**White Salmon Valley Education Foundation**
**Competitive Grant Application**

# Cover Page

Date: Oct. 29, 2010

Applicant(s):

Status: ☐ Administrator **X** Teacher ☐ Student ☐ Community Member ☐ Other: _____

School: Columbia High School Email: Contact Phone #: 509 493-3368

Name of Project: Electric Race Car Class

Dollar Amount Requested: $7450 Total project cost: $27,450

Number of Students Involved: 14-18 students per year (90 students over a 5 year period)

How will funds be used (put 'x' on the line): X Professional Development X Equipment ___ Goods & Contracted Services ___

Substitute Teachers ___ Other:_____

**Goals of this application:**

To recruit proposals that are seeking tools (professional development, mentors, hardware, equipment, materials, collaboration time or other) that will:

- aid or enhance specific instruction and learning methods which, with a plan, will be implemented in the classroom. As well, including concrete measures to monitor benefit.

## Part I - Description of Proposal - Overview:

Please give a brief description (75 words or less) of your proposal that will enhance instruction in the classroom:

**We propose to continue to fund our exciting new introductory engineering course for our students here at CHS. In this course students apply academic principles (geometry, algebra, trigonometry, physics, and chemistry) to design, build, and race electric cars in the Electrathon America Racing Series. Please visit: www.electrathonamerica.org**

## Part II Detailed Proposal Description

Describe the proposal through the following questions:

a. What are the goals of the proposal? How will they be achieved?

**Our goal is for our students to get excited about their learning! This excitement will propel them to continue into further educational training beyond high school in universities, tech schools, apprenticeships, etc. This will be achieved by designing a highly engaging curriculum that will find students building real-world products that they will be proud of for years to come. Each year students at CHS will build highly efficient vehicles capable of over 1500mpg (equivalent energy).This environmentally friendly sport engages students to stretch their ingenuity to design vehicles to travel as far as possible on a closed loop course on limited electrical power.**

b. What is the need for this proposal and how was it determined?

**As a teacher I see too many students leave high school without continuing on to post-secondary training. Statistics show that success in life requires a family-wage career which usually requires at least some education or training beyond high school. Our new Electric Car class has been developed in several high schools across the country and has been shown to increase the numbers of graduates who choose to continue on to post-high school education in the industrial and engineering-related fields. Using concrete measures as you have requested, we found last year 80 percent of graduating seniors who took this new class went onto further training after high school. This is much higher percentage than most high schools typically achieve. With your grant we can continue to allow this course to affect our community's students positively.**

c. Describe targeted student population.

**Our target population is 15 to 19 year old male and female students who enjoy applying academics to exciting real-world challenges.**

d. List any other participants (staff, students, community members etc…).

**Mr. Hipskind collaborates with several people to create this opportunity for our students. From our school district Dr. Lewis, Mr. Hadley, and Mr. Ruthardt assist in technical and supervisory capacities in class and after school at our Skills USA Club. Some of the top engineers and technicians from Insitu, Hood Tech, Custom Interface, Destiny Electric, Versatile Supply, and Morris Motors enthusiastically provided over 400 hours of technical support and mentorships in the past year. Additionally they give presentations to the class on a range of topics including ergonomics, aerodynamics, steering geometry, power management and braking systems. They receive and respond to emails from our students on a regular basis. It is truly a special relationship within our community.**

**Regionally, two teachers from Willamette High School and Hood River Valley High School (who have similar courses in Eugene and Hood River) mentor Mr. Hipskind while he continues to develop the curriculum. We also have over a dozen parents who have formed a booster club to help out doing fundraisers, helping out at work parties and assisting at the events and parades. It is an exciting**

**community effort that you need to stop by and see!!**

e. Provide a timeline of major tasks and activities for this project.

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| **Grant Proposal** | **October 2010** |
| **Curriculum Development** | **Ongoing** |
| **Order Equipment** | **ASAP** |
| **Teach Course** | **August 2010-June 2011** |
| **Attend Races** | **Spring 2011** |

f. How will you evaluate success in achieving proposal goals as listed in (a) above?

**As mentioned above we will continue to track data using concrete measures that tells us how many students continue on to post-secondary training after high school. We have already shown an increase of over 30% in our first year alone. We will continue to track this percentage to see how much this figure increases with the goal of having 100% of our students headed off to continued training after graduating from CHS.**

# Budget

a. Provide an itemized budget for your grant proposal in the space below:

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| **3** | **Electronic Gauges** | **$400** |
| **4** | **Free Wheels and gearing** | **$350** |
| **4** | **Batteries** | **$600** |
| **1** | **Curriculum/Race supervision** | **$1000** |
| **4** | **Body Material** | **$500** |
| **2** | **Potentiometer** | **$200** |
| **4** | **Steering racks** | **$500** |
| **24** | **Tires and tubes** | **$500** |
| **2** | **Sets of Fasteners** | **$100** |
| **1** | **Battery charger** | **$300** |
| **3** | **Motors/Controllers** | **$2400** |
| **Sub total** | | **$6850** |
| **Tax and Freight allowance** | | **$600** |
| **Grand Total** | | **$7450** |

b. List any other funding sources for this proposal, and explain how those funds will be used.

**Our school district will provide the following:**

**-Teacher salary and benefits to teach course**
**-Facility upkeep, utilities, and maintenance**
**-General shop supplies**
**-Transportation to and from races for students and cars**

**We estimate the above value for this course to be approximately $20,000 per year ongoing.**

c. Are there additional district costs not covered by this proposal (i.e. additional staff time, transportation, physical plant maintenance or cleaning, etc.)? If so, please explain.

**Please see section b. above**

d. If this is an ongoing project, explain how it will be funded in the future.

**This course will need ongoing funding for the future. Each year a new group of students will design a new car reusing the motors, batteries, electronic components, wheels, etc. from the previous year. However, we have found that some items will need to be replaced due to stresses on the equipment to ensure student safety. To support these needs our parent booster club started fundraising last spring and has raised over $2400 locally. We have a grant writer who has submitted two grants on our behalf and we look forward to the results of that effort. We will continue to fundraise locally to help cover these costs. About $1000 will be provided by the district each year towards consumables (welding wire, metal, gas, safety equipment) by our CTE budget. Over time we expect demand for the course to increase and we will continue to look for future funding to expand this very successful program to allow more students to participate.**

**Part III: Alignment with the WSVEF priorities and criteria-**

**High Funding Priorities: (worth up to 5 points):**
**This first priority is compulsory:** Must score a 4 or higher to meet funding requirements.

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| Scoring Rubric | Provides **long-term benefit** to the community and schools. (Multiple groups of students will be affected multiple academic calendar years through this investment.) | **Receives a score of 5:**<br>A substantial portion of the funding (60% or more) will pay for one or more of the following:<br>**1.** equipment that is reusable for future projects **and/or**<br>2. underwriting professional development **and/or**,<br>3. creates capacity building opportunities **and/or**,<br>4. develops or replicates curriculum and/or programs with strong potential for long term benefit.<br>**Receives a 4:** A portion of the funding (50 – 59%) purchases any of the above options.<br>**Receives a 3:** A portion of the funding (40- 49%) purchases any of the above options**.** |

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| Answer | **Your funding will create long term benefits to our students here at CHS. Multiple groups of students will recycle and reuse this equipment each year as they get excited about learning industrial and technical concepts needed to design, model, build, and race electric race cars for the Electrathon Racing Series.**<br><br>**Mr. Hipskind will effectively use the curricular development money to collaborate with people who run model programs, such as Willamette High School instructor Mike Hodgert, who has had several state champion teams in Electrathon America. Mr. Hodgert has agreed to mentor Mr. Hipskind through this process. Mr. Hipskind will use this guidance to develop a world-class curriculum for our students here at CHS.** |

| **Priority #** | **Indicator** | **Traits of a score of 5** | **Traits of a score of 3** | **Traits of a score of 1** |
|---|---|---|---|---|
| #3 Rubric | Uses innovative, real-world projects to help students:<br>• apply knowledge,<br>• demonstrate higher-order thinking (eg/ critical analysis, synthesis, evaluation...) and,<br>• apply literacy skills<br><br>in the development of unique products and solutions. | Directly addresses state grade level standards for the content area(s) in question.<br><br>Involves projects that require students **to use critical thinking to address, or attempt to solve a real-world problem for which there is no single 'right' answer**.<br><br>Will most **probably involve collaboration among students and/or other members** of the local or world community. | Directly addresses state grade level standards for the content area(s) in question.<br><br>Involves projects that require students **to read about or find minimal information regarding a problem** for which there is no single 'right' answer. This work might involve the 'upper end' of Bloom's taxonomy but will **primarily address knowledge and comprehension.**<br><br>It **may or may not** involve **collaboration** among students or between students and other members of the local or world community. | May or may not address state grade level standards for the content areas(s) in question.<br><br>Involves **worksheets or other applications that have limited relationships with real world problems.**<br><br>Students will mostly be required to respond with right/wrong or multiple-choice types of responses. |

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| #3 Answer | **Our students will have the opportunity to develop four innovative real-world projects: Four electric race cars!! Imagine the excitement as students start to apply the math and science theories as they begin to research, design, model, and finally build their race cars from scratch! Imagine how excited they will be the first time they strap into their five point safety harness and helmet to test out their vehicles! Imagine the rush they will get as they line up alongside 45 other cars at a sanctioned Electrathon America event as their families and friends cheer them on from trackside! Along the way they will work as teams with community mentors to apply academics related to communication, critical thinking, physics, and math while learning new information about design processes, aerodynamics, ergonomics, electronics, gearing, blueprints, and fabrication. One of our local mentors summed it up by stating they he wished he could have learned this foundational engineering before he went on to college and into his career. This course will place our students years ahead of their peers when they move onto universities tech schools and apprenticeships.** | | | |
| #5 Rubric | Links with and/or recruits the service of community members and resources to further educational and career goals for students in the district. | Directly addresses state grade level standards for the content area(s) in question, **and** involves:<br>• **reciprocal relationships** with community members (i.e. community members and/or students share expertise, engage in dialogue, reciprocally resolve problems, provide internships, etc.) **and/or**<br>• provides career paths for students. | Directly addresses state grade level standards for the content area(s) in question and **may involve:**<br>• **one-way relationships** with community members (i.e. presentations, letters to the newspaper, assembling products to display in community businesses, etc.) **and/or**<br>• provides career paths for students. | May or may not address state grade level standards for the content areas(s) in question, and involves simply **notifying community members** of the event or project. |
| #5 Answer | **One of the most exciting aspects of this new course is the opportunity for our students to learn from some of the experts we have right here in our local community. Early on students learn about efficient design from experts like Peter Kunz, who is the head aeronautical engineer at Insitu. Students will learn to build safe electronic drive systems under the watchful guidance of our district's own licensed electronics expert, Don Ruthhardt and local technician Richard Paige. Cars will need safe braking and steering systems: luckily we have people like Buz Morris (ASE-certified auto tech), Aram Saghikian, a licensed mechanical engineer at Hood Tech and manufacturing engineer David Linn of Custom Interface. We even have a professional racing coach, Ronnie Swyer, who has taken our students and their cars to a private racetrack to teach them efficient driving techniques. They have all agreed to advise our students throughout this educational opportunity. As mentioned earlier, the curricular work will be mentored by industrial teachers from model programs in Hood River and Willamette High School in Eugene, Oregon. The rich level of expertise which our students benefit cannot be overstated and is a powerful force in the success of this program.** | | | |

Web links for terminology such as “technology”, “21st Century skills and knowledge”, “Differentiating instruction” and “Zone of proximal development” are located at the bottom of this document.

**Applicant signature** _____ **Date** _____

**Principal signature** _____ **Date** _____

**Superintendent signature** _____ **Date** _____