

TRUCKEE TAHOE AIRPORT DISTRICT  
BOARD OF DIRECTORS AGENDA ITEM SUMMARY

Topic: Ground Power Unit

Purpose	Information:	Guidance:	Decision: <b>X</b>
Recommendation	After research and staff consideration, staff recommends the purchase of a Ground Power Unit (GPU). Staff specifically recommends a direct current (DC) Jetgo 550 Mti. Product information is attached to the staff report.		
Last Action	The Board of Directors approved \$35,000 for a GPU in the budget for FY 2012-2013. As part of the budget process, the Board of Directors requested information and a proposal from staff before the funding is released.		
Discussion	<p>Ground Power Units, (GPU) are standard and customary equipment used in the servicing of general aviation aircraft. Their use is widespread across facilities ranging from small general aviation airports to large Part 139 commercial service airports. Depending on the structure of the airport, this equipment may be offered by the airport operator to assist aircraft or by fixed based operators offering a range of service on the field.</p> <p>Considerable environmental impact is realized from aircraft idling, onboard auxiliary power unit usage, (APU), and extended ground operation often required at airports with extreme temperature variation. In addition to air quality considerations, noise from idling aircraft poses some level of impact on pilots, passengers, and the public utilizing airport facilities near the ramp. Some of these impacts are outlined in great detail in the ICAO Document 9889 2011.</p> <p>It is anticipated that the recent trend of increasing operations will continue as the economy improves and our region grows. The fleet mix is moving toward a larger turbine contingent and this is illustrated in the Quarterly Operations and Comments Reports for 2011 and 2012. The requisite level of service for this type of operator will require a GPU.</p> <p>Repositioning flights have come to the forefront in staff discussions. The utilization of standard aviation servicing equipment may provide operators with the required service, preventing a double operation at Truckee through a repositioning flight.</p> <p>Occasionally, stranded aircraft, may pose a significant liability to the airport requiring additional staff time. Aircraft left on the ramp in inclement weather require marking, protection, non-standard snow removal, movement, and client contact. These incidents may be alleviated or reduced by the use additional equipment including a GPU.</p> <p>Staff researched the feasibility and practicality of a GPU by</p>		

## TRUCKEE TAHOE AIRPORT DISTRICT BOARD OF DIRECTORS AGENDA ITEM SUMMARY

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speaking to pilots, several FBOs that provide the service, manufacturers, and cold calling other FBOs in various regions to determine what the range of charges are for GPU services.

The aircraft in our fleet mix are either alternating current (AC) or direct current (DC) powered. All of our piston, turbo prop, and most of our small and medium jets are DC powered. Only the larger heavier aircraft, such as newer Challengers and Falcons, Globals, and Gulfstreams are AC powered. AC GPUs typically cost in excess of \$60,000. While AC units can power both AC and DC powered aircraft, we think utilization by AC aircraft will be very infrequent. This is based on discussions with pilots and with several FBOs. The larger more complex AC aircraft will not risk using GPUs to power aircraft systems, and will almost always chose to run their auxiliary power units (APU) to assure a clean steady supply of power. FBOs assume liability for the aircraft they are servicing. While somewhat rare, hiccups or breakdowns in the AC GPUs can cause extensive damage to aircraft systems and avionics. It also requires a full time operator to run an AC GPU for the time the unit is plugged into the aircraft and requires annual inspections and certifications. Based on the risks involved, cost of the unit, and the percentage of our fleet that are powered by AC, staff does not recommend an AC GPU.

Currently the District does not have a policy or time requirement for running an APU on the ramp. We typically encourage pilots to use them sparingly but at times, crews will run APUs for up to an hour typically on warmer days to power air conditioning, and avionics systems while they wait for passengers. We are not aware of noise annoyance issues with APU's off airport; however a few airport business tenants indicate annoyance from APU usage when operated over 20 to 30 minutes.

The DC unit staff recommends purchasing provides power to the aircraft through a bank of batteries charged by a 1.5 liter 4 cylinder diesel engine that meets EPA Tier 4 standards. It is very quick and easy to deploy. The DC battery power is a very clean steady power source.

### **Potential GPU Utilization:**

Much of our business with a DC GPU will be starts for turbo props and small jets that are operating in warm temperatures or in cold temperatures, particularly when they have sat overnight on the ramp in winter. We do not think there will be a high demand for extended ramp usage, and extended usage could infringe on the ability to use the GPU for jump starts Most GPU cycles will be approximately 30 minutes.

In addition to speaking to pilots, operators, manufactures and other FBOs regarding GPU usage, staff compiled a list of the various

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## TRUCKEE TAHOE AIRPORT DISTRICT BOARD OF DIRECTORS AGENDA ITEM SUMMARY

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aircraft and the frequency of their visits to the Truckee Tahoe Airport. We used this data to assist in our prediction of potential usage of GPU service. Please see the attached grouping lists. The list was divided into three categories;

- **Group A** – These aircraft are the most likely to use GPU services, and staff estimates a 15% usage factor for this category. This assumption is based on the commonality of requests from flight crews, aircraft manufacturer recommendations, and common industry standards. Staff feels this is a conservative estimate. For example, usage for Piaggios may be as high as 50%. On warm days in the summer, Group A would likely exceed the 50% estimate.
- **Group B** – Staff estimates a 3% usage factor for these aircraft visits. These are newer aircraft or aircraft designed not to rely on GPU service for starts. Staff considers this to be a conservative estimate as well.
- **Group C** – These aircraft fall into the category of aircraft that would never use our GPU as they are AC powered, only occasionally use GPU services, be serviced merely by a jump start, or rely on their on-board APU. They are not counted into the cost/revenue calculation. This group includes all AC and piston aircraft. Piston aircraft would only use the GPU for a jump start. This service is currently provided with the tug.

The total count of 9,300 aircraft visits as found in Groups A-C represent aircraft visits and not total operations. A visit considers one landing and one takeoff. Staff's aircraft visit calculation removes unknown aircraft (roughly 500 operations) and glider operations (roughly 5000 operations).

Based on the data provided in Groups A through C, staff estimates 290 calls for GPU services out of 9300 aircraft visits.

It should be noted that 290 is our target in the third year of GPU service. In learning from our experience with lavatory cart service, it takes a few years to build a client base and market this service. In the first year of GPU service we estimate 145 GPU services or 50% of our target, in year two we estimate 218 GPU services or 75% of our target. We hope to be at our target of 290 in year 3. This build up factor has been included in the attached ROI Worksheet. Note that this worksheet is based on the cash flows of the project and calculates the net present value and internal rate of return of the project. It will not reconcile to the cost per service shown below, which has a factor built in to recover the cost of the equipment.

### **Cost per GPU Service**

# TRUCKEE TAHOE AIRPORT DISTRICT BOARD OF DIRECTORS AGENDA ITEM SUMMARY

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To estimate the cost of each GPU service, the following assumptions are made:

- Each GPU service is estimated to take approximately 30 minutes, on average.
- Fully burdened labor rate of \$38 per hour is to be used for the Operations/Maintenance worker who will provide the service.
- GPU fuel consumption is 1 gallon per hour on average, at a cost of \$3.86 per gallon.
- Machine expense is estimated to be \$24.59 per hour or \$12.30 per event (30 minute service).
  - Unit purchase price \$33,000 ÷ 1,342 hours of service
  - Hours of service calculated as: 145 events in year 1, 218 in year 2 and 290 per year for years 3-10. The total number of events is 2,683 – at half an hour each that equates to 1,342 hours of service.

The cost per GPU service in the first year of operation, including the cost of the equipment, is:

Labor	\$19.00
Fuel	1.93
Machine	12.30
Maintenance	<u>1.33</u>
	\$34.56

Included in the above operating cost is the anticipated costs of maintenance for the unit; four hours of mechanic service time per year. In accordance with manufacturer recommendations, the replacement of the batteries in year 4 and year 8 has been included in the operating expenses on the attached ROI worksheet (page 2 of 4). The ROI worksheet is based on cash flow, and so the cost of the equipment, which is paid up front, is not included in the annual “anticipated operating expenses;” however, the labor, fuel and maintenance costs are included.

## **Revenue and Cost Recovery**

Staff research discovered that GPU service charges varied from \$50 to \$150 per service cycle. Factors such as regional location, bundling with fuel quantity purchased, contractual agreements, and other bundled services arrangements are considered by FBOs in setting a price.

Based on our assumption that most service cycles will be jump starts, staff recommends that a charge of \$75 per 30 minutes of GPU service to cover equipment, staffing costs, maintenance of GPU and a return on investment (see attached ROI Worksheet). Staff also recommends that the General Manager be provided latitude to adjust this cost at his discretion, if warranted, for quantity

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TRUCKEE TAHOE AIRPORT DISTRICT  
BOARD OF DIRECTORS AGENDA ITEM SUMMARY

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fuel purchases or other considerations.

Based on the fleet mix groups provided in the attachment and the information provided in this staff report, staff makes the following assumptions.

- Cost to perform each GPU service = \$34.56.
- Recommended charge per GPU service = \$75.
- Estimated net revenue per GPU service = \$40.44.
- Estimated annual demand for GPU services in third year = 290
- Annual net revenues are projected to be \$5,864 in year 1.
- Annual net revenues are projected to be \$11,728 beginning in year 3.

**Other Potential uses for GPU**

The particular GPU presented also has the capability to be used as a portable generator to power 110V alternating current equipment. The unit recommended by staff along with many others were observed and researched by the General Manager at the NBAA trade show in 2011.

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Fiscal Impact	The current FY 2013 Budget includes \$35,000 for a GPU. Based on cost and revenue projections, cost recovery should occur during the fourth year of service.
Communication Strategy	TTAD information sources and website will be updated, e-blast announcements will be sent, and the new service will be posted at Unicom. Staff will also reach out to our current user base and inform them of the new GPU service.
Attachments	Aero Specialties spec sheet for Jetgo 550 Mti Aircraft Operations Group Charts Return on Investment ROI Worksheet.

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