Hybrid-electric buses for UAF

**Date:** February 28, 2013  
**Project title:** Hybrid-electric buses at UAF  
**Amount requested:** $7,500.00  
**Proposal author:** Erica Blake

**Contact information:** Phone: (907) 378 – 7476  
Email: elblake@alaska.edu

**Academic department, year in school, undergraduate or graduate standing:** Graduated in May 2012 with a BA in Earth science and minor in biology. I am currently taking courses as a non-degree seeking undergraduate student this semester.

**Sustainability theme:** Energy, Transportation, Social Sustainability

**Project summary:** UAF and the surrounding Fairbanks area constantly have terrible air quality during the winter. To fix this air quality issue, UAF should acquire a hybrid-electric bus. The costs for purchasing a hybrid bus is really expensive so hiring a grant writer for federal grants to assist this purchase is necessary. Nadine Winters (from Winters & Associates) and Jeff Weltzin are both federal grant writers and have previously been on the borough assembly.

**Project description:** Fairbanks has poor air quality, which comes from coal-fired plants, wood stoves and vehicles etc. Some sources say Fairbanks air quality is in the top 10.

“The Environmental Protection Agency has taken note and designated part of the Fairbanks North Star Borough as a “non-attainment area” out of compliance with the Clean Air Act. Any day with a 24-hour average of more than 35 micrograms of particulate per cubic meter is considered in violation. Get enough days per year, and an area is considered out of attainment.” (Alaska Dispatch, December 21, 2012)

As an educational research institution, UAF should find ways to reduce their emissions output. One way would be to acquire a hybrid-electric bus. In order to do this, the appropriate funding is required. In reviewing literature, I have found that municipalities and universities get Federal grants to offset the high cost of hybrid vehicles. I am requesting $7,500, to pay a grant writer to apply for several federal grants that UAF is eligible for. Any remaining funding will be spent on outreach efforts to educate students on the importance of alternative energy and inform them about the hybrid-electric bus (es) coming to campus. Purchasing hybrid-electric buses would help reduce pollutants in the air, and it can be a step towards better air quality.

The FNSB transportation is very interested and supportive of UAF efforts and we are looking into a partnership for the research aspects of this project. Their support will be helpful as we pursue funding.

Hybrid-electric buses use a combination of electric power and diesel to drive. The brakes and stopping mechanisms in a hybrid vehicle generates electricity that goes into a
battery for temporary storage. As the vehicle accelerates from a stop this stored
electricity is used to power the wheels and help the vehicle move forward with little to
no diesel use. A hybrid-electric bus at UAF will save money towards the cost of diesel.

Acquiring a hybrid bus is feasible for Alaska. The extreme weather poses challenges, but
these hybrid-electric buses should have no problems operating in our cold climate.

The hybrid-electric buses have a high cost. They have two batteries (nickel metal
hydride and lithium ion) that have a total cost of $160.00. The bus cost itself is $500,000
to $600,000 which is dependent on which company the hybrid bus is purchased from.
The high costs can be covered by a federal grant.

The plan is to use about $7,500.00 of the RISE funding to pay a grant writer and to
advertise at UAF. The grant writer would write grants for federal grants such as; Bus and
Bus Facilities (Section 5339), State of Good Repair Formula Grants (Section 5337),
Urbanized Area Formula (Section 5307), Formula Grants for Rural Areas (Section 5311)
and Research and Demonstration Programs. All of those programs are under the
Moving Ahead for Progress in the 21st Century (MAP-21).

There are several commercial grant writers in Fairbanks that have a strong track record
of successfully getting Federal grants. Some names came from the internet and some
from referrals. Michele Hebert got in touch with Nadine Winters about grant writing.
Jeff Weltzin is another option; I have not been successful in getting in touch with him.
Both Nadine and Jeff have been on the FNSB assembly and both get grants for urban
and rural cities in Alaska. I have emailed Angela Larson the head consultant for the
Goldstream Group, Program Development and Evaluation, but have not gotten a
response in the last week.

**Project Value:** A hybrid electric bus would reduce diesel consumption and release fewer
emissions. The long term goal is to reduce the number of pollutants in the air. Diesel
fuel emits; volatile organic compounds, oxides of nitrogen, particulate matter, carbon
dioxide, methane and carbon monoxide. The volatile organic compounds, oxides of
nitrogen and particulate matter when combined with heat and light create this ozone
layer that is hazardous for children, elderly and people with chronic respiratory
problems. Reduced emissions at UAF may be a great start towards cleaner air in the
Fairbanks area.

Driving a hybrid-electric bus would increase the fuel economy by 40%, reduce
maintenance costs by 30%, and reduce greenhouse gases by 40% according to the
Washington Transportation Authority (WTA).

A short-term benefit would be improving campus transportation. With a new hybrid
bus, it will be important that it is transporting students around campus in a timely
manner. In order to find out what may need improving, I plan to conduct a survey
among students stating at the top a hybrid-electric bus will be purchased. In order to use it well, it will be important to get the students aware and thinking of ways to improve the public transportation system at UAF.

**Implementation Plan:**

<table>
<thead>
<tr>
<th>Date</th>
<th>What will be done</th>
<th>Responsible person</th>
<th>Funds used</th>
</tr>
</thead>
<tbody>
<tr>
<td>March-May</td>
<td>Find and hire a grant writer for about $80.00/hr</td>
<td>Erica Blake/Michele Hebert</td>
<td>5,000</td>
</tr>
<tr>
<td>March-May</td>
<td>Advertise among UAF students</td>
<td>Erica Blake</td>
<td>500</td>
</tr>
</tbody>
</table>

**Outreach Plan:**

<table>
<thead>
<tr>
<th>What outreach</th>
<th>Venue</th>
<th>Date</th>
<th>Who will do it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Service Announcement (PSA)</td>
<td>Sun Star, Daily News Miner, Radio, Cornerstone</td>
<td>April</td>
<td>Erica Blake</td>
</tr>
<tr>
<td>Tour of the Hybrid</td>
<td>Park it somewhere by SRC and set up booth to educate/inform students on hybrid technology, have music playing</td>
<td>To happen when UAF acquires the hybrid-electric bus which is dependent upon success of receiving federal grants.</td>
<td>OOS Employee</td>
</tr>
<tr>
<td>Surveys</td>
<td>Input/suggestions on the current shuttle routes.</td>
<td>March-April</td>
<td>Erica Blake</td>
</tr>
<tr>
<td>Article about</td>
<td>Sun Star, Daily</td>
<td>Summer</td>
<td>Erica Blake/OOS</td>
</tr>
</tbody>
</table>
Hybrid-Electric Bus News Miner Employee

Video tour and interview KTVF Channel 11, to inform UAF and the Fairbanks area on the first hybrid-electric bus To happen when the UAF acquires the hybrid bus (es) Erica Blake/OOS Employee

Flyers Hang flyers around campus April/May Erica Blake

**Budget**

| Paying a grant writer | For several Federal grants for acquiring a hybrid bus  
- Bus and Bus Facilities  
- State of Good Repair Formula Grants  
- Urbanized Area Formula Grant  
- Formula Grants for Rural Areas  
- Research and Demonstration  
- Any other applicable grants that are required | Cost  
$7,000 |

| Outreach  
Printing flyers  
Banner  
Woodcenter Design  
Various other advertisements | Quantity  
100  
100  
20 | Cost  
$500  
$500  
$500 |

Total ~320 $7,500.00

**Budget justification** - I have reviewed the grant applications and spoken to administrators in D.C about sources of funding. The complexity of these, application is beyond student skills. Nadine Winters, (Winters and Associates) provided us with
estimated cost of applying for several sources of funding. I have emailed D.C about a
federal grant contact in Washington State who may be able to help us.

**Qualification & Experience** - I am currently employed with the Office of Sustainability
and can carry out and start a lot of the outreach projects. The past month I have been
reading and researching articles on hybrid technology, and I put a power point
presentation together for the RISE Board at the February 7, 2013 meeting.

**Technical advisers and collaborators**
- Martin Klein, Business Manager for Facility Services
- Michele Hebert
- Adam Barth
- Sarah Mousseau

**Attachments:**
- Support email statement from Martin Klein
- Power points;
- Hybrid-Electric Bus (Presentation Erica Blake put together)
- Alternative Vehicle Fuel Opportunities (ppt. emailed from FTA employee, Vanessa
  Williams)

**Email of Support**

Hi Martin,
I am writing a proposal to pay someone to write grants for hybrid-electric buses. I need a
technical adviser for this project. Are you in support and can you be a technical adviser
for my RISE Board proposal?
   - Erica
Erica

Yes, I'd be glad to help out.

Martin
--
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Division of Auxiliary and Contract Services
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