

LEVEL	Middle School / High School
NUMBER OF TEAMS	Regional Design Day - up to 3 teams per school; MESA Day - 1 team per school
TEAM MEMBERS	3-5 students

OBJECTIVE

Use the approved Greater Phoenix map and credible transportation data to identify traffic problems and propose at least two meaningful changes to the transportation system. Explain and defend the design, then document the engineering process in the poster.

GENERAL RULES & CHALLENGE REQUIREMENTS

Transportation system: the connected roads, transit, routes, intersections, and other features that help people move through a community.

- All designs must be based on the approved Map of Greater Phoenix.
- Propose at least two distinct, meaningful changes to the transportation system. Each must address an identified problem and be supported by evidence.
- The two changes do not have to be different types of solutions; judges consider how they work together as part of the transportation system.
- Teams may improve roads and related transportation infrastructure but may not destroy/remove existing highways such as I-10, Loop 101, or US 60.
- Teams may research existing, planned, under-construction, or recently completed transportation projects, but may not present those projects as their own proposed solutions.
- Use credible, verifiable data. Sophisticated traffic-engineering calculations are not required; evidence must reasonably support the team's decisions.

RESOURCES & DATA

- [Approved Map of Greater Phoenix](#)
- [City of Phoenix Street Traffic Volumes](#)
- [Arizona Department of Transportation Data](#)
- [Maricopa Association of Governments Maps and Data](#)

ARIZONA MESA PROVIDED AT EVENTS

- Computer with Microsoft Office and internet access
- Projector

JUDGING PROCEDURE & PRESENTATION

- Maximum presentation time: 8 minutes. Judges stop the presentation at 8 minutes; there is no overtime point penalty.
- Judges may ask questions for up to 2 additional minutes.
- Use a visible timer and the same time warning for every team.
- Team members should meaningfully participate and be prepared to explain the problem, evidence, proposed changes, and expected effects.

HOW YOUR PROJECT EARNS POINTS

Your project earns 75 points for the quality of your transportation design, use of evidence, and presentation. The Engineering Design Poster is worth an additional 25 points, for a total of 100 points.

Use the scoring rubrics on the next page while you develop your project. They show what judges will look for and what strong engineering work should demonstrate.

ENGINEERING DESIGN POSTER - 25 POINTS

Submit one 36 in. high × 48 in. wide landscape poster as a PDF. It is due by 5:00 p.m. at least two weeks before MESA Day; Arizona MESA will announce the exact date and submission process.

Template: [Arizona MESA Engineering Design Poster Template](#). Recommended, but not required.

Include the project/prototype name, school, team member names, school logo, MESA logo, and the team's Explore → Design → Test → Iterate engineering story.

Area	Pts	What judges look for
Explore	5	Understanding of the challenge, criteria/constraints, research, and ideas considered.
Design	5	Selected approach, key features, and design decisions.
Test	6	Relevant testing/data/evidence and what the team learned.
Iterate	6	Evidence-informed changes, retesting/evaluation, and improvement or next steps.
Communicate	3	Clear, organized communication that makes the engineering easy to understand.

PROJECT & PRESENTATION RUBRIC - 75 POINTS

Area	Pts	What will help your project earn points
Design: proposed solutions	12	Propose at least two meaningful transportation changes that directly address problems your team identified.
Design: feasibility/reasoning	10	Explain why your proposed changes could realistically work and why your team selected them.
Design: systems thinking	8	Show how your proposed changes work together and how they could affect other parts of the transportation system.
Data: problem/data	8	Use credible data to clearly identify and understand the transportation problems your team is addressing.
Data: evidence supports decisions	10	Use evidence to support your design decisions and explain why your proposed changes should help.
Data: communication	7	Present data and evidence clearly so judges can understand how they influenced your team's decisions.
Presentation: explanation	8	Clearly explain your proposed changes and how they address the identified transportation problems.
Presentation: maps/visuals	5	Use maps and other visuals effectively to help judges understand your proposed transportation system.
Presentation: Q&A	5	Demonstrate understanding of your project and explain the reasoning behind your team's decisions when answering questions.
Presentation: participation/organization	2	Deliver an organized presentation with meaningful participation from team members.

PROJECT CHECK: Can your team identify the problem with evidence, explain why you chose each change, show how data influenced your decisions, consider effects on the larger transportation system, and defend your choices?

TL;DR

Use the approved Greater Phoenix map and credible transportation data to identify traffic problems and propose at least two meaningful changes to the transportation system. Explain how the changes are expected to improve traffic flow, present and defend the design to judges, and document the engineering process in a digital poster.

READ THE FULL SPECIFICATIONS. The TL;DR is a quick reference and does not replace the complete rules.

SPECIFICATION CHECK

- ☐ Approved map used
- ☐ At least two meaningful changes
- ☐ Existing highways not removed
- ☐ Data/evidence cited
- ☐ Work is original to the student team

Correctable issues should be corrected when feasible before judging. Serious or intentional violations, plagiarism, or prohibited/non-original solutions may result in disqualification.

TRAFFIC JAM - JUDGE SCORESHEET

School: _____ Team: _____

Judge: _____ Level: ☐ Middle School ☐ High School

PROJECT & PRESENTATION SCORING - 75 POINTS

Area	Max	Score
Design: proposed solutions	12	_____
Design: feasibility/reasoning	10	_____
Design: systems thinking	8	_____
Data: problem/data	8	_____
Data: evidence supports decisions	10	_____
Data: communication	7	_____
Presentation: explanation	8	_____
Presentation: maps/visuals	5	_____
Presentation: Q&A	5	_____
Presentation: participation/organization	2	_____
Transportation Design & Engineering Reasoning	30	_____
Data Analysis & Evidence	25	_____
Presentation & Defense	20	_____

POSTER & FINAL SCORE

Competition Score	_____ / 75
Engineering Design Poster	_____ / 25
FINAL SCORE	_____ / 100

Transportation Design & Engineering Reasoning (30) + Data Analysis & Evidence (25) + Presentation & Defense (20) + Engineering Design Poster (25) = 100 points

JUDGE NOTES
