PURDUE NORTHWEST

BAJA RACING

Sponsorship Guide

2023 Season

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THE COMPETITION

SAE, Society of Automotive Engineers, hosts three Baja competitions in the United States each year. The East, Midwest, and West regions each host one of the competitions with the specific locations changing each year. For this upcoming season, the locations are Ohio, Oshkosh, and Oregon. Each competition is limited to 100 teams and is 4 days long consisting of static and dynamic events.

The first two days of competition are all the static events. The first day is team registration, engine check, and business presentation finals. The second day is design presentations and tech inspection. The last two days are all the dynamic events. The third day is acceleration, sled pull, maneuverability, and specialty. The last day is the endurance race and awards.

Design Evaluation: 150 pts.

The objective of the engineering design evaluation event is to evaluate the engineering effort that went into the design of the vehicle and how the engineering meets the intent of the market. Students will be judged on the creation of design requirements and the ability to meet those requirements, computer aided drafting, analysis, testing and development, manufacturability, serviceability, system integration and how the vehicle works together as a whole.

Vehicle Systems

System
Brake System
Engine & Drivetrain
Frame & Body
Instruments, Wiring & Accessories
Miscellaneous, Safety, Finish and Assembly

Cost Evaluation: 100 pts.

The purpose of the Cost Event is to provide teams an opportunity to show the cost/benefit design decisions used in the prototype vehicle. The Cost Event aims to compare the total vehicle cost for each team against all other teams at the competition. The Cost Report will be summarized in an online format where teams can complete their overall BOM (Bill of Materials) with material and manufacturing costs.

Business Presentation: 70 pts.

The Business Presentation event evaluates the team's ability to develop and deliver a comprehensive business, logistical, production, or technical case that will convince outside interests to invest in the team's concept. Teams assume that the judges represent different areas, including engineering, production, marketing, and finance.

Acceleration: 70 pts.

The Acceleration Event is designed to measure each vehicle's ability to come up to speed quickly from a standing start. Acceleration is measured as the time to complete a 30.48 m (100 ft.) or 45.72 m (150 ft.) flat, straight course from a standing start. The course surface may vary from pavement to loose dirt.

Hill Climb or Traction: 70 pts.

This event tests the vehicle's relative ability to climb an incline from a standing start or pull a designated object, e.g., progressive weight skid, vehicle, or chain along a flat surface. The traction event may take place on a straight or curved course.

Land Maneuverability: 70 pts.

Maneuverability is designed to assess each vehicle's agility and handling ability over off-road terrain. Teams will attempt to maneuver through the course with a minimum time. The course may consist of a variety of challenges at the organizer's option, possibly including tight turns, pylon maneuvers, ruts, bumps, drop-offs, sand, rocks, gullies, logs, and inclines.

Specialty: 70 pts.

Specialty events are designed to test the vehicle under unique off-road conditions that might be unique or specific to a particular Baja SAE® competition site. Examples of specialty events are: Rock Crawl, Mud Bog, and Suspension. Specialty events may require the vehicle to complete a course in a minimum time or proceed a maximum distance.

Endurance: 400 pts.

The endurance event assesses each vehicle's ability to operate continuously and at speed over rough terrain with obstacles in potentially adverse weather conditions (rain, snow, etc.). The endurance event may be run for time or for distance. The default is four (4) hours and the vehicle with the most laps (orbits) around the course is declared the winner. The endurance course is a closed loop measuring approximately 0.8 km (0.5 mi.) to 3.2 km (2 mi.). The endurance course will feature different surfaces (e.g. dirt, grass, sand, mud, gravel, stone, and asphalt). The endurance course will feature various obstacles and terrain to test the vehicle's durability, traction, and speed.

THE CAR

The goal of Baja is to design and fabricate a single-seat, all-terrain, sporting vehicle that contains a driver. Each team uses a 14hp Kohler Command Pro CH440 engine with a modified restrictor plate label to power their vehicles.

Drivetrain

Drivetrain is responsible for transferring as much power as possible from our newly introduced Kohler engine to the wheels. Four-wheel drive is required for the 2023 season, which will be a huge challenge. With both the introduction of a new engine and four-wheel drive, we may be facing the largest challenge in a season since the beginning of SAE Baja in the 1970's. Our drivetrain is fully designed by students, and only the regulated engine, transmission, axles, and wheels are not drawn in 3D by the students for fabrication. Even our mounting tabs must face FEA analysis to avoid misalignment and vibration damage of the entire system.

Suspension

Our suspension is responsible for allowing our vehicle to drive over boulders and obstacles at high speeds, maximizing tire contact with the ground, minimizing body roll, and maintaining a high ground clearance. We design and fabricate all suspension components except the shocks. Being an off-roading vehicle, the suspension must be designed to regularly face very high dynamic loads from jumps and obstacles, which requires months of extensive analysis, modeling, and testing.

Brakes

Our brakes are designed custom to each vehicle. We are designing to run an inboard disk brake in the rear with two disk brakes in the front, with each end operating in an independent system to preserve safety in case of failure. We cannot race at any official event without first demonstrating that all four wheels can lock up and slide while the vehicle is operating at full speed.

Frame

Our frame is 100% designed, cut, bent, and welded by students. No outside fabrication or design is allowed per SAE Baja rules. Our welders must pass weld tests by presenting structurally sound weld samples at competition before our vehicle is allowed to compete.

Steering

While traditional Baja vehicles run in relatively straight lines over hills, our vehicle is expected to make sharp turns and even drift around corners. We design and manufacture a custom rack and pinion to reach our goals. If our steering radius exceeds just 8 feet, we may fail to compete in the maneuverability course.

Body Panels

Our body panels reduce racing weight by keeping out mud and dirt, keep our drivers safe by blocking any rocks and debris that may be flung into the air, and contribute to the aerodynamics of the vehicle. All our designs are designed by students, and our sponsors' logos are found on our body panels.

Ergonomics

Our vehicle must support drivers between the 5th percentile female and the 95th percentile male. This is quite a challenge because ergonomics must work around nearly every system of the vehicle to ensure our drivers can withstand a four-hour endurance event through harsh, jarring terrain.

Safety

At competition we must pass extremely rigorous safety inspections before our engine is allowed to start. The failure rate for first-time inspections is nearly 100%. Our safety team ensures we can face these inspections with no major failures while protecting the team against fire injuries and the drivers against rollover injuries.

Electrical

Our safety team provides the system teams necessary information to make data-driven decisions in design and tuning using data acquisition systems. Our electrical system has seen serious improvement for the last two years and will continue to grow with more funding for data acquisition systems.

THE COST BREAKDOWN

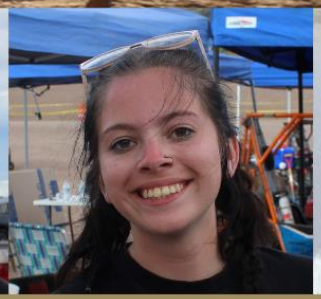
1. **Car Costs**	**$25,470**
a. Drivetrain	11,800
b. Frame	1,070
c. Body Panels	1,150
d. Suspension	4,800
e. Brakes	950
f. Steering	1,100
g. Ergonomics	350
h. Electrical	450
i. Data Acquisition	8,200
j. Safety	1,200
2. **Competition Costs**	**$33,200**
a. Canada	4,700
b. Wisconsin	6,100
c. Oregon	16,100
d. Ohio	6,300

TOTAL ESTIMATED FINANCIAL NEED	**$58,670**
PNW University Funding	**$-3,250**
REMAINING ESTIMATED FINANCIAL NEED	**$55,420**

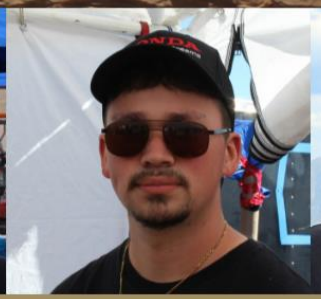
OUR TEAM

The Purdue Northwest chapter of the Society of Automotive Engineers is a student organization dedicated to the advancement of academic careers in the world of engineering. Through this, students gain vital skills such as hands-on experience, peer collaboration, and networking with professionals in many fields of engineering and engineering technologies.

Pete Cowling
Team Captain



Arin Grandowski
Team Manager



Michael Coy
Sponsorship Lead

Brian Scott
Media Lead

A UNIQUE OPPORTUNITY

In addition to helping us achieve our goals, your company logo will be seen on an international level by students, companies, and spectators.

A sponsorship will benefit your company as well as Purdue Northwest Baja Racing. First, your company's name or logo will prominently be displayed on our competition vehicle, which provides a prime opportunity to be recognized at international collegiate events. These events have many future engineers, universities, present engineers, companies, and event sponsors that notice your company's commitment to the future of engineering, as well-as to our education. The team is also highlighted at many other events in the community, such as visiting high schools.

Secondly, as Purdue Northwest Baja Racing is a non-profit self-funded organization, all donations to the team can be used as a tax write-off.
Purdue Northwest Baja Racing also gives back to the community. In the past, we have assisted with the FIRST Lego League Robotics competition. We also participate in various mentoring projects for the Nuts, Bolts & Thingamajigs® (NBT) summer camps and visiting local High Schools in Purdue Northwest's "STEM on the Road" events. We have also developed an internal fostering program for incoming students to develop skills in advanced manufacturing.

To the Purdue Northwest Baja Racing team, your sponsorship provides us encouragement and support from the professional world, along with a chance to be recognized for our engineering and fabricating talents. We are an ambitious group of students and strive for success, but we need your support to perform at our full potential.

SPONSORSHIP TIERS

Our team is rapidly growing thanks to our amazing sponsors. With the team growing and gaining more sponsors, we'd like to recognize those that go above and beyond for our team. To do this, we implemented a tier system. Below, you will see the different tiers and their corresponding dollar amount. The dollar amount will include gifts-in-kind, discounts, and monetary donations

SPONSORSHIP TIERS	INSTAGRAM RECOGNITION	THANK YOU GIFTS	COMPANY LOGO ON CAR	RESUME DROPS
HONORARY $0-249	✔	✔		
BRONZE $250-499	✔	✔	SMALL	
SILVER $500-1,499	✔	✔	MEDIUM	
GOLD $1500-4,999	✔	✔	LARGE	✔
PLATNUM $5,000+	✔	✔	X-LARGE	✔

Do you have questions or special requests? Email us at purduenwbajaracing@pnw.edu!
We also attend nearby company cookouts, meetings, and other events for our Sponsors.

2022 SPONSORS

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Purdue University Northwest

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BERLIN METALS

THANK YOU FOR CONSIDERING US!

The Society of Automotive Engineers (SAE) at Purdue University Northwest (PNW) competes yearly in international collegiate competitions sponsored by SAE and leading automotive manufacturers. The SAE Baja competitions require students to design and fabricate a single seat off-road vehicle. This competition requires talents such as engineering, project management, advanced machining, and fabricating skills. The major goal of this competition is to prepare students for real world applications by providing hands-on experience. The SAE Baja team also competes in unofficial events such as Blizzard Baja and the Quebec EDN Winter Event, which follow similar objectives.

Each year three official National events are held in various locations throughout the United States. For the team to attend these events each year, they need funding for travel, parts, and materials to build a competitive vehicle. Donations of any parts, supplies, tools and/or funding to purchase materials would be greatly appreciated.

These collegiate competitions provide hands-on experience, undertaken by the most dedicated and enthusiastic students in the fields of engineering technology curriculum. By sponsoring Purdue Northwest Baja Racing, you will have a direct impact in the careers of each student in the organization, providing them the opportunity for real world experience thus, enhancing everyone's education. Contributing to this team by gifts- in-kind, monetary gifts, discounts on parts, supplies, etc. is a contribution to the future of engineering.

Rick Rickerson

LABORATORY SPECIALIST & STUDENT LIAISON

SPONSORSHIP FORM

Company Name:

Contact Person:

Phone Number:

Email:

Company Address:

Type of Donations:

- Parts (Braking, Steering, Suspension, Etc...)
- Supplies: (Oil, Lubricants, Brake Fluid, Etc...)
- Monetary Donation: (Cash, Giftcards for Gas, Etc...)

*Please make all checks out to Purdue NW Baja Racing.
**Along with this from please send your logo that will be featured on our car and website in a png or jpg.

CONTACT US

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