West Virginia Residency for Inclusive STEM Education (WV RISE)

Contents

Introduction

The 2009 Carnegie Foundation *Preparation for the Professions Program* study revealed that teachers receive less professional preparation than clergy, engineers, lawyers, doctors, or nurses. As a consequence, many novice teachers leave the classroom before developing the professional skills necessary to help students learn to their potential. Approximately one-third of new teachers leave the profession within five years (Darling-Hammond, 2003; Gray et al., 2015; Hong, 2012; Weale, 2016), costing districts billions of dollars (up to [redacted] per teacher who must be replaced) and contributing to low teacher morale and disruptions in student learning.

The **West Virginia Residency for Inclusive STEM Education (WV RISE)** partnership will address the needs of novice teachers through an innovative residency and comprehensive induction program. WV RISE will meet the requirements of the *Partnership Grants for the Establishment of Effective Teaching Residency Programs* **Absolute Priority 2 – Partnership Grants for the Establishment of Effective Teaching Residency Programs** by implementing a high-quality teaching residency program as defined in Federal Register Volume 87, No. 38 for the high-need subjects of math and science in grades 5-12, as identified by high-need local education agencies (LEAs) in West Virginia, a state that has not previously received a TQP grant. The WV RISE partnership will produce **three cohorts** with 12, 15, and 18 residents, respectively, for a total of 45 new teachers who will commit to serving as math or science teachers in their sponsoring districts for a minimum of three years after completion of their year-long residencies. They will earn a Master of Arts in Teaching (MAT) degree by completing a 15-month, 36-credit program. While earning their degree, residents will complete a full-year residency in their sponsoring district under the guidance of a highly skilled mentor and expert coach. Upon successful completion of the residency, residents will complete state certification within one year of graduation and will be employed in a school where the district will also provide two years of induction support, including mentoring and ongoing instructional coaching.

The WV RISE Partnership: A Shared Purpose

The WV RISE partnership encompasses the expertise of two universities (Marshall University (MU) and West Virginia State University (WVSU, which is one of only two Historically Black Colleges/Universities in WV), a state nonprofit (the June Harless Center for Rural Educational Research and Development [JHC]), a national nonprofit (the Southern Regional Education Board [SREB]), and multiple West Virginia school districts. The purpose of our partnership is straightforward: To combine our shared goals, capabilities and resources in ways that generate an impactful synergy so together we produce stronger outcomes than the partners could achieve independently. The partnership will facilitate close communication so each partner understands the goals, needs, and constraints of the others and how their own resources can best be used to enhance outcomes for all. For example, the partners have conducted a careful analysis of the hiring needs of participating districts to guide the recruitment of residents so the program will help the partner districts fill vacancies in subject areas/grades where teacher shortages exist and to supply teachers for specific school situations (e.g., schools that serve higher proportions of high-need students).

Through a shared purpose by all partners, WV RISE will also address **Competitive Preference Priority 1 – Increasing Educator Diversity (CPP1)** by recruiting and preparing teachers from underserved populations; **Competitive Preference Priority 2 – Supporting a Diverse Educator Workforce and Professional Growth to Strengthen Student Learning (CPP2)** by supporting novice teachers and mentors who teach math/science (shortage areas in WV high-need schools); **Competitive Preference Priority 3 – Meeting Student Social, Emotional, and Academic Needs (CPP3)** by providing multiple personnel who will support the social-emotional, academic, and financial needs of residents; and **Competitive Preference Priority 4 – Promoting Equity in Student Access to Educational Resources and Opportunities (CPP4)** by providing training and coaching to novice teachers on equitable and inclusive learning strategies for grades 5-12 students. By focusing on these priorities, WV RISE will become part of a comprehensive effort across West

Virginia to increase the number of high-quality teachers, complementing the state's new *TeachWV* campaign (https://teachwv.com/).

A. Project Design (30 points)

A1) WV RISE demonstrates a rationale in WV

The U.S. Bureau of Labor Statistics (2022) projected that each year during the 2020s the U.S. economy will add one million STEM jobs, growing by 11%, compared with 8% for all other industries. STEM jobs are also higher paying, with median pay in 2021 estimated at [redacted] for STEM jobs compared with [redacted] as a median for all non-STEM careers. Middle grades students without exposure to STEM or development of science/math skills will be unlikely to enroll in and even less likely to succeed in advanced math and science classes, computer science classes, and AP and dual enrollment courses in STEM subjects. High school students with lower achievement in math and science are less likely to pursue postsecondary STEM fields (Lichtenberger & George-Jackson, 2013). It is also doubtful that high school students without strong science and math skills will be well-prepared for STEM studies in college.

In a 2016 report prepared by the Regional Educational Laboratory Appalachia, Lochmiller et al. found that from the 2008-09 to 2012-13 school years, approximately 10% of teachers in WV on average left their school district from one year to the next. Of these, very few (0.9%) moved to a different school district in the state. Of teachers with zero years of experience who began teaching in a WV public school in 2008-09, 32% left by 2012-13. WV needs well-prepared math and science teachers if students are to succeed in STEM fields after high school. According to a 2019 Alliance for Science & Technology Research in America report, WV is predicted to have an 11% increase in the number of STEM-related careers from 2018-28, growing to 103,944 STEM-related jobs. Yet WV students underperform in math – only 24% of WV students scored proficient or above on the 2019 National Assessment of Education Progress (NAEP; National Center for Education Statistics, 2019). In 2019, only 21% of all WV students who took the ACT met all 4 college-readiness

benchmarks (ACT, 2019). On WV state assessments, only about 39% of students in grades 3-12 were proficient in math in 2019. Two years later after the start of the Covid-19 pandemic, the proficiency rate dropped 11 points. The WV RISE partners share the conviction that the best way to improve student learning is by improving teaching (Gitomer & Bell, 2016; Hanushek, 2011; Hattie, 2012; Muijs & Reynolds, 2018; Stronge et al., 2011).

A Learning Policy Institute analysis of the teaching workforce in WV identified math and science as areas with consistent teacher shortages (Saunders, 2021). Because the hardest-to-staff subjects are often math and science, when a district struggles to attract teachers, it also tends to struggle in math and science student outcomes, as has happened in our partner districts (see Appendix H: *Achievement Data for Partner Districts*). The findings of the 2015 Programme for International Student Assessment showed that U.S. students attending less advantaged schools received 30 hours less science instruction than their more advantaged peers and scored on average 91 points lower on the exam (OECD, 2016). WV RISE is intended to address that disparity in our partner districts by addressing the shortage of qualified math and science teachers (**CPP2**).

Leaders in four LEAs have pledged support for the WV RISE project – Berkeley, Cabell, Kanawha and Mercer counties. Between 23% and 36% of all families in these school districts qualify for federal benefits (see Table 1 for high-need indicators), which is greater than the state and national poverty rates from the most recent census figures. WV's poverty rate is 15.8%; the national rate is 11.4%. In our partner districts, five middle schools and six high schools serve student populations of which at least 45% qualify for free or reduced price lunch. Recruitment of the first cohort will begin with these districts, which are in the MU service area and have existing relationships with MU. Other districts may be recruited for the second and third cohorts.

At a time when many states are experiencing shortages of teachers for math and science, and novice teachers are leaving the profession at high rates within their first three years of teaching when placed in high-need schools, there is a need to try a new model for preparing teachers. Guha

Table 1. High-Need Indicators of Partner Districts

District	% Families with Food Stamp /SNAP Benefits		% Teachers on Provisional Licenses	
Berkeley	23.2		51%	
Cabell	27.3		13%	
Kanawha	28.2		13%	
Mercer	35.6		4%	
School	**% Students on Free/Red. Lunch**	**% Students of Color**	**% Special Education**	**% Economically Disadvantaged**
Berkeley				
Martinsburg North MS	68.3	42.6	24.1	59.1
Martinsburg South MS	56.5	37.7	18.5	54.3
Spring Mills MS	38.3	22.8	20.2	38.5
Hedgesville HS	38.5	20.8	14.8	33.3
Martinsburg HS	58.7	40.3	17.0	47.7
Spring Mills HS	38	23.2	16.5	30.7
Cabell				
Huntington HS	59.7	24.3	19.1	53.2
Huntington MS	57.1	35.0	20.7	55.6
Kanawha.				
Dunbar MS	51.7	36.4	19.3	64.4
Horace Mann MS	42.2	37.9	15.3	54.6
Stonewall Jackson MS	67.5	53.6	21.7	81.2
South Charleston HS	47.7	30.9	14.7	49.9
Capital HS	45.8	38.8	14.0	54.6
Riverside HS	53.9	9.5	12.1	53.8
Mercer				
Bluefield HS	48.6	30.0	19.5	55.0
Bluefield MS	57.4	31.4	21.5	64.7
Statewide		Unavailable	17.4	46.9

Sources: West Virginia Department of Education; National Center for Education Statistics

et al. (2016) point out that these teacher shortages disproportionately impact schools serving our most vulnerable student populations. Nguyen and Redding's (2018) descriptive analysis of changes in demographics, qualifications, and turnover of math and science teachers from 1988 to 2012 confirms that placement in high-minority schools and unsupportive working conditions are correlated with math and science teachers leaving the classroom at higher rates than teachers in other subject areas — perhaps because math and science teachers have more options for employment outside education. Teaching vacancies in these schools during a time of shortage are often filled by underprepared teachers who then struggle, fail, and leave. As of December 2021, WVDE reported the state faces a shortage of 1,000 certified teachers, up from 700 before the

pandemic, and 20% of beginning teachers leave after the first year, twice the national rate. Recently the WVDE reported that only 33% of 9th grade Math 1 teachers were fully certified, and only 25% of Algebra I teachers. We meet **CPP2** by focusing on the preparation of teachers for critical shortage areas.

The continual churn caused by teacher attrition is costly to districts in terms of student achievement and progress on school improvement. The WV RISE partners are committed to providing all students high-quality instruction that prepares them for success in college, careers, and life. Student learning will not reach the high levels necessary for success in a global economy and a technology-driven physical and social environment unless teachers have a deep understanding of the content they teach and use instructional practices that are proven to engage students in deep learning of content and the requisite cognitive, technical and social-emotional skills. Ensuring teachers have opportunities to develop and grow their instructional expertise requires close collaboration between the university that prepares teachers and the districts and schools where they enter the profession.

The project team theorizes that 1) this problem can be alleviated by teachers who know how to provide high-quality instruction that increases student achievement and interest in math and science; 2) teachers' capacity to provide evidence-based math and science instruction can be developed through professional development (PD) that deepens their content knowledge and ability to effectively implement proven instructional practices such as the BSCS 5E Instructional Model (see Appendix H); and 3) teachers' increased use of evidence-based instructional practices will result in more meaningful learning and higher achievement for students.

Our logic model (see Appendix C) indicates the inputs, activities and strategies, outputs, and outcomes of the WV RISE project, which will result in new math and science teachers in grades 5-12 across West Virginia who are prepared for the challenge and joy of teaching.

A2) Goals, objectives, and outcomes to be achieved are clearly specified and measurable

Table 2 shows the WV RISE program goals, objectives, and performance measures. Table 3 in the Evaluation Plan section includes the measures for assessing each goal and related objectives.

Table 2. Goals, Objectives, and Outcomes

Goal 1: IMPLEMENTATION - Develop and implement the WV RISE teacher residency model, increasing the capacity of project partners to select and prepare highly qualified science and math teachers while using a continuous improvement process to recommend revisions to implementation to maximize effectiveness.	
Objectives	**Outcomes**
1a. Establish a strong recruitment and selection process likely to increase diversity (**CPP1**), reflecting the communities in which residents serve.	1a-1: In years 1-3, WV RISE will recruit a diverse pool of teacher candidates across three cohorts of 12, 15, and 18 well-qualified residents, respectively.
1b. Fully implement the residency program as designed, including wraparound services necessary to prepare, support and retain three diverse cohorts of novice teachers, (**CPP1**, **CPP3**).	1b-1: At least 85% of candidates enrolled successfully complete the MAT program. 1b-2: By the end of their first year of induction, 80% of participants agree that their experience in WV RISE created a positive, inclusive environment that supported their academic, social-emotional, and career-development needs.
1c. Select, prepare and support outstanding mentor teachers to work one-on-one with the WV RISE teacher residents.	1c-1: In years 2-4, the WV RISE partnership will recruit and train 45 math- or science-focused mentors with a 1:1 ratio of mentor:resident. 1c-2: By the end of Year 2, SREB will work with partner districts to develop components of a comprehensive 2-year induction program.
1d. Establish statewide collaboration in support of teacher residency programs.	1d-1: In years 4-5, WV RISE will hold at least 3 networking meetings per year where information and resources are disseminated to various stakeholder groups (e.g., LEA's, teacher preparation programs).
1e. Improve the fidelity of implementation for subsequent cohorts	1e-1: By the end of the first cohort (Y2), WV RISE residency components will be implemented with 80% fidelity; 90% fidelity for Cohorts 2 and 3. (Yrs. 3 & 4)
1f. Develop high-quality, effective partnerships	1f-1: By the end of Year 3, WV RISE will have developed into a high-quality partnership, with avg. score on the PRISM rubric completed by all partners ≥90%
Goal 2: TEACHER IMPACT - Increase the supply of well-prepared novice teachers with a background in STEM fields entering and persisting in the teaching workforce in high-need West Virginia LEAs.	
Objectives	**Outcomes**
2a. Increase the number of candidates successfully completing a rigorous preparation program, resulting in certification and placement within shortage areas of	2a-1: At least 85% of MAT graduates will attain master's level WV Professional Teaching Certification in math/science within one year of program completion **(GPRA 1 & 2)** 2a-2: At least 85% of TQP residents who were enrolled in the MU graduate program in the previous grant reporting period and did not graduate will persist in the program the following year. **(GPRA 3)**

math and science. (**CPP2; GPRA 1, 2, 3**)	
2b. Deliver high-quality induction support, post-residency, through coaching and mentoring designed to meet the needs of novice teachers, including ongoing professional learning. (**GPRA 4 & 5**)	2b-1: 80% of program completers who were employed for the first time as teachers of record in the preceding year by the partner high-need LEA were retained for the current school year. **(GPRA 4)** 2b-2: 75% of program completers will be *employed* by a high-need LEA for 3 consecutive years *after initial employment.* **(GPRA 5)** 2b-3: SREB will collaborate with districts to design and support a two-year induction program resulting in a 10% increase from pre to post in teachers' sense of efficacy based on the *Teacher Self-Efficacy Scale* (Tschannen-Moran & Woolfolk, 2001)
Goal 3: STUDENT IMPACTa- hnprove student achievement in science and mathematics, and increase students' awareness of and interest in STEM careers.	
Objectives	**Outcomes**
3a. The students of WV RISE teachers will meet or exceed proficiency standards on state ESSA assessments in math and science. (**GPRA 6**)	3a-1: The % of students assigned to WV RISE teachers who are proficient on the WV Summative Math Assessment in grades 5-8 will increase 3 ppts per year from baseline (2025) to Year 5 (2027). **(optional GPRA 6)** 3a-2: The% of students assigned to WV RISE teachers who are proficient on the WV Summative Assessment in 5th and 8th grade Science will increase 3 ppts per year from baseline (2025) to Year 5 (2027). 3a-3: For math and science state assessments, the proficiency rate of students assigned to WV RISE teachers will be 5 ppts higher than comparison students in Years 3-5. 3a-4: Students assigned to WV RISE teachers will show significant increases in Quantile scores from baseline (2025) to year 5 (2027).
3b. Students will possess a greater awareness of STEM fields and an increase in their intention to persist in course-taking in math and science related fields in high school.	3b-1: In years 3-5, students assigned to WV RISE teachers (post-residency) will report at least a 10% increase in STEM engagement, and more positive attitudes toward STEM from the beginning to the end of the school year, based on the *S-STEM* Survey (Friday Institute, 2012)

A3) WV RISE represents a comprehensive effort to improve teaching and learning and support rigorous academic standards for students

This project represents a comprehensive effort to improve teaching and learning by increasing and improving the supply of high-quality math and science teachers in grades 5-12 throughout West Virginia.

(1) A **year-long residency** where teachers spend more than 70% of their time with a same-subject mentor, in a classroom that reflects the reality of teaching in the district and school context where they are likely to be hired as full-time teachers.

(2) An **MAT degree** in Mathematics (grades 5-12), General Science (grades 5-12), Biological Science (grades 9-12), Physics (grades 9-12), or Chemistry (grades 9-12), which are aligned to WV standards and the needs of districts serving **high-need students**, resulting in the resident being fully certified as a West Virginia teacher.

(3) **Extensive PD, individualized coaching, and just-in-time support** provided by mentor teachers and all project partners (see Appendix H: *Support for Residents and Mentors*).

(4) A **two-year comprehensive induction program** following the residency, where novice teachers continue to receive support and feedback from mentors and SREB instructional coaches and mentors receive PD and coaching from SREB and JHC.

Further, WV RISE represents a comprehensive effort to improve teaching and learning by preparing grades 5-12 math and science teachers because of 1) a strong partnership that includes two universities and two nonprofits (described in the Introduction and throughout the project narrative); 2) our close adherence to an evidence-based model for designing teacher residency programs, which includes attending to residents' diverse social-emotional, academic, financial, and career development needs (**CPP3**); and 3) the focus on evidence-based instructional practices that impact student learning of WV's rigorous academic standards.

Evidenced-Based Model for Teacher Residency

The Recruitment and Selection of Teacher Residents: Critical to the success of WV RISE is the selection of candidates who are highly qualified, highly committed, have a strong math or science background, reflect the diversity of the school population (**CPP1**), and are a good fit for the community in which their residency will take place. The recruitment and selection process is designed to attract quality candidates by removing traditional barriers from application through course enrollment. This process includes: 1) an attractive package of incentives, 2) sharing program information through multiple types of media with a large pool of potential candidates, and 3) a collaborative selection process that includes two universities (including an HBCU) and two

nonprofit organizations.

The WV RISE **incentive package** is comprised of multiple components that should appeal to a broad range of potential candidates. These components compare favorably with the inducements available for other similar programs, going beyond what is provided by the typical residency program in terms of financial assistance and support for professional learning. Most residency programs offer financial incentives to attract and retain high-quality candidates, but the typical incentives are limited to living stipends, student loan forgiveness, and/or tuition remittance in exchange for residents' commitment to teaching in the district for a specified period of time, typically three to five years (Guha et al., 2017). WV RISE's incentives include the same benefits and salary comparable to that provided to West Virginia first-year teachers; a strong support system during the residency in the form of mentoring, coaching and close supervision by university faculty, mentors, and SREB coaches; a graduate degree; and continued PD and support during the first two years of employment following the residency in a well-designed comprehensive induction program.

Qualified candidates will be recent graduates with a baccalaureate degree or a mid-career professional from outside the field of education with strong content knowledge or a record of professional accomplishment. To identify a sufficiently large pool of qualified candidates, we plan to share program information through diverse methods. These include posting relevant information on the websites of MU, JHC, WVSU, the partner districts, the WVDE, and SREB; and distributing informational brochures and working with the human resources directors of the partner districts to access the recruiting resources they typically use (e.g., job-posting services like Indeed.com). In addition, we will solicit the help of other in-state and out-of-state teacher preparation institutions in posting our advertisements broadly.

Because we believe our recruiting efforts will result in a large pool of qualified candidates, the WV RISE resident **selection process** will be highly competitive, resulting in only the best candidates being selected to become teacher residents. The steps of the process are:

1) Applicants provide the following documentation of their qualifications:
    a. A bachelor's degree from an accredited college/university (GPA of 2.8 or better)
    b. Passing scores on the Praxis CORE Academic Skills for Educators tests in reading, writing, and math
    c. Completion of at least 50% of the content specialization requirements (see Appendix H: *MU MAT Application Requirements*)
    d. A content specialization GPA of 2.8 with a grade of "C" or better for each course
    e. Official transcripts from all colleges/universities attended
2) Applicants **demonstrate strong math or science content knowledge** (a minimum of 18 credit hours) as documented in college transcripts. They must have a degree in the specific content area or meet the content course requirements listed here (see Appendix H: *MU MAT Application Requirements*).
3) Applicants demonstrate **strong oral and written communication skills** (evidence gathered via interviews and Praxis Core).
4) Applicants self-report during interviews on dispositions such as persistence, resourcefulness, understanding of cultural differences, belief of their efficacy for impacting students' academic success and coachability via use of the STAR protocol (situation, task, action, results; Cook, 2009).
5) Data on applicants is reviewed by SREB and MU. The most qualified candidates are screened into the team interview phase of the selection process.
6) Selected applicants are interviewed by a joint partner panel that includes representatives from all partners (i.e., SREB, MU, WVSU, and JHC).
7) District and school administrators in the partner districts interview applicants approved by the panel for acceptance into the MAT program and recommended to the district, **based on district/school hiring needs and goodness of fit with the community** in which each

participating school is based. Applicants not approved for the WV RISE MAT have the option of seeking admission to the traditional MAT program at MU.

8) The final decision about acceptance into WV RISE is based on consensus around joint partner panel recommendations and district/school leader input.

In the recruitment and selection of WV RISE residents we will meet **CPP 1 – Increasing Educator Diversity.** SREB has a recent history of increasing educator diversity through its 2019 TQP project, the Georgia Residency for Educating Amazing Teachers (GREAT). As we are about to begin preparing our third cohort of GREAT residents, we find that 13 of 38 residents (34%) are Black, and 15 of 38 (39%) are people of color. This compares favorably against current demographics for the U.S. teacher workforce, where only 7% of public school teachers are Black, despite comprising 13% of the U.S. population. Because West Virginia is much more demographically homogeneous than GA, we are unlikely to recruit as diverse a group of residents in WV, but we are confident in our abilities to contribute to increased teacher diversity in the Mountain State. Currently 0.8% of WV teachers are Black, and 1.1% are Hispanic. Additionally, in conducting our needs assessment we have found that schools without any Black teachers at all are among the schools with the highest percentages of Black students in the state.

The WV RISE partnership includes WVSU, an HBCU founded in 1891 and located in Dunbar, WV. It serves approximately 3,900 students. Though WVSU has a teacher preparation baccalaureate program, it does not offer a graduate program in education. WV RISE provides WVSU undergraduates in math and science fields an opportunity to enter the education field at the graduate level through MU's MAT program. This partnership is critical to increasing the diversity of the teaching workforce in WV (**CPP1**). Whereas HBCUs comprise only 3% of the nation's colleges and universities, they account for about 50% of America's Black teachers. The WV RISE partnership will use the expertise of WVSU faculty and staff to ensure due consideration is given to applicants from underserved populations.

In addition to targeted recruiting to attract students of color, WV RISE is designed to bring other underserved populations into the teaching profession, including parenting students, first-generation college graduates, military-connected students, and students with disabilities. In both of the first two cohorts of the GREAT program, SREB and GCSU support multiple participants who qualify as underserved students. SREB coaches have the skills and resources to advise parenting students in balancing responsibilities and staying on top of university coursework and residency expectations while also meeting family responsibilities. One GREAT Cohort 1 participant is a current Georgia National Guard member and was deployed for three weeks during Fall 2021, taking him out of his middle school in his first year of teaching. SREB coaches and his mentor teacher provided coaching around classroom management, etc., upon his return to his school. Cohort 3, which begins in Summer 2022, will include an Air Force officer transitioning to teaching. Several other GREAT participants are students/teachers with disabilities. The GREAT partnership has provided them with individualized supports, including helping one participant secure needed medical care.

For WV RISE, all project partners are committed to recruiting and supporting traditionally underserved students. MU and WVSU have committed to hiring a project coordinator to advise applicants during the admissions process, advise residents during the residency period, and assist with wraparound services for residents, particularly those who qualify as underserved students to ensure they complete the program. Students who qualify for SNAP or TANF may also qualify for workforce development support, as teacher certification through the WV RISE program will enable completers to support themselves and their families.

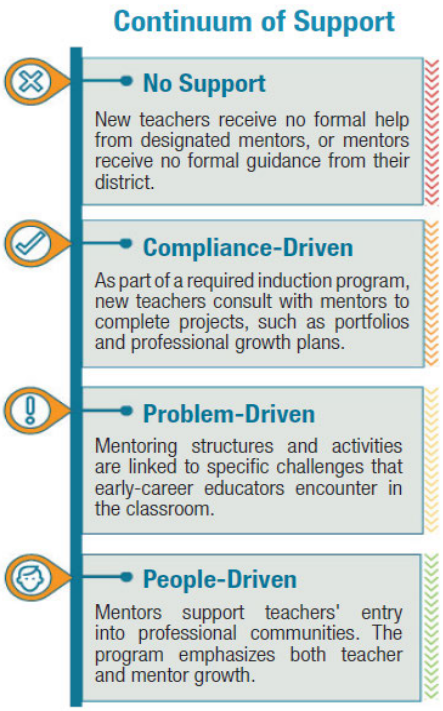
WV RISE will also address educator diversity by offering workshops to prepare applicants for the Praxis Core Academic Skills for Educators (Core) assessment, required in WV to enter a teacher preparation program. For decades entrance exams have had a disparate impact on minorities interested in teaching, keeping many thousands of minorities out of the profession (Fenwick, 2021). WV RISE will provide Praxis Core workshops to potential applicants, which will be developed

collaboratively by MU and WVSU staff and faculty. As a service to our district partners, these workshops will be available free of charge to any prospective teaching candidates, which follows a best practice identified by the University of North Carolina-Charlotte in its efforts to increase teacher recruitment,

Yearlong Residency: WV RISE residents will receive significantly **more hours of clinical experience** (estimated 1,600 hours) than typical teachers-in-training primarily because they will work with a mentor teacher for an entire school year, progressing naturally from an observation while the mentor teacher models effective teaching, to coteaching with gradually increasing responsibilities for the residents as their skills develop, to having the resident take over all teaching tasks for an extended period in the spring. Throughout this experience the mentors guide their residents in reflecting on classroom management and routines, lesson planning, teaching strategies, differentiating instruction, and building positive relationships with students.

A key element of the residency is the use of video to improve the quality of feedback teacher residents receive from coaches and mentors as well as the self-assessment of their classroom performance. Typically, when a university supervisor conducts observations of residents it is part of their official evaluation. Using video observations can disrupt that "high stakes" mentality by changing the conversations between the residents and those supporting them. One research study has shown that when using video observations, "teachers perceived observations to be fairer and were more likely to describe a specific change in their practice resulting from their post-observation conference" (Center for Education Policy Research [CEPR], 2015, p. 4). This research also showed "allowing teachers to choose which lessons to submit did not get in the way of identifying those who were struggling…giving teachers control of the video collection and submission process…reduced teacher defensiveness" (CEPR, 2015, p. 5).

SREB coaches and **mentors** will also view residents' videos and offer feedback, providing residents an individualized experience so they are receiving support that is specific to their needs and the grade level and content area(s) to which they are assigned for that school year. This is detailed in SREB's 2018 publication titled *Mentoring New Teachers: A Fresh Look* (see Appendix H), which describes a continuum of support mentors can provide. This project will go beyond compliance to provide **problem-driven support and people-driven support** increasing the likelihood teachers become highly effective and remain in the classroom for years to come. SREB coaches, MU faculty, and mentors will use the same observation rubric to ensure feedback to residents is consistent (see Appendix H: *Marshall University Observation Tool*). The WV RISE grant will provide each resident with an iPad and Swivl robot to record their lessons throughout their residency and induction periods.



Close Integration of Coursework and Clinical Practice: Close integration of university coursework and the authentic practice setting of the teacher residency is essential if residents are to gain high levels of pedagogical skill. This goal is achieved through a six-step process.

1) Prior to the first course, MU faculty work with JHC and SREB staff to analyze MAT program course content in terms of the high-priority resident practices (Appendix H: *WV RISE Crosswalk of High Priority Resident Practices*).
2) Appropriate course revisions are made, and practices identified as needing additional depth of coverage are targeted during ongoing PD delivered by JHC with input from SREB coaches and WVSU faculty and staff.
3) Residents and mentors review assignments from individual MU courses at the beginning of

each term (when a new course is started) to identify assignments involving clinical experiences and/or aligning with content to be taught in the residency classroom.

4) Residents and mentors embed the identified assignments into their work with students, providing authentic practice for residents as a key component of their preparation.
5) Residents share their learning experiences with MU faculty, their fellow residents, and SREB coaches via online discussions of course assignments and/or small group meetings, obtaining additional guidance and feedback. Video recordings of how the residents taught lessons in their classroom will be reviewed by MU faculty and SREB coaches, who will provide specific feedback to residents on their performance.
6) MU faculty use residents' questions, experiences to refine coursework for future cohorts.

In addition to aligning closely with the clinical experiences of the residency, MU coursework taught by faculty from the College of Education and Professional Development (COEPD) addresses several key teacher preparation content areas. These include preparing new teachers to 1) work effectively with students with disabilities, including how to contribute as a member of individualized education program teams (CISP 510 *Introduction to Instructional Practices for Exceptional Children* and CISP 520 *Introduction to Exceptional Children*); 2) to apply knowledge of human learning in planning, implementing and evaluating instruction (CI 515 *Integrated Methods and Materials for Secondary Education*, EDF 619 *Educational Psychology*, and CI 624 *Advanced Instructional Strategies*); 3) to understand and use research and data to modify and improve classroom instruction (EDF 612 *Educational Evaluation*); and 4) to think critically about the content of the academic discipline and make connections between learner, academic tasks, and engagement in literacy processes (CIRG 644 *Literacy in the Content Areas*).

Residents will also take math and science content courses, which will prepare them to teach WV's **rigorous academic standards**. WV's College and Career Readiness Standards for Science are based upon on the Next Generation Science Standards, which are designed to ensure students

"develop an in-depth understanding of content and develop key skills – communication, collaboration, inquiry, problem solving, and flexibility – that will serve throughout their educational and professional lives" (Next Generation Science Standards, n.d.). The state's math standards are just as rigorous and are "essential for college- and career-readiness in a twenty-first century, globally competitive society" (WVBOE, 2016). They also incorporate the habits of mind of proficient math students, which are comparable to the Common Core State Standards for Mathematical Practice. Math and science content courses will be taught by faculty in the MU College of Science (See Appendix E for letters of support).

Residents will be selected on the basis of math and science coursework taken as undergraduates, and the MAT program provides the required professional education courses and clinical experiences at the graduate level. Because applicants for certification must have completed all classes required for the content area, applicants must have a transcript analysis to determine which content requirements have already been met. Though applicants have a degree in a specific field, they may not have taken all courses prescribed for teachers in their field of study, and additional content classes may be required prior to application and enrollment in the MAT program. The transcript analysis will provide a list of courses needed to complete the content area requirement. When needed, the content courses are taken in the college/department of the academic discipline and taught by faculty within those programs, rather than by COEPD faculty. This ensures that while pedagogy is taught by experts in teaching, the math and science content is taught by professors whose primary expertise is in that content.

SREB coaches and MU and WVSU faculty and staff will also support residents outside of their required courses to ensure they have the content knowledge to pass their respective Praxis content exams required for licensure and to effectively teach that content to students. MU and WVSU faculty and staff will develop a series of workshops designed to assist preservice teachers with passing the Praxis assessments. These workshops could be used to support preservice teachers

beyond the grant period. SREB coaches and JHC staff will provide residents PD workshops throughout the residency year to build pedagogical content knowledge, or the knowledge teachers need to teach specific content (e.g., recognizing not only student mistakes but also their underlining misconceptions), which ensures they can effectively teach WV's rigorous academic standards. SREB coaches will also provide additional support (e.g., small group meetings, individualized coaching) for residents in classroom management, which research indicates is a high need area for novice teachers (Aitken & Harford, 2011; He & Cooper, 2011; Zhukova, 2018). See Appendix H: *Support for Residents and Mentors*.

WV RISE Project Coordinators at MU and WVSU will be dedicated to supporting residents' social-emotional, academic, financial, and career development needs **(CPP3)**. They will advise candidates through the application, admission, and course enrollment process, and will help residents locate wraparound supports if needed. The MU Project Coordinator will also track individual resident's academic performance and progress to ensure they remain on course for successful completion of coursework and the residency. Their job duties are based upon the evidence-based practices outlined in the WCC's Practice Guide *Effective Advising for Postsecondary Students* (Karp et al., 2021), for which there is strong and moderate evidence of effectiveness. For more information about the role and responsibilities of the MU and WVSU Project Coordinators, see Appendix H: *Adequacy of Resources of WV RISE Partners*.

Selection and Training of Mentors: The principal at each participating school plays a key role in the selection of mentors. Principals will use the *Mentor Selection Criteria* form (see Appendix H) to identify quality mentors for the WV RISE program. Formal approval of the principals' recommendations will be made by the Project Management Team following a review of the ratings provided by the principal. Principals will also agree to **relieve mentors of additional duties** (e.g., bus duty) since mentors will have the **extra responsibility of mentoring and guiding residents** for three years (i.e., residency and two years of induction).

Mentors will be selected from grades 5-12 math and science teachers at participating schools, and residents will be placed with in the mentors' classrooms for the entirety of the residency. In smaller schools in great need of math and science teachers the pool of possible mentors may be limited. To work within this constraint SREB coaches will provide tailored support for mentor teachers as needed. To attract the best possible teachers to serve as mentors, a financial incentive of [redacted] during the residency and [redacted] each year for two induction years will be offered.

The June Harless Center (JHC), with support from SREB and WVSU, will **train WV RISE mentors** in a three-day workshop prior to the start of the residency year. JHC was established in 2000 to provide leadership in educational initiatives for rural WV educators and students by addressing educational problems, sustaining school improvement, and offering PD in STEM, literacy, and early childhood education. During this three-day workshop, mentors will a) develop the instructional leadership skills to support residents in creating equitable learning environments for students, b) learn to employ strategic instructional coaching cycles, c) create and maintain collaborative and trusting relationships that advance teaching and learning, and d) provide actionable feedback. SREB coaches will provide follow-up support to mentors through face-to-face and virtual coaching and virtual small-group meetings. Mentors will also attend quarterly follow-up workshops throughout the residency year to refine their skills as mentors for WV RISE residents. During the two years of induction, mentors will participate as cohorts in two workshops each year as well as small group meetings with other mentors. SREB coaches will provide individualized coaching four times per year focused on mentors' observation and debriefing skills. See Appendix H: *SREB Support for Residents and Mentors* for a full list and frequency of PD and coaching for WV RISE mentors and residents.

Comprehensive Two-Year Induction: The goals of teacher induction are to increase retention and improve teachers' skills and self-efficacy, ultimately improving student achievement (Ingersoll, 2012). Research has produced evidence that high-quality induction programs can increase teacher

effectiveness and improve student learning when implemented well (Glazerman et al., 2010; Ingersoll & Strong, 2011; Schmidt et al., 2017). Additionally, Villar and Strong (2007) found that induction programs can return substantial financial benefits well beyond their costs by reducing costs of recruiting, hiring, and orienting new teachers to the district and school culture.

While most districts offer some form of induction or mentoring, it is often a limited set of services that falls short of a *comprehensive* induction — a program of supports for novice teachers or those new to the district that is intensive, structured, and sequentially delivered in response to teachers' emerging pedagogical needs. Comprehensive induction is often delivered through experienced, trained full-time mentors and may also include a combination of school and district orientation sessions, special professional development, classroom observations, and constructive feedback through formative assessment (Glazerman et al., 2010).

Potemski and Matlach (2014) identified four key features of an effective induction program: 1) an orientation to the district and school culture through effective principal leadership and communication; 2) instructional support that includes data-driven conversations between mentors and through peer-based professional learning communities; 3) a set of professional expectations that are aligned with school, district or state standards; and 4) ongoing professional development based on individual teacher needs.

The literature on induction reflects the goals and features of the comprehensive induction process the WV RISE partners will implement for residents who complete the program's year-long residency. Our goal is to provide support for new teachers that helps them successfully enter into the culture and context of the schools in which they are beginning their teaching career, responds to their pedagogical needs, bolsters their confidence in their ability to teach, and assists them in continuing to grow their instructional expertise and professional identity. This model of induction ensures that they have a positive impact on student learning from the beginning and, as a consequence, are satisfied enough with their work and workplace that they remain in their schools

and in an education career for the long haul. Our concept of *induction* is drawn from the work of Fulton et al. (2005): induction is a system of supports, people, and processes that are all focused on assuring the novice teachers become effective in their work. The following paragraphs provide descriptions of 1) the structures for planning and implementing the comprehensive induction process, 2) the role of each partner in implementing the induction process, and 3) the focus of the supports new teachers will be given during their induction.

The comprehensive induction process for WV RISE teachers will build on the foundation of math and science content and pedagogical coursework, the strong collaborative relationships the partners develop during the project planning year and residency, and the new teachers' extensive classroom practice during the residency so that the new teachers experience a seamless, coherent system of support and professional learning throughout their early career years. The professional growth plan prepared by the resident, mentor, and SREB coach at the end of the residency will be the launch pad for the new teacher's induction and will be updated at the end of each induction year by the novice teacher and the school's New Teacher Induction Team (NTIT). Induction will begin with novice teachers attending SREB's Making Schools Work Conference the summer after their residency. SREB and JHC will provide scheduled and just-in-time support to residents and mentors during the school year. MU and WVSU faculty and staff will continue to serve as advisors and ongoing resources to new teachers and mentors during induction, providing feedback from observations when requested by the new teacher or mentor.

Beginning in project year 2, representatives from all project partners will begin working with each school hosting a resident to form a school-level New Teacher Induction Team (NTIT) and develop or revise an induction plan based on research and criteria developed by the WV RISE Project Management Team. The NTITs will be comprised of the principal; school-based specialists/instructional coaches for math or science; the new teacher's assigned mentor teacher; and a district administrator in charge of teacher development. During induction, WV RISE graduates

will receive at least six coaching visits per year by SREB coaches (combination of in-person and virtual) and meet at least eight times per year in small groups, remaining in cohorts. Mentors will meet with residents at least weekly during induction. Elements of the induction process are described in detail in Appendix H: *WV RISE New Teacher Induction Process*.

Financial Support in Exchange for Commitment to Teach: A study of residency programs compared the resident stipend to the average salary for first-year teachers in six districts (Silva et al., 2014). Those salary data, which are for 2011-12 (in one case 2012-13), show the living stipend in the 12 programs averaged 43% of the average first-year teacher's salary, with the smallest stipend 22% of the average salary and the largest 66%.

The **living stipend** in WV RISE equals 100% of a first-year teacher's salary and benefits, which is approximately [redacted] for the resident salary and [redacted] to the district to cover a portion of the benefits, taxes, and retirement paid for by the district). Following the residency year, residents will complete the certification process and become teachers of record in their sponsoring districts. Residents will commit to serving as a teacher in their sponsoring district for a minimum of three years following their residency. **Residents who do not fulfill this commitment will be required to repay any stipends** to the partnership, which will be used to carry out the additional activities consistent with the purpose of the WV RISE program.

Emphasis on Evidenced-Based Instructional Practices

To ensure WV RISE residents are equipped with the most effective instructional practices, we reviewed the current knowledge base for math and science-related teaching practices, including the recommendations in *IES Practice Guide Improving Mathematical Problem Solving in Grades 4 – 8* (Woodward et al., 2012) and others, and selected practices we considered the most essential for novice teachers to master. We refer to these elements as *high-priority resident practices*. We created clusters of related practices to populate the *WV RISE Crosswalk of High Priority Resident Practices* (Appendix H), which we will use to review the content of each course in MU's MAT in

Mathematics, General Science, Biological Science, Chemistry, and Physics for the purpose of identifying where each practice is addressed and determining where course content and assignments should be revised to ensure residents learn and have sufficient opportunities to apply these essential elements of quality instruction.

The crosswalk is organized into clusters that were drawn from the National Center for Teacher Residencies' (NCTR) research brief *High Priority Resident Practices: Six Key Practices to Prepare Teacher Candidates for Effectiveness* (2018). Within the first cluster, there are multiple sets of related instructional practices. The first set represents widely applicable teaching strategies derived from the recommendations of the IES Practice Guide *Organizing Instruction and Study to Improve Student Learning* (Pashler et al., 2007), which includes spacing opportunities for students to work with targeted content, using concrete examples to illustrate key concepts, and using prompts that encourage students to pose and answer *deep-level* questions on content. Another cluster lists eight traits of high-quality assignments. These include aligning assignments with standards and requiring students to engage in higher cognitive demand tasks. The primary source for this cluster was Education Trust's *Checking in Update: More Assignments from Real Classrooms* (Dabrowski, 2016).

The crosswalk also includes science and engineering practices drawn from Bybee (2011) and math practices developed collaboratively by the National Governors Association Center for Best Practices and the Council of Chief State School Officers (2010). The science and engineering practices include planning and carrying out investigations, constructing explanations, and designing solutions. The goal of using these practices is to provide students with practice with the strategies utilized by professionals in STEM disciplines. They are effective instructional strategies and contribute to building students' interest in STEM careers and align with WV's rigorous science standards. The math practices define how mathematically proficient students reason through mathematical situations, communicate mathematically, and justify their solutions.

Through this project, residents will also learn how to embed research-based practices that promote **equity and adequacy in resources and opportunity** for all students, especially those from underserved populations, into their instruction, assignments, and assessments (**CPP4**). MU coursework will prepare them to understand historic and current inequities in education provision and outcomes in WV. All WV RISE residents will take either ED 665 *Sociology of American Schools* or ED 615 *History of Education in the United States*, which will help residents better understand the origins of inequities in American schools and how those inequities act as barriers to student learning and achievement. When teachers understand and appreciate underrepresented students, those students are given more opportunities for higher-order thinking and academically rigorous instruction (I et al., 2020; Hunter et al, 2019). MU coursework will also include an emphasis on instructional strategies that can improve outcomes for underserved students, including disciplinary literacy (CIRG 644 *Literacy in the Content Areas*), which promotes equity for underserved students as literacy is the foundation of learning (Kazakoff, 2021); two courses devoted to teaching residents how to address the needs of students with disabilities (CISP *510 Introduction to Instructional Practices/Exceptional Children* and CISP 520 *Introduction to Exceptional Children*); and using technology to enhance student learning (CIEC 534 *Applications Software in the Classroom Curriculum Area*).

Coaching and PD provided by mentors, SREB coaches, and JHC will also build residents' ability to implement evidence-based instructional strategies that Hattie (2009) describes as having effect sizes in the *zone of desired effects* ($d \geq 0.4$) related to improving student achievement, including how to 1) provide students' meaningful and effective feedback ($d = 0.73$), 2) build positive relationships with students ($d = 0.72$), and 3) designing learning experiences that heighten engagement $d = 0.62$).

A4) WV RISE reflects up-to-date knowledge from research and effective practice

The design of WV RISE reflects current knowledge from research and effective practice (see Appendix H: *WV RISE Research-Based Components*). Specifically, the project design aligns with seven of the design features that distinguish effective residency programs from most traditional teacher preparation and alternative certification programs identified by Guha et al. (2016; see Appendix H: *Crosswalk of WV RISE Design with Effective Residency Features*).

- Strong district-university partnerships
- High-ability, diverse candidates recruited to meet specific district hiring needs, typically in fields where there are shortages
- A full year of apprentice teaching under close supervision
- Coursework about teaching and learning tightly integrated with clinical practice
- Carefully selected and well-trained mentors who coteach with residents
- Ongoing mentoring and support for graduates
- Financial support for residents in exchange for a 3-year teaching commitment

While the greater length of clinical experience adds value to the residency, it is the focus on "regular, systematic opportunities to **practice** essential aspects of teaching, so that they may gain the necessary repertoire to teach students in ways that support their learning" (Peercy & Troyan, 2017, p. 27) that contributes significantly to the research-based design of WV RISE. MU faculty and JHC staff will work jointly to ensure **high-priority resident practices** are thoroughly infused into MAT coursework and that residents have multiple opportunities to employ each practice in authentic lessons and receive feedback on their performance. See Appendix H: *WV RISE Crosswalk of High Priority Resident Practices* for a crosswalk that will be used to align MAT courses to high priority residency practices identified by NCTR (2018).

Our focus on these high-priority practices is based on what we have learned from the last half-century of research on teacher preparation. While competency-based teacher education (when

research was grounded in a behavioral model of learning) and case-based methods for teacher education (as researchers shifted their focus from teachers' behaviors to teachers' thinking and knowledge) were attempts to better prepare teachers for the complex task of teaching, neither successfully attended to what Kennedy (1999) labeled the *problem of enactment*, or the gap between what new teachers can consider and what they are able to do. The move toward high-priority practices is an attempt to weave together novice teachers' development of meaningful knowledge about teaching with their capacity to *enact* effective teaching in the classroom. In WV RISE we address the problem of enactment by ensuring residents learn to apply practices that are essential to the work of teaching, and which novices can learn to enact in their early years – a central purpose of WV RISE.

Another key aspect of the residency is that it uses a **cohort model.** Members of the residency are scheduled to take the same classes at the same times, and will become used to working with each other, collaborating together, and supporting each other. The establishment of long-term professional relationships is linked to both persistence and effectiveness in teaching, and WV RISE is designed to inculcate that from the beginning (Berry et al., 2008). The residents are likely to develop interpersonal relationships, which can add to their sense of belonging and inclusion (**AP2, CPP3**) (Ferguson & Brown, 2019).

WV RISE also emphasizes **evidenced-based instructional practices** as described in Section A3.

A5) Performance feedback and continuous improvement are integral to WV RISE

WV RISE will use short cycles of Deming's *Plan-Do-Study-Act* (PDSA) as the building blocks of a comprehensive improvement process that will enable us to assess the impact of each program component and continuously refine the design of the residency preparation model (Blasé & Fixsen, 2013; Deming Institute, 2022).

- **Plan**: State objective/questions, plan to carry out the cycle, and plan for data collection.
- **Do**: Carry out plan, document problems and unexpected observations, and begin analysis.
- **Study**: Complete the analysis of the data and summarize what was learned. "*Outcomes are monitored to test the validity of the plan for signs of progress and success, or problems and areas for improvement*" (deming.org)
- **Act**: For the next cycle, what changes are to be made?

With these cycles, project partners can analyze relevant data and refine project processes throughout the grant period, ensuring a quality learning experience for residents and their mentors. Adjustments to project components can be made quickly to address the needs of current participants and revised from year to year as needed to ensure future cohorts experience a quality residency and induction. The implementation of three cohorts allows for successive refinement and improvement over iterations.

This type of short-cycle formative evaluation provides multiple benefits (Leis & Shojania, 2016). These include:

1. Efficient use of data—collecting just enough to inform the best action forward.
2. High "return on failure ratio" (valuable lessons learned with minimal resources invested).
3. Recognize necessary refinements to the intervention promptly.
4. Anticipate what might go wrong during implementation of the next step or phase.
5. Increase confidence the intervention will produce improvement.
6. Engage stakeholders in development of the intervention.
7. Minimize resistance when changes are implemented.

Three groups will monitor implementation of the WV RISE project – an Advisory Committee, a Project Management Team, and an Implementation Team. The roles and responsibilities of these groups are detailed in Section D2 of this proposal.

A6) WV RISE will build capacity and yield results that will extend beyond the period of Federal financial assistance

The WV RISE partners are dedicated to supporting WV in an ongoing comprehensive effort to successfully recruit, induct, support, and retain quality teachers. The WV RISE program will serve as one component in the statewide mission of attracting, promoting, supporting, and retaining new teachers. WV RISE aligns with and advances the WVBOE yearlong Residency Model, which began implementation in Fall 2021 in at least one content area in all WV Educator Preparation Programs (EPPs). WV universities must implement the Residency Model in all content area EPPs by Fall 2024. The yearlong clinical embeds the resident teacher in the school, district, and community as they work beside a licensed teacher utilizing a coteaching model for educator preparation and PK-12 student achievement. WVDE also utilizes the *TeachWV* website to recruit and support new teachers.

The WV RISE will have long-term outcomes for partner districts. WV RISE will not only increase the diversity of the teachers in these districts, but it will also increase the quality of teaching and learning as described in Section A3 of this proposal. The districts will also use their improved induction plans beyond the grant period to support not only WV RISE novice teachers but also other new teachers to their districts.

The programmatic changes to the MU MAT program that are described in other sections of this proposal will improve the quality and output of the MU MAT program, but they are not sufficient to address the numerous policy and practice hurdles that limit a state's ability to attract and retain excellent, diverse teachers. Policy changes must accompany programmatic changes because current policy places critical limits on the profession in four key areas: limiting entry pathways, licensure, teacher supports and compensation structures (Diliberti et al., 2021; Ingersoll et al., 2019; Loewus, 2021).

SREB has experience in helping states create action plans for comprehensive teacher workforce

policy solutions that help elevate the teaching profession through an Education Human Capital Roundtable strategy. To help West Virginia, we propose to hold a roundtable with members representing state boards, commissions, agencies, educators, advocates and legislators charged with improving teacher recruitment, preparation, and building the teaching pipeline. As in other states SREB is working with, SREB will help the WV roundtable hold challenging conversations to understand the state's particular policy barriers and how to innovatively solve them, provide customized research, and facilitate in-state and virtual convenings over a period of one or more years.

Supporting policy change in teacher recruitment, preparation, and retention through WV RISE activities as described above will extend the impact of the project across the entire state and well beyond the timeframe of the 2022 TQP grant, building capacity and ensuring all teacher preparation institutions, districts and classrooms benefit from this investment.

B. Quality of the Project Evaluation (20 points)

The plan for evaluation embedded in this project includes both an implementation study and an impact study. Analyses for each are described under separate headings below. [redacted] and the team at Magnolia Consulting will lead the external evaluation. As Magnolia's Director of Research and Evaluation, [redacted] manages and guides a large portfolio of Magnolia's research and evaluation work, with responsibilities including strategic and fiscal planning, organizational capacity building and leadership, and project oversight. She is a certified What Works Clearinghouse (WWC) reviewer and is currently serving as Co-PI on an IES grant with SREB as well as external evaluator on SREB's 2019 TQP grant (see Appendix D for her resume and Appendix H: *Adequacy of Resources of WV RISE Partners* for more about [redacted] expertise). Magnolia, headquartered in Charlottesville, Virginia, also supports REL-Appalachia. Team members' proximity to the region also contributes to making this a strong partnership for evaluation.

Observed outcomes are often mediated by the fidelity with which an intervention is implemented so it is extremely important to document and analyze the process (e.g., implementation) along with the expected outcomes (e.g., impact). The implementation study will include analysis of data related primarily to Goal 1 – the fidelity of implementation, and feasibility of the resources developed and refined in Years 1-3. The impact study will focus on Goals 2 and 3, continuing to monitor fidelity of implementation, along with measuring teacher retention and certification, changes in teachers' self-efficacy, and students' STEM achievement and engagement from 2024-25 through 2026-27.

B1) The methods of evaluation will provide valid and reliable data on relevant outcomes.

Implementation Study: SREB and partner organizations are designing a rigorous recruitment and selection process. The project team and evaluation team will collect data on recruitment efforts, avenues through which applicants are sought, and the demographics of the applicant pool for each cohort. (**Objective 1a**) In addition, any WV RISE resident who leaves the program prior to the end of their induction period will be interviewed by a member of Magnolia's evaluation team. This "exit interview" will provide important qualitative information to determine whether reasons for attrition are exogenous or endogenous to the intervention.

Magnolia will document the implementation of the residency, which will include training for residents and their mentor teachers. **Objectives 1b,1c,1d-** This portion of the evaluation is based, in part, on Guskey's (2002) model for the evaluation of professional development interventions. This model includes five distinct levels designed to "recognize the various factors that influence the relationship" between professional development activities and changes in student outcomes (p.78). For the proposed evaluation, site visits, periodic brief surveys of teachers' and mentors' perceptions, and annual focus groups with teachers and mentors will provide useful formative data for project staff. The evaluation team will summarize data from these data collection efforts in quarterly updates and detailed annual reports. Intervention fidelity measures will be developed in

Year 1 (**Objective 1e**), consistent with guidelines used throughout the field of educational interventions (Nelson et al., 2012). Initial satisfaction ratings will be used to improve program delivery and design. Guskey's Level 4 – "Participant use of knowledge and skills" – demonstrates the importance of documenting and improving upon the implementation of PD content to facilitate participants' effective use of new knowledge and skill. For the proposed evaluation, data collected from classroom observations, mentor feedback and teacher-resident interviews will be used to inform program content and structure. In addition, qualitative data on the "actor-oriented perspective" (Penuel et al., 2014) will be collected to document the instructional decisions teachers make as they apply the PD and adapt the feedback to their classroom practice. In addition, studying "*teachers' unanticipated interpretations of curriculum purposes and structures are useful for redesigning embedded support for teacher learning and PD*" (p.756). Therefore, the proposed evaluation will include data collected via interviews, surveys, and focus groups on how teachers engage with the professional development support, and the fidelity with which they make use of the strategies learned through the MAT program. These data will be reviewed by project partners and used by the project mentors and SREB coaches to design and shape the residency's coaching content and video feedback structure to best meet the needs of the WV RISE teachers. The PRISM rubric (**Objective 1f**) will be used annually to measure the progression of the partnership between SREB, MU, WVSU, JHC and partner districts creating a feedback loop for those implementing the intervention.

Impact Study: *Data sources for teacher impact analysis*

Teachers' training and certification **(Objective 2a, GPRA 1-3)** -- This project will carefully document the progress of WV RISE residents through the MAT program at MU, credits earned and assessment outcomes. **(GPRA 3)** Evaluators will track certification status of each resident to ensure they obtain initial WV Professional Teaching Certification within one year of program completion, and all graduates will seek certification in math or science. **(GPRA 1 & 2)**

Employment retention – **(Objective 2b, GPRA 4 & 5)**- Descriptive statistics will be reported on teacher retention among WV RISE teachers, as well as other novice secondary STEM teachers in these same districts and regions, as well as the state. Personnel records will provide accurate data on which teachers remain in the same school or transfer to another school within the district. Teacher retention data will document 1- and 3-year retention rates for WV RISE residents, compared to district, state and national averages for math and science teachers. **(GPRA 4 & 5)** Though WV RISE teachers will commit to remaining in their district for a minimum of three years as a condition of their participation in the residency, the project team will maintain accurate records documenting cases of attrition and specify reasons when/if any residents leave the program before the end of the residency or during the induction program. SREB's close partnership with WVDE will enable the project team to determine whether teachers transfer to other non-participating schools in WV. Thus, the project will be able to track teacher retention in their school, in their district, and in the profession within the state of WV.

Teachers' Sense of Efficacy **(Objective 2b-3) –** The Teachers' Sense of Efficacy Scale (TSES) is designed to see what creates the most difficulties for teachers in daily school activities (Tschannen-Moran & Woolfolk, 2001). This is an important construct to measure as recent research has shown that "contextual factors such as the teaching resources and interpersonal support available were found to be much more salient in the self-efficacy beliefs of novice teachers (Tschannen-Moran & Hoy, 2007). The evaluation team will administer this widely used, empirically validated survey to each resident at least three times during the grant to measure trends over time: post-residency and at the end of their first year of induction. Where possible within the grant timeframe, evaluators will administer it again to Cohorts 1 and 2 at the conclusion of the second year of induction. Three moderately correlated factors have been consistently found in the TSES: student engagement, instructional practices, and classroom management. All three factors have reliability coefficients > .80.

Data sources for student impact analysis (Objectives 3a & 3b)

The portion of the impact study focusing on student achievement outcomes will utilize a quasi-experimental design. It will include matched comparison teachers (and their students) from within the same district (or region, if district is small) as each of the project's WV RISE participants. MU's close relationships with the larger partner districts of Cabell and Kanawha will facilitate this data access. The quasi-experimental design for the evaluation of the program's impact on student achievement outcomes is expected to meet WWC evidence standards with reservations and Tier 2 ESSA standards for **"moderate evidence**." Each portion of the impact study is described separately below. Data collected will measure domains specified in the evidence review protocol for *Teacher Training, Evaluation and Compensation – Version 3.1* published by the WWC in 2015. This document is a guide for researchers measuring the effects of professional development interventions.

***Student achievement in math and science* (Objective 3a – GPRA 6)**: To examine the impact on student achievement in math and science, evaluators will analyze data from students of WV RISE residents and students of comparison teachers employed in elementary and middle schools. Specifically, evaluators will analyze data from the **West Virginia General Summative Assessment (WVGSA),** which is the state-required annual ESSA assessment. The math portion of this assessment is administered to students in grades 3 through 8, and the science portion is administered to students in grades 5 and 8. The high stakes nature of these tests will ensure their validity and reliability, as well as the integrity and consistency of administration across multiple sites. For both WV RISE and comparison teachers, data will be reported in terms of their students' proficiency levels and scale scores. Because a vertical scale does not exist across grade levels for these WV assessments, and the teacher residents will each be assigned to different grade levels during the induction period, evaluators will calculate *z*-scores based on the state mean and standard deviation for each test and grade level for use in analyses. It is anticipated that WVGSA math scale

scores and scores from district science assessments for the year prior to project implementation will be available for most students of WV RISE and comparison teachers. Evaluators will use these scores to verify that before project implementation, the math and science performance of students of WV RISE and comparison teachers do not differ by more than ¼ of the pooled standard deviation (e.g., Hedges' g <.25). This will establish baseline equivalence in math and science performance and determine whether a statistical adjustment is necessary in the outcome analysis to account for pre-intervention differences in math and science performance between WV RISE and comparison groups in the analytic sample.

As stated above, the comparison group will be comprised of teachers (and their students) who have not participated in the WV RISE program but who are similarly experienced (i.e., novice) to teachers in the program. The evaluation team will monitor **attrition** of teachers, as well as the representativeness of each cluster (**individual level non-response**). To determine the impact of the intervention on student math and science outcomes, evaluators will use two-level hierarchical models (i.e., HLMs for continuous math and science scale score outcomes and HGLMs for binary math and science proficiency outcomes) in years 3-5. To increase the precision of the estimates of program impact on student outcomes, the models will include teacher-level and student-level covariates. Teacher covariates (included at level 2 of each model) will include whether a teacher is in the treatment or comparison group and subject area assignment (math, science or both). Student-level covariates (included at level 1 of each model) will include gender, economic disadvantage status, and student-level assessment scores from the prior year. The WWC review protocol states that if it is "*unlikely the intervention affects enrollment decisions, such as a low-profile teacher induction or PD program*" then **only late joiners pose a risk of bias**. The evaluation will limit the risk of bias from joiners by excluding from the analysis any data collected from a student who joins a treatment/control classroom more than six weeks after the start of the 2024-25 school year (Cohort 1), the 2025-26 school year (Cohorts 1-2) and 2026-27 school year (Cohorts 1-3).

***Students' STEM engagement* (Objective 3b)** - Students of teachers participating in WV RISE will also complete the *Student Attitudes Toward STEM* (S-STEM) survey, which is designed to measure changes in students' confidence and efficacy in STEM subjects, 21st century learning skills, and interest in STEM careers (Friday Institute, 2012). A 2-page document detailing the extensive validity evidence and reliability (i.e., Cronbach's alpha) for each construct ranging from .84 to .91 is provided in Appendix H. The S-STEM survey invites students to give information about their attitudes toward science, technology, engineering, and mathematics subjects, postsecondary pathways, self-assessment of their aptitude in STEM courses, and their STEM-related career interests. T-tests will be used to measure changes from pre to post within students assigned to WV RISE teachers.

B2) The methods of evaluation are thorough, feasible, and appropriate to the goals, objectives, and outcomes of the proposed project

Table 3: Goals, Objectives and Evaluation Methodology

<table>
<tr><td colspan="3">Goal 1: IMPLEMENTATION - Develop and implement the WV RISE teacher residency model, increasing the capacity of project partners to select and prepare highly qualified science and math teachers while using a continuous improvement process to recommend for revisions to implementation to maximize effectiveness.</td></tr>
<tr><td>Objectives</td><td>Formative Evaluation methodology
(PM=performance measure)</td><td>Timeline</td></tr>
<tr><td>1a. Establish a strong recruitment and selection process likely to increase diversity (CPP1), reflecting the communities residents serve.</td><td rowspan="3">PM 1a-1:
*Qualitative analysis of data provided via quarterly project meetings and interviews with WV RISE residents to identify barriers and accelerators to recruitment and implementation.
*Counts of applicants will be tracked to document and support recruitment efforts

PM 1b-1, PM 1b-2, PM 1c-1, PM 1c-2:
*Summaries of qualitative data collected during site visits and observations to document program implementation and mentor support
*Document mentor selection process and collect data on the quality of mentor training through interviews with mentors
*Quantitative (e.g., descriptive statistics and frequencies) and qualitative analysis (i.e., thematic analysis) of data collected through resident and mentor surveys and focus groups</td><td rowspan="3">*Quarterly meetings beginning in Spring 2023 (year 1) through Spring 2025 (year 3)
*Monitoring of program records to track applicant counts (spring, years 1-3)
* Site visits and qualitative feedback from residents and their mentors collected monthly
*Resident and mentor surveys (fall, years 2-4)
*Resident and mentor focus groups (annually, years 2-4)</td></tr>
<tr><td>1b. Fully implement the residency program as designed, including wraparound services necessary to prepare, support and retain three diverse cohorts of novice teachers. (CPP1, CPP3)</td></tr>
<tr><td>1c. Select, prepare and support outstanding mentor teachers to work</td></tr>
</table>

one-on-one with the WV RISE teacher residents.	addressing perceived strengths and weaknesses across multiple cohorts. (Boyatzis, 1998)	
1d. Establish statewide collaboration in support of teacher residency programs 1e. Improve the fidelity of implementation for subsequent cohorts	*PM 1d-1 & PM 1e-1*: *Fidelity index will be created to monitor and measure the quality of the residency and induction program designed in each district. Data will be used to inform project staff about support needed to improve induction program delivery.	*Ongoing monitoring (Years 2-5)
1f. Develop high-quality, effective partnerships	*PM 1f-1*: *PRISM rubric will be used to measure the depth and quality of the partnerships between SREB, MU, WVSU, Harless Center and partner districts. (See Appendix H for further description) *Analysis of data from project meetings	*Baseline PRISM rubric administered January 2023 and follow-up administered annually thereafter *Quarterly meetings beginning spring' 23
Goal 2: Increase the supply of well-prepared novice teachers with a background in STEM fields entering the teaching workforce in high-needs districts in West Virginia.		
Objectives	**Summative Evaluation methodology**	**Frequency**
2a. Using a residency program with a 90% completion rate, prepare three cohorts of 12, 15, and 18 new teachers, respectively. [45 participants selected, 40 completers, 10% attrition]. (GPRA 1, 2 &3)	*PM 2a-1 & 2:* *Document residency completion and attrition rates using transcripts, certification status records, a checklist of required components, site visits and interviews with mentors and project team meetings	*Ongoing review of transcripts, records, and checklist (years 2-4) *Ongoing site visits (years 2-4) *Quarterly project team meetings (years 2-4)
2b. Retention of teachers who have completed the residency program will match or exceed retention rates for novice teachers prepared by traditional programs. (GPRA 4 & 5)	*PM 2b-1 and 2:* *Personnel records will be used to calculate retention rates of program completers compared with regional and district data for all novice teachers entering the teaching workforce *PM 2b-3:* *Administer Teacher Self-Efficacy Scale (TSES) to WV RISE residents at the beginning of their first year, and end of their 1st and 2nd year of teaching to determine if induction program results in increased self-efficacy.	*Annual review of personnel records (years 3-5) *TSES administered beginning of first year and end of 1st and second years of teaching (years 2-5)
Goal 3: Improve grades 5-12 student achievement in science and mathematics, and increase students' awareness of and interest in STEM careers.		
Objectives	**Summative Evaluation methodology**	**Frequency**
The students of WV RISE teachers will meet	*PM 3a- 1, 2, 3, and 4:*	*HLM and HGLM analyses conducted annually,beginning

or exceed proficiency standards on state ESSA assessments in math and science. (GPRA 6)	*HLM analyses of math and science scale scores to compare the performance of students of WV RISE and comparison teachers *HGLM analyses of math and science proficiency levels to determine whether students of WV RISE teachers have a higher likelihood of achieving proficiency than students of comparison teachers. *Descriptive comparison of treatment group's math and science scale scores and proficiency rates across years 3-5	in year 3 (2025) through year 5 (2027) *Descriptive cross-year comparisons conducted in years 4 and 5.
Students will possess a greater awareness of STEM fields and an increase in their intention to persist in course-taking in STEM related fields in high school.	*PM 3b-1:* *Administer S-STEM to determine if, in years 3-5, students assigned to WV RISE teachers (post-residency) report at least a 10% increase in STEM engagement, and more positive attitudes toward STEM, based on the *S-STEM* Survey (Friday Institute, 2012)	*S-STEM administered semiannually (pre/post) in 2024-25, 2025-26, and 2026-27

Table 4. GPRA Performance Measures (PM) included in the evaluation plan

WV RISE Resident COHORT	1	2	3
School Year completing residency	2023-24	2024-25	2025-26
PM 1: Certification/Licensure. The percentage of program graduates who have attained initial State certification/ licensure within one year of program completion.	X	X	X
PM 2: STEM Graduation. The percentage of math/ science program graduates that attain initial certification/licensure within one year of program completion.	X	X	X
PM 3: One-Year Persistence. The percentage of program participants who were enrolled in the postsecondary program in the previous grant reporting period, did not graduate, and persisted in the postsecondary program in the current grant reporting period.	X	X	X
PM 4: One-Year Employment Retention. The percentage of program completers who were employed for the first time as teachers of record in the preceding year by the partner high-need LEA and were retained for the current school year.	X	X	
PM 5: Three-Year Employment Retention. The percentage of program completers who *were employed* by the partner high-need LEA for three consecutive years *after initial employment.*	X	X	
PM 6: Student Learning. The percentage of grantees that report improved aggregate learning outcomes of students taught by new teachers. (post-residency)	X	X	X

C. Adequacy of Resources (30 points)

C1) SREB provides adequate support and resources for WV RISE

The Southern Regional Education Board (SREB) is a nonprofit, nonpartisan organization (501-3c) that provides a variety of educational services to services in all 50 states, including urban and

rural areas, and different learners such as economically disadvantaged, racial and ethnic groups, migrant populations, individuals with disabilities, English learners, and individuals of each gender. Founded in 1948 as America's first interstate compact for education, SREB was formed by Southern governors and legislators who recognized that states working together could achieve more to improve public education than they could alone. SREB is led by a board that includes governors and their appointees (legislators, educators, and other leaders) from the compact states — Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

SREB has sufficient financial and human resources to deliver the services described herein. SREB currently has 111 employees located in 17 states. Seventy-one percent of SREB's employees (79 of 111) hold advanced degrees. SREB is headquartered in Atlanta, GA, and currently carries out school improvement work in 30 states. In the last fiscal year SREB's program revenue exceeded [redacted], and net assets exceeded [redacted]. The Atlanta headquarters is approximately 25,000 square feet, which provides ample space for offices and in-person meetings of up to 40 people.

For more than 30 years, SREB has partnered with states, districts, and schools to identify and implement strategies that engage and empower students to put what they learn in the classroom to work in the real world. SREB helps districts and schools identify barriers to achieving college- and career-readiness goals and take ownership of the strategies and solutions they need to increase the percentage of students who graduate high school college and career ready. SREB school improvement frameworks help schools make successful transitions by aligning instruction with rigorous grade-level standards, using instructional time to meet students' unique needs, and empowering teachers to co-plan instruction and assignments within and across disciplines.

SREB has extensive experience in providing high-quality professional development for K-12 teachers and school leaders that focuses on practices linked to the improvement of student achievement, as well as coaching, planning, and supporting the districtwide implementation of new

instructional practices and large-scale school reform efforts. In WV RISE, SREB will expand its role to include collaborating with MU, JHC, and WVSU to strengthen MU's MAT program. This effort will include a joint analysis of course syllabi to align course content and the high-priority resident practices that reflect what effective math and science teachers should know and be able to do. SREB plans to extend this type of collaboration with other teacher preparation programs and develop a network of universities that are seeking to improve the quality of their programs and the effectiveness of the teachers they produce.

For WV RISE, SREB will serve as the "bridger" organization, facilitating communication across the diverse partner organizations, which Goldring and Sims (2005) found to be central to creating successful structures that promote effective interorganizational relationships. SREB will coordinate the efforts of all project partners, including districts, to ensure each partner provides input into the design and implementation of project components. SREB will also serve as the fiscal and reporting agent for the project throughout the grant period.

SREB Personnel for WV RISE: Each member of the team has a well-defined role and functions well in a team environment. Their background and responsibilities are listed below. The program director and project manager are both experienced in managing large and complex training programs. Resumes are included in Appendix D.

[redacted], *Program Director*, will serve as the Principal Investigator (PI) for WV RISE, overseeing all project activities and managing WV RISE. He will serve as primary point of contact with partners (i.e., MU, districts). A former director of math, and project lead for several multimillion-dollar projects, [redacted] has worked with schools and districts in over 16 states coordinating PD, budgets, and personnel management.

[redacted], *Project Manager*, will oversee day-to-day operations. [redacted] is a senior leadership coach for SREB. Her duties include project management, grant writing, and school improvement coaching with teachers and school and district leaders. During her 10 years at

SREB, she has served countless teachers, coaches, and principals in more than 15 states, leading workshops, school- and districtwide curriculum and instruction reviews, and coaching visits. [redacted] also served as the lead math consultant, coordinating the work of more than 20 instructional coaches and trainers for SREB's Mathematics Design Collaborative work, an initiative funded by a [redacted] Bill and Melinda Gates Foundation grant.

[redacted], *Leadership Consultant*, brings more than five decades' experience in education: 7 years as a classroom teacher; 4 years as principal of Florida's largest elementary school; many years as a consultant, bureau chief and director for the Florida state education agency and the Southeast Regional Vision for Education. While at the Florida Department of Education, [redacted] oversaw all teacher preparation, training, and licensure for the state. For WV RISE, [redacted] will serve as a consultant to district staff and principals for Years 1-2.

Two SREB instructional coaches yet to be determined will directly support residents through workshops, small group meetings, and individualized coaching during the residency and induction years. They will collaborate with JHC and WVSU to develop and enact workshops and will serve as integral members of the Implementation Team. **An SREB mentor coach** yet to be determined will directly support mentors through workshops, small group meetings, and individualized coaching during residency and induction. SREB coaches have substantial experience designing and leading PD, assisting teaching with identifying and addressing problems of practice, and providing virtual and in-person coaching.

SREB Supplies: The supplies outlined in the budget narrative are adequate and necessary for successful implementation of WV RISE. Two laptops will be purchased for SREB coaches, who will use them for regular communication with residents, mentors, and project partners. Laptops will also be used for hosting video conferences (e.g., Zoom meetings) with participants and partners and for virtual coaching with residents and mentors. Supplies also include Swivl and iPads for recording of lessons for virtual coaching. SREB has previously had success using these supplies with the

residents of the GREAT program. SREB will also use the Teaching Channel online platform for virtual coaching visits (see Appendix H*: Virtual Coaching Protocols*).

See Appendix H: *Adequacy of Resources of WV RISE Partners* for details of the adequacy of support and resources of MU, WVSU, JHC, and Magnolia Consulting (external evaluator).

C2) The budget for WV RISE is adequate

Adequate financial resources have been dedicated to support the implementation of WV RISE over the grant period. SREB has a long history of working with LEAs on school improvement and supporting teachers to implement effective instructional practices, ensuring budgets are adequate to cover all expenses and needs. SREB's project director and project manager have worked on multiple large-scale grants and have a proven track record of grant management, project management, achieving results, and ensuring budgets are adhered to for grants and contracted services. Budget items for SREB coaches, MU staff and faculty, JHC staff, and WVSU staff and faculty will ensure residents and mentors receive adequate and appropriate multi-tiered training, coaching, and support throughout the residency and induction years.

The living wage for residents is adequate as it matches the state salary for first-year teachers [redacted] The additional [redacted] per resident will assist districts with expenses incurred by hiring assigned residents as district employees. These expenses include taxes, health benefits, Social Security, and state retirement contributions. Districts will provide in-kind funds to cover the rest of these expenses, totaling an estimated [redacted] per resident. Mentor stipends of [redacted] over three years ([redacted] for residency, [redacted]/year for induction) are adequate and reasonable. Mentors spend time every day during the residency helping mold and shape their resident's identity as an educator, which requires more time during this year than in induction. The mentors will continue to hone their mentoring skills during the induction years by attending workshops, participating in virtual coaching sessions, and practicing their skills by observing their mentees and providing them feedback (see Appendix H: *Support for Residents and Mentors*).

The in-kind contribution is adequate and shows the commitment of SREB, MU, WVSU, JHC, the partner districts, and residents. The in-kind contribution of 10% time of the SREB Project Director will give the partnership access to his expertise in leading a TQP partnership (i.e., GREAT program). SREB also provided in-kind funds through a discounted daily rate for coaches from [redacted] to [redacted]. In-kind funds from MU include personnel time for Co-PI [redacted] and JHC staff, classroom and office space, cash donations, personnel time, and other generous donations (see Budget Narrative).

C3) The costs for WV RISE are reasonable

SREB is aware and accustomed to minimizing costs while working with states and districts, allowing them to utilize multiple SREB services (e.g., coaching, PD workshops) for limited funds. The costs for the WV RISE program are reasonable and within the average awards described in the Federal Register for the 2022 TQP grant. Table 5 represents the budget per year for WV RISE. The total for the five-year grant is [redacted], substantially less than the [redacted] maximum award indicated in the Federal Register.

Table 5. Budget Per Year for WV RISE

Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

The long-term cost of increasing teacher effectiveness is reasonable. "A 2007 cost-benefit analysis that monetized increased teacher effectiveness and examined savings from reduced teacher turnover found that every [redacted] invested in a comprehensive induction program produces a return of [redacted] after five years" (Villar & Strong, 2007, p.15). When taking into account the savings to districts due to aspiring teachers receiving a robust residency model preparation, it also reduces the cost of their preparation.

The costs for SREB support and equipment are reasonable. The discounted daily rate for SREB coaches of [redacted] is substantially less than the daily rate charged by educational consultants who provide coaching and professional learning, some of whom charge as much as [redacted] or more

per consultant. SREB coaches will also provide some support virtually (i.e., coaching and small group meetings), which decreases overall travel costs for the grant. Though supplies (e.g., laptops, iPads, Swivl robots) purchased with grant funds will be current models, vendors have provided reasonable prices for these items. For example, PowerUpEDU provided a discount for the Swivl robots given the number of robots we would order.

C4) SREB and its partners have the resources to operate the project beyond the length of the grant

SREB and its WV RISE partners have committed time, personnel, and financial resources to providing high-quality learning experiences and support services for future teachers in WV and beyond. Far from being a standalone, one-shot approach to preparing a scattering of WV math and science teachers, WV RISE is part of a much larger teacher preparation initiative SREB has embarked upon. SREB is partnering with the Appalachian Regional Commission, WVDE, MU, the Kentucky Department of Education, Morehead State University (KY), and multiple districts in both states in the Growing Appalachian Teachers of Excellence (GATE) initiative. The long-term objective of GATE is to create a regional grow-your-own network preparing middle grades and high school STEM teachers for rural schools. Recruitment of future teachers will begin with materials to support career exploration in the middle grades. High school supports will include a career pathway aligned with career and technical education (CTE; including a concentration of three classes); supports for establishing or improving peer tutoring programs; for-credit teaching assistant programs (included in the CTE pathway); and Career and Technical Student Organizations (e.g., Educators Rising).

The GATE program will have many of the same components as WV RISE but will also expand recruitment and support of future teachers beginning when they are middle grades students through their induction years as full-time teachers. GATE partners will recruit undergraduates into teacher prep programs at partner universities, where first-generation students will receive wraparound

services. SREB instructional coaching paid for by district partners will support teacher candidates during their residency induction. After developing the program in Kentucky and West Virginia, SREB plans to expand GATE to Tennessee and Virginia. (See Appendix H: *Growing Appalachian Teachers of Excellence* for more about GATE.)

MU, WVSU, and JHC are committed to collaborating to support future WV teachers through the MU MAT program, which will include a yearlong residency beyond the WV RISE project. The WVBOE has established a policy that all teacher preparation in the state must include yearlong residency prior to certification. WV universities offering teacher preparation were mandated to offer at least one content area requiring a yearlong residency beginning with freshmen entering in Fall 2021 and convert all content areas to require a yearlong residency beginning with freshmen entering in Fall 2024. The policy requires that the residency include a minimum of 750 hours of coteaching over a minimum of 28 weeks.

Supplies purchased with WV RISE funds add to the sustainability of project components beyond the grant period. JHC and WVSU will continue to provide cutting edge technology for use by teachers and students in their hybrid learning labs, using non-grant funds to upgrade hardware and software as needed. WV RISE novice teachers will use the iPads and Swivls to record lessons and reflect on their instruction beyond the grant period, which is a personalized approach to PD and can be more effective than other types of PD (Beisiegel et al., 2018).

C5) WV RISE partners demonstrate a commitment to the implementation and the success of the project

SREB is committed to the success of the WV RISE program and its purpose in increasing new teacher retention and preparedness through a comprehensive residency and induction plan. The nonprofit organization has a long-standing commitment to assist its 16 member states, one of which is West Virginia, with advancing economic outcomes through improving P-16 education efforts. Specifically, SREB has partnered with WV over the last decade to examine and implement effective

practices and policies for teaching and learning in the areas of mathematics and disciplinary literacy and develop advanced CTE course pathways. SREB also has experience in residency programs as it is a core member of another TQP grant, partnered with Georgia College and State University. SREB knows that effective mentoring programs are people-driven rather than compliance-driven (SREB, 2018) and is committed to ensuring the WV RISE program embodies this concept.

Marshall University has a long history, over 150 years, of preparing quality educators for the region. The current administration is committed to increasing its ability to recruit and prepare future teachers in shortage areas such as math and science (**CPP2**). In recent years it has added a full tuition scholarship for a small number of undergraduates who are pursuing teaching preparation in these content areas. These recruiting efforts reflect the desire of the university to become a reliable source of high-quality teachers in math and science fields. As a measure of quality, the COEPD was granted full accreditation in 2019 by the Council of Accreditation for Educator Preparation and was recognized for exceptional self-assessment and accreditation preparation. The WV RISE program is a perfect fit to expand the goal of increasing the number of quality math and science teachers for WV schools. Letters of support from MU's COEPD and College of Science are in Appendix E.

The Harless Center serves school districts across WV and provides PD for educators and programming for students. As an outreach program of the MU COEPD, JHC supports the university's goals in preparing high-quality teacher candidates for the field, especially in the shortage areas of math and science (**CPP2**). Many of the districts supported by JHC have indicated a need for math/science teachers for the upcoming school year. JHC is committed to supporting the collaborative efforts of the WV RISE partnership as indicated in the letter of support in Appendix E.

WVSU is an HBCU founded in 1891 as a land-grant university designated to provide for the education of Black citizens in agriculture and the mechanical arts. Over time, the university has met the growing needs of West Virginians by expanding its degree offerings to include education. However, WVSU only offers a baccalaureate degree in education. It is committed to the success of

WV RISE as it will provide expanded opportunities for underserved students to earn an advanced degree (**CPP1**) through a residency MAT program (**AP2**). A letter of support from the WVSU interim provost is available in Appendix E.

The state of West Virginia is committed to the success of WV RISE as evidenced by the letter of support from the State Superintendent of Schools W. Clayton Burch in Appendix E. This project can provide a model of support for WVDE to disseminate around the state. Reducing turnover by even 15% can provide a cost savings to districts that far exceeds the amount of annual funding requested (Carver-Thomas & Darling-Hammond, 2017). The WV RISE project is designed to not only improve teacher retention in hard-to-staff areas through a meaningful residency and mentoring program, but also improve teacher effectiveness and subsequently student achievement. The potential cost savings are substantial given the intensive amount of support, particularly in relation to the cost typically incurred by districts when teachers leave.

Four school districts have pledged their support for WV RISE as evidenced by the letters of support in Appendix E. Each district has confirmed a need for qualified math and science teachers and a commitment to supporting the resident-mentor relationship. Each district has also agreed to provide in-kind support by contributing to residents' retirement, benefits, and taxes.

D. Management Plan (20 points)

D1) The management plan is adequate to achieve objectives on time and within budget

The Management Plan shows important project tasks and key milestones. A timeline that displays the flow of activities across the five years of the project appears in Appendix H: *WV RISE Timeline.* Items in Table 6 repeated for each cohort are denoted with an asterisk(*). "All Partners" refers to staff from SREB, MU, WVSU, and JHC.

Table 6. WV RISE Goals, Objectives, and Timeline

Goal 1: IMPLEMENTATION – Develop and implement the WV RISE teacher residency model, increasing the capacity of project partners to select and prepare highly qualified science and math teachers while using a continuous improvement process to recommend revisions to implementation to maximize effectiveness.

Objectives		
1a. Establish a strong recruitment and selection process likely to increase diversity (**CPP1**), reflecting the communities in which residents serve.		
1b. Fully implement the residency program as designed, including wraparound services necessary to prepare, support and retain three diverse cohorts of novice teachers (**AP2**, **CPP1**, **CPP3**).		
1c. Select, prepare, and support outstanding mentor teachers to work one-on-one with the WV RISE teacher residents.		
1d. Establish statewide collaboration in support of teacher residency programs.		
1e. Improve the fidelity of implementation for subsequent cohorts.		
1f. Develop high-quality, effective partnerships.		
Activity–**Key Milestones in Bold** *Frequency in Italics.* * = *"Repeat for each cohort."* [Objective(s)]	Timeframe	Responsibility
Draft informational message for recruiting residents for use by universities and school districts in West Virginia.* [1a]	10/22	Project Manager
Advertise openings for Cohort 1 residents, listing the required documentation. Follow up with potential applicants. Collect applicant documents and conduct initial screening.* [1a]	12/22a- 4/23	District Contacts, MU, SREB, JHC, WVSU,WVDE
Meet with district leaders to clarify expectations and review the recruitment, selection, and application process and the roles of each partner for these activities. [1a]	10/22a-11/22	Project Manager
Track counts of applicants to support recruitment efforts.* [1a]	2/23 – 5/23	Evaluation Team
Interview applicants for acceptance into WV RISE, submit recommended lists to partner districts for district interviews.* [1a]	1/23 – 3/23	Project Man. Team
Review qualifications of candidates recommended by each district and **select 12 Cohort 1 residents**.* (15 in C2, 18 in C3) [1a]	3/23 – 5/23	Project Man. Team
Review process and outcomes of Cohort 1 recruitment/selection and identify needed improvements for future cohorts.* [1a]	7/23	Project Man. Team
Conduct a qualitative analysis of information shared at quarterly project meetings and interviews with Residents to identify barriers and accelerators to implementation. [1a, 1d]	Spring 2023 – Spring 2025	Evaluation Team
Conduct an orientation for residents selected into Cohort 1.* [1b]	5/24	Project Man. MU MAT Coord.
Align MAT course content and teaching methods with WV RISE high-priority residency practices, state K-12 standards, and district needs (based upon syllabi review by all project partners). [1b, 1d]	11/22a- 2/23	MU Faculty JHC
Develop and provide Cohort 1 residents a special WV RISE Program Handbook that contains pertinent information about the features and implementation of MAT program.* [1b]	1/23 – 6/23	Project Manager
Teach MAT courses to ensure residents have the content knowledge and pedagogical skills to effectively teach grades 5-12 math or science* [1b]	5/23 – 8/24	MU Faculty
Provide Cohort 1 residents ≥3 visits per semester from MU supervisor to monitor their progress and provide feedback on their application of evidence-based teaching practices and completing other MAT program requirements.* [1d]	9/23 – 8/24	MU Supervisors
Collaborate with school principals in selecting Cohort 1 residency mentors who meet the criteria for WV RISE.* [1b]	5/24	Project Manager MU Coordinator
Provide support for Cohort 1 residents and mentors through workshops, small group meetings, and individualized coaching visits during the residency and two years of induction* (See Appendix H: *Multi-Layered Support for Residents and Mentors* for specific details) [1b, 1c]	6/23 – 7/24	SREB, JHC, WVSU

Conduct weekly meetings of at least 30 minutes with novice teachers in 1st year of induction to support lesson/unit planning, formative assessment, and problem solving; and provide emotional support (**CPP2**).* [1b]	8/24 – 5/25	Mentors
Monitor induction activities, collecting feedback from Cohort 1 novice teachers and their mentors and principals; process feedback and share with District Contacts.* [1b, 1c, 1f]	9/24 – 5/26	Project Man. District Contacts
Develop and enact trainings that strengthen WV RISE residents' content knowledge and prepare them for PRAXIS content assessment. [1b]	4/23 – 8/23	MU, WVSU
Form a New Teacher Induction Team (NTIT) in each district and assist teams developing two-year Induction Program.* [1c]	10/23 – 8/24	All Partners Partner Districts
Prepare principals and mentors to implement their district's 2-year Induction program for Cohort 1 novice teachers hired into their schools following the residency.* [1c]	5/24 – 8/24	District Contacts
Develop and use a Fidelity Index to measure the quality of the Induction Program designed in each partner district. [1c]	Summer 2024	Evaluation Team
Sponsor at least 2 statewide networking meetings annually in Years 4-5 to identify and share best practices in residency model teacher preparation among universities, districts and educational organizations [1d]	9/25 – 7/27	Project Manager
Prepare semi-annual updates on the implementation of WV RISE and disseminate to the statewide education community through SREB, MU, WVSU, and WVDE media; present informational sessions statewide and regional conferences. [1d]	5/23 – 9/27	Project Manager
Assist other universities offering teacher preparation programs within WV to design or enhance their programs to incorporate lessons learned and best practices of WV RISE. [1d]	As requested 9/26 – 9/27	Project Manager
Prepare at least 2 articles about WV RISE and submit for publication in prominent, widely read state and/or national education publications and journals. [1d]	8/24 – 8/27	Project Manager Evaluation Team
Adjust the program design based on proposal reviewers' feedback; create a detailed schedule of project tasks and activities. [1e]	10/23 – 10/26	Project Man. Team
Collect, review formative data on Cohort 1 residents' MAT course completion and performance for first half of the residency and make adjustments as needed to support struggling students.* [1e]	12/23	Project Man. Team Implemen. Team
Conduct informal interviews with residents to identify barriers and accelerators to implementation.* [1e]	Spring 24 – Spring 26	SREB Coaches
Collect feedback from Cohort 1 residents on course content, assignments for first half of residency; make revisions for improving second half of residency, future cohorts.* [1e]	1/23	MU, JHC
Develop and administer Stakeholder Surveys to collect data on perceived strengths and weaknesses of WV RISE across cohorts. Use the data to improve design and delivery. [1e]	Fall 2023	Evaluation Team Project Manager
Establish and maintain open communication among partners during the recruitment and selection process; meetings of the Advisory Committee, Project Management Team, and Implementation Team; emails, etc. Review the implementation plan, identify and proactively address issues. [1f]	10/22 – 9/27	Project Manager
Schedule and hold monthly Project Management Team meetings to ensure project timelines are adhered to and monitor the progress of project implementation.* [1f]	Ongoing, begin 10/22	Project Management Team

Schedule and hold Implementation Team meetings biweekly to discuss participants' progress during the residency and induction periods and troubleshoot any challenges that arise.*[1f]	Ongoing, begin 11/22	Implementation Team
Schedule and hold Advisory Committee meetings twice per year to monitor the progress of project goals and objectives and providing recommendations for improvement of processes.*[1f]	12/22; 5/22	Advisory Com. Project Director Project Manager
Identify a high-level administrator in each partner district to be the district contact who will keep the superintendent abreast of project activities and provide input on implementation decisions. [1f]	10/22 – 9/27	District Superintendents
Work with partner districts to place Cohort 1 residents in high-need schools, with mentors who are the best fit for developing their teaching knowledge, skills and dispositions, and in communities where they reflect the population of students they will teach.* [1f]	6/23 – 8/23	All Partners
Administer PRISM rubric to key partners to measure depth and quality of partnerships between SREB, MU and partner districts; analyze baseline data; prepare narrative summary of initial results.* [1e] *Annually, January.*	1/23	Evaluation Team
Goal 2: TEACHER IMPACT – Increase the supply of well-prepared novice teachers with a background in STEM fields entering and persisting in the teaching workforce in high-need WV LEAs.		
Objectives		
2a. Increase the number of candidates successfully completing a rigorous preparation program, resulting in certification and placement within shortage areas of math and science. **(CPP2;GPRA1,2&3)**		
2b. Deliver high-quality induction support, post-residency, through coaching and mentoring designed to meet the needs of novice teachers, including ongoing professional learning. **(GPRA 4 & 5)**		
Activity–**Key Milestones in Bold** *Frequency in Italics.* * = *"Repeat for each cohort."* [Objective(s)]	Timeframe	Responsibility
Provide a high-quality preparation program with a yearlong residency in the classroom of an experienced mentor teacher; an MAT program integrating coursework and clinical practice; and preparation for initial master's level WV teacher certification for teaching math/science effectively in grades 5-12 in high-need WV districts.* [2a]	6/23 – 8/26	All Partners
Document residents' completion of the MU MAT program through transcripts.* [2a; GPRA 1-3]	Ongoing 6/23 – 8/26	Evaluation Team
Document completion of the residency through a checklist of required components, completed through site visits and interviews with mentors and project staff.* [2a; GPRA 1-3]	Ongoing 6/24a- 6/26	Evaluation Team
Track certification status of residents to ensure they obtain initial WV Professional Teaching Certification within one year of program completion, and that all graduates are seeking math or science certification.* [2b; GPRA 1, 2]	9/24a- 9/27	Evaluation Team
Calculate the 1-3 year retention rates of WV RISE novice teachers compared with regional and district data for all novice teachers entering the teaching workforce, using personnel records.* [2b; GPRA 4, 5]	9/24a- 9/26	Evaluation Team
Keep accurate records to document attrition and specific reasons when/if residents leave the WV RISE program before the end of the residency or during the induction program.* [2a, 2b; GPRA 1, 4]	6/23 – 6/27	Evaluation Team
Administer Teacher Sense of Efficacy Scale to WV RISE novice teachers at the beginning of their first year as teacher of record, and end of their 1st and 2nd year of teaching to determine if the induction program results in increased self-efficacy.* [2b]	Annually 8/24a- 6/25	Evaluation Team

Goal 3: STUDENT IMPACTa– Improve student achievement in science and mathematics, and increase students' awareness of and interest in STEM careers.		
Objectives		
3a. The students of WV RISE teachers will meet or exceed proficiency standards on state ESSA assessments in math and science. (**GPRA 6**)		
3b. Students will possess a greater awareness of STEM fields and an increase in their intention to persist in course-taking in math and science related fields in high school.		
Activity–**Key Milestones in Bold** *Frequency in Italics.* * = *"Repeat for each cohort."* [Objective(s)]	Timeframe	Responsibility
Provide residents instruction/assignments in MAT courses aligned with clinical experiences, WV standards, and evidence-based math/science instructional practices.* [3a]	6/23 – 8/24	MU Facultya–COEPDa& COS
Observe residents' classroom instruction during onsite and virtual coaching visits, provide feedback on residents' focus on state academic standards and use of evidence-based instruction.* [3a, 3b]	9/23 – 5/24	SREB Coaches
Use district assessment data to measure student progress among Cohort 1 WV RISE novice teachers assigned to high schools, where possible (**validity and reliability may be issues with these measures**). * [3a, GPR 6]	Annually 6/25a– 6/27	Evaluation Team
Analyze results on the WV General Summative Assessment for grades 5-8 math and grade 5 and 8 science for Cohort 1 WV RISE novice teachers and control group teachers' students, using scale scores and performance levels to measure improvement over time.* [3a – 1, 2, and 3; GPRA 6]	Annually 7/25 – 7/27	Evaluation Team
Administer the *Students' Attitudes Toward STEM (S-STEM)* survey to students of WV RISE novice teachers and use t-tests to measure changes from pre to post for students assigned to WV RISE teachers during a given school year.* [3b]	9/24a– 5/27	Evaluation Team
Use a two-level hierarchical model to measure effects of the WV RISE intervention on students, including teacher-level and student- level covariates in the model.* [3b]	7/25 – 9/27	Evaluation Team

D2) Procedures are adequate for ensuring feedback and continuous improvement

Continuous improvement is a core value behind all of the work of SREB's School Improvement Division, and the SREB team assigned to this project are both personally and institutionally invested in always looking for ways to improve teaching and learning. Three teams – a high-level Advisory Committee meeting two times per year, a mid-level Project Management Team meeting monthly, and an Implementation Team meeting every other week – will ensure that feedback is continually incorporated into project improvement through regular PDSA cycles, as described in Section A5.

The Advisory Committee will meet two times per year to monitor the progress of project goals and objectives, providing recommendations for improvement of processes. The committee will

include the deans of the Colleges of Education from MU and WVSU, a representative from WVDE, superintendents or their representatives from participating districts, an SREB leadership consultant, and the JHC director.

The Project Management Team will ensure project timelines are adhered to by the Project Manager, monitor the progress of project implementation by the Implementation Team, and safeguard project continuity in the event of Project Manager turnover. This team will meet at least monthly and include the SREB Project Director, SREB Project Manager, MU MAT coordinator, a faculty representative from WVSU, and a representative from JHC. When patterns of concerns arise (e.g., taking the right classes in the right order to be ready for certification exams; too many classes in a particular semester; etc.) programmatic changes can be made, if not for the current cohort, then for the next cohort.

The SREB Project Manager will work closely with the SREB coaches, MU faculty advisor for residents, MU and WVSU Project Coordinators, and JHC science and math coordinators as an Implementation Team. The Implementation Team will meet biweekly to discuss participants' progress during the residency and induction periods and troubleshoot any challenges that arise. A proactive approach is necessary to preparing new teachers, and identifying and addressing concerns before they rise to the level of problems can keep residents on track to enter and stay in the profession. Informal concerns often come to the team from coaches, professors, residents, mentor teachers, or district leaders, and those concerns are addressed immediately.

Data are central to improvement efforts and the external evaluation team. Members of the external evaluation team have a standing invitation to attend meetings of the Project Management Team. As described in the previous section the external evaluator will regularly gather stakeholder data from residents, mentors, and district liaisons through surveys, focus groups, and interviews. These data will be analyzed and formally submitted to the Project Management Team each spring and included in annual reports.