To complete this application, you will need access to Microsoft Excel and/or Google Sheet access. Please complete and embed the following spreadsheets into the application, and answer the 12 questions below. Submit the completed application by emailing the Word document to [carbon@ucsc.edu](mailto:carbonfund@ucsc.edu) by 11:59 PM on **Friday, January 19th**.

[Milestone Sheet](https://docs.google.com/spreadsheets/d/1_IfxDf71NDw0T6uM19MbRf5bWsRUzKi3q88CAUqx2bY/edit?usp=sharing)

[Budget Sheet](https://docs.google.com/spreadsheets/d/1n3GfsUoDcQUIEniGP8HF4s2zi57OsRG2NpO4bHA3Cm8/edit?usp=sharing)

[GHG Calculator](https://docs.google.com/spreadsheets/d/1sSgtcChG3ARWqt_fFvyjpk5Pc8cZUzJhZ9JUb_kC8A4/edit#gid=1)

**1. Project Title:**

|  |
| --- |
| Emissions-free transportation for student research |

**2. Primary Contact:**

|  |
| --- |
| Name: Patrick Robinson  Title: Director, UCSC Año Nuevo Natural Reserve  E-mail Address: patrick.robinson@ucsc.edu  Phone Number: 831-708-8094 |

**3. Total Amount Requested: $**

If different from Abstract Application, please state why

|  |
| --- |
| $10,000 (This is the same as the initial request) |

**4. If the overall purpose and/or key components of your project have changed since the abstract application, please describe how so here.**

|  |
| --- |
| The purpose and key components of the project remain unchanged.  Our mission is to provide zero-emission daily transportation to undergraduate and graduate students who use UCSC’s Año Nuevo Reserve while also allowing broader use within the UCSC community to further reduce the carbon footprint of gasoline powered vehicles commonly used for transportation between the newly expanded Coastal Science Campus and the main UCSC campus. The Nissan Leaf all-electric vehicle is a very low cost vehicle with a range that is appropriate for these short-distance tasks. |

**5. Please describe the information and the process used to calculate predicted greenhouse gas reductions.**

|  |
| --- |
| As the Director of UCSC’s Año Nuevo Reserve, I coordinate graduate and undergraduate projects and maintain a log of all research visits. This allows me to estimate the number of vehicle trips per year and, therefore, the number of gallons of gasoline that could be saved from using an all-electric vehicle. Currently, we have nearly 2,000 student researcher visits to the Reserve per year and use an inefficient truck for most of the transportation. Based on current usage, I estimate that we can eliminate 25 gallons of gasoline use per week throughout the year, saving a total of 1300 gallons per year. |

**6. Please describe the direct and/or indirect environmental, financial, and societal benefits associated with this project.**

|  |
| --- |
| This project provides a variety of benefits to the UCSC community:  Environmental: this zero-emissions vehicle will be used to replace gasoline-powered vehicle miles to transport students to UCSC’s Año Nuevo Reserve. Therefore, we will directly, and dramatically, reduce the carbon footprint of our transportation needs for many years into the future.  Financial: By acquiring an all-electric vehicle dedicated to student transportation to research sites, we seek to ensure equal opportunity across socio-economic classes of students while dramatically reducing our carbon footprint in daily research and teaching activities. Currently, undergraduate student involvement at the reserve is limited due to the cost of operating a lab-owned university truck. In many cases, students are asked to drive personal vehicles and their research projects are turned down if they do not have access to a private vehicle. Access to an all-electric vehicle will ensure that students, regardless of current financial status, will be able to conduct their own thesis projects at world-class research sites like the Año Nuevo Reserve while simultaneously reducing their carbon footprint.  Societal: In addition to making this electric vehicle available for use by users in the UCSC community, the vehicle will be used to transport students conducting a variety of research projects – including climate change research. This will allow the students to “practice what they preach” by carrying out their climate-change research in a manner that minimizes their own carbon footprint. |

**7. Explain how you will acquire products and/or services with the least environmental impact possible.**

|  |
| --- |
| The sole product used in this project is a used Nissan leaf all-electric car. This is a small zero-emission vehicle that will dramatically reduce the carbon footprint of transporting students and researchers to the UCSC Año Nuevo Reserve. |

**8. Please specify the match funding secured for this project. Match funding includes all other sources of funding for the project, such as other grants or donations, labor (including volunteer hours), and other resources, such as donated materials. If no match funding provided, please describe your attempts to secure match funding.**

|  |
| --- |
| UCSC Professor Pete Raimondi was awarded a $10,000 Santa Cruz County Air District Grant to purchase an all-electric vehicle. This grant requires that a gasoline-powered vehicle be retired from the UCSC fleet. If awarded a CarbonFund grant, I will work with Pete Raimondi to combine the two awards to purchase a new Nissan Leaf (instead of the planned purchase of a used vehicle) which will dramatically increase the lifetime carbon savings of the project. If that matching is not possible for any reason, I will revert to the original plan of purchasing a used Nissan Leaf (which will also yield many years of carbon savings). |

**9. Will your project need on-going funding after the completion of this grant? If so, please describe how the project will continue with support outside of the Carbon Fund grant.**

|  |
| --- |
| The main expense of the project is the purchase of an all-electric vehicle. All university vehicles have additional expenses (e.g. insurance, maintenance, etc.) that will be covered by a small permanent annual budget I manage for the Año Nuevo Natural Reserve. If possible, any remaining funds after the purchase of the vehicle will be used to supplement these additional expenses. |

**10. If you receive only partial funding, how will that affect your ability to implement your project? How will partial funding affect your project’s ability to save resources (water, electricity, waste, etc)?**

|  |
| --- |
| Unfortunately, this project requires full-funding to be successful. We are already minimizing costs by purchasing a used vehicle and leveraging Reserve funds for vehicle fees/maintenance/insurance, etc. If additional funds are available, we would be able to acquire a vehicle with lower mileage that will increase the lifespan of the vehicle and, therefore, our carbon savings in this project. |

**11. Explain how the project meets this fund’s** [**mission statement**](https://sustainability.ucsc.edu/get-involved/funding/carbon-fund/about/index.html)**.**

|  |
| --- |
| This project serves the mission of the UCSC Carbon Fund in direct and indirect ways:  (1) By acquiring an all-electric zero-emissions vehicle, we will directly eliminate thousands of gasoline-powered miles of driving per year.  (2) This electric vehicle will provide transportation to Año Nuevo Reserve where researchers are currently studying the impacts of climate change on marine mammals, such as the northern elephant seal.  (3) This electric vehicle will be used on a daily basis primarily in the morning. The vehicle will be available for others in the UCSC community to use in the afternoons. This will not only replace additional gasoline-fueled miles, but will demonstrate the utility of zero-emission vehicles to the larger community. |

**12. Does your project include student engagement? How will this project benefit and engage with the greater student body? How will it benefit and engage with UCSC as a whole?**

|  |
| --- |
| Graduate and undergraduate students will be the primary drivers of this electric vehicle. It is also our aim to make this electric vehicle a UCSC community resource. Almost all of the student research activities at Año Nuevo Reserve occur in the early morning and the electric vehicle will be available for other uses during the remainder of the day. Undergraduate and graduate students conducting research or teaching activities will be given priority, but we will also allow any use associated with university business that replaces gasoline-powered miles.  In addition to these direct benefits, we strongly believe that allowing a diverse group of students to drive an all-electric vehicle will increase familiarity with the technology and facilitate broader acceptance and appreciation of zero-emission cars. |

**13. Please answer this question if you have been awarded a Carbon Fund grant before for this project. How did you measure the impact of your project, and give an update of how the funds were used?**

|  |
| --- |
| We were previously awarded a carbon-fund grant entitled: “Solar power upgrade for research and teaching at the UCSC Año Nuevo Reserve”. We purchased two solar power generators and both were put to use at Año Nuevo Reserve. The first was installed at the old Ranger Residence at North Point and allowed us to initiate our first overnight camping trip by undergraduate classes at that site, which was a great success! The Reserve hosted many classes and the solar generator reduced vehicle usage back-and-forth to Santa Cruz while allowing the students an immersive field experience. The second solar generator was installed at the south end of the reserve and is being used primarily for charging radios which are used on a daily basis by students and researchers conducting research projects. Both solar generators were also made available to the State Park staff who also do a variety of public service projects at these sites. |

**Project Budget**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date Last Updated: | 1/19/2018 |  |  |  |
| Date of Budget Approval (if applicable) | |  |  |  |
|  |  |  |  |  |
| **Item** | **Short Description** | **Estimated Cost/Item** | **Quantity** | **Total Projected Cost** |
| Nissan Leaf | a used Nissan Leaf will be identified and purchased from the local used car market | $ 8,500.00 | 1 | $ 8,500.00 |
| Taxes, fees | various taxes and fees associated with the purchase of a used car in california | $ 1,500.00 | 1 | $ 1,500.00 |
|  |  |  |  |  |
| Misc. Expenses | (Note: extra funds after above expenses may be used for parking fees and vehicle maintenance) |  |  |  |
|  |  |  | **Total:** | **$ 10,000.00** |

**Greenhouse Gas Cost and Savings Calculation**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **INPUT VALUES IN THE GREEN CELLS ONLY\* DOWNLOAD FIRST, DO NOT EDIT\*** | | |  |  |  |  |  |
|  | Yearly Project Resource Savings | Project Lifespan | Total Project Resource Savings | Calculated Cost Savings ($) | | Calculated GHG reductions (tons CO2e) | |
| *Enter estimated savings in kWh, therms, gallons, or pounds* | *Enter # of Years* | *Yearly* | *Project Total* | *Yearly* | *Project Total* |
| Estimated **electricity** savings (kWh) | 0 | 0 | 0 | $0.00 | $0.00 | 0.00 | 0.00 |
| Estimated **natural gas** savings (thm) | 0 | 0 | 0 | $0.00 | $0.00 | 0.00 | 0.00 |
| Estimated **domestic water** savings (gallons) | 0 | 0 | 0 | $0.00 | $0.00 | 0.00 | 0.00 |
| Estimated **irrigation water** savings (gallons) | 0 | 0 | 0 | $0.00 | $0.00 | 0.00 | 0.00 |
| Estimate **gasoline** savings (gallons) | 1300 | 5 | 6500 | $5,200.00 | $26,000.00 | 11.34 | 56.68 |
| Estimate **diesel** savings (gallons) | 0 | 0 | 0 | $0.00 | $0.00 | 0.00 | 0.00 |
| Estimated **waste** reduction (pounds) | 0 | 0 | 0 | $0.00 | $0.00 | 0.00 | 0.00 |
| Total | | | | $5,200.00 | $26,000.00 | 11.34 | 56.68 |
|  |  |  |  |  |  |  |  |
| **Enter Total Project Cost from Budget Table in Application** | | | $10,000.00 |  |  |  |  |
| Cost/ton of CO2e Reductions | | | -$282.29 |  |  |  |  |
| Simple Payback Period (Years) | | | 1.92 |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Emissions Factors and Costs** | ***Do not change any values in this table*** | | |  |  |  |  |
| *Greenhouse Gases* | | *Price* |  |  |  |  |
| *Emission Factor* | Units |  |  |  |  |
| Electricity | 0.238 | kg CO2e/kWh | $0.13 |  |  |  |  |
| Natural Gas | 5.306 | kg CO2e/therm | $0.75 |  |  |  |  |
| Domestic Water | 0.004 | kg CO2e/gallon | $0.019 |  |  |  |  |
| Irrigation Water | 0.004 | kg CO2e/gallon | $0.006 |  |  |  |  |
| Gasoline | 8.72 | kg CO2e/gallon | $4.00 |  |  |  |  |
| Diesel | 10.07 | kg CO2e/gallon | $4.40 |  |  |  |  |
| Waste | 0.073 | kg CO2e/lb waste | $0.07 |  |  |  |  |
|  |  |  |  |  |  |  |  |
| \* Notes: |  |  |  |  |  |  |  |
| *1. If your project reduces GHGs in other ways than those listed in this calculator, contact the Carbon Fund to discuss options for calculating your reduction* | | | | | | | |
| *2. Last date updated: Sept 5, 2012* |  |  |  |  |  |  |  |
| *3. Source for emissions costs: US Energy Info. Admin. http://www.eia.gov/* | | |  |  |  |  |  |
| *4. Feel free to add any information that is relevant to your project, but please explain your calculations in the space below* | | | | | | | |
| Methodolgy & Source: | | | | | | |  |
|  |
|  |

**Project Milestones**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | |
|  | | | | | | |
|  | | Be sure to include: -Project start date -Target date for project completion -Date by which you will need the first installment of money from fund -Date by which you expect to have spent all funds -Target date for submitting final project report to fund -Any other significant milestones along the way | | | **List milestones chronologically and insert additional rows if necessary.** |  |
| **Task #** | **Milestone** | | **Description** | **Stakeholders/ Collaborative Members** | **Estimated Completion Date/Deadlines** | **Fulfilled** |
| 1.00 | Project start date | | Begin search for used Nissan Leaf electric vehicle; Also coordinate with Pete Raimondi and UCSC Fleet Services regarding possible $10,000 matching funds | Professor Pete Raimondi / Fleet Services | 15-Feb |  |
| 2.00 | Identify vehicle for purchase | | search for used vehicles and meet with sellers | Año Nuevo Reserve researchers | 1-Mar |  |
| 3.00 | Access to grant funds | | Initiate purchasing process | UCSC academic accountants, fleet services | 1-Mar |  |
| 4.00 | Inspection appointment | | Fleet services inspection of vehicle prior to purchase | Fleet Services | 5-Mar |  |
| 5.00 | Finalize purchase of vehicle | | work with purchasing, academic accountants, and fleet services to purchase vehicle | purchasing, academic accountants, and fleet services | 10-Mar |  |
| 6.00 | Misc. Expenses | | Set up insurance, parking permit, mileage log | Fleet Services, TAPS | 15-Mar |  |
| 7.00 | Start using vehicle | | daily usage and charging of vehicle | Reserve students and researchers | 20-Mar |  |
| 8.00 | Project Completion & Spending of remaining funds | | Vehicle will be used for many years into the future, but Carbon-Fund costs associated with purchase, setup, maintenance will end here | UCSC Community | 1-Jun |  |