



New Mexico Mathematics, Engineering, Science Achievement, Inc.

32nd Annual MESA Day



Energy as a Grand Challenge

**March 25th, 2020
Albuquerque, New Mexico
Albuquerque Convention Center**

Official Handbook



32nd Annual MESA Day Handbook

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MESA DAY GENERAL INFORMATION

The NM MESA, Inc., Annual Statewide Math and Science “MESA DAY” is designed to encourage the concept of problem solving through teamwork. It salutes NM MESA students for their commitment to academic excellence and reinforces the NM MESA mission of preparing students from historically underrepresented ethnic groups for college majors and careers in math, engineering and science. In keeping with our mission, advisors are encouraged to assemble teams that are representative of the ethnic and gender diversity of their school and MESA enrollment.

COMPETITION OVERVIEW: According to the National Science Foundation INFEWS Program, “Humanity depends upon the Earth's physical resources and natural systems for food, energy, and water (FEW). However, both the physical resources and the FEW systems are under increasing stress. It is becoming imperative that we determine how society can best integrate social, ecological, physical and built environments to provide for growing demand for food, energy and water in the short term while also maintaining appropriate ecosystem services for the future. Known stressors in FEW systems include

governance challenges, population growth and migration, land use change, climate variability, and uneven resource distribution. The interconnections and interdependencies associated with the FEW Nexus pose research grand challenges. To meet these grand challenges, there is a critical need for research that enables new means of adapting societal use of FEW systems”

All of our events will address the topic of Energy as a Grand Challenge. NM MESA schools are invited to participate in our MESA Day as follows:

- On Site Science-Energy Science Escape
- On Site Math-Watts Up? Calculating Energy Efficiency
- Prepared Design-Living Off the Grid: Build a Smart House
- On Site Engineering-Generating Energy

ALL TEAMS: Each team will be composed of 2-4 students and the same students must participate in all events. 4 students per team are suggested due to the work load and difficulty of events. Each team must participate in all events to attend.

Team names MUST be declared as follows: (School) (Level) – (Team #). *Example: Mesaville High School – Team #1*

MESA USA COMPETITION: The 2020 MESA USA Competition will be held separately from the MESA Day Competition the day prior to the MESA Day Competition. See the New Mexico MESA USA Handbook for event details.

ELIGIBILITY: Advisors must enter all profiles (A-2’s) and submit all A-1’s to their Regional Coordinator’s Office **by 5pm, February 28, 2020**. Only the students listed on the roster (have their A-2 submitted and have their A-1’s submitted) will be eligible to participate. **NO EXCEPTIONS!**

Of Special Note to Middle/Junior High Schools serving 9th grade students – Each middle/junior high school that includes a 9th grade class is allowed to have an event team with a maximum of 50% 9th grade students. These teams will compete in the Middle School division **only**. **No** 100% 9th grade teams will be allowed in middle school competition.

ATTENDANCE AND QUALIFICATION: All schools will be allowed to participate in MESA Day as follows. Please use the table to determine the number of teams your school can bring. **This is different from previous years’ allotment.**

MESA Day Track	
20 – 39 profiles	Max number of teams=1
40 – 79 profiles	Max number of teams=2
80+ profiles	Max number of teams=3

PLAGIARISM AND ADVISOR POLICY:

Academic honesty and personal integrity are essential to ensure future success as college students and STEM Professionals. As such, NM MESA expects that the work will be solely the work of the students. If the work or ideas of another are used to further students’ work then proper credit must be given to the owner. Failure to do so will result in an act of Plagiarism. If it is determined that a student committed plagiarism, they will be disqualified from the competition and they will be ineligible to receive any awards. They may also risk further sanctions from MESA USA and/or their MESA State. All work is to be new and original for the current project year.

Advisors (or non-competitors) are NOT allowed in any competition area unless instructed. All adjustments to prepared designs **MUST** be conducted by the student competitors and once competitions begin, students may not have contact with non-competitors. Also, any complaints and/or appeals need to be addressed by the **STUDENTS** to the Event Coordinator **DURING** the event. Individuals may be allowed to enter areas to take pictures, but that is at the discretion of the Event Coordinator and no contact can be made with competing students.

SCORING SUMMARY: Final team rankings will be based on the total score, which is derived by adding all of the component scores. *NOTE: Results are not final until overall results are reported.*

On Site Science	100 points
On Site Math	100 points
On Site Engineering	100 points
Prepared Design	150 points
Total	450 points

AWARDS: (Middle and High School)

- Trophies will be awarded to the top 3 overall teams (1st-3th Place).
- Awards will be presented to individual team members placing 1st – 3rd Place.
- Awards will be presented to the top team in each individual event (1st Place).
- Additional awards may be provided.

IMPORTANT: Awards will not be presented at the MESA Day Competition. To ensure accuracy, final scoring will occur upon the conclusion of the event and a live virtual announcement will be done at 3:30 PM on March 26, 2020.

DISQUALIFICATION: Individual event teams can be disqualified for the following:

- Any team member not having a Student Profile (A2) in database or A1 on record
- Lead judge disqualifies an event team for not following event guidelines
- Unauthorized use of cell phones during event(s)
- An event team is found to have violated event guidelines after competition has concluded
- General inappropriate behavior at any time during the competition
- If after competition is concluded, it is found that any team violated rules or requirements for any event, they may be disqualified from competition and will forfeit any qualification or placement spots they may have earned.

MESA DAY REGISTRATION: This is required for any team wanting to attend MESA Day. All qualification registration and submittal of materials will be done via the Cvent System with a direct link on the MESA Day Event Page on the NM MESA Website. **ALL REGISTRATION WILL NEED TO BE SUBMITTED ELECTRONICALLY BY FEBRUARY 28, 2020 AT 5pm.** Refer to the needed materials in this handbook for details, requirements, and instructions for submittal. In addition to the electronic submittal, all Regional Coordinators will verify team preparedness with team inspection(s) and interview.

General Information that will need to be collected during this process is: transportation requests, team names, and RC Inspections. *NM MESA STAFF has the authority to cancel attendance for any team if they do not have completed projects and/or are not prepared to attend MESA Day up to the date of the event.*

IMPORTANT: The registration portal will be the same for MESA Day and MESA USA Competitions. You will only select the competition(s) you are participating in.

ADDENDUMS AND EVENT RESOURCES: There are several addendums and resources which will be useful in preparing for MESA Day. All addendums will be available on the NM MESA-MESA Day Event Website. These include:

- Any Final Logistical Information
- Templates and Inspection Lists
- Event Resources and Helpful Preparation Information
 - There will be a link to an official resource page. Each event will have an opportunity to post helpful resources.
- MESA Day Frequently Asked Questions (FAQ)
 - Will be changed throughout year as questions arise

It is the responsibility of the school program to periodically check for resources and updates. Before competition date, it is STRONGLY encouraged as the FAQ section will contain any clarifications and/or addendums to the event handbook and these will be followed at competition. The FAQ document is an official MESA Day Document and is the official addendum to this handbook.

GENERAL NOTES: Schools arriving late to MESA Day or teams arriving late to an event will participate at the discretion of the lead judge. Extra time will not be allotted to any team arriving late. Schools are expected to participate fully and are asked not to depart until the conclusion of the Awards Ceremony. Students should be instructed to demonstrate good sportsmanship and will be held accountable for any misbehavior. Students are reminded to respect the competition areas. DO NOT leave your trash anywhere; use the trash containers provided. Students are required to clear their own tables and throw away their trash.

Cell Phone usage –Advisors are asked to follow and remind their students about appropriate cell phone protocol, including the misuse of 911, texting, cameras, general usage, and calculators during competition and general events. Judges will repeat this cell phone usage reminder at the beginning of each competition. Failure to comply may lead to disqualification.

MESA DAY STUDENT LEADERSHIP COUNCIL: MESA Day will be implementing the use of a student leadership council. The council will be responsible for assisting with event logistics. Nominations for the leadership council will be part of the registration procedure. Each program is allowed to nominate (2) individuals in addition to any competing students.

All levels are encouraged to apply, but students must be responsible and represent NM MESA. Final selections will be made based on the final available roles. Students will not be able to participate in the leadership council and participate in MESA Day competition events as roles will happen simultaneously. All selected students will receive a leadership credit and recognition for being a MESA Day Student Leadership Council member.

NAME BADGES: NM MESA will provide name badges based on names submitted at registration.

ALBUQUERQUE CONVENTION CENTER (ACC) REGULATIONS: Students are reminded to respect the ACC. DO NOT leave your trash anywhere; use the trash containers provided. The ACC staff requires students to clear their own tables and throw away their trash. In addition, the following is not allowed within the ACC: Glitter, Confetti, helium balloons or anything that is airborne, anything that is

messy or damaging, and outside food/drink. Nothing is allowed to be adhered or pinned to walls or facility equipment. Individual programs violating any rules will be billed accordingly by the ACC.

TIMELINE: Below is a suggested timeline to prepare for both the MESA Day Competition and related activities.

Month	To Do
August	Regional Coordinator Contact and Training as Needed. Regional RAMS-Advisor will give a review for the year. Release of NM MESA Day Handbook and start of FAQ Document-Review and prepare questions.
September	Verify school procedure for buying and ordering materials. Start creation of teams and groups for projects. Start Engineering Design Notebooks and Energy Topic Research
October	Make arrangements for Regional Support event(s)-transportation, facilities, leave, etc.
November	Determine what to Prototype and create materials list. Regional Rallies and/or Regional support events. (Fall)
December	Start researching and building models. USA-Start Arduino programming. Continue to document all work in Engineering Notebook. Refine Project Plan to meet current progress and holiday break(s).
January	Iterate and evaluate models. Set up Regional Coordinator Review Date-REQUIRED to participate Continue to check the NM MESA FAQ Page and MESA Day Resources for needed information located on the NM MESA website.
February	MESA Day Submittal Deadline-February 28, 2020 @ 5PM <ul style="list-style-type: none"> • Deadline to enter students in MIMS (A-2) and to submit A-1's to Regional Coordinator for MESA Day eligibility. • Regional Coordinator Inspections • Submit USA Items-Project Report Work with Regional Coordinator to determine transportation and attendance logistics. Finalize Team Projects
March	MESA USA Competition: March 24, 2020 MESA Day Competition: March 25, 2020 Competition Final Scoring and Awards LIVE Announcement: March 26, 2020



MESA DAY COMPETITION GENERAL AGENDA
March 25, 2020: Albuquerque Convention Center-West Building

7:00 AM	Staff Report: Event Scorerroom	<i>Kiva Auditorium</i>
7:30 AM	Prepared Design Judges Report: Breakfast and Orientation	<i>Kiva Pima/Maya</i>
8:00-9:00 AM	Team Registration and Check In	<i>Kiva Lobby</i>
	<i>Teams MUST Arrive NO LATER than 9AM at the ACC Complex to allow enough time for student drop off, registration, and impound</i>	
	Prepared Design Impound	<i>Ballroom C</i>
	Attendee Breakfast and Snack Bar-Purchase on Own, Available Throughout Day	<i>Kiva Concessions</i>
8:30 AM	Remaining Judges Report: Breakfast and Orientation	<i>Kiva Pima/Maya</i>
9:30 AM	Welcome	<i>Kiva Auditorium</i>
9:50 AM	Dismissal to Events	
	<i>MESA Day-On Site Science</i>	<i>Ruidoso/Pecos-East</i>
	<i>MESA Day-On Site Math</i>	<i>Ballroom B</i>
EVENT	<i>MESA Day-On Site Engineering</i>	<i>Ballroom A</i>
LOCATIONS:	<i>MESA Day-Prepared Design</i>	<i>Ballroom C</i>
	<i>Downtime</i>	<i>Kiva Auditorium</i>
	<i>Attendee Lunch</i>	<i>Kiva Lobby-TBD</i>

TEAM ROTATION SCHEDULE				
	HS RED	HS BLACK	MS YELLOW	MS GREEN
10:00-11:00 AM	Downtime	OS Engineering	OS Math	OS Science*
11:10-12:10 PM	OS Science*	OS Math	OS Engineering	Downtime
12:10-12:40 PM	Lunch	Lunch	Lunch	Lunch
12:40-1:40 PM	OS Engineering	OS Science*	Downtime	OS Math
1:50-2:50 PM	OS Math	Downtime	OS Science*	OS Engineering

11:00-2:00 PM	MESA USA People's Choice Voting	<i>Kiva Lobby</i>
11:30-1:30 PM	Judge and Volunteer Lunch	<i>Kiva Pima/Maya</i>
12:00-1:00 PM	Prepared Design-Model Viewing, Open to the Public	<i>Ballroom C</i>
2:45 PM	Prepared Design-Top 10 Finalists Posted (Earlier Possible)	<i>Kiva Lobby</i>
2:50 PM	Closing Ceremony-Raffles, Advisor Recognition	<i>Kiva Auditorium</i>
3:30-4:30 PM	Prepared Design-Top 10 Pitch Presentations	<i>HS-Ballroom A</i> <i>MS-Ballroom B</i>
	Prepared Design People's Choice Voting-Top 10 (optional)	<i>Kiva Lobby</i>
4:30 PM	Final Dismissal	

**OS Science teams will be assigned a 15 Minute Competition Time closer to the event. Remaining time in rotation can be used as downtime and/or lunch.*

MESA Day Event Information:

For On Site Challenges: Additional information for all on site challenges will NOT be provided in advance, beyond what is below. Teams are encouraged to be composed of individuals with various skills who can work together to accomplish a given task in a limited amount of time.

For Prepared Design: Teams are expected to come with their model prepared. Onsite construction will not be allowed. Upon arrival at MESA Day, teams are required to submit their device for impound during the given registration time. No changes are allowed to their device once impounded.

On Site Math

Watts Up? Calculating Energy Efficiency

Teams will work together to investigate the numbers relating to energy efficiency and answer questions. You'll evaluate data, use measurement tools and check out real-life examples. Learn about different alternative energy technologies, like passive solar home design, wind turbines, solar panels, and more, plus energy conservation and insulation. All background information and formulas will be provided so that learning will happen while you're at the event! You only need to bring your thinking cap and be ready for teamwork!

On Site Engineering

Generating Energy

Teams will work together in a hands on building project to generate energy. Teams should be generally familiar with some energy sources such as wind and solar energy. In addition, teams should be familiar with general energy, electricity, and wiring concepts. All materials and information will be provided at the event. Get ready to build and generate energy.

On Site Science

Energy Science Escape

Energy Science Escape is a 15-minute teamwork challenge of science based STEM skills. Student teams will enter to find a single basket containing multiple tools and resources. They will need to work together to successfully solve 10 mini-challenges. Mini-challenges will include a multitude of measuring, circuitry, architecture concepts and more... a high wattage and creative combination of STEM skillsets will be needed. Each mini challenge will be worth 10 points for a total of 100 event points. Cell phones will be collected by an event judge and returned after the challenge is completed.

Prepared Design

Living Off the Grid: Build a Smart House

Competition Overview:

Your group is the Project Team for a company named, "Living Off the Grid" and your team is tasked with designing and modeling a self-sustaining and energy efficient home for a client that would like to *live off the grid in New Mexico*. They have purchased a huge piece of flat land and would like to be able to live comfortably, but not be dependent on any city or town utilities. As part of the engineering process, you

will need to design a home, create a model of the home, and determine what makes it self-sufficient and sustainable. Accompanied with the model, all teams should have a floor plan (blueprint), brochure and a prepared 3-minute pitch of their home.

Safety:

- 1.) Standard safety practices including the use of protective eyewear if needed must be observed during construction.
- 2.) The model must not contain any material that can pose a danger to students, officials, spectators or cause damage to the host facility, as determined by the judges.

Inspection and Impound:

- 1.) Model home inspection will take place prior to MESA Day by your regional coordinator. Inspection will include ensuring that the model meets general specifications. The blueprint and brochure must be in process and present with the model. Teams should also have a pitch prepared by inspection.
- 2.) Model home and materials must be in final form prior to model impound. If materials do not meet specifications or are not submitted, teams will not receive a score within some/all rubric sections.
- 3.) Teams will drop off their model homes and materials at the designated competition area. No additional parts or materials are to be submitted besides the model, blueprint, and brochure.
- 4.) Judging will take place throughout the day.

General Rules:

- 1.) See the rubrics and sections for model home, blueprint, brochure, and pitch to find detailed specifications.
- 2.) Teams must label EVERYTHING with their school name and team number. Anything not labeled correctly will not be evaluated.
- 3.) The scale used for everything will be:
 - a. Middle School scale: $\frac{1}{2}$ inches = 1 foot / High School scale: $\frac{1}{4}$ inches = 1 foot
- 4.) All teams will participate and receive scores in the model home, blueprint, and brochure sections. Only the teams that are selected for the final pitch presentations will receive points in the pitch area.
- 5.) Each member of the team must participate in the pitch and show involvement in the design of the model and project.
- 6.) Only the team members will be allowed in the judging area for impound of their materials. Team members may invite others to view their pitch, but it will be at the discretion of the presenting team.
- 7.) Software platforms to create your blueprint are allowed, but not required. A hand drawn blueprint will be worth the same as a software created blueprint.

Event Procedure:

- 1.) Upon impound, judges will evaluate submitted models, blueprints, and brochures.
- 2.) Judges will evaluate all submitted materials.
- 3.) The top 10 Middle and High School Teams will be identified and announced prior to the closing ceremonies. This evaluation will be based on the scores of the submitted items only.
- 4.) The top 10 teams will present their pitches and receive points for the pitch section.
- 5.) The remaining teams will not receive a point score for the pitch section and will not present a pitch to a panel of judges.
- 6.) Model homes will be open to the public during lunch and all attendees will have the opportunity to vote for a people's choice award winner amongst the selected top 10 projects upon conclusion of the closing ceremonies.

Scoring Summary: Final team rankings will be based on the total score, which is derived by adding all of the component scores.

1. Model Home: *90 Points Maximum Total*
2. Blueprint: *20 Points Maximum Total*
3. Brochure: *20 Points Maximum Total*
4. Pitch: *20 Points Maximum Total*

Total Points 150 points

Judging Method: To ensure fairness and equity in scoring judges will be assigned as follows:

- 1.) Each judge will be assigned a topic/line item to score amongst all projects for brochure, model, and blueprint.
 - a. This will ensure one judge is evaluating everyone the same for that particular topic.
 - b. A team's final score will be the collection of multiple judges individual scores and not based on one judge for these events.
- 2.) For Pitch, each judge will score all presenting teams. Final score will be an average of all judge scores.
 - a. A ranking system will be used in the event of a tie.

Scale Model:

The objective of the scale model is to give a visual representation of the floor plan of the “off the grid home” based on the client’s family size. To increase the overall presentation, the model is allowed to have “real life” details, but is not required. The scale model should also show how the structure and other components will be organized on the available land.

The *model* should have the following components:

- 1.) Build a scale model house with a maximum 1200 square foot living area for a family of four (2 adults, 2 children). *Middle School Scale: ½ inch= 1 foot. High School Scale: ¼ inch=1 foot*
- 2.) The model home must demonstrate that it is equipped with all basic home systems such as plumbing, lighting, power, heating/cooling and waste water.
- 3.) The model home must show that at least two renewable energy sources would power the home. (e.g. solar energy, wind power, geothermal, hydropower, biomass, etc.)
- 4.) The model home does not have to be a working model.
- 5.) The model home must show that it is “off the grid” and self-sustaining meaning it is not dependent on any city/town utilities services.

The *model* can use the following materials:

- 1.) NM MESA will provide table space to display your Project Team smart home model.
- 2.) Model should be mounted and secured on foam board platform. Maximum Foam board size is 20” x 30” x 3/16”.
- 3.) Model house can be built from, but not limited to various structural materials such as foam board, balsa wood, cardboard, paper, cardstock or craft sticks.
- 4.) Recycled materials including boxes, bottles, cans and containers can be cut or modified to make the model.
- 5.) Any natural materials like dirt, twigs, and stones can be used in the model as long as they do not create a mess by coming off the model.

- 6.) No pre made kits or parts/pieces of kits may be used. “Model sized” appliances and/or landscaping can be used.
- 7.) Different adhesives can be used such as contact cement, rubber cement, hot glue, white glue, wood glue, super glue, tape, etc. (Make sure your adhesives are compatible with your structural material for your final model).
- 8.) No temporary adhesives can be holding together the model by MESA Day. This includes rubber bands, clamps, masking tape, paper clips, etc. These adhesives can be used during construction but not on final draft. Anything not permanently attached will not be judged.
- 9.) Use of 3D printers to print the structure (walls, doors, roof) of the model home *cannot be used*.
- 10.) Use of 3D printers to print accessories/other components to add to the model *can be used* (e.g. appliances, furniture, and landscaping, etc.)

Pitch Details:

- 1.) Only the top 10 teams (Middle School and High School) will present their pitch.
- 2.) Once the teams are called in random order, they will be allowed to set up their model as they see fit for their pitch (no more than 1 minute).
- 3.) Once they are ready to begin, a designated judge will start a timer for the 3-minute pitch time.
- 4.) An assigned judge will be in charge of keeping track of the time throughout the pitch and will give a 30 second warning.
- 5.) All team members must be involved and show an active role in the model and pitch.
- 6.) At the conclusion of the pitch, judges will be given an opportunity to ask any clarifying questions, but time will not exceed 5 minutes total.
- 7.) Once complete, the team is to take their model and all materials and exit the judging area.
- 8.) Teams will be presenting their pitch to their “client” in the perspective as if they are about to build the clients’ home.

Blueprint Objective:

The blueprint is a scale drawing to be used as a tool for planning, guiding and developing the scale model home. With the blueprint you can show the floor plan of the target architecture, in this case the “off the grid model home” and showcase the strategic plan to meet the needs of the client.

Common architecture symbols should be used in the blueprint. Visit the MESA Day Resource Page if teams need assistance with this.

Brochure Objective:

The objective of the brochure is to inform the client and other prospective buyers about the model home components that are not obvious or cannot be demonstrated on the model. The following are guiding questions that you may answer in your brochure.

- 1.) What are the dimensions of the model home and how do they meet the needs of the client?
- 2.) What makes your home design “off the grid”?
- 3.) What renewable energy sources power the various systems of your home design?
- 4.) How does your model demonstrate the ways lighting, water/wastewater, heating /cooling will be powered?
- 5.) Did you research and compute energy generation and consumption for your potential home based on the sources you selected?
- 6.) What types of materials or products did your team select to encourage energy efficiency, recycling, sustainability, durability and “off the grid” concepts in the home? Give details.
- 7.) What makes your home design unique compared to what is on the market?

SCALE MODEL
2020 MESA Day Prepared Design-Team Evaluation Rubric

School Name: _____

Level: HS or MS

Team #: 1 or 2 or 3

Team Members: _____

Scale Model Rubric:	Level of Skill						JUDGE INITIALS
	Exceptional (5 points)	Excellent (4 points)	Good- Met Skill (3 points)	Fair (2 points)	Poor (1 point)	Not Present (0 points)	
Structure							
Scale Everything is drawn to the correct scale and a scale is provided. <i>MS: ½ inch=1 foot HS: ¼ inch=1 foot</i>				All meets criteria	Part meets criteria	No Attempt	
Materials The structure of the model is made from allowable materials. It is evident no modeling building kits were used.				All meets criteria	Part meets criteria	No Attempt	
Mounted Model is mounted on a (Maximum Size) 20” x 30” x 3/16” in. foam board.				All meets criteria	Part meets criteria	No Attempt	
Name Model is clearly labeled with school, team #, and team members.				All meets criteria	Part meets criteria	No Attempt	
Attachment All parts of model are permanently attached. No loose parts.				All meets criteria	Part meets criteria	No Attempt	
Labels All Major parts are clearly and appropriately labeled.							
Materials Legend A legend is provided that clearly illustrates the material used in the model and what it represents.							
Dimensions Dimensions are provided where appropriate including distance between objects. The model clearly does not exceed a 1200 square foot living area.							
Addresses Client Needs The model is appropriate for a family of 4 (2 adults, 2 children)-Sleeping and Living Space.							
PAGE 1 TOTAL:							

Scale Model Rubric Continued: School _____ Team: _____		Level of Skill					JUDGE INITIALS
		Exceptional (5 points)	Excellent (4 points)	Good- Met Skill (3 points)	Fair (2 points)	Poor (1 point)	Not Present (0 points)
Renewable Energy Sources and “Off the Grid” Living (Does not Rely on City/Town Utilities)							
Renewable Energy Sources The model demonstrates the use of two renewable energy sources.							
Home System: Lighting/Power This system is included and clearly found. It is “Off the Grid” and shows it is powered by a renewable energy source if appropriate.							
Home System: Heating/Cooling This system is included and clearly found. It is “Off the Grid” and shows it is powered by a renewable energy source if appropriate.							
Home System: Indoor Plumbing This system is included and clearly found. It is “Off the Grid” and shows it is powered by a renewable energy source if appropriate.							
Home System: Wastewater This system is included and clearly found. It is “Off the Grid” and shows it is powered by a renewable energy source if appropriate.							
Creativity & Realism							
Originality Model is unique from other models.							
Overall Building Materials Materials are appropriate and realistic.							
Home Systems Design Choices are appropriate and realistic.							
Home Accessories Items inside of home are appropriate and realistic.							
Landscape Design Items outside of home are appropriate and realistic.							
Overall Aesthetics Overall, model is creative and aesthetically pleasing.							
Effort Model shows effort and that the team conducted research prior to building.							
PAGE 2 TOTAL:							
SCALE MODEL TOTAL:							
JUDGE COMMENTS:							

BLUEPRINT
2020 MESA Day Prepared Design-Team Evaluation Rubric

School Name: _____

Level: HS or MS

Team #: 1 or 2 or 3

Team Members: _____

	Level of Skill			
	Good-Met Skill (2 points)	Partially Met Skill- (1 point)	Not Present (0 points)	JUDGE INITIALS
Blueprint Rubric:				
Scale Everything is drawn to the correct scale and the scale is included. MS: ½ inch=1ft HS: ¼ inch=1ft				
Dimensions The dimensions of the model add up to the required 1200 square foot living area.				
Margin Max ½ inch margin is present around the drawing.				
Lines Drawing is carefully rendered with significant effort in accuracy and clean lines.				
Labels All components are clearly labeled.				
Neatness Drawing legible, neat and clean.				
Architecture symbols All appropriate architecture symbols are clearly drawn and labeled.				
Match to Model Blueprint and model match in scale and layout.				
Overall Aesthetics Overall, blueprint is creative and aesthetically pleasing.				
Effort Blueprint shows effort and that the team conducted research prior to creating.				
BLUEPRINT TOTAL:				
JUDGE COMMENTS:				

BROCHURE
2020 MESA Day Prepared Design-Team Evaluation Rubric

School Name: _____

Level: HS or MS

Team #: 1 or 2 or 3

Team Members: _____

	Level of Skill			
	Good-Met Skill (2 points)	Partially Met Skill- (1 point)	Not Present (0 points)	JUDGE INITIALS
Brochure Rubric:				
Headline The headline is captivating and addresses the interest and needs of the client.				
Client Includes essential information about the components of the model home that meets the needs of client.				
Renewable Energy Sources Explains the renewable energy sources demonstrated on the model home design, which would potentially make the home "off the grid."				
Home System: Heating/Cooling Includes how this home system will be powered.				
Home System: Lighting/Power Includes how this home system will be powered.				
Home System: Water/Wastewater Includes how this home system will be powered.				
Organization/Flow The information, graphics, photos, charts are well organized on the brochure. Information is clear, concise, and appropriate.				
Materials Includes information on materials used and how your model home is unique.				
Overall Aesthetics Overall, brochure is creative and aesthetically pleasing.				
Effort Brochure shows effort and that the team conducted research prior to creating.				
BROCHURE TOTAL:				
JUDGE COMMENTS:				

PITCH

2020 MESA Day Prepared Design-Team Evaluation Rubric

School Name: _____

Level: HS or MS

Team #: 1 or 2 or 3

Team Members: _____

Pitch Rubric:	Level of Skill				
	Excellent (3 points)	Good- Met Skill (2 points)	Partially Met Skill- (1 point)	Not Present (0 points)	JUDGE INITIALS
Client Introduction					
The target client is identified and pitch includes meeting the need of the client.					
While keeping the target client in mind, teams adequately explain key design requirements and features.					
Model Home					
Teams identify what renewable energy sources will be used to power their home.					
Pitch includes a brief description of how water is used in the home.					
Pitch includes a brief description of how the home is cooled and heated.					
Presentation					
All team members participated in the pitch.			Present	Not Present	
Delivery is poised, controlled, and smooth.			Present	Not Present	
Good language skills and appropriate terminology/vocabulary are used.			Present	Not Present	
Length of presentation is within the assigned time limits.			Present	Not Present	
Information was well communicated.			Present	Not Present	
PITCH TOTAL:					
JUDGE COMMENTS:					

Team Ranking-In the Event of a Tie: Please Circle

1	2	3	4	5	6	7	8	9	10
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MESA DAY QUALIFICATION REGISTRATION INSTRUCTIONS

Deadline: February 28, 2020 @ 5PM

ALL INFORMATION WILL BE COLLECTED ELECTRONICALLY AT WWW.NMMESA.ORG

Form will no longer be collected in hard copy, but the following information will be needed to complete on-line registration. (1) Registration will be done per school and will collect all needed information for both MESA Day and MESA USA Competitions.

You are reminded that you are only eligible to bring the amount of teams listed below based on your program size. All attending teams must be ready for competition. Events are designed for an event team of 2-4 students.

MESA Day Track	
20 – 39 profiles	Max number of teams=1
40 – 79 profiles	Max number of teams=2
80+ profiles	Max number of teams=3

Information You Will Need Per School Registration:

- Unique Email Address
- School Name, Level (HS or MS), Region
- Advisor Information (all attending, contact information)
- Transportation Information (vendor, amount, contact information, type, etc)-Will determine PO or parking arrangements.
- Good Mailing Address-In the event any information needs to be mailed to you including a parking pass.
- Leadership Council Nominee Information (Optional)-2 Students per Program. Be prepared to answer short questions about nominated students' skill(s) and why you are recommending them.

Information You Will Need Per MESA Day Team:

- Team Member Names (Up to 4)
- Alternate Member Names (Up to 2)
- Regional Coordinator Inspection-Working or Potential to be Working Prepared Design, General Preparedness.

Information You Will Need Per MESA USA Team: ONLY IF YOU ARE PARTICIPATING

- Team Member Names (Up to 4)
- Official Advisor Name. In the event of advancement and if a school has multiple advisors, an official advisor must be declared prior to competition.
- Regional Coordinator Inspection-Working or Potential to be Working Prototype, Submittal of Required Project Report, Sample Interview, General Preparedness.
- **Team Submittals You Will Need to Upload Per Team:**
 - Project Report:
 - MUST be submitted in Portable Document Format (.PDF) as (1) Document and no larger than 9MB in document size.

Regional Coordinator Inspection Checklist

This form is required to qualify for MESA Day/MESA USA and will determine event participation

Inspections must be completed by February 28, 2020 at 5PM

School: _____ [] HS [] MS Region: _____

TOTAL # Profiles: _____

Inspection Done: ☐ In Person ☐ Online (Facetime, GoTo, Etc) _____ ☐ Other _____

Date Inspection Done: _____

<i>Mark all objectives met for each team and use bottom section to indicate if team has qualified to attend MESA Day.</i> NOTE: Each individual team has to meet qualification to attend. Projects/Models must be unique to each team. Plagiarism will not be tolerated. Teams will be disqualified from participation for copying or allowing another team to copy their work.	MD 1	MD 2	MD 3	MUSA 1	MUSA 2	MUSA 3
MESA USA Competition: ONLY IF TEAM IS PARTICIPATING IN MESA USA						
Prototype is a working prototype or has potential for completion by event date.						
Prototype is able to demonstrated and described adequately.						
Uses Arduino programming and hardware.						
Has an input and output relay of information.						
Team has submitted a project report by the required deadline according to specifications						
Team has completed an oral interview with the Regional Coordinator-Oral interview will be a question/answer session over concepts and your project						
MESA DAY Competition (On Site):						
Team has generally prepared for the topic of "Energy as a Grand Challenge"						
Prepared Design: Event is in progress as follows and has potential for full completion						
Model AND Blueprint is designed specifically for the given family size (4 people, 2 adults and 2 children) AND meets max requirement of 1200 Square Feet						
Model AND Blueprint meet scale criteria: <i>MS: 1/2 inch=1ft HS: 1/4 inch=1ft</i>						
Model is not constructed from any model building kits (Models of trees, landscaping, windmills, etc. are acceptable as accessories)						
Model home or blueprint demonstrates that it is equipped with all basic home systems such as plumbing, lighting, heating/ cooling and water. (These components cannot be external from the home)						
Model demonstrates that it is "off the grid" and self-sustaining/energy efficient						
Model home shows that it is powered by at least two renewable energy sources. These sources can be external from the home						
Model is mounted on a foam board no larger than 20" x 30" x 3/16"						
Blueprint uses appropriate architecture symbols and is properly labeled						
Blueprint has a 1/2 inch margin						
Team has created a visually appealing brochure that has information asked for						
Team has prepared a 3-minute pitch						
MARK IF TEAM QUALIFIED:						

Regional Coordinator Inspection Checklist-Page 2

Team Name:	Student Team Members (Up to 4)	Student Alternates (Up to 2)
MESA Day Team 1:		
MESA Day Team 2:		
MESA Day Team 3:		
MESA USA Team 1:		NOT ALLOWED
MESA USA Team 2:		NOT ALLOWED
MESA USA Team 3:		NOT ALLOWED

All Team Members must be in MIMS with their A-1 and A-2 Submitted to be Eligible as of Registration Deadline

NOTES:

Other Things to Discuss During Inspection are: Transportation Arrangements, Meals, Lodging, Etc.

Regional Coordinator Signature/Date: _____

Advisor Signature/Date: _____

If Inspection is done Virtual, Advisor must complete form with signature then submit to RC for Approval and Submittal

ALBUQUERQUE CONVENTION CENTER FLOOR PLAN

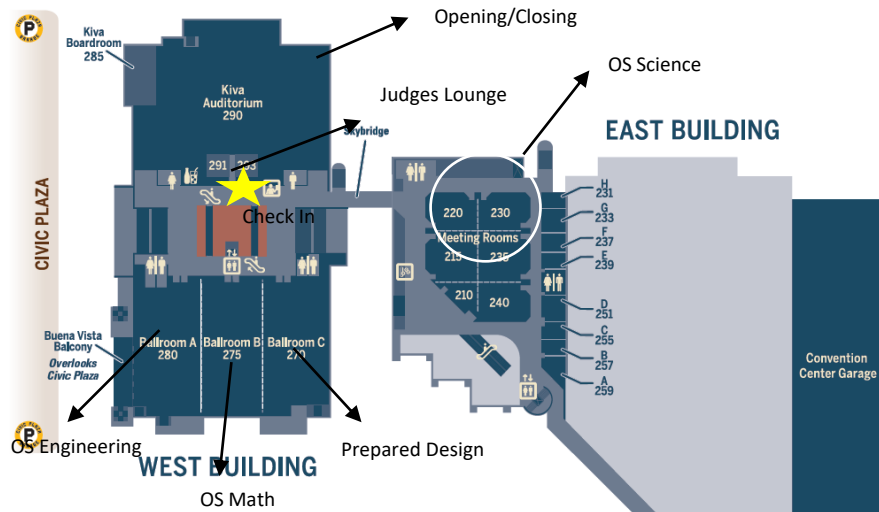
UPPER LEVEL

WEST BUILDING

- Kiva Auditorium
- » Box Office
- » Concessions
- » Kiva Boardroom
- Ballroom A, B, C
- » Buena Vista Balcony
Overlooks Civic Plaza
- Skybridge to East Building

EAST BUILDING

- Meeting Room 210-240
- Suite A-H
- Convention Center Parking



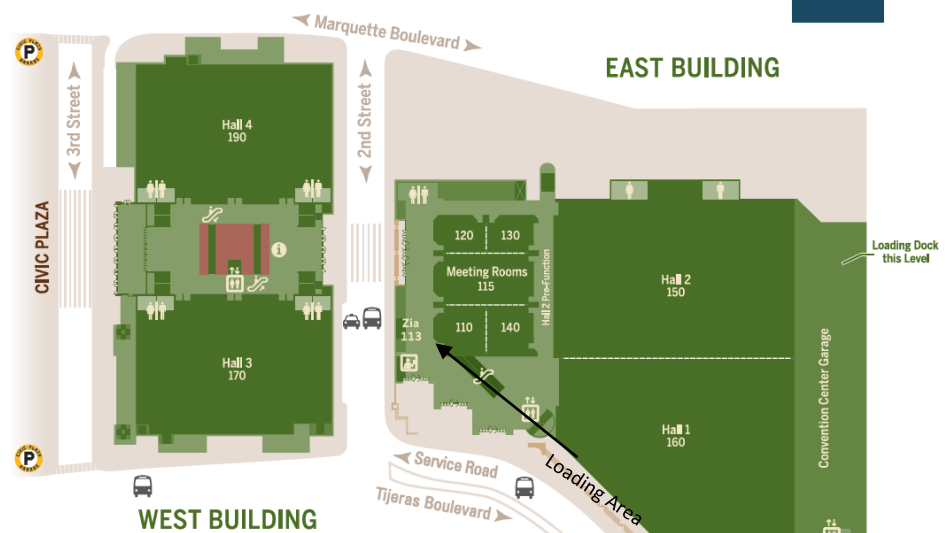
MAIN LEVEL

WEST BUILDING

- Hall 3 & 4
- Guest Services
- Civic Plaza Outdoor Event Space
- 2nd Street Entrance

EAST BUILDING

- Hall 1 & 2
- Meeting Room 110-140
- Zia Lounge 113
- Box Office
- 2nd Street Entrance
- Tijeras Boulevard Entrance



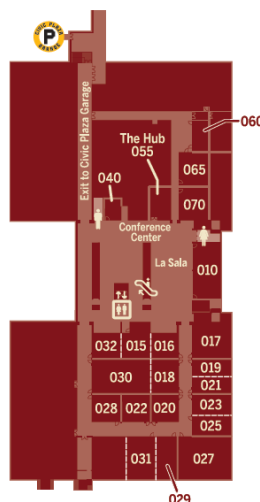
LOWER LEVEL

WEST BUILDING

- Conference Center
- The Hub 055
- La Sala (Lounge)
- Civic Plaza Parking

UPPER LEVEL EAST ROOMS:

- 210 Tijeras
- 215 San Miguel •
- 220 Ruidoso •
- 230 Pecos •
- 235 Mesilla •
- 240 La Cienega



WEST BUILDING

LEGEND

- Box Office
- Concessions
- Elevator
- Escalator
- Guest Services
- Parking
- Pick-up & Drop-off
- Restroom
- Vending

All areas of the Albuquerque Convention Center are accessible to people with mobility impairments.

MESA Day Logistics Information:

LODGING: Lodging is not provided. Because schools may be required to consolidate transportation, blocks of rooms will be arranged at local properties and details will be posted to the event website. Each program is responsible for the cost of their lodging and should contact property to set up payment arrangements and reservations for your program. Your Regional Coordinator may assist you with this process.

TRANSPORTATION: NM MESA will pay for transportation to and from MESA Day in accordance with transportation guide. All programs will be required to bus pool, utilize district suburban's, or other methods of economical transportation as able. Your Regional Coordinator will be working with all attending teams to arrange transportation. Buses transporting NM MESA teams will be allowed to drop off students directly in front of the West Complex. This is a STRICT loading and unloading area and busses must leave immediately and are not allowed to remain waiting. Busses are not to return to this area until dismissal of MESA Day and/or departure of your students and will not be allowed to wait for anyone. There are multiple locations throughout the city for the bus to park free of charge through the duration of the competition and a bus parking location will be arranged and information provided closer to the event date. The location of the facility is 401 2nd St. N.W (south of Lomas, north of Central), all events are located in the Upper Level of both the East and West Complexes.

Buses can load/unload on 3rd St. between Tijeras and Marquette in the Convention Center loading zone. This space will be blocked off to traffic and used primary for this event.

-from Central Ave. head north on 3rd St., pass Tijeras, merge into loading zone on the right

-from Lomas Blvd. head south on 5th St. to Tijeras, turn left on Tijeras. Proceed to 3rd St., turn left, merge into loading zone on the right

Schools that do not have a bus (school vehicle, suburban, personal vehicles, or van) will need to park in the Albuquerque Convention Center parking structure or another nearby downtown lot at a charge. If you are approved to bring a school vehicle, etc in lieu of a bus, parking instructions will be given to you.

Convention Center Parking Structure is located on the Southwest corner of Dr. Martin Luther King Jr. and Broadway.

-from I-25 exit Dr. Martin Luther King Jr. Head WEST on Dr. MLKJ. Immediately past Broadway, while in the left lane, merge into Convention Center Parking structure.

-from I-40 exit 6th St. Head SOUTH to Lomas Blvd. Turn left on Lomas. Proceed to Broadway. Turn right on Broadway. At the Dr. MLKJ intersection, turn right onto the bridge and into the left lane. Immediately merge into Convention Center Parking structure.

LUNCH LOCATIONS: Lunch is not provided. Students are NOT to leave the Albuquerque Convention Center Area. The Convention Center will have adequate vendor set ups that will have general breakfast, snack, and lunch concession items. They will also have “meal deals” and will provide menu information prior to MESA Day. Due to Convention Center Regulations, NO OUTSIDE FOOD may be eaten inside of the Convention Center. There are two adjoining outside areas that can be used if students/schools are to bring their lunch. They are the Galleria and Civic Plaza. If you choose to eat in these areas, YOUR ENTIRE GROUP MUST BE WITH YOU. There are to be no unattended students leaving the inside of the Convention Center and no students are to be left alone inside if your group splits.

Note: As a courtesy, they have allowed us to keep food in the ACC (coolers, bags, boxes, etc.), BUT you must not eat outside food within ANY area of the Albuquerque Convention Center.