CIP.

Deliverables:

4.1 Establish regular research and evaluation convenings

4.2 Hold monthly working group meetings made up of a diverse collection of DPI and UW-Madison researchers and evaluators; the meetings would institutionalize those meetings and structures established under the previous 2015 SLDS award.

4.3 Conduct four research and evaluation convenings per project year between the UW-Madison and DPI communities, with presentations from graduate students (see Deliverable 4.9). Topics will align to SLDS grant goals of data infrastructures for education choice, the DPI research agenda, and educator needs expressed through the CIP. These convenings would institutionalize those that were piloted under the previous SLDS award, and could include formats such as:

- "Briefings" with short flash presentations on research and evaluation topics from Deliverable 4.2, followed by informal discussion; could be in person and/or via web-based platforms;

- Poster fairs based on projects from Deliverable 4.2; and

- Presentations at the end of semester graduate level courses taught by those on the REP working group.

4.4 Bi-annual WERAC meetings will include representation of researchers and research consumers from across the state to advise on the DPI research agenda.

4.6 Identify topics for 4-6 rapid response projects per year.

4.7 Match graduate students from one of the following programs at UW-Madison (described above) with a project topic:

- WCER Clinical Program;

- Interdisciplinary Training Program;

- WCER Fellows; and

- The Network Fellows Program.

4.8 Create similar templates for accessible reports that would also become usable and searchable by teachers and administrators in WISELearn.

4.9 Provide accessible written reports and presentations to DPI and interested stakeholders.

School-Level Poverty Measure

In addition to the activities described above, we request participation in the United States Department of Education's testing of a school-level poverty measure. Wisconsin is uniquely qualified to participate in this important exercise given DPI's successful partnership with the

Institute for Research on Poverty (IRP) at UW-Madison, the sole federally funded National Poverty Research Center in the United States. IRP also manages the Wisconsin Administrative Data Core, a large array of cleaned and harmonized state administrative data, including data from the departments of Children & Families, Health Services, Corrections, Workforce Development, and other sources. The system relies on a file known as the Multi-Sample Person File (MSPF), which contains one observation per individual (N= 7 million+), with no individual appearing twice. The MSPF can be linked with program participation data files, as well as complementary files that allow researchers to group individuals by case, by geography, and/or by various definitions of family, and follow them over time. The Data Core supports the integrated analysis of multiple program participation and outcomes of individuals and families, and is one of the richest collections of linked administrative data in the United States.

DPI and IRP have an extensive history of collaboration, including partnership in the 2015 SLDS grant, the federally funded "Wisconsin Educational Collaboration for Youth in Foster Care" grant, and over a dozen other projects using DPI data linked to the Wisconsin Data Core. Importantly, for the 2015 SLDS grant, IRP used the Data Core to complete a research project addressing the following research questions: (1) To what extent can racial disparities in school achievement be accounted for by alternative indicators of socioeconomic disadvantage, at both the individual and school level; (2) Does persistence of disadvantage matter; and (3) Are there other indicators of disadvantage (e.g., Supplemental Nutrition Assistance Program or Medicaid participation) that can be useful if community eligibility reduces the utility of free and reduced-price school lunch eligibility as an indicator of individual student disadvantage? This research lays excellent groundwork for exploring innovative ways of validating the new school-level poverty measure using administrative data from other sources. And, if this proposal is funded, IRP is committed to bringing its expertise in poverty measurement and integrated administrative data research to bear, to assist DPI in this important project.

(C) TIMELINE FOR PROJECT OUTCOMES

The three proposed Education Choice infrastructure projects follow a similar timeline that consists of three phases. The first phase, planning, is dedicated to performing critical analyses necessary to lay the groundwork for the projects to succeed. Planning tasks for the choice infrastructure projects include:

- Reviewing and evaluating existing systems and software applications;
- Creating workflow processes;
- Documenting data dependencies among systems; and
- Evaluating legal requirements and identifying existing business rules, data governance protocols, and data management processes that will be impacted by the work.

Based on our past experience with projects of a similar scale to those proposed here, we estimate the planning phase to be six months to complete. Planning for Outcomes 1 and 2 occurs

concurrently at the onset of the grant term. Planning for Outcome 3 begins after the bulk of the development for Outcomes 1 and 2 has been completed, which we estimate to be approximately January 2023.

During the second project phase, the development team works closely with DPI senior-level administrators in the relevant business area to implement the workflow processes and design plans created during planning. This implementation phase is when systems integrations, infrastructure frameworks, and applications are built and modified using Agile methodology (i.e., iterative development cycles). In addition, a backlog of modifications and improvements is created based on feedback from the project's co-sponsor. Implementation for Outcomes 1 and 2 begins approximately July 2020. Implementation for Outcome 3 begins approximately January 2023. End dates for implementation are difficult to estimate as the length of the modification and improvement backlogs are largely to be determined. However, we anticipate creating a minimum viable product for Outcome 1 will take the full-time work of one scrum team, which consists of approximately 2-3 developers, a product owner, scrum master, and a quality assurance analyst.

For each Outcome, the third phase is defined as the time between standing up the minimum viable product and January 2023, the end of the grant term. This time is dedicated to building and refining project backlogs, prioritizing these backlogs to make incremental improvements to functionality and interoperability as budget and staff time allow, and training users both internal and external on the new applications and systems. This last task involves creating documentation and training resources as well as providing technical assistance as needed. It relies on leveraging existing customer support staff and infrastructure including the case management and knowledge base features within the enterprise customer relationship management (CRM) solution. This part of the work also leverages relationships with our partners including the CESAs and Wisconsin's professional education organizations to identify key channels and events in which training on the new tools and resources occurs. All training efforts are performed under the supervision of the Customer Services Team Manager and in coordination with the business areas.

OUTCOME 1 - Rebuild Enterprise Database and School Directory Application

Project Leads: Dan Retzlaff and Melissa Straw - Business Owners of the project at the WISE Leadership Committee.

Subtask / Deliverable	Timeline	Key lead staff
1.1 Create workflow process for implementing school alignment policies	January 2020 - June 2020	Apps Dev Manager, SLDS Grant Manager, Assigned Scrum Team
1.2 Create workflow process used to determine how schools are related to	January 2020 - June 2020	Apps Dev Manager, SLDS Grant Manager,

one another		Assigned Scrum Team
1.3 Create system architecture and database design	January 2020 - June 2020	Apps Dev Manager, SLDS Grant Manager, Assigned Scrum Team
1.4 Implement an automated workflow used to authenticate and update records in the enterprise system	July 2020 - June 2021	Apps Dev Manager, SLDS Grant Manager, Assigned Scrum Team
1.5 Implement upgraded enterprise architecture and technical infrastructure	July 2020 - June 2021	Apps Dev Manager, SLDS Grant Manager, Assigned Scrum Team
1.6 Create new School Directory software application	July 2020 - June 2021	Apps Dev Manager, SLDS Grant Manager, Assigned Scrum Team
1.7 Add capability for private and choice schools to update school directory information through new School Directory software	July 2020 - June 2021	Apps Dev Manager, SLDS Grant Manager, Assigned Scrum Team
1.8 Improve interoperability	July 2021 - June 2022	Apps Dev Manager, SLDS Grant Manager, Assigned Scrum Team
1.9 Create and deliver training materials to end users	July 2021 - June 2022	Apps Dev Manager, SLDS Grant Manager, Assigned Scrum Team

OUTCOME 2 - Integration of DPI's Education Choice Systems

Project Leads: Tricia Collins - School Management Services (SMS) Director and Business Owner, Dan Retzlaff - Director of Applications Development

Subtask / Deliverable	Timeline	Key lead staff
2.1 Review Online Application System	January 2020 - June 2020	Apps Dev Manager, SMS Director,

		Assigned Scrum Team
2.2 Identify where gap analysis is needed to connect to the WISE system	January 2020 - June 2020	Apps Dev Manager, SMS Director, Assigned Scrum Team
2.3 Identify and document data dependencies	January 2020 - June 2020	Apps Dev Manager, SMS Director, Assigned Scrum Team
2.4 Evaluate legal requirements, business rules, data governance/management policies	January 2020 - June 2020	Apps Dev Manager, SMS Director, Assigned Scrum Team
2.5 Establish minimum viable product requirements	January 2020 - June 2020	Apps Dev Manager, SMS Director, Assigned Scrum Team
2.6 Create an external facing application	July 2020 - June 2021	Apps Dev Manager, SMS Director, Assigned Scrum Team
2.7 Build choice program system integration to WISEdata	July 2020 - June 2021	Apps Dev Manager, SMS Director, Assigned Scrum Team
2.8 Build framework and infrastructure	July 2020 - June 2021	Apps Dev Manager, SMS Director, Assigned Scrum Team
2.9 Analyze requirement differences between regular and alternative parent application processes	July 2021 - January 2023	Apps Dev Manager, SMS Director, Assigned Scrum Team
2.10 Build parent application software system infrastructure	July 2021 - January 2023	Apps Dev Manager, SMS Director, Assigned Scrum Team
2.11 Build backlog of future system improvements	July 2021 - January 2023	Apps Dev Manager, SMS Director, Assigned Scrum Team

Subtask / Deliverable	Timeline	Key lead staff
2.12 Provide training and technical assistance	July 2021 - January 2023	Apps Dev Manager, SMS Director, Assigned Scrum Team

OUTCOME 3 - Streamlining the PI-1563 Membership Collection

Project Leads: Dan Bush - School Financial Services (SFS) Director and Business Owner, Dan Retzlaff - Director of Applications Development

Subtask / Deliverable	Timeline	Key lead staff
3.1 Map the Ed-Fi data model	January 2022 - June 2022	Apps Dev Manager, SFS Director, Assigned Scrum Team
3.2 Evaluate legal requirements, business rules, data governance/management policies	January 2022 - June 2022	Apps Dev Manager, SFS Director, Assigned Scrum Team
3.3 Develop system architecture	January 2022 - June 2022	Apps Dev Manager, SFS Director, Assigned Scrum Team
3.4 Develop validation rules	January 2022 - June 2022	Apps Dev Manager, SFS Director, Assigned Scrum Team
3.5 Modify WISEdata student data collection application	July 2022 - June 2023	Apps Dev Manager, SFS Director, Assigned Scrum Team
3.6 Conduct vendor integration testing	July 2022 - June 2023	Apps Dev Manager, SFS Director, Assigned Scrum Team
3.7 Develop software application for LEAs to review fiscal data quality	July 2022 - January 2024	Apps Dev Manager, SFS Director, Assigned Scrum Team
3.8 Develop validations and ETL procedures	July 2022 - January 2024	Apps Dev Manager, SFS Director, Assigned Scrum Team

3.9 Provide training and technical assistance to end users	July 2022 - January 2024	Apps Dev Manager, SFS Director, Assigned Scrum Team

Outcome 4 - Institutionalized partnership structure between DPI and UW-Madison connecting research, evaluation and practice

<u>Project Leads:</u> Annalee Good, Eric Grodsky, Percival Matthews, SLDS Project Manager, Carl Frederick

Given the partnership infrastructures are largely in place, the REP working group (4.1.a) could begin regular meetings at the beginning of Year 1 and continue through all four project years. Similarly, WERAC (4.1.c) would continue its bi-annual meetings starting in Year 1 and continuing through all four project years. The research and evaluation convenings (4.1.b) would begin in the latter half of Year 1 in Fall 2020. Descriptions for the key lead staff listed in the following tables are provided in Section E.

Deliverable component	Timeline	Key lead staff
4.1.a REP Working Group meetings	January 2020 - December 2023	Good, Kimball, Carl, Shager, Project Manager, Frederick
4.1.b Research and evaluation convenings	October 2020 - November 2023	Good, Grodsky, Matthews, Shager, Project Manager, Frederick
4.1.c WERAC	April 2020 - October 2023	Good, Kimball, Carl, Shager, Project Manager, Frederick

Given the rapid response projects would leverage and build upon existing structures for graduate student applied training, we estimate the first projects could begin in Summer 2020, with presentations of these projects by Fall 2020. The final projects would be completed over Summer 2024, for presentation in Fall 2023.

Deliverable component	Timeline	Key lead staff
4.2.a Identify project topics	Initial topics in Spring 2020, with new topics identified in subsequent years in Spring 2021, Spring 2022, and Spring 2023	Frederick, Good, Grodsky, Matthews + REP Working Group

4.2.b Match graduate students with projects	Spring 2020 - Spring 2023	Good, Grodsky, Matthews
4.2.c Create common template for reporting	Summer 2020	Good, Grodsky, Matthews
4.2.d Present projects in convenings	October 2020 - November 2023	Good, Grodsky, Matthews

(D) PROJECT MANAGEMENT AND GOVERNANCE PLAN

Our proposal intends to build on the governance structures described above that were established under previous SLDS grants. The DPI project governance structure aligns with the data governance structure for all WISE projects. The Agile development methodology is the foundation of the WISE project governance structure, and is used for managing projects and releasing products under the Division of Libraries and Technology.
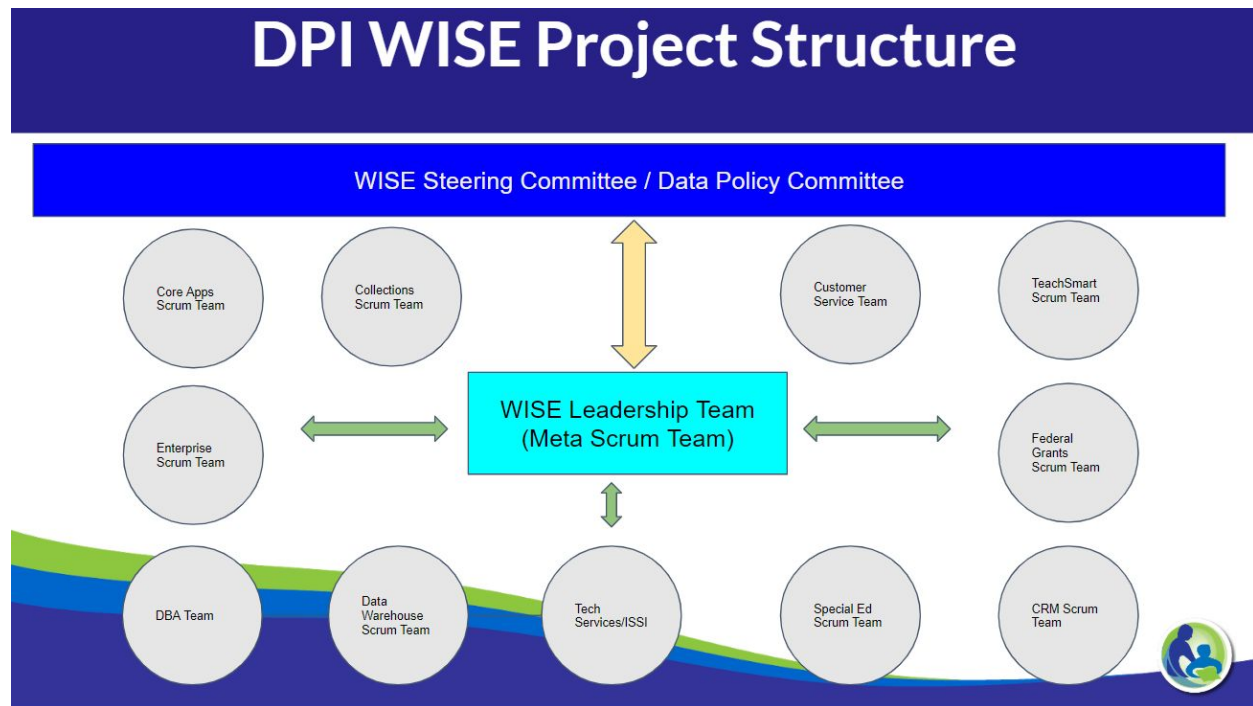
Scrum Teams

Small development teams are the base of the DPI project governance structure. The teams are referred to as "Scrum Teams" because they follow the Agile development framework called Scrum to implement Agile values and deliver value to customers. Scrum teams perform two-week iterative development and product release cycles to deliver value faster to users while also gathering customer feedback between each iteration. Each team has its own product backlog, in addition to team members that perform scrum master and product owner roles. DPI follows the same scrum practices and principals as described by the Scrum Alliance. One or more scrum teams will be assigned the task of completing outcomes and deliverables as defined in the SLDS grant.

WISE Leadership Team

The WISE Leadership Team is comprised of IT management and a network of product owners representing all scrum teams for projects that fall under the WISE umbrella. The Leadership Team meets weekly in order to:

- Align the teams' priorities along with a single cross-team backlog in order to coordinate individual scrum team backlogs and build agreements with stakeholders;

- Create an overarching vision for products, making them visible to the entire agency;

- Forecast and coordinate release plans and product roadmaps;

- Conduct an initial review of all IT project requests and determine whether they can be directly assigned to a scrum team or need to go to the WISE Steering Committee for prioritization;

- Resolve dependencies raised by teams; and

- Collaborate and make agreements on team product backlog priorities, address changes needed to strategy, and plan releases.

WISE Steering Committee

At the top of the project governance structure is the WISE Steering Committee. The WISE Steering Committee is also the policy committee under the data governance structure. The WISE Steering Committee consists of leadership (directors and assistant directors) representing all divisions and teams in the agency. The WISE Steering Committee sets the organizational vision and sets strategic priorities. The committee meets monthly in order to:

- Build alignment with key stakeholders to secure support for product implementation;

- Review and prioritize new enterprise projects;

- Review status of current projects;

- Review work related to additional collections and data elements to be brought into the WISEdata system;

- Address changes needed in strategy and funding; and

- Express preferences or sometimes urgent demands that may cause the agency's single enterprise backlog to be restructured

IT Project Request Process

The IT Project Request process is a key component of the project and data governance process. All SLDS project initiatives will use the IT Request Process to prioritize and assign projects that fall under the SLDS grant. The IT Request Process follows these steps:

1. DPI staff complete an IT Project Request Form located on the DPI intranet for any projects, analysis or development, that require time and effort from any of the IT Teams (a training module is available);

2. A designated IT staff member monitors the requests;

3. Once a request is received the IT staff member notifies the requestor that the project has been received and that it will be reviewed at an upcoming meeting and a project summary is also created;

4. The request is added to the IT Project Tracker and to the weekly WISE Leadership meeting agenda;

5. Requests are reviewed by the WISE leadership team weekly. Some requests are assigned directly to a development teams product backlog, which is then discussed and further broken down at sprint planning sessions. Project requests requiring more information and understanding are assigned to analysis projects. Large scale projects that disrupt planned work or require cross-team collaboration and commitment go to the WISE Steering Committee for review and prioritization.

SLDS Grant Project Manager

The SLDS grant project manager will serve the role as a Chief Product Owner in the DPI project project governance structure. The grant manager will attend the WISE Leadership and WISE Steering committees to collaborate on, prioritize,and finalize decisions for the projects within the grant. The grant manager will work with scrum team product owners, coordinate cross-team activities, and monitor the progress of SLDS grant project deliverables and outcomes.

The project manager will also serve a coordinator role in the proposed research practice partnership work, serving as the chief liaison between DPI and UW-Madison partners on matters impacting the research practice partnership. As mentioned above, this role will facilitate the governance and meeting structures that proved effective in nurturing the research practice partnership during the previous SLDS grant cycle. Additional responsibilities will include

engaging in cross-agency discussions at the Executive and Director levels to ensure the research agenda supports the agency's continuous improvement model and, under the guidance of the WERAC Chair, helping connect and align the work of the DPI/UW-Madison partnership committee to the work of the broader, statewide advisory council.

External Agencies

DPI proposes a subcontract with the University of Wisconsin-Madison to support joint work on Outcome 4. A detailed breakdown of estimated costs for this contract is included in the Budget Justification. Although we will be working closely with Hilary Shager at the Institute for Research on Poverty on the development of the school-level poverty measure, her support will be covered by the supplemental funds awards for this work and therefore, is not included in the current subcontract estimates included in this proposal and budget narrative.

DPI's new project manager will be responsible for attending all REL project meetings and the bi-annual WERAC sessions in order to monitor the progress of this subcontract. The project manager's oversight will be facilitated by the close working relationships we have already developed with the researchers in this proposal as well as physical proximity of our offices (just over a mile apart in downtown Madison).

(E) STAFFING

DPI Key Staff

Our proposal calls for the support of a number of key personnel both within DPI and at the University of Wisconsin-Madison. These persons are leads for each of the respective Outcomes. The Project Manager role is to be funded through the grant and will work across all project Outcome areas.

Kurt Kiefer, Assistant State Superintendent for Libraries and Technology

Kurt has served as the division administrator for the Division of Libraries and Technology since 2010. His role includes that of chief information officer (CIO) for DPI. In that time he has overseen the completion of work under two SLDS grants, including Wisconsin's SLDS 2009 and 2015 grants. Additionally, he has worked closely with external stakeholders to build ongoing state support for DPI's data initiatives including successful initiatives to secure two new streams of state funding to support the SLDS, WISEdash, WISEdata, and WISELearn. Kurt will serve as the overall executive sponsor of this project. He will work to identify key internal and external stakeholders as well as manage budget expenditures and liaison with federal grant coordinators as necessary.

Dan Retzlaff, Applications Development Team Director

Dan is the Director of the Applications Development and Management team under the Division of Libraries and Technology. Dan has 20 years of experience as a professional working in IT - Applications Development in both public and private industries. He worked as a software engineer and development team lead for 13 years, and has been serving as the Director of the Applications Development team since 2012. As the Director of the Applications Development Team, Dan is responsible for six individual scrum teams and serves as the organizations Agile/Scrum coach in which he helps teams advance in their scrum maturity and product delivery goals. The WISE System product suite is one example of the systems developed and maintained under Dan's direction. Dan will be responsible for assigning SLDS grant project work to scum teams, ensuring product deliverables and outcomes goals are met.

Melissa Straw, Data Warehouse and Decision Support (DWDS) Team Director

Melissa is the Director of the DWDS Team at DPI. With over 17 years experience managing and leading large-scale data warehouse and business intelligence projects, Melissa is an expert at delivering data products that improve decision making. She has spent the last seven years overseeing a team in charge of building and expanding the statewide WISEdash Data Dashboard and Data Warehouse solution. Schools and districts use WISEdash for improvement planning, early warning identification, and snapshot and data quality reporting. Melissa is also responsible for meeting federal and state reporting requirements, as well as maintaining the public-facing dashboard. Melissa has focused expertise in implementing proven organizational data governance and data quality solutions. As part of the IT Management team, Leadership Team, and the WISE Steering Committee, Melissa will be responsible for collaborating with key stakeholders and making key decisions regarding the grant. She will assign work to the DWDS scrum team ensuring product deliverables and outcomes goals are met. She will also work with Dr. Annette Smith, the Technology Services Team Director, on privacy and security.

Annette Smith, Technology Services Team Director

Annette is the Director of the Technology Services Team at DPI. She works in collaboration with the IT team to fully support the infrastructure needed to run the state's data systems. This includes both on-premises and cloud-based resources. Her background includes 10 years as a district technology director, five years in private industry, and time as a professor. Her primary role in supporting the SLDS grant will include maintaining and monitoring data privacy, data security, and cyber security for the data systems.

Gabrielle Koontz, Customer Services Team Director

Gabrielle is the Director of the Customer Services Team at DPI. In collaboration with her team and other IT staff, she coordinates data submission best practices, data quality outreach efforts, and training and user documentation. She has a background in technical writing and

communications and, using these skills, ensures that the WISE suite technical developments are explained in a digestible way for schools and vendors in our state. Prior to her time at DPI, she worked as a software trainer and English Instructor. High quality data and user understanding are of the utmost importance for Gabrielle and the Customer Services Team.

Tricia Collins, School Management Services Team Director

Tricia is the Director of the School Management Service (SMS) Team at DPI. She has served as the SMS director for the past six years and prior to that was a department school administration consultant for the private education choice programs for 13 years.The SMS team administers the public and private education choice programs, including public school open enrollment and the four private education choice programs. In that role, Tricia oversees the development and operation of the OAS and OPAL application systems. The SMS team also administers the financial management and accounting of federal and state grants to school districts, private schools, child and adult day care programs, non-district charter schools, cooperative educational service agencies, county children with disabilities education boards, and other service providers. Tricia will serve as the project liaison with staff on the integration of DPI's Education Choice Systems (Outcome 2).

Daniel Bush, School Financial Services Team Director

Daniel is the Director of the School Financial Services Team (SFS) at DPI. SFS administers over $5 billion in state school aids and is responsible for financial data collections and reporting, including student membership counts. Prior to assuming the role of Director in May 2019, Daniel was a consultant on the SFS Team for two stints totaling five years, and also spent a year with the department's Office of Educational Accountability working on the creation of Wisconsin's state school accountability system. He is licensed as a school business manager and worked at a school district for two years. Daniel will serve as project liaison and lead subject matter expert on the Membership Collection (Outcome 3) and will also consult on the Education Choice Systems (Outcome 2) component of the project.

Carl Frederick, Research Analyst

Carl is a Research Analyst on the Policy and Budget Team at DPI. For the past three and a half years, Carl has managed the Department's internal research agenda and has been chair of the Wisconsin Education Research Advisory Committee which advises the state superintendent on emerging issues in education research that are relevant to Wisconsin's students in K12 and beyond. Carl also acts as a liaison with the agency's external research partners and other researchers interested in work related to our research agenda. This task includes working with the data governance coordinator, data stewards, and the WISE Steering Committee to review confidential data applications and, if approved, provide well-documented data to the researcher. Carl will take an active role in organizing work done by the REP working group (Outcome 4), including developing meeting agendas (Deliverable 4.1) and assisting program areas within DPI

in prioritizing and formulating the rapid response projects (Deliverable 4.2). He will also work with our partners at IRP on the school level poverty indicator project.

University of Wisconsin-Madison Key Staff

Annalee Good, Assistant Scientist - Wisconsin Center for Education Research (WCER), Co-Director of the Wisconsin Evaluation Collaborative (WEC), and Director of the WCER Clinical Program, UW-Madison

Annalee is co-Principal Investigator (co-PI) on an ongoing study of digital tools in K-12 education, and supports many youth-serving organizations through culturally responsive evaluation in topics such as tutoring, personalized learning, community schools, and ensuring equitable access and outcomes in advanced learning opportunities. She has published and presented numerous papers on topics including public contracting for digital instructional tools, the nature of the instructional landscape in out-of-school-time tutoring, the role of tutoring in school reform, and the role of K-12 teachers in the creation of public policy. Annalee also is the co-lead of the Wisconsin chapter of Scholars Strategy Network. She was an 8th grade social studies teacher before earning her master's and doctoral degrees in Educational Policy Studies from UW-Madison. In addition to participating in the REL workgroup and WERAC meetings, Annalee will supervise, with Percival Matthews, the WCER Clinical Program students matched to practitioner- and DPI-identified rapid response research and evaluation projects (Outcome 4).

Steven Kimball - Co-Director of the WEC, within the Wisconsin Center for Education Research, UW-Madison

Steve helped initiate, plan, and launch the WEC project. Steve is also a senior researcher with the Consortium for Policy Research in Education. He is Principal Investigator for the WCER team that is supporting DPI in the development and implementation of the state Educator Effectiveness System. For 10 years, Steve served as a content expert for the technical assistance team serving the U.S. Department of Education's Teacher Incentive Fund. Steve has published numerous articles, book chapters, and policy briefs on teacher and principal evaluation, compensation, and other human resource management issues. Steve was the co-PI of a 2005-2007 study funded by the Institute for Educational Sciences on performance evaluation of principals. Additionally, he served as PI for a multi-year evaluation of the Chicago Community Trust Education Program. Before completing his graduate studies, Steve held legislative analyst positions in the U.S. House of Representatives, the U.S. Senate and the Texas State Office in Washington, D.C. Steve completed his Ph.D. from the UW-Madison Department of Educational Leadership and Policy Analysis in 2001. Steve will serve as a member of the REL workgroup and WERAC (Outcome 4).

Bradley Carl - Assistant Scientist and Co-Director of the WEC, within the Wisconsin Center for Education Research, UW-Madison

Brad's current work focuses on evaluation of programs and initiatives at the PreK-12 level, as well as the design, implementation, and evaluation of state educator effectiveness and school accountability systems. He has worked extensively with the Milwaukee Public Schools since 2007 on program evaluation and the development of postsecondary tracking measures, education/health outcomes, and early warning indicators. Prior to joining WCER, Brad worked for the Office of Educational Accountability at DPI, the Center on Education and Work at UW-Madison, and the American Institutes for Research in Washington, D.C. He holds degrees from Hamline University (B.A., International Studies and History) and Michigan State University (Ph.D., Sociology-Urban Studies). Brad will serve as a member of the REL workgroup and WERAC (Outcome 4).

Eric Grodsky - Professor, Sociology and Educational Policy Studies, University of Wisconsin-Madison

Eric's research is largely focused on inequality in higher education, including work on affirmative action, socioeconomic inequalities in college attendance and completion, changes in the role of merit in these processes over time and the role of information about their college readiness in high school students' college preparatory behavior. Eric is also currently involved in work focused on the effects of college remediation on persistence and time to degree, as well as research on the determinants of entry into and persistence in science, technology, engineering and mathematics fields of study at baccalaureate institutions. Eric's work has appeared in American Journal of Sociology, American Sociological Review, Sociology of Education and the Annual Review of Sociology among other venues. In addition to participating in the REL workgroup and WERAC meetings, Eric will supervise students from the Interdisciplinary Training Program who are matched to practitioner- and DPI-identified rapid response research and evaluation projects (Outcome 4).

Hilary Shager - Associate Director of Programs and Management, Institute for Research on Poverty (IRP), UW-Madison.

Hilary oversees day-to-day operations of IRP, facilitates research and data sharing contracts with Wisconsin state agencies, and conducts social policy research. From 2014 to 2018, she served as the Associate Director of the UW-Madison La Follette School of Public Affairs, responsible for administrative oversight of the school's activities; educational programming; and teaching professional development, evidence-based policymaking, and program evaluation. While at La Follette, she also directed the Wisconsin Family Impact Seminars and Committee Connect outreach programs with the Wisconsin State Legislature. Previously, she worked as a research analyst at the Wisconsin Department of Children and Families, where she designed and conducted evaluations of the state's early care and education, child welfare, Temporary Assistance for Needy Families (TANF), and child support programs. She is a graduate of

UW-Madison, where she received her Ph.D. in public policy with a minor in education sciences, and Master of Public Affairs. Prior to her graduate studies, she taught high school and middle school language arts and social studies in Fort Atkinson and Madison, Wisconsin. Hilary will serve as a member of the REL workgroup and WERAC (Outcome 4). In addition, she will assist the Project Manager in the requirements for participation in the development of the school-level poverty measure.

Percival Matthews - Associate Professor in the Department of Educational Psychology, University of Wisconsin-Madison

Percival's research is on human mathematical cognition with hopes of finding effective applications to pedagogy. His research interests are mathematical cognition with two primary goals: to understand some basic underpinnings of human cognition, and to find ways to leverage this understanding into effective pedagogical techniques that can be used to impact the life chances of everyday people. At root, Percival's research investigates how symbol systems support mathematical cognition in order to gain insights into a) underpinnings of human mathematical thought and b) key mechanisms governing human symbolic capacities. His research currently consists of three interrelated strands: (1) investigating children's understanding of the equal sign; (2) investigating how humans imbue symbolic numbers with a sense of magnitude; and (3) examining how alternative representations of to-be-learned content can affect learning and transfer of that content. In addition to participating in the REL workgroup and WERAC meetings, Percival will co-supervise the WCER Clinical Program students matched to practitioner- and DPI-identified rapid response research and evaluation projects (Outcome 4).

(F) DATA SECURITY AND PRIVACY

All DPI deliverables associated with SLDS outcomes will meet FERPA requirements and highly prioritize student data privacy and confidentiality. DPI's technical security systems are audited yearly and meet both the state and national standards including the NIST Cybersecurity Framework.[7]

DPI's data governance structure is clearly defined and continuously monitored through the existing platforms. This structure includes training for DPI staff as well as support and training for those who may access data elements. The process for accessing data is also defined within this structure.

The Internal Data Access Request process described above will be used for application and database access requests. All requests require privacy training and approval before access is granted at the SEA level for our WISE applications. ASM/WISEsecure will continue to be used at the local level for granting district and school access to secure systems. Documentation on our Secure Home web page describes the process for requesting access as well as each secure

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[7] A copy of the NIST Cybersecurity Framework is included as part of Appendix C.

application, with roles and descriptions describing data and features that each role can access. Redaction will continue to be used on the aggregated data on the WISEdash Public Portal to protect the privacy of students.