NEW MEXICO GOVERNOR'S
STEM CHALLENGE

In today's world, transportation encompasses physical movement of people, goods, and vehicles. Beyond the physical transportation of people, goods and vehicles, information technology such as the Internet provides the movement of data through networks; allowing for the cultural exchange between communities; historical exploration; futuristic speculation; and emotional conveyance. Identify a transportation or information technology need in your home, school, community or state, and use STEM to develop an innovative solution to meet that need.

Written Proposal Scoresheet

Industry Partner Name	
Judge Name(s)	
School Name	
Team Name	
Team Members	
Date of Proposal Review	

Directions:

- When using this rubric, select the score that you think best aligns with the written proposal you are reviewing.
- Scores for each section should always be a whole number (e.g. a team cannot score a "3.5").
- Tally the total score at the end of the rubric.
- Add any written feedback in the section following the rubric.
- For support with use of the rubric, please contact Madi Egnaczak (madiburns12@icloud.com) and Paul LeFrancois (paul@lanlfoundation.org).

Section/Score	4-Exemplary	3-Proficient	2-Emerging	1-Developing	0-Not Met
1 - Executive Summary	An exemplary executive summary includes a concise description of the team's response to the Challenge Question by (1) explaining the problem that the team is trying to solve, (2) explaining the team's proposed solution, and (3) identifying future possibilities for the work.	A proficient executive summary includes a description of the team's response to the Challenge Question by achieving at least 2/3 of the following: (1) explaining the problem that the team is trying to solve, (2) explaining the team's proposed solution, and (3) identifying future possibilities for the work.	An emerging executive summary includes a description of the team's response to the Challenge Question by achieving at least 1/3 of the following: (1) explaining the problem that the team is trying to solve, (2) explaining the team's proposed solution, and (3) identifying future possibilities for the work.	A developing executive summary includes a description of the team's project but may not explicitly include a summary that (1) explains the problem that the team is trying to solve, (2) explains the team's proposed solution, and (3) identifies future possibilities for the work.	The written proposal does not include an executive summary.
2- Introduction	An exemplary introduction (1) identifies a problem, (2) demonstrates knowledge of the problem through cited research, (3) identifies constraints related to the problem, and (4) clearly states the goal of the project.	A proficient introduction (1) identifies a problem, (2) demonstrates knowledge of the problem through cited research, and (3) clearly states the goal of the project, but might not identify constraints related to the problem.	An emerging introduction (1) identifies a problem and (2) clearly states the goal of the project but might not demonstrate knowledge of the problem through cited research or identify constraints related to the problem.	A developing introduction clearly identifies a problem, but might not clearly state the goal of the project, demonstrate knowledge of the problem through cited research or identify constraints related to the problem.	The written proposal does not include an Introduction.
3- Course of Action	An exemplary course of action section describes in great detail (1) how the team responded to the identified problem including (2) the creative and collaborative decision-making process used, (3) the various ideas considered, and (4) the reasoning behind the team's chosen method for responding to the identified problem.	A proficient course of action describes in some detail (1) how the team responded to the identified problem including (2) the creative and collaborative decision-making process used, and (3) the reasoning behind the team's chosen method for responding to the identified problem but might not include the various ideas considered by the team.	An emerging course of action describes in general (1) how the team responded to the identified problem including (2) the creative and collaborative decision-making process used, but might not include the reasoning behind the team's chosen method or the various ideas considered by the team.	A developing course of action describes how the team responded to the identified problem but might have little to no detail explaining the creative and collaborative decision-making process used, the reasoning behind the team's chosen method, or the various ideas considered.	The written proposal does not include a Course of Action section.

Section/Score	4-Exemplary	3-Proficient	2-Emerging	1-Developing	0-Not Met
4 - Model / Prototype Design	An exemplary model/prototype design section includes 5/5 of the following: (1) a clear explanation of what the model is and how it was developed, (2) a list of materials and costs (not to exceed $500), (3) an overall projected budget, (4) a compelling usage plan for how the model functions, and (5) a clear safety plan for using and testing the model.	A proficient model / prototype design section includes at least 4/5 of the following: (1) a clear explanation of what the model is and how it was developed, (2) a list of materials and costs (not to exceed $500), (3) an overall projected budget, (4) a compelling usage plan for how the model functions, and (5) a clear safety plan for using and testing the model.	An emerging model / prototype design section includes at least 3/5 of the following: (1) a clear explanation of what the model is and how it was developed, (2) a list of materials and costs (not to exceed $500), (3) an overall projected budget, (4) a compelling usage plan for how the model functions, and (5) a clear safety plan for using and testing the model.	A developing model / prototype design section includes fewer than 3/5 of the following: (1) a clear explanation of what the model is and how it was developed, (2) a list of materials and costs (not to exceed $500), (3) an overall projected budget, (4) a compelling usage plan for how the model functions, and (5) a clear safety plan for using and testing the model.	The written proposal does not include a section describing the Model or Prototype Design.
5- Testing Process	An exemplary testing process provides the following in great detail: (1) the hypothesis developed in response to the question / problem, (2) a detailed summary of multiple rounds of model / prototype testing and troubleshooting, (3) a discussion of strengths and weaknesses of the model / prototype and modifications that came about during the testing process, and (4) easy to read data and results.	A proficient testing process provides the following in detail: (1) the hypothesis developed in response to the question/problem, (2) a detailed summary of multiple rounds of model/prototype testing and troubleshooting, (3) a discussion of strengths and weaknesses of the model/prototype and modifications that came about during the testing process, and (4) easy to read data and results.	An emerging testing process provides at least 3/4 of the following in some detail: (1) the hypothesis developed in response to the question/ problem, (2) a detailed summary of multiple rounds of model/prototype testing and troubleshooting, (3) a discussion of strengths and weaknesses of the model/prototype and modifications that came about during the testing process, and (4) easy to read data and results.	A developing testing process provides equal to or fewer than 2/4 of the following in general detail: (1) the hypothesis developed in response to the question/problem, (2) a detailed summary of multiple rounds of model/prototype testing and troubleshooting, (3) a discussion of strengths and weaknesses of the model/prototype and modifications that came about during the testing process, and (4) easy to read data and results.	The written proposal does not include a section describing the testing process.

Section/Score	4-Exemplary	3-Proficient	2-Emerging	1-Developing	0-Not Met
6 - Reflection	An exemplary reflection on the design and testing process clearly and in great detail (1) explains how the design addressed the identified problem, (2) demonstrates the feasibility of the design OR provides an explanation of what made the design unfeasible but what could be done in future versions, (3) accounts for risks and benefits if implemented at a large scale and (4) describes how the team worked together throughout the design process.	A proficient reflection does the following in general detail (1) explains how the design addressed the identified problem, (2) demonstrates the feasibility of the design OR provides an explanation of what made the design unfeasible but what could be done in future versions, (3) accounts for risks and benefits if implemented at a large scale and (4) describes how the team worked together throughout the design process.	An emerging reflection includes at least 3/4 of the following generally: (1) an explanation of how the design addressed the identified problem, (2) an explanation of the feasibility of the design OR an explanation of what made the design unfeasible but what could be done in future versions, (3) an accounting for risks and benefits if implemented at a large scale and (4) a description of how the team worked together throughout the design process.	A developing reflection includes at least 2 of the following but with little detail: (1) an explanation of how the design addressed the identified problem, (2) an explanation of the feasibility of the design OR an explanation of what made the design unfeasible but what could be done in future versions, (3) an accounting for risks and benefits if implemented at a large scale and (4) a description of how the team worked together throughout the design process.	The written proposal does not include a reflection.

Total Score: ___/24

Section/Score	Written Feedback
1- Executive Summary	
2-Introduction	
3 - Course of Action	
4 - Model/Prototype Design	
5 - Testing Process	
6 - Reflection	

Related Next Generation Science Standards Science & Engineering Practices

Ask Questions and Define Problems
A practice of science is to ask and refine questions that lead to descriptions and explanations of how the natural and designed world works and which can be empirically tested.

Construct Explanations and Design Solutions
The products of science are explanations and the products of engineering are solutions.

Develop and Use Models
A practice of both science and engineering is to use and construct models as helpful tools for representing ideas and explanations. These tools include diagrams, drawings, physical replicas, mathematical representations, analogies, and computer simulations.

Plan and Carry Out Investigations
Scientists and engineers plan and carry out investigations in the field or laboratory, working collaboratively as well as individually. Their investigations are systematic and require clarifying what counts as data and identifying variables or parameters.

Using Mathematics and Computational Thinking
In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; statistically analyzing data; and recognizing, expressing, and applying quantitative relationships.

Analyzing and Interpreting Data
Scientific investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists use a range of tools—including tabulation, graphical interpretation, visualization, and statistical analysis—to identify the significant features and patterns in the data. Scientists identify sources of error in the investigations and calculate the degree of certainty in the results. Modern technology makes the collection of large data sets much easier, providing secondary sources for analysis.

Obtaining, Evaluating, and Communicating Information
Scientists and engineers must be able to communicate clearly and persuasively the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity.