

Sunrise on the western Organ Mountains, Las Cruces, NM

2026 TEAM SUCCESS GUIDE

35 YEARS OF LESSONS AND INSIGHTS TO HELP YOUR TEAM

THINK SMARTER, WORK STRONGER, AND COMPETE SUCCESSFULLY.

YOUR SOURCE FOR:

- Learning the WERC contest philosophy
- Understanding award selection criteria
- Tips for organizing and funding your team
- Applying judges' insights to strengthen your performance
- Learning about resources available to your team while in Las Cruces.

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PART I: CONTEST STRUCTURE AND PHILOSOPHY: The Role of the RFP

Each event of the contest maps directly to your future work as an engineer.

Contest entries go beyond a simple science-fair-type display. Teams demonstrate their working bench-scale process and plan for full-scale implementation, considering factors such as cost, waste, schedule, feasibility, safety, regulations, and public acceptance. WERC analytically tests the teams' processes/designs in our own independent labs.

Scoring for the main contest is in four events:

1. A technical report
2. An oral presentation
3. A poster board presentation
4. A bench-scale process demonstration

An additional event, The Flash Pitch, is scored independently.

Engineering Request for Proposals: The RFP

The WERC Environmental Design Contest simulates the problem-solving process an engineer might encounter on the job. It follows the Request for Proposal (RFP) format, a standard that companies often use to solicit new engineering designs. When answering the contest (or any) RFP, consider opportunities to add value to the client.

RFPs vary from company to company. We have selected elements of RFPs that provide effective ways for students to learn about the engineering design process.

How each stage of the contest is modeled after an engineering RFP.

Task Problem Statement: RFP: task statement is published, soliciting engineering solutions to a problem.

Design Contest: WERC publishes task problem statements from which teams select a project.

Written Report: RFP: Competing engineering teams submit a written report discussing their proposed solution, expected performance, test results, data on expected costs, environmental and waste issues, safety and health issues, plans for public involvement and/or gaining public acceptance, full-scale implementation plans, a techno-economic analysis, and audits from professionals.

Design Contest: Teams submit a 25-page written report containing all elements listed above.

Oral Presentation: RFP: Selected applicants orally present their proposed solution to a technical review committee.

Design Contest: All teams orally present their solutions to the judges.

Bench-scale Demonstration: RFP - The technical review committee requests a pilot-scale system to confirm that the planned system is effective on a small scale.

Design Contest: Teams build and demonstrate working bench-scale models of their designs during the contest. WERC conducts independent tests to confirm the teams' results.

Poster Presentation: RFP - The poster presentation is used during proposal presentations to allow engineers to quickly refer to the most important facts and conclusions.

Design Contest: Teams design and present a conference-style poster of their project's essential figures, data, and conclusions. The poster is also used as a reference during the bench-scale presentation.

Cash Awards: RFP: A company wins the contract.

Design Contest: Winning a cash award is analogous to winning the engineering contract.

Flash Pitch Competition: The competition hones skills in pitching a design to an engineering firm or an internal boss and helps schools fulfill ABET Student Outcome #3: Ability to communicate with a range of audiences.

PART II. AWARD SELECTION CRITERIA

Judging Philosophy

In the real world, when pitching a project, a good paper and a good oral presentation let you in the door. To win the contract, you need good pilot study results and must stand out from your competitors in your design's cost, performance, simplicity, and low waste generation. Judges score teams in a similar way. If your solution is fabulous, but costs ten times more than the other teams, you will lose points.

Award Amounts: The award amounts listed below are contingent upon funding and are subject to change.

Task Awards: First, Second, and Third Place awards for each task (\$2500, \$1000, \$500)

The winning team is the one with the highest score in all elements of the task (Technical Content, Environmental considerations, Community Outreach, Audits, Written, Oral, Poster Presentation, and Bench-scale Demonstration).

The number of awards depends on the number of entries per task. We apply the one-half rule: No more than half of the entries will receive awards. For example, if there are 3 entries in one task, there will be a First-Place award only. If there are six entries, there will be First-, Second-, and Third-place awards, and so on.

If fewer than three teams enter a task category, those teams may be combined with another task for judging based on the closest fit. In such cases, teams will be evaluated on the strength of their engineering judgment and their ability to communicate it clearly, regardless of topic differences. This same judging principle is applied each year to the Open Task. It has a minimum of three completely different tasks competing for the same prizes.

Bench-scale Competition Awards: First, Second, and Third Place awards for each task (\$1000, \$750, \$500)

A separate rubric is provided to the judges for the Bench-scale Competition Award. This award recognizes the bench-scale design's quality, performance, reliability, simplicity, and environmental sustainability. Teams not earning a Task Award may still win the Bench-Scale Award based on the strength of their demonstration.

Freeport-McMoRan Innovation in Sustainability Award (\$2500)

An award for the team that creates the best overall innovative product, process, or solution to a land management, energy, water, and/or air or other sustainability issue(s), and meets FCX's (Freeport-McMoRan's) approach to Sustainable Development and Resource Conservation. Selection Criteria:

- Potential for real-life use and implementation
- The degree to which the proposed product, process, or solution successfully addresses a land management, energy, water, and/or air or other sustainability issue(s).
- Demonstration of Physical, Chemical, and Ecological effects on Sustainable Development as it relates to land, energy, water, and/or air.
- Energy- and water-use efficiency.
- An understanding of the operational, environmental, and social impacts of product/solution or method, including upstream and downstream issues.
- Affordability, cost-effective operation, and maintenance; quality of cost/benefit analysis, including all sustainability elements or selections made in developing the product/solution/method.
- Overall potential environmental, social, and economic benefits.

Judges' Choice Awards (Up to 3 awarded) (\$500)

Judges select teams that distinguished themselves in all four elements of a task. Judges may elect to award the Judges' Choice to more than one team at the contest. Judges' Choice is often awarded to teams that have experienced obstacles along the way but persevered and submitted a noteworthy design.

Peer Award (Up to 3 awarded) (\$300)

Teams will visit other teams' bench-scale demonstrations/discussions and vote on the best solutions to current environmental issues. A team cannot vote within its own task.

Pollution Prevention Award (P2 Award) (\$1000)

Teams should consider the concept of Pollution Prevention (P2) in their solutions and develop cost-effective P2 efforts through improved operational processes, which result in savings across all aspects of energy, environment, and economy. Teams that fully eliminate waste through repurposing, reuse, or recycling will have a clear advantage.

The P2 award is based on the team's demonstration of an understanding and implementation of:

- significant reduction or elimination of wastes at their sources,
- reduced generation of greenhouse gases,
- reduced use of hazardous materials,
- conservation of water and air resources,
- utilization of sustainable materials, and/or
- energy efficiency measures.

Outstanding Student Award in Memory of Intel's Terry McManus (\$300 per student)

To honor his memory, Intel created the Terry McManus Memorial Award in 2006 to be given to a student or students who demonstrate the same drive that Terry had. Terry loved coming to the Design Contest every year and seeing students who shared his goals for environmental excellence. This memorial award is presented to a student who demonstrates a passion for environmental conservation. Up to three students may win the award each year.

Each team may nominate one student from their team. The name is given to the advisor.

The advisor writes a one-page nomination letter describing why the chosen student is deserving of the award. The write-up should demonstrate the student's commitment to environmental excellence and a passion to pursue global environmental improvements. Nominations should highlight the student's work in community projects, a history of research in environmental issues, etc.

Nomination letters should be submitted to the WERC team site by Tuesday night (the second day of the contest). They will be distributed to the judges for the final decision.

Flash Pitch (First, Second, Third Place awards: \$1000, \$750, \$500)

The Flash Pitch Competition is scored separately from the main competition by a distinct set of judges, primarily experienced in product design and development, business development, start-ups, and technology transfer.

The Flash Pitch judges encourage entrepreneurship as teams present a business pitch to judges who are primarily looking for a marketable product or process. A winning Flash Pitch will be engaging, present data from the bench-scale demonstration that illustrates the success of the design, and present economically feasible plans for scale-up. If it takes 10 years to realize a profit, judges will be concerned (unless the environmental contribution is so significant that it overshadows the profit margins. If that is the case for your product, you need to "sell" that idea to the audience. Judges appreciate a discussion of the triple bottom line.

PART III: HELPFUL HINTS FOR SUCCESSFUL CONTEST PARTICIPATION

III-A. General Contest Helpful Hints

We have gathered these ideas from watching the most successful (and less successful) teams.

Team Composition

1. The “Perfect” team is one that works well together and consists of members who have a strong work ethic and a plan to improve an engineering process. Your Advisor will guide team member selection.
 - a. For some successful teams, every member is of the same major.
 - b. Some successful teams are multidisciplinary. Students from multiple fields can work on the same team: Chemical, Civil, Environmental, Mechanical, Electrical Engineering, Science, Tech Writing, Economics (develop the TEA), Safety, Art (design the presentations), etc.
 - c. Some teams place students on a team as sophomores, and each year give students increasing responsibility: becoming a Team Leader in the Junior year and a Co-Advisor in the Senior year.
2. Select a team leader who is organized and has leadership skills; has knowledge of laboratory procedures, safety, and chemical clean-up; and will help each team member find a niche on the team.
3. Identify and utilize the skills of each team member and trust them to do their part of the job.
4. Keeping the same advisor (and/or passing along helpful hints from year to year) is an advantage.

Financial Support:

Your task’s sponsor (shown on the Task Problem statement) covers costs of venue rental, analytical testing, chemicals, cash awards, and trophies for your task. **Recognize all sponsors:** send thank-you notes, post about them on social media, post to their social media, and display their names/logos at your bench-scale area.

Seek financial support from your community:

- a. Ask companies that your team members worked for in summer internships/co-ops. Many teams have had success with this.
- b. Seek out local businesses/organizations that are considered “Friends of the Environment” (or turn them into such “Friends” as they sponsor your team).
- c. Hold campus fundraisers or GoFundMe. People often purchase treats or services to support a cause or organization.
- d. Submit grant requests to your academic department, college, or special student programs.

Contest in general:

1. Dress to impress; look, act, and dress as professionals. Don’t just sell your process, sell yourselves.
2. Always be respectful to your teammates, other teams, judges, and WERC staff.
3. If you are concerned about how you are being treated, notify the Program Manager immediately.
4. Set up a realistic timeline for the team and follow it.
5. Bring all of your team’s research notes to the contest; it may be useful, and if it is well organized, you will be able to answer questions from the judges you did not anticipate or put in the paper.
6. Network while at the contest. Bring a business card/QR code and ask others for business cards/contact info, whether they are students, judges, or faculty from other schools.
7. Bring extra copies of your paper with contact information, in case judges want to recruit you.
8. Bring your resume. If you are not graduating, internships may still be available. If you are graduating, there may be a job available. Have a PDF of your resume ready to share.
9. Track the hours spent on different areas of concern: research, testing, writing, etc. You can pass this along to future teams at your school to help them as well.
10. The first year of participation is the toughest because teams do not know what to expect. Keep entering every year and, during the “off season,” ask our judges for help preparing. They are happy to help you!

Focus on the needs of the Client:

When answering the contest (or any) RFP, consider opportunities to add value to the client: What potential benefits and/or additional resources are possible as a result of your team's design? In addition to reducing costs of processing, transport, and disposal, explore ways to generate new revenue streams. Since teams rarely do this, your judges will be IMPRESSED!

Know the Task Problem Statement and Manual Contents:

1. Read the entire manual aloud as a team to ensure that everyone understands all aspects of the contest.
2. Carefully read and discuss the Task Problem Statement aloud as a team at least once per week during the early stages. Later on, review it aloud periodically. Make checklists to remember all requirements.

Understand the Task Problem Statement:

Judges report that the most common deficiencies in all aspects of the contest are:

1. Not understanding the problem statement.
2. Not addressing all required topics outlined in the problem statement.
3. Presenting a weak Process Flow Diagram (PFD), computer architecture, etc. Your PFD may look very different from the examples. Its strength will be in its appropriateness, according to your project.

These issues will be prevented by frequently reviewing and discussing the problem statement with the entire team and your mentors, referring to our [sample PFDs](#), and submitting a carefully constructed PFD in the 30% Project Review.

Team Organization:

1. Keep a tabbed binder in your lab that is accessible at all times containing: Task Problem Statement, Team Manual, Success Guide, Judging Criteria, FAQs, and Deadlines.
2. Ensure that everyone on the team reads all WERC manuals, task problem statements, and other materials.
3. Assign a team member to check the website weekly. Especially the [FAQs](#).
4. Make check lists for everything: 1) judging criteria, 2) requirements, 3) equipment to pack and/or ship, etc.
5. Stay organized; have one person organize all research information logically and accessibly.
6. Learn to expect and deal with change. Don't sweat the small stuff. What's done is done—Move on.

Research:

1. Throw nothing away, even if it only touches on the project. Some of the most creative solutions come from minor points mentioned in papers.
2. Contact mentors with expertise in each area of your project early and often; they may help you gain insight, find research papers, and other reference material.
3. Don't be afraid to go to the top to find information or resources; top people can help, and they won't look down on you—they will be excited if you are informed and enthusiastic.
4. Reach out to local engineering firms or businesses that may be interested in your task. Getting feedback and "what I wish this product would do" could take your team's solution to the next level, and **judges will be impressed** that you reached out for real-world input. But remember to be respectful of people's time.

Travel

1. The El Paso Airport is about an hour's drive away from Las Cruces.
2. Keep track of expenses to help with next year's budgeting.
3. Put equipment and the bench-scale items in a secure place, along with a checklist of items needed.
4. If you are not bringing your equipment with you, ship it to us. Keep your tracking numbers. Use our [Equipment Transport Form](#) on our website. We will deliver your packages to the contest.
5. Check out spots to see in New Mexico: White Sands, Very Large Array, Sun Spot Observatory. Some teams even take the whole week and go to the Grand Canyon. Side trips enrich the experience and help bond the team.

Follow-up:

After the competition:

- Write down what you learned and pass it down to next year's teams at your school.
- Write thank-you notes to your WERC Task sponsors and your team sponsors. They will be impressed by your efforts and more likely to sponsor your team and the WERC contest next year.

III-B. Hints for Writing a Great Report

General Paper Preparation Hints

- The Written Report sets the stage for your team's success at the contest and indicates your team's attention to detail. It is the first thing the judges see. They read and evaluate each paper against the judging criteria and against every other paper in the same task. Judges tell us that they can frequently predict whether a team will win based on the quality of the report—if a team is not careful with the report, they are likely to follow the same pattern throughout the contest.
- Pay attention to detail and follow all helpful hints. Refer often to the Written Report Requirements in the Team Manual.
- Use well-written professional papers as models for your paper organization. The judges are accustomed to reading scientific writing style—be succinct; omit flowery, undocumented writing.
- WERC's [Guidelines](#) page includes sample award-winning papers from previous years at the Design Contest.
- Cite sources as you go; you may not be able to find the source again—trust us on this!
- Seek feedback on your proposed solution from local engineers and end-users of your solution.
- Ensure that the paper flows in a logical way. Use proper headings to help judges locate information easily.
- Include a timeline for the industrial installation, scaled up from the bench scale solution.
- Work carefully on the computations for the full-scale product. Remember that scale-up designs do not simply multiply directly from your bench-scale design.
- Cost-effectiveness is a key issue; keep costs in mind as you refine your solution: Consult a professional, such as a city manager, as you include permit fees, construction costs, architect fees, etc.
- Remember the Audits! Select your auditors carefully and early; the more expert the auditor, and the more aligned with the subject matter, the better the quality of the paper. Rough-finish the paper at least three weeks before the paper due date, in time for two weeks in the auditor's hands and a minimum of one week for the team to incorporate changes. You may need to conduct further research after the auditors respond.
- Make sure the paper includes all requirements, including the audits.
- Select several reviewers (in addition to auditors) with combined professional experience covering all elements of your paper. Make sure you cover these bases when selecting reviewers (and get as many reviews as you can): a strong editor, a strong technical background, and someone with no previous knowledge of the subject (you will know your paper successfully communicates when someone who knows nothing about your task can understand your paper).

Judges frequently note the following deficiencies with respect to technical writing and editing:

1. Spelling errors. Use the spelling checker.
2. Failure to have the paper reviewed by a technical editor.
3. Missing units altogether or poorly selected units, e.g., 0.001 Kg versus 1 gm.
4. Misuse of terms. Ensure you are familiar with the correct definitions of industrial terms.
5. Lack of figures, tables, and illustrations. Properly used, they make a paper significantly more understandable. Figure captions should clearly explain all elements in the figure. The text should reference all figures.
6. Poor use of figures, tables, and illustrations. Figures should add to the clarity of the text.
7. Incomplete process flow and mass balance diagrams. If you are unsure about preparing a PFD with mass balances (and if it applies to your project), look it up and/or consult an engineer. What is placed on the PFD is dependent on your process(es).
8. Illegible graphics. Ensure that all graphics can be easily interpreted by someone unfamiliar with your project. Take special care when reducing figure and table sizes to fit the page. When we are familiar with a figure, we may not notice that reducing the size makes it difficult to read. If in doubt, ask someone who knows nothing about the figure if they can read and understand it.

- **Executive Summary**

The Executive Summary is a concise overview of the entire project. From it, the reader should be able to understand the task, the options considered, the process selected, the project costs, performance, schedule, and the conclusions reached.

Common deficiencies in executive summaries noted by judges:

1. Copying the problem statement from WERC's materials instead of restating it concisely in a manner that reflects knowledge of the problem.
2. Devoting too much space to stating the problem. Spend most of the space on data, findings, solutions, costs, health, safety, waste, and other relevant topics.
3. Wasting the reader's time with lengthy or overstated doomsday problem-motivation statements. Spend no more than a sentence or two on the motivation for the project.
4. Failing to cover all the aspects of the paper in a brief, concise manner. The summary should be a stand-alone document that provides a comprehensive overview of the project.
5. Going into too much detail. As a summary, it should be succinct. It should not exceed two pages, but one is better.

- **Body of the Report**

The body of the paper provides the details of your project. It must be complete and written in a logical order that leads the reader to your team's conclusions. It should include all of these:

1. A discussion of the technological alternatives considered for the task.
2. A discussion of the full-scale design, based on the bench-scale development and laboratory results.
3. An economic analysis with cost, schedule, and performance data, and a business plan to put it into action.
4. A discussion of health, safety, and environmental regulations.
5. A community involvement/relations plan.

Judges commonly observe the following deficiencies in the body of the report:

1. Not enough research into the background/history of the problem.
2. Insufficient research and discussion of viable technology alternatives. This section of the report should cover all the technologies considered, indicate pros and cons for each, and reflect the logical thought process by which your team designed the full-scale solution.
3. Failure to address in what instances their chosen design might not be the best solution.
4. Failure to cover all topics required by the problem statement.
5. A weak justification for the technology selected.
6. Data not clearly summarized.
7. Insufficient discussion of laboratory-scale experimentation and/or insufficient laboratory data to validate the final claimed solution.
8. Failure to communicate, such as difficult-to-interpret illustrations, missing data, unclear prose, etc.
9. Poor paper organization. Make it easy for judges to find information by naming section headers appropriately and placing information under the proper section header. Include page numbers in the Table of Contents!
10. Lack of balance in the paper. No single section should overpower another.
11. Failure to follow auditors' recommendations, or poor selection of auditors.

- **Full-scale Design Description (Scale-up)**

The discussion of how the full-scale design maps to the bench-scale prototype.

Judges have noted the following deficiencies in the scale-up design section of the report:

1. Failure to apply fundamental engineering principles and concepts (such as conservation of mass/energy, Laws of Thermodynamics, Physics, etc.).
2. Failure to show, in a logical manner, how the solution meets the requirements.
3. Poor documentation of the laboratory setup and results.
4. Failure to provide sufficient data to reflect an understanding of the task and its solution.
5. Ignoring secondary wastes, especially hazardous secondary wastes.
6. Process flow diagrams that lack appropriate mass and energy balances. (See PFD examples on next page.) Submit your PFD in your 30% Project Review to ensure that it is sufficient.
7. Failure to appreciate the physical and chemical issues related to scale-up.
8. Designing processes that cannot be scaled up from bench scale to full scale because of inadequate consideration for health, safety, or environmental hazards.
9. Confusion between the bench-scale and full-scale processes. If using surrogates in the bench scale, there will likely be significant differences between the bench-scale and full-scale process.
10. Exaggerating one hazard over another (e.g., being overly concerned about traces of plutonium when the real threat is a hazardous chemical present in the mix). Conversely, radiation at potentially lethal levels generally makes the presence of other hazardous substances immaterial. You must understand and evaluate these issues on a case-by-case basis.

- **Complete Process Flow Diagrams (PFD) or other process system diagrams showing balanced inputs and outputs.** Include all diagrams that outline the system flow, inputs, outputs, and processes:

- **Data-Flow Diagrams for instrumentation, control systems, power flow, circuits, etc.**
 1. Follow protocols for your discipline.
 2. Designs involving sensors should include schematic diagrams and technical specifications for the device and each sensor, as well as data flow diagrams for the sensors and data logger (if applicable).

- **Sample Process Flow Diagrams that include Mass and Energy balances for chemical processes.**

Your PFD should show every process stream in your design **as appropriate to your problem.**

Mass Balance: sum of mass of all input streams = sum of mass of all output streams

Energy Balance: sum of energies entering the system = sum of energies leaving the system

For computer architectures, your PFD will include Inputs and outputs.

Alongside the PFD, you must include a table that includes the following, as they apply to your design:

- Normal operating temperature and pressure. (These are the players in the “Energy Balance”.)
- Normal volumetric or mass flow rate. If multiple phases are involved, report the flow rate for each phase.
- Density at normal operating temperature and pressure conditions. If the stream has multiple phases, the density for every phase should be reported along with the overall density.
- Viscosity for each phase in the stream should be separately reported.
- Vapor fraction should be reported if gases are present.
- Specific heat ratio Cp/Cv and compressibility factor should be reported for the gaseous phase.
- Molecular weight for each constituent should be reported separately.
- Enthalpy flow for each stream should be reported, sometimes in KJ/hr.
- Include waste streams. How much waste is generated? How will it be addressed?

In all PFDs be sure to:

- Define all abbreviations
- Clearly label all streams. To help the judges quickly scan your PFD, use a descriptive label (such as “Distillation Column”) rather than difficult-to-decipher coded labels.

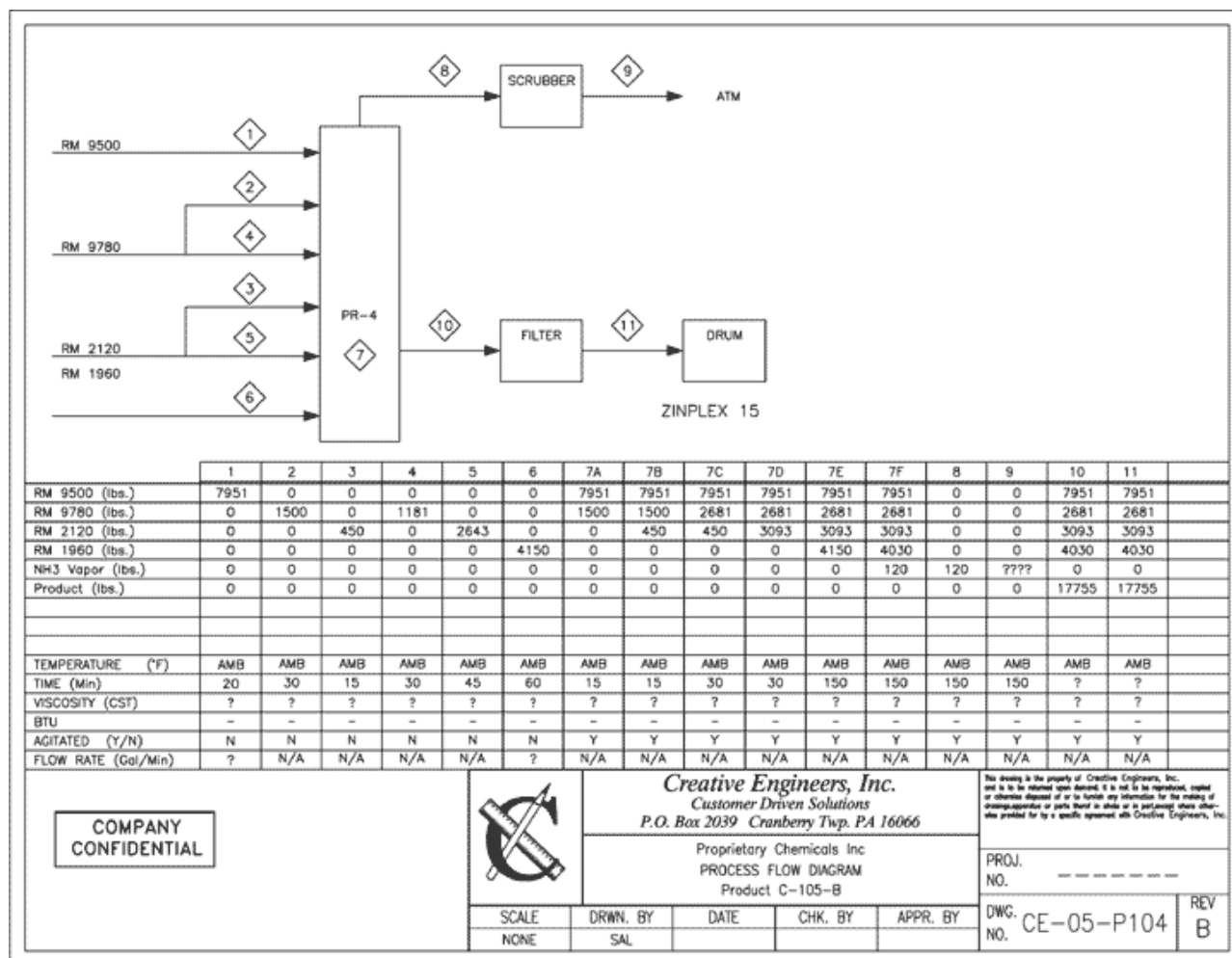
Find sample PFDs on this and the next page. They are not perfect and may not include all the necessary elements for your project – please refer to the list above. In one example, the input labels are cryptic; we do not like that aspect of it (for example, what does “PR-4” mean?).

External Resources:

External PFD Guide: [PFDs and Mass/Energy Balance Quick Start](#) (External link takes you to pdfcoffee.com to a discussion of Process Flow Diagram (PFD) with Mass and Energy Balance, by J.D. Singh)

External Process Documentation Guide: [Process Documentation | Creative Engineers, Inc.](#) (External link takes you to examples of Piping and Instrument Diagrams (P&ID), Process Flow Diagrams (PFDs), Equipment Layouts, Piping Designs, and Process-Hazard Assessment (PHA))

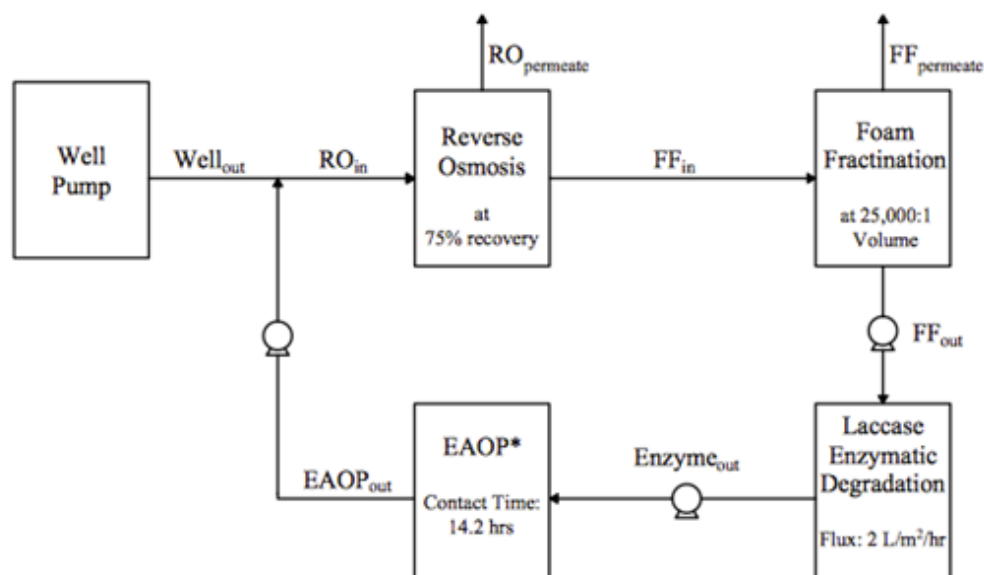
PFD Example 1. Found at Creative Engineer Inc. (You should use more descriptive labels than those on the left side of the diagram. “RM 9500” is not sufficiently descriptive.)



[Process Documentation | Creative Engineers, Inc.](#)

PFD Example 2. Recently submitted in a contest team's technical report.

Process labels are clear and defined within the diagram itself – judges do not need to go hunting for meanings of abbreviations. *PDF Courtesy of California Polytechnic University, San Luis Obispo.*



Stream Name	Well _{out}	RO _{in}	RO _{permeate}	FF _{in}	FF _{permeate}	FF _{out}	Enzyme _{out}	EAOP _{out}
Volumetric Flow (gpm)	700	~700	525	175	~175	0.00347	0.00347	0.00347
PFOA concentration	50 ppt	50 ppt	0	200 ppt	0	5 mg/L	23.3 mg/L	24.5 ppt
PFOS concentration	50 ppt	50 ppt	0	200 ppt	0	5 mg/L	3.3 mg/L	24.5 ppt
Short Chain Concentration	1.49 ppt	0	0	0	0	0	3.5 mg/L	0.30 ppm
Absolute Pressure (psi)	14.7	60	14.7	14.7	20	14.7	14.7	14.7
Temperature (F)	Ambient	Ambient	Ambient	Ambient	Ambient	Ambient	Ambient	Ambient
Hydrogen Peroxide (mol/gal)	0	0	0	0	0	0	0.189	0
Sodium Sulfate (mol/gal)	0	0	0	0	0	0	0.378	0

*Electrochemical advanced oxidation process

- **Economic Analysis and Business Plan**

No manager will support the construction of a facility or process that is not economically sound. Therefore, economic analysis is critical to your design. It includes visualization tools to summarize your findings.

An economic analysis details the proposed cash flows, schedules, and ramifications of the various actions. A business plan sells your economic analysis. Include a business plan in your report. You need to convince the judges (and yourself) that your proposed solution is marketable and economically feasible.

You should have two questions in the back of your mind as you “sell” your idea: 1) Who cares? (Is this really worth investing in?) and 2) Why your team? (A lot of people claim they can save the planet—why should I choose you?)

Find an auditor (and a technical reviewer) from industry to advise your team on the issues below.

- **Business Plan Checklist:**

Required Economics Calculations for a robust business plan:

1. Capital cost CAPEX (including construction, instrumentation, plumbing, etc.)
2. Operating cost OPEX (to include raw materials, utilities, labor/maintenance)
3. Depreciation and MACRS taxes
4. Use of "economies/diseconomies of scale" concepts (typically requiring a determined production rate to optimize cash flow to address the question, "How much should we produce?")
5. Cash flow analysis (use of discount factors to account for the time value of money)
6. Profitability analysis (Net Present Value (NPV) analysis; Internal Rate of Return on Investment (IRR); Payback period)
7. Lifecycle cost analysis
8. Comparison of alternatives by capitalized cost methods OR an Economic Replacement Analysis (equivalent annual cost, EAC, based on a present worth analysis accounting for initial cost, O&M costs, salvage value, interest rate, and service life)
9. Visualization tools: Use tools such as sensitivity analyses, graphs, and other visuals to illustrate how key parameters impact system performance and economics.

Judges have commonly noted the following deficiencies in teams' economic analyses:

1. Costs listed are either poorly documented, out of date, or for the wrong industry sector. Judges often note that no sources are provided, but cost estimates are often stated to the nearest penny.
2. Project and construction schedules are missing.
3. Critical market costs are missing references.
4. Life-cycle cost analysis is missing. The construction project approach should not be too limited.
5. Insufficient detail—cost elements such as overhead, maintenance, labor, utilities, operations, and equipment need to be itemized.
6. Limited investment decision information and/or no return-on-investment calculations.
7. Costs that are not compared with the cost of a current baseline technology. Your cost analysis should always compare your innovation with the current state of technology, and, if possible, with alternative technologies.
8. A lack of understanding of the relationship between cost and the potential for implementation of a process.
9. Failure to understand the relationship between cost and regulatory impacts, such as negotiations and redesign.
10. Costs attributed to engineering development need to be included.
11. Failure to evaluate how regulatory considerations impact the cost, schedule, and overall feasibility of a process. If there are standards with abnormal effects on the process, design, or waste streams, be sure to note these effects and how you plan to reduce or mitigate their impact.

- **Health, Safety, and Environmental Regulations**

The health, safety, and environmental section of your paper should provide an overview of applicable regulations. However, just listing the applicable regulations is inadequate. Specific pertinent issues must be identified and discussed. For example, if a process uses an explosive chemical, a discussion of special controls is essential.

Judges have frequently noted the following deficiencies in health, safety, and environmental issues:

1. Contestants know what laws apply, but fail to understand how those laws affect their project. Ask an expert who can help you understand this.
2. Many papers address federal regulations, but ignore state laws. Your report should address both state and federal regulations according to the state your project focusses on.
3. Failure to discuss how regulatory approval will be achieved.
4. A lack of detail in plans for handling significant health and safety issues when processing at full scale.
5. Failure to select a viable technology due to inadequate familiarity with the hazardous materials and conditions of the project.
6. A lack of a well-rounded safety plan (i.e., physical, chemical, radiological, etc.) for the full-scale design.
7. A misunderstanding of the regulatory drivers; i.e., why a certain project may need to be completed or why some technologies are not viable.
8. Failure to address the special concerns outlined in the problem statement (health & safety, regulatory, economics, radioactivity, etc.).

- **Community Relations Plan**

At a minimum, all teams' Community Relations Plan should include outreach via social media. Task sponsors started requesting this in 2022. Your posts should be linked to the sponsor of your task if the sponsor's social media outlets are available. Your social media outreach is important because, as engineers, part of your job will involve reaching out to the public to gain acceptance of your company and its projects.

Beyond social media outreach, a community relations plan is not required for every project. If your process will introduce a hazardous operation to an area where none previously existed, or if cleaning up hazardous materials raises public concerns about the potential for a release, it is essential that you involve the community. Listed in the next section is the *Public Involvement Plan* that will help you learn how to engage the community in making decisions of public concern. If your project does not require a public involvement plan, **state this explicitly in your report** and explain why this is the case.

The most common errors in this section:

1. Telling the community what you plan to do. You need to invite them to provide input on decisions.
2. Failure to explain why a community relations plan is not required, if needed.

- **Public Involvement Plan (a.k.a. Community Acceptance Plan)**

Projects conducted by federal agencies and the private sector must produce results that will directly benefit the surrounding communities at project sites. Involvement of tribal and public representatives in the evaluation of technologies can ensure that these projects not only improve as a result of such collaboration but also gain long-term community acceptance.

Meaningful Partnerships

Tribal and public representatives should participate in:

1. technology assessment,
2. development activities,
3. deployment activities.

Although the public does not make final decisions, it is important that public representatives become partners in the decision-making process. Decisions developed through partnerships established early in the process will result in successful projects that will save dollars and other resources by solving problems early, before decisions become policy.

Meaningful approaches to creating decision-making partnerships must go beyond traditional public relations or community outreach activities and must do more than the regulations require.

Teams should note that for the contest, this is primarily a plan. It may/may not be appropriate to engage the community for this project. Refer to your task for details and consult with your advisor for guidance.

Objectives of the Public Involvement Plan

Identify the public participation objectives. Consider some or all of these objectives:

- **Action Plan:** Create an action plan that includes local public involvement (including tribal participation in the project, where applicable).
- **Decision Making:** Identify a clear definition of the decision-making process. A realistic expectation regarding the roles of all parties should be considered.
- **Information Requirements:** Analyze the types and forms of information for effective participation.
- **Education:** Develop an educational element that addresses the needs of the group.
- **Accountability:** Establish a two-way accountability process. Include an approach for responding to all input received and documenting all actions. Define your plans for integrating public involvement into the process.
- **Schedules:** Create schedules, milestones, and timelines for public involvement activities.
- **Resources and Costs:** Determine the resources required to implement the plan, including staffing and financial needs. Consider additional costs, such as travel and per diem.

- ***Report Conclusions***

The conclusions in the technical report should be brief; they should state what you are going to do and why.

The most common error: Reaching conclusions that are not supported by information in the report.

- ***Appendices***

Appendices should be used very sparingly. Generally, only include information that is essential but is not appropriate in the body of the report; e.g., a letter quoting a price from a company willing to purchase either the product or the by-product from your process. Appendices are included in the page count.

- **Audits**

A paper received at the WERC office without three audits is incomplete.

The purpose of audits is to help you find weaknesses in your report. It is to your advantage to select auditors who have not been involved in your design process. Faculty at your college/university may qualify, but avoid using anyone who is mentoring your team, as they may not be able to identify issues that fresh eyes can see.

Ensure that your three auditors are qualified to review your paper based on the economic, legal, and health/safety issues, respectively. When possible, select auditors from the industry who are likely to utilize your technology.

- Give the auditors sufficient time to conduct their review
 - Rough-finish the paper at least three weeks before the paper due date, in time for two weeks in the auditor's hands and a minimum of another week of work by the team to incorporate changes.
 - You might have to do more research after the auditors
- Do not have anyone on your team, even advisors, perform the audits.
- Ensure that the auditors write comments and make suggestions for improvement.
- Request that the auditor place the audit on letterhead. Some may be uncomfortable with that. Respect their wishes and we will, too.
- Finding auditors
 - Ask your advisor to identify and contact auditors or give you names of contacts.
 - Go to LinkedIn and seek engineers (especially your school's alumni!) in your geographic area and the task discipline.

Judges have often noted the following deficiencies with respect to the audit section of the reports:

1. The most significant error: not using the input from the auditors to improve the paper or project.
2. The professional who performed the audit did not read the problem statement.
3. Auditors submit a form letter "rubber stamp." This is not appropriate. They should list specific suggested improvements.
4. The auditors are often three professionals who have the same expertise. The auditors should come from the three specified disciplines.
5. Audits should not be performed by persons within the team's university—they do not have the same credibility as outside audits, due to conflict-of-interest issues. Use internal auditors if it is your only option.

- **Submit the Technical Report on time**

In the real world, late submissions are not considered. At the Design contest, there is a heavy point deduction for late paper submissions that may cost you an award.

Only the Team Leader or Advisor is able to upload the written report to the team's account. If you experience any issues with submission, please contact werc@nmsu.edu immediately or call 575-312-7623 (24-hour cell).

Use caution when submitting: each new submission overwrites the previous time stamp. If you must resubmit, do so with caution. We once had a team that continued to resubmit every day for three days past the due date. They thought they were making "extra sure" it was turned in, but each day, another 25 points were subtracted from their score.

III-C. Hints for Preparing the Oral Presentation

1. Have your oral presentation ready two weeks (minimum) before the contest!
2. All presentation schedules are published two weeks prior to the start of the contest. If you are scheduled to present your slides in the Theater, you may wish to bring a laser pointer. Other rooms will not require this (see [Presentation Rooms](#)).
3. Try to relax before the presentation and enjoy presenting your team's results. If you focus on your great design, rather than yourself, your presentation will be much more enjoyable for all.
4. Show results and costs.
5. If you use something in the oral or poster presentation that you didn't use in the paper, cite it. Know your sources well enough to be able to cite them at any time.
6. Pause frequently during the oral presentations to let the judges process the information; well-planned pauses are effective in an oral presentation.
7. Practice presenting before various professionals, such as other faculty. Listen to their advice, and make corrections accordingly.
8. If you don't remember something while you are in the middle of a presentation, pause, but do not announce that you can't remember.
9. Be prepared to answer questions about applications of the process; how to market it, who would use it ("the target audience"). If you were employed by someone in industry, this would be of critical interest.
10. Judges will wait until your presentation is finished to ask questions. If you don't know the answer, don't try to make one up or fake it. Admit that you don't know. You can follow it up with, "I don't know, but think it might be ... "or, "I don't know, but we will look it up and discuss it the next time we meet."
11. Follow up on finding out the answers to questions you could not answer at the oral presentation. Judges will expect you to answer them during the bench-scale demonstration.
12. Judges prefer that you limit your presentation to four students during the Oral Presentation.
 - a. This is based on their observation that having more than four presenters interrupts the flow of information, making it more difficult for them to "take in" the details of a presentation.
 - b. They also find that too many transitions take excessive time from the presentation.
 - c. To give all team members presentation experience, they can be assigned to the poster session, the bench-scale demonstration, and/or the Flash Pitch.
13. It is best for the advisor not to attend the oral (or any other) presentation because the students tend to behave in a more inhibited way when the advisor is present. If the faculty must attend, they are to act as observers only. If an advisor speaks up or answers a question that the team should address, a 25-point deduction will be applied. Advisors are allowed to help with technical difficulties such as screen connectivity.

III-D. Hints for Preparing for the Poster Presentation

The poster must be available for both the Poster Session and the Bench-scale demonstration.

Elements of a good poster:

1. Stick to the size limitation. There is a 25-point deduction for a poster larger than 36" x 48".
2. Note that the mounting boards that WERC provides were cut to a nominal size and are actually 35" x 47".
3. Your poster should include only the most important data, conclusions, and references. Consider what information you will need to have readily available when discussing your process with the judges.
4. Graphics are the primary element of a good poster. Use them to illustrate your results (figures, tables, data, timelines, etc.).
5. Do not include large blocks of text. Use bulleted lists or numbered lists for text. Use full sentences only when absolutely necessary.
6. A poster or brochure should have plenty of "blank" space and not look crowded.
7. **Do not include large blocks of text.** Yes, this is the second time we state this in this section. We hope that by repeating it, teams will actually follow our advice. Judges absolutely abhor large blocks of text on posters, but teams continue to do it. Let's impress the judges this year and keep text to a minimum!

Poster Presentation Strategies

1. The Poster Session is on Monday afternoon. It will be held in the Ventanas Ballrooms (see [Presentation Rooms](#)), with the partitions open.
2. Teams will carry their mounted posters from the bench-scale area to the ballrooms, pick up an easel that is waiting for them, and set up their poster in a location designated for them through signage.
3. The Poster Session may be divided into two sessions:
 - a. *Closed session:* If time allows, Judges will have 30-45 minutes to review posters without teams present. Teams will set up their posters, then exit the room. If more than six teams are entered in any one Task, the closed session will likely be omitted to allow judges time for each team's Oral and Poster presentations.
 - b. *Open session:* Teams will enter the room, stand by their poster, and answer judges' questions.
4. No more than three team members should stand by the poster, due to space limitations, but feel free to rotate team members in and out.
5. Judges will come to your poster in small groups, spending approximately 10 minutes per team.
6. Prepare a brief 30-second introduction to your poster and project. After that, allow the judges to ask questions.
7. Don't memorize a poster presentation; perhaps the first introductory sentence, but no more. Be prepared to address what interests the judges.
8. Try to find something new to tell the judges that was not in the formal oral presentation.
9. At the end of the poster session, teams will move their poster back to their bench-scale demonstration area for use on the following day.

III-E. Hints for Preparing the Bench-scale Demonstration

Preparing the bench-scale Prototype before the contest:

Thoroughly test the bench scale apparatus before you come, analyze your results, and report them in the written report and oral presentation.

1. Keep it simple, if possible, because there will be fewer things to potentially go wrong.
2. Keep trying—if your first hypothesis does not prove correct, think, research, discuss solutions with your advisor, update your design, and try again, and again, and again.
3. Consider ordering testing supplies to analyze your results, to help you be independent of other labs during the testing phase of prototype design.

For the Contest Bench Scale setup:

1. Your bench-scale setup must align with your team's approved ESP. Last-minute substitutions are usually acceptable, but they will be checked to ensure the safety of your apparatus.
2. Be very careful with safety concerns, and ensure that your setup is stable and safe. Judges will note safety hazards. Before you can be commissioned for your bench-scale process, your apparatus will be inspected by the NMSU Safety Officer.
3. Test your setup to check for leaks and stability. Ensure all hoses are securely tethered to prevent them from flying off and spraying chemicals everywhere; tethers on pressure pipes are also required.
4. Bring your own specialty PPE as needed (goggles, rubber gloves, aprons, lab coats, etc.) WERC will have some PPE available, such as safety glasses and nitrile gloves (see *Team Manual*), but you may prefer (or may be required, based on your ESP) to provide your own.
5. If you are shipping your equipment, pack it very carefully. Often, items are broken if packed in a large container without sufficient padding.
6. Bring a list of resources for purchasing replacement items, in case of damage or loss during transport (Home Depot, Lowe's, etc.). Record phone numbers, store hours, and addresses. This can save your team precious time when you are at the contest.
7. If you encounter difficulties when setting up your equipment, notify a WERC staff member immediately. We are here to help you and will do everything possible to connect you with the right equipment, people, or resources you need.

Hints for the Demonstration:

1. You will be able to set up your bench-scale demonstration on Sunday. We will begin commissioning on Sunday evening after the Safety meeting. Commissioning will continue on Monday morning. Teams will not be allowed to operate their equipment until Monday morning.
2. Testing samples (if needed to run the bench-scale apparatus) will be distributed to teams on Monday morning after they have been commissioned to run their apparatus.
3. Posters will be hung within the booth area. Teams refer to them during bench-scale discussions with the judges. Figures and tables will be particularly helpful during your discussions; make sure to include the most relevant data on your poster – it makes the bench-scale discussions go more smoothly.
4. Enjoy your moment! Teams usually report that the bench-scale demonstration is their favorite event in the competition. You will have met with the judges formally during the oral and poster presentations. In this new "lab" environment, the atmosphere is more relaxed, and teams enjoy the opportunity to show the judges their actual operating equipment.

III-F. Hints for Preparing the Flash Pitch Presentation

The Flash Pitch competition helps schools satisfy ABET Student Outcome #3: an ability to communicate effectively with a range of audiences. It also fosters an entrepreneurial mindset by having teams pitch their business plans to potential investors, environmental leaders, and start-up professionals.

If your team's process or product is designed to be a community service, rather than a commercial venture, modify the pitch to convince community leaders to adopt your plans. If this applies to your team's project, contact us, and we will develop a rubric tailored to your needs (wercc@nmsu.edu).

The Pitches are scored independently from the other stages of the contest, making it possible for a team to win first place in the Flash Pitch Competition and not place in the main four-stage Design Contest.

Audience

This is a business pitch. Your goal is to present a business plan to your primary audience, potential investors (the Flash Pitch judges). Also in attendance will be other Design Contest teams and advisors, main contest judges, and other invited guests, including members of local environmental groups. See Resources below for help preparing your business plan and pitch.

Judges may include:

- Angel investors
- Staff of Arrowhead Center, an NMSU Community for Entrepreneurship and Innovation
- Business faculty, engineering faculty, and college administrators
- Environmental proponents (may include business owners, students, etc.)

Tips for preparing the Flash Pitch Presentation

1. Convince a company to invest in your technology. Although you are "selling" your design, remember that it is not enough to give a good sales pitch – make sure to have engineering, cost, and scale-up data to back up your claims.
2. Consider your audience. Judges include scientists, engineers, investors, tech investors, and community leaders.
 - a. The event emphasis is on entrepreneurship, so the judges will be strongly stacked in that direction.
 - b. A primary goal of the Flash Pitches is for you to demonstrate that you can speak to a wide range of audiences.
 - c. Define it! If a 6th grader would not understand it, you need to clarify it. Define it, explain it, and repeat the explanations if they are key to your topic. Define acronyms before using them!
 - d. Last year, judges most wanted to see (but never saw) a discussion of the triple bottom line. Find out what that is, and report it to really "Wow" the judges.
3. Engage the audience.
 - a. Make eye contact with audience members (or at least look at their eye level, and not above heads).
 - b. Be interesting. Vary your vocal tone and inflections. Brighten your eyes. Be excited about your solution.
4. Present a motivating introduction: What is this about? Why is this important? Attract people's attention and make your audience care about your solution—Show how it makes an impact.
5. Answers the primary judging questions: 1) Why should I care? 2) Why should I hire your team?
6. Build anticipation of your solution.
7. Structure your presentation to tell a story: ensure it has a strong beginning, middle, and end. Include stories that engage the audience, provided they don't stray too far from your primary objectives.
8. Emphasize only one or two main points (do not try to throw all of the details at your audience).
9. Define all your terms and don't use jargon.

10. Fit the talk to your own personality and style. Be who YOU are. Bring in humor, if it comes naturally.
11. Use graphics to tell your story: photos, tables, graphs (“A picture speaks a thousand words”).
12. Use props (parts of your Bench-scale apparatus) if you wish.
13. Avoid distracting PowerPoint special effects. Use special effects only if they help explain your subject.
14. Use short blocks of text - bullet points are best – do not write in complete sentences; make bullet points grammatically parallel. (It is easier for the audience to “digest” passages that are written in parallel with each other).
15. Time your presentation carefully. Practice over, and over again, to ensure that you stay on schedule.
16. Practice the introduction and the ending over and over until they flow naturally from you. That will get you off to a smooth start and ensure a strong finish.
17. Write a well-crafted closing statement: give a call to action, a strong summary of benefits, refer back to the original problem statement, and describe how the problem can be solved using your technology, etc. **Do not close with a weak**, “that’s all I’ve got.” Or “I’m out of time.”
18. Be ready to close at any point near the end of the talk, in case you are close to going over time. Have your final statement in your mind and practice jumping to it from different points near the end of the presentation. Trust us—sometimes the speaker will have an uncontrollable desire to add a “quick” unplanned thought that can shift the presentation off-schedule.
19. We recommend that the closing remarks be timed and that a team member should cue the presenter when the closing remarks must begin, in order to finish within the allotted time.
20. Any comments made after the bell will result in a point penalty.
21. When making final presentation preparations, remember that all presentation schedules are published two weeks prior to the start of the contest. If you are scheduled to present your slides in the Theater, you may wish to bring a laser pointer. Other rooms will not require this (see [Presentation Rooms](#)).

Resources for helping you prepare a successful business pitch:

1. **Video: Tips to preparing a successful 3-minute pitch:** “Startup guide: A Winning 3-Minute Startup Pitch” (<https://www.youtube.com/watch?v=q6bewrSolcY>)
2. **Business Plan Builder: Tory Burch Foundation.** They provide templates for helping you create a business plan. In the MS Word version, very helpful information starts on p. 12: <https://www.toryburchfoundation.org/business-plan-builder/#classic-business-plan>

PART IV. HINTS FOR PREPARING THE 30% PROJECT REVIEW

A 30% engineering Project Review is expected when answering an RFP. It outlines for the client an engineering firm's preliminary design.

At WERC, the report will be reviewed by the judges you will meet at the contest, but it will not be scored. It is intended to help you make course corrections in the final phases of your research and development. The more information you provide the judges, the more they can help you.

Teams have reported being significantly helped by the reviewers during this phase of the contest.

Tips for preparing the 30% Project Review

1. Share what you know, and don't worry if you don't know everything yet. This is a review of your progress, not a final report.
2. Write from the perspective of sharing preliminary results in a formal manner. Do not waste words; avoid flowery prose. Keep it concise and straightforward to help reviewers quickly locate essential information.
3. If you do not have the data requested, do not avoid the subject. Address the issue directly. This will put the reviewers in the frame of mind to help you find what you need, if they are able.
4. If you are having difficulties with an aspect of the project (your apparatus is not performing as expected, your data is incomplete, etc.), do not be afraid to point out these difficulties. You may get some sage advice.
5. You get out of it what you put in. If you provide a limited PFD or process schematic, the judges will have little to build on. Therefore, provide as much detail as possible to receive the most helpful feedback.

Tips for Reflecting Upon Reviewer Comments

1. Stay calm and open-minded. Feedback is part of the engineering process. Even experienced professionals receive critiques that surprise them. Use this as an opportunity to grow and improve your design.
2. Seek to understand before reacting. Read each comment carefully to see what the reviewer was trying to communicate. If feedback seems unclear or off-base, discuss it with your faculty advisor.
3. Look for patterns. If multiple reviewers note the same issue, it is likely an area that needs attention—whether in your design, analysis, or communication.
4. Clarify, do not justify. If a reviewer misunderstands your intent, that is a signal that your report or diagrams may be unclear. Use the comments to strengthen how you present your ideas.
5. Act strategically. You will not have time to fix everything. Focus on the changes that most improve technical soundness, clarity, and persuasiveness.

What reviewers will look for:

1. Was it written from the standpoint of the designing team presenting preliminary findings to a client?
2. Are there any inputs/outputs missing in the process flow/schematic diagram (waste streams, staffing, etc.)? Should the team consider adding more details to the diagram, such as expected flow rates and volumes?
3. Did the team support their proposed designs with data/calculations? If the team does not yet have data/calculations, what plans do they have to collect this information?
4. Did the team include cost estimates? If the team does not yet have cost estimates, what plans do they have to collect this information?
5. Does the team appear to be on schedule? Are there any suggestions the judge can make to help streamline the process?

PART V. WERC CONTEST RESOURCES

Bench-scale equipment and NMSU Chemistry Stockroom

See *Team Manual* for information about Las Cruces resources for equipment and requesting equipment and/or supplies from WERC.

Poster printing

Would you like to print your 35 x 47" poster and pick it up in Las Cruces? Below are a couple of options, but other print shops are also available in Las Cruces.

Las Cruces Insta-copy (575.526.6602)

- Order online in advance: <https://insta-copy.com/order/>
- Submit a PDF, sized and ready to print
- Request Matte Polypro paper (economical and most commonly ordered for conference posters at NMSU)
- Turnaround time: same day if submitted before 2:00 pm. Orders submitted later may be processed on the next day.
- Indicate payment type in advance to help them create an invoice – credit card or PO.
- Cost: \$31.00

Las Cruces Staples (575.526.4871)

- Online ordering of a 36x48 poster: Not recommended. Requires at least one week of lead time and costs \$66 plus expedited delivery charges.
- Quick turnaround of a 36x48 poster can only be arranged in-store (although this location can accept online orders for smaller posters for store pickup).
- Bring in a USB drive or transfer the PDF using your phone.
- Same-day printing – submit in-store before noon
- Overnight printing – submit in-store after noon, and it will be available the next day.
- Rush printing – adds a fee – call for details.
- Cost: \$35 – 40 (+ optional rush printing fees)

WERC IEEE Conference Proceedings

Waste Management Education Research Conference (WERC) Proceedings

The *Team Manual* outlines the primary information about the WERC IEEE Conference.

Find our previous [WERC proceedings here](#).

At the 2026 Awards Ceremony, WERC will announce the teams invited to submit their papers for additional review and potential publication. If your team is invited to submit a paper for the conference proceedings, we will email instructions to the Advisors and Team Leader after the contest.

IEEE Xplore Copyright Transfer

Submission to IEEE Xplore requires the authors to provide a transfer of copyright to IEEE.

IEEE Xplore Publication Fees

Although authors are normally charged a \$50 per-paper fee, along with a publication fee totaling \$1500, the IEEE El Paso Chapter is sponsoring the publication fee, and WERC will cover the per-paper charge. Please thank the El Paso Chapter of IEEE for sponsoring the publication.

IEEE Membership

WERC offers a \$50 discount to one team registered under an advisor if at least one team member is an IEEE member. This person can be either faculty or a student. Student membership is \$32 ([Register at: ieee.org/membership/join](https://www.ieee.org/membership/join)).

PART VI. PRESENTATION ROOMS

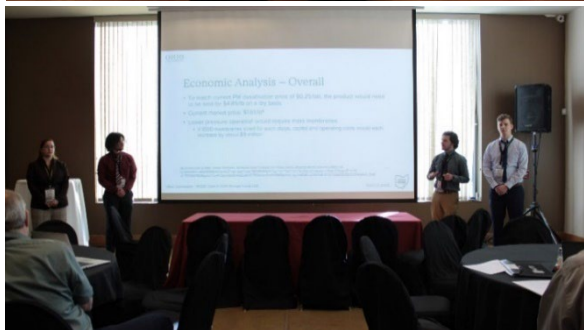
The photos below illustrate the presentation rooms for the Oral and Flash Pitch presentations.



Ventanas Ballrooms 1, 2, and 3 are used as one large room (partitions open, as shown) for large-audience events, including the Welcome, Meals, the Flash Pitch Final Round, and the Awards Ceremony. Note the three projection screens.

When three teams are scheduled to present simultaneously, the partitions will be closed to separate the rooms (See the next two photos). Note: An elevated stage is situated in front of the center screen.

Poster Presentations: Teams will set up their posters around the ballrooms, as assigned.



Oral presentations and Flash Pitch Round 1.
This is Ventanas 1.

In Ventanas 1 and 3, presenters stand at floor level. Note the standing height relative to the screen.

Judges often prefer to sit further back from the judges' table (with a red tablecloth).



Oral presentations and Flash Pitch Round 1.
This is Ventanas 3.

In Ventanas 1 and 3, presenters stand at floor level. Note the standing height relative to the screen.

Judges often prefer to sit further back from the judges' table (with a red tablecloth).



Oral presentations and Flash Pitch Round 1.
This is the Theater.

Presenters stand at floor level or may stand on the stage. The screen is significantly elevated. Teams assigned to the Theater may wish to bring a pointer.

Judges are shown in the audience.



Center stage (Ventanas 2) in the Ventanas Ballrooms.

Some teams will present their Orals or Flash Pitch Round I on this stage (with partitions closed).

For the Flash Pitch Final Round, the partitions are open, as shown, allowing presenters to address a large audience.

The center stage is elevated (Note the standing height relative to the screen.) At least one microphone will be wireless to allow movement across the stage. The podium mic is stationary.

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