## Technical Review Coversheet

**Applicant:** Green River Regional Educational Cooperative (U411C190146)  
**Reader #1:** **********

### Questions

#### Selection Criteria

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**Sub Total** 80 77

#### Priority Questions

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**Sub Total** 5 3

**Total** 85 80
Technical Review Form

Panel #15 - EIR Early Phase Tier 1 - 15: 84.411C

Reader #1: **********

Applicant: Green River Regional Educational Cooperative (U411C190146)

Questions

Selection Criteria - Significance

1. The Secretary considers the significance of the proposed project. In determining the significance of the proposed project, the Secretary considers the following factors:

   (1) The potential contribution of the proposed project to increased knowledge or understanding of educational problems, issues, or effective strategies.

   (2) The extent to which the proposed project involves the development or demonstration of promising new strategies that build on, or are alternatives to, existing strategies.

Strengths:

This project has a great potential to add knowledge to address educational problems including lack of rural students’ participating in STEM-Computer Science courses and AP courses, lack of rigorous teacher professional development in the STEM-Computer Science curricula, and the low expectations of both rural teachers and student for achieving postsecondary degrees and careers in the science, math, technology, and computer science areas. The applicant clearly supports all these issues with evidence and current research, such as the 2019 ACT Center for Equity in Learning Report demonstrating that rural students are less likely than non-rural students to participate in AP courses (p. e25).

To some extent, the applicant demonstrates its new strategies will provide alternatives and enhancements to existing strategies for rural teachers and students in engaging in higher performance of students. A brief explanation is presented for how its project differs from existing educational programs to teach students STEM. The proposed project will concentrate greatly upon effective and collaborative professional development, which should lead to increased student achievement (p. e27).

Weaknesses:

The applicant does not provide clear relationship of how its project will build upon existing strategies for teaching rural teachers the content and pedagogy for instruction in the STEM and Computer Science areas. A discussion is not presented for how other rural schools/and or schools with high rates of student poverty have addressed the lack of professional development for current STEM teachers and have addressed the lack of rural students engaging in the STEM and computer science courses (pp. e27-e28). The applicant does not provide a full discussion of how its proposed project differs from other schools’ endeavors to teach high-needs students in STEM-Computer Science, dual credit courses, or offer teacher professional development online with rigorous coursework (p. e27). The applicant states it has not yet completed an analysis of a comparison study of skills with effective STEM classes but plans to do such a study at the commencement of this proposed project (pp. 11-12).

Reader’s Score: 23
Selection Criteria - Quality of Project Design

1. The Secretary considers the quality of the design of the proposed project. In determining the quality of the design of the proposed project, the Secretary considers the following factors:

   (1) The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable.

   (2) The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework.

   (3) The adequacy of procedures for ensuring feedback and continuous improvement in the operation of the proposed project.

Strengths:

To a great extent, the applicant provides two clear project goals, accompanying objectives, and measurable outcomes. Goals include address STEM and Computer Science instruction and learning, such as Goal 1 for the improvement of teacher STEM-CS knowledge, practice, implementation and effectiveness (p. e31). Thorough measurable outcomes are given with expected increases and specific instruments or assessments to measure the outcomes, i.e., increase of 30% in Project Year 2 of participating high school students participating in STEM-Computer Science dual credit courses for Years 2-5 of the project (p.e33).

A clear Logic Model provides information to form the foundation for this project. The Model provides project goals, objectives, outcomes, project inputs, student implementation elements, teacher implementation elements and Project Outputs. This Model succinctly demonstrates who/what is expected and how it will be accomplished with fidelity. The Project Outputs are rigorous for both students and teachers and will ensure that students will increase in project participation, student achievement in STEM courses, high school graduation rates and dual high school/college credits (p. e125).

Continuous improvement and continual feedback are well-detailed and include clear timelines, collaboration timeframes, and several assessments to provide a depth of data to guide the project and make adaptations, i.e., implantation of the Oxley's Continuous Improvement Cycle, quarterly meetings with teachers' Communities of Practice, monthly analyses of school data by School Data Team, and regular meetings of the Project Advisory Council (p. e38).

As a vital component of the continuous feedback cycle, the proposed project will conduct meaningful participant surveys for valuable feedback from the participants and stakeholders, i.e., teachers, students, and administrators (pp. e39, e131).

Another key element of quality feedback for this project is the selection of an independent evaluator for this project, the Center for Evaluation, Policy, and Research at the Indiana University, Bloomington, which has years of effective evaluation for educational, governmental, and business sectors (p. e42).

Weaknesses:

No weaknesses found.

Reader’s Score: 35

Selection Criteria - Adequacy of Resources/Quality of Management Plan

1. The Secretary considers the adequacy of resources and the quality of the management plan for the proposed project. In determining the adequacy of resources and quality of the management plan for the proposed project, the Secretary considers the following factors:
(1) The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks.

(2) The qualifications, including relevant training and experience, of key project personnel.

(3) The potential for continued support of the project after Federal funding ends, including, as appropriate, the demonstrated commitment of appropriate entities to such support.

Strengths:

A comprehensive Management Plan with a thorough timeline is provided to ensure the project's successful completion on time. A five-year timeline is specific for each project milestone and also contains clear detailed of gathering of baseline student/educator data, Advisory Council Meetings, Site Visits by the Project Director, and professional development for teachers (p. e132). The Management Plan contains complete details for activities correlating to every project objective with a specific implementation and completion timeframe and assignment of responsible personnel for implantation of the milestone, i.e., Design STEM-CS Micro-credential Pathways with BloomBoard beginning on October 1, 2019 and completing by February 1, 2020 (p. e128).

The details in the Budget and thorough Budget Narrative present an excellent outline to follow in expending funds during the budget and keeping the costs within budget, i.e., all personnel are listed by title, FTE unit, salaries for each of the five project years, and details of fringe benefits calculations (pp. e171-e177).

The applicant's management plan also contains a critical budget element of having the over 10% required in-kind contribution match from two industries, the Green River Regional Educational Cooperative, and partner LEAs (pp. e155, e157-e168). Also, this assurance by those businesses/LEAs in their Letters of Support provides clear indication that a large portion of the budget resources will keep the project within budget, i.e., Letters of Support from Monroe County Board of Education and Metcalfe County Board of Education for in-kind contributions of donated time/mileage of participating teachers/administrators (pp. e162-e163).

The applicant provides thorough job descriptions for the key personnel who will be new hires for this project, such as the STEM Project Director and the STEM Project Coordinator (pp. e133-e139). The job descriptions also contain clear expectations of minimum college degrees/licenses to be held and experiences in prior curriculum and project development and implementation.

A high-level of potential is evident for support of the key project elements beyond the five-year grant cycle. The applicant provides a full discussion of the elements which could be sustained, include the wealth of knowledge gained by the teachers via the new professional development of STEM-Computer Science, research for teaching high-poverty students, newly learned strategies from the Endeavor Network, ongoing educator collaborations in the new Communities of Practice, and newly formed industry partnerships (p. e42).

Weaknesses:

The applicant does not present convincing information about how it plans to provide monies for new teachers to the schools who desire to also participate in the training that the project teachers have experienced or engage in STEM-Computer Science postgraduate degrees in order to teach dual credit courses at the high school level (p. e42).

Reader's Score: 19

Priority Questions

Competitive Preference Priority - Competitive Preference Priority
1. Within Absolute Priority 3, we give competitive preference to applications that address the following priority:

Projects designed to improve student achievement or other educational outcomes in computer science (as defined in the notice). These projects must address the following priority area:

Expanding access to and participation in rigorous computer science (as defined in the notice) coursework for traditionally underrepresented students such as racial or ethnic minorities, women, students in communities served by rural local educational agencies (as defined in the notice), children or students with disabilities (as defined in the notice), or low-income individuals (as defined under section 312(g) of the Higher Education Act of 1965, as amended).

Note: Projects addressing this priority must be administered in a manner consistent with nondiscrimination requirements contained in the U.S. Constitution and Federal civil rights laws.

Strengths:
The applicant thoroughly addresses how it will provide rigorous STEM-Computer Science dual credit course work to high school students at the 8 participating LEAs. The project is well-described to be implemented with equity to all students, and especially underrepresented students, such as low-income and special needs students. Details demonstrate the extent of high-needs students in all the 8 participating LEAs with poverty rates (F/R Meal Rates) ranging from 60.8% to 85.1% in these rural districts (p. e146). Strategies include alternative assessment and assistive technologies for the students with disabilities (pp. e14-e15).

Weaknesses:
The applicant does not clearly describe its STEM-Computer Science curricula to be rigorous. Statements are made that the newly designed curricula will be "rigorous" or "space-related", but no specific content is detailed, especially for computer science (pp. e29, e32).

Reader’s Score: 3

Status: Submitted
Last Updated: 06/20/2019 09:09 AM
### Technical Review Coversheet

**Applicant:** Green River Regional Educational Cooperative (U411C190146)  
**Reader #2:** **********

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| **Priority Questions**                         |                 |               |
| **Competitive Preference Priority**            |                 |               |
| **Competitive Preference Priority**            | 5               | 3             |
| 1. Absolute Priority 3                         |                 |               |
| **Sub Total**                                  | 5               | 3             |
| **Total**                                      | 85              | 81            |
Technical Review Form

Panel #15 - EIR Early Phase Tier 1 - 15: 84.411C

Reader #2: **********

Applicant: Green River Regional Educational Cooperative (U411C190146)

Questions

Selection Criteria - Significance

1. The Secretary considers the significance of the proposed project. In determining the significance of the proposed project, the Secretary considers the following factors:

   (1) The potential contribution of the proposed project to increased knowledge or understanding of educational problems, issues, or effective strategies.

   (2) The extent to which the proposed project involves the development or demonstration of promising new strategies that build on, or are alternatives to, existing strategies.

Strengths:

Green River Community College’s STEM project provides strong research evidence of the significance of their rural focus on improving STEM access with career pathways resulting in academic growth for the 17,000 students in the initiative. (e20, e24) The national research was reinforced with specific Kentucky data from the American College Testing (ACT) STEM report revealing 48% of students were interested in STEM majors and careers. (e24) Examining changes in these statistics during and after implementation can inform the field how to strengthen retention of students in STEM.

The size of the intervention is significant with over 17,370 students in grade 6-12 participating makes this a significant examination of STEM implementation strategies. The teacher capacity building focus is on serving 56 staff with 32 from high school and 24 middle school teachers. (e125)

Since one of the focus of STEMcs is teacher capacity building, the evidence of the need for support of rural teachers was compelling and identified specific factors that impact rural schools serving high numbers of disadvantaged students. (e26) For example, rural teachers are less likely to have a master's degree, and many have lower levels of academic preparation, especially in STEM content areas, compared to urban/suburban peers. (e26) The importance of this STEM intervention is to examine if intensive professional development with support can produce an academic achievement growth in disadvantaged students.

The STEM initiative was established by a well established nonprofit regional educational cooperative serving 46 rural school districts which can utilize its network of regional cooperatives for dissemination of outcomes to a broader audience of rural educators in Kentucky and nationally. (e27) It has established a set of partners with national STEM PD programs through Teachers College, Columbia University (e35) (US Satellite Labs), vendors (Bloomboard), higher education (Western Kentucky University) and community members who make up a unique collaborative network. An analysis of the roles of the partners and their contributions would be significant especially with vendors as partners (e27) focusing on the professional development credentialing components.

The multiple systems of support are an interesting approach since it uses resources across multiple strategies to increase teacher knowledge, instructional competencies, and “rank” using various providers and delivery strategies. It is a personalized approach to professional development. This would be of interest to educational initiatives across various content areas (e27) as cost effective, engaging and motivating professional development strategies are crucial to impacting teacher capacities.
Weaknesses:
While there was a national research base supporting the initiative, there was a lack of regional data to support the proposal. The application did not fully describe the current interventions that this initiative will build upon. There was no baseline data provided for the participating schools, student demographics, or current career pathways established even though the participating schools are members of the educational cooperative. For example, CS AP courses are implemented currently but no data was provided on numbers participating, percentage scoring high enough to receive credit, number of schools providing this option. (e25)

Selection Criteria - Quality of Project Design
1. The Secretary considers the quality of the design of the proposed project. In determining the quality of the design of the proposed project, the Secretary considers the following factors:

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(2) The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework.

(3) The adequacy of procedures for ensuring feedback and continuous improvement in the operation of the proposed project.

Strengths:
STEM provided a clearly specified and measurable set of goals. The objectives had specific measures for each, and the majority included evaluative components and was measurable. (e31-34) The initiative uses a wide variety of measurement tools and specifies that data will be collected and analyzed before, during and after interventions. (e33)

The conceptual framework and project design were comprehensive. Since one of the STEM focus is on providing multiple opportunities for teacher capacity building with six major design elements – certification based on PD for STEM certification, (e35) NBCT certification, dual credit credentials, micro-credentials, or credit toward a Masters degree – (e34) paired with personalization of strategies based on the teacher’s choice. The same design was used for student interventions. (e28-30)

The project design includes numerous professional learning opportunities based on conceptual models that focus on examination of districts/students/schools, Endeavor Network, Project Based Learning, Curriculum Review, Micro-credentialing, and Industry Partnerships. (e38) The extensive set of specific offerings is comprehensive and all focus on STEM or improvement of student academic outcomes.

The quality of the professional development offerings is rigorous based on the national and state partners. The fact that the outcomes of the PD is designed to “reward” teacher participating with formally recognized credentials that support their skill development while also improving their abilities to earn “rank”. (e28-30)

STEM has a very structured feedback and continuous improvement strategy that underlies all the professional development options while generating data that is analyzed monthly in school teams and quarterly at Community of Practice (COP) events. Three leadership positions have defined responsibility for continuous monitoring including project director, associate executive director of Green River Regional Educational Cooperative and the Advisory Council. (e38-39)

STEM has a Data Team component, which will be school level data teams that look at student academic data based on their five-step process. This will generate specific analysis that will be used for continuous improvement activities that occur in school-level monthly and with Community of Practice (COP) quarterly sessions. STEM will use Plan-Do-Study-
Act strategy to track and generate data for feedback during implementation. (e36)

Weaknesses:
No weaknesses were noted.

Reader’s Score: 35

Selection Criteria - Adequacy of Resources/Quality of Management Plan

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   (2) The qualifications, including relevant training and experience, of key project personnel.

   (3) The potential for continued support of the project after Federal funding ends, including, as appropriate, the demonstrated commitment of appropriate entities to such support.

Strengths:
STEM designed the management plan so it enhanced their project objectives format that defined goals, objectives and measurements. (e 31-33) The management plan used the same objectives and enhanced that with very detailed activities with start and end dates and responsible staff. (e127-131) A companion document entitled work plan timeline also enhanced the other two documents with milestones or key components tracked on a 5-year longitudinal schematic with responsibility included. (e132) These documents provide clear timelines and management details that would allow staff to monitor and guide all necessary actions over the implementation period.

The expertise of the GRREC, its institutional capacity, and history of managing multi-year federal and philanthropic grants was documented. It has a diversified funding stream and provides services to 20,000 educators annually. (e40)

The expertise of the key staff of STEM as presented and included relevant and direct experience with key elements of the design including STEM content. (e40-41, e62-121) The background and expertise of key partners including the Advisory Council and the external evaluator were provided. (e41-42, E62-121) For new positions, three job descriptions were included detailing qualifications and responsibilities that were directly related to duties involved in STEM. (e133-141)

Based on the business model of GRREC, they anticipate that after successful implementation of the elements of STEM many of their 46 districts will purchase services to participate in the initiative’s strategies. (e42)

There are documented significant fiscal matching funds from partners including in-kind services from GRREC and fiscal matches by the participating districts, Endeavor, and Bloomboard (e43-44) totaling $1,114,275.00. (e9)

Weaknesses:
A strong plan for continuation of the initiative was not presented with enough detail to support sustainability of all the interventions. Unless there is a clearly defined plan, the individual elements of the reform would be offered for purchase and the overall impact at the school level would be marginalized.
Priority Questions

Competitive Preference Priority - Competitive Preference Priority

1. Within Absolute Priority 3, we give competitive preference to applications that address the following priority:

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Note: Projects addressing this priority must be administered in a manner consistent with nondiscrimination requirements contained in the U.S. Constitution and Federal civil rights laws.

Strengths:
The Green River Regional Educational Cooperative has a focus on building the capacity of educators to provide STEM and CS services to 17,000 students. The outcome is to increase student achievement, access to new learning opportunities and exposure to STEM and CS content. The focus is on providing multiple PD pathways, resources and supports as teachers gain the essential STEM and CS competencies and instructional strategies to provide a rigorous set of CS coursework

Weaknesses:
The lack of specificity regarding the CS coursework that will be implemented and the increase in the numbers of underrepresented students who have access to new CS coursework were not provided. There was also no plan to track student academic achievement changes based on those who participate in the new CS coursework compared to the students who have not participated.

Reader's Score: 3

Status: Submitted
Last Updated: 06/20/2019 08:23 AM
Technical Review Coversheet

Applicant: Green River Regional Educational Cooperative (U411C190146)
Reader #3: **********

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| **Priority Questions**           |                 |               |
| **Competitive Preference Priority** |             |               |
| 1. Absolute Priority 3           | 5               | 3             |
| **Sub Total**                    | 5               | 3             |
| **Total**                        | 85              | 82            |
Questions

Selection Criteria - Significance

1. The Secretary considers the significance of the proposed project. In determining the significance of the proposed project, the Secretary considers the following factors:

   (1) The potential contribution of the proposed project to increased knowledge or understanding of educational problems, issues, or effective strategies.

   (2) The extent to which the proposed project involves the development or demonstration of promising new strategies that build on, or are alternatives to, existing strategies.

Strengths:

The applicant clearly demonstrates that they are working with high needs students in Kentucky, given that more than 72 percent of students qualify for free/reduced lunch in their 16 schools, and four of the eight school districts served are in Kentucky counties designated as Persistent Poverty Counties by the Congressional Research Service. (e15, e24)

The applicant specifically details the national and international rankings of US students in STEM subjects, as well as math and science literacy and proficiency. (e25)

The applicant highlights the key educational issues, barriers, and challenges for rural students, including state and district budget cuts, lack of specific teacher training and coursework in STEM and computer science, small teacher candidate pools, and less rigorous high school coursework. (e24, e26)

The applicant proposes incorporating promising evidence-based project components and activities for teachers, such as teacher teams, instructional planning goals and improvement, a regional Community of Practice, school data teams, project-based learning, mentoring and coaching, and small group sessions for reflection and feedback. (e28)

This proposed project demonstrates the inclusion of promising new strategies for teacher professional development, with four different tracks in which teachers can gain leadership or national board certification, potentially increase teacher rank through micro-credentials, and/or obtain their Master’s degree through Western Kentucky University. (e28-e30)

Weaknesses:

The applicant indicated that they received state funding for equipment and teacher training and support for AP-level courses, but they do not describe what the courses were, how many students participated, and how was the student achievement regarding passing the courses and the AP exam. (e25)

Reader's Score: 24

Selection Criteria - Quality of Project Design

1. The Secretary considers the quality of the design of the proposed project. In determining the
quality of the design of the proposed project, the Secretary considers the following factors:

(1) The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable.

(2) The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework.

(3) The adequacy of procedures for ensuring feedback and continuous improvement in the operation of the proposed project.

Strengths:
The applicant presents two overall goals, each with several specific objectives and performance measures for both teachers and students that are measurable and time-bound. (e31-e34)

The applicant highlights several important feedback surveys and measures, including student surveys of their own coursework, student surveys of teacher effectiveness, and fellow educator surveys and input. (e32-e33)

The applicant provides a detailed and comprehensive logic model that highlights and clearly aligns project inputs, implementation elements, project outputs, and goals, objectives, and outcomes for both students and teachers. (e125)

In order to address the issues surrounding rural poverty, the project will train teachers in understanding the effects of poverty on student thinking and learning through a workshop on the evidence based “A Framework for Understanding Poverty”. (e36)

In order to enhance continuous feedback and improvement, the applicant proposes to use data teams to collect and chart data, identify root causes, discuss SMART goals, update and implement instructional strategies, and review outcomes indicators. The data teams will also work with the Communities of Practice to implement the well-known Plan-Do-Study-Act (PDSA) cyclical approach to continuous improvement.

The applicant highlights several effective components of its feedback and continuous improvement plan, including data teams that meet monthly, Communities of Practice that meet quarterly, an initial curriculum review, quarterly Advisory Council meetings, as well as student and teacher surveys. (e38-e39)

Weaknesses:
None noted.

Reader’s Score: 35

Selection Criteria - Adequacy of Resources/Quality of Management Plan

1. The Secretary considers the adequacy of resources and the quality of the management plan for the proposed project. In determining the adequacy of resources and quality of the management plan for the proposed project, the Secretary considers the following factors:

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   (2) The qualifications, including relevant training and experience, of key project personnel.

   (3) The potential for continued support of the project after Federal funding ends, including, as appropriate, the demonstrated commitment of appropriate entities to such support.
**Strengths:**

The applicant provides a thorough and detailed management plan that clearly aligns the project goals with specific and measurable objectives, project activities for students and teachers, timelines including start and end dates, and key responsible personnel. (e127-131)

The applicant also provides a detailed workplan of project milestones for each quarter of each of the five years of federal funding, as well as the key staff that is responsible for implementing the project milestones. (e132)

The applicant organization clearly describes its history of successfully winning federal grants, its strong project performance, and its fiscal plans to ensure sustainability through membership fees, state and federal grants, sponsorships, and fees for service. (e39-e40)

The applicant clearly describes the primary roles and responsibilities of the project director, project coordinator, and project assistant, while also providing the job descriptions of these three key project personnel, including minimum qualifications, annual time commitment and detailed responsibilities. (e40, e41, e133-e141)

The applicant provides a detailed plan for ensuring continued support after federal funding ends that includes the retention of the teacher professional development, expertise and experience, certifications, and degrees that were gained during the period of federal funding by requesting that participating teachers commit to serving in their district for a minimum period of three years post-project period to ensure that the full effect of the project can be realized. (e43)

The applicant clearly details the in-kind and matching support from the Green River Regional Educational Cooperative, the US Satellite Laboratory, Western Kentucky University, and Bloomboard, and there is clear potential for these funders to continue to support the project after federal funding ends. (e43-e44)

**Weaknesses:**

None noted.

**Reader's Score:** 20

**Priority Questions**

**Competitive Preference Priority - Competitive Preference Priority**

1. Within Absolute Priority 3, we give competitive preference to applications that address the following priority:

   Projects designed to improve student achievement or other educational outcomes in computer science (as defined in the notice). These projects must address the following priority area:

   Expanding access to and participation in rigorous computer science (as defined in the notice) coursework for traditionally underrepresented students such as racial or ethnic minorities, women, students in communities served by rural local educational agencies (as defined in the notice), children or students with disabilities (as defined in the notice), or low-income individuals (as defined under section 312(g) of the Higher Education Act of 1965, as amended).

   Note: Projects addressing this priority must be administered in a manner consistent with nondiscrimination requirements contained in the U.S. Constitution and Federal civil rights laws.
Strengths:
The applicant proposes a project focused on expanding access to teacher professional development and support for rural teachers in STEM and computer science, which will improve teacher effectiveness, impact academic achievement, and increase dual-credit course offerings in STEM and computer science for high needs middle and high school students in Kentucky.

Weaknesses:
The applicant does not clearly identify specific plans for using computer science education curricula or how current computer science curricula will be updated. There are no details on specific professional development components that are focused on enhancing computer science education and teaching. (e35-e38)

Reader’s Score: 3

Status: Submitted
Last Updated: 06/20/2019 08:45 AM