

## Calculate a Project's ROI - GROUND POWER UNIT

### Step 1 - Understand the Benefits

Document the business case for the purchase. Review the business case to understand the project and the benefits it is expected to deliver. Identify tangible and intangible benefits. Convert intangible benefits to tangible factors.

Example: Benefits like increasing employee morale (intangible) can be converted to be tangible as follows: Increase employee morale can increase retention, which can save new employee recruiting and training costs. Based on the employee turnover last year, HR dept can provide tangible figures like "reduce employee turnover by 5% and save \$5,000 in new employee recruiting costs.

Document the benefits of your project below.

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. Additional information is contained in the Staff Report for the November 29, 2012 board meeting.

**Step 2 - Understand cash flow**

Current Year Expenditure:  as a negative (outflow)

Must determine expected useful life of asset  Years

Expected revenues by year:

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Expected revenues by year:	\$ 10,875	\$ 16,313	\$ 21,750	\$ 21,750	\$ 21,750	\$ 21,750	\$ 21,750	\$ 21,750	\$ 21,750	\$ 21,750
anticipated expenses (enter as a negative)	\$ (3,228)	\$ (4,756)	\$ (6,284)	\$ (7,263)	\$ (6,263)	\$ (6,263)	\$ (6,263)	\$ (7,263)	\$ (6,263)	\$ (6,263)
net cash flow by year	\$ 7,647	\$ 11,557	\$ 15,466	\$ 14,487	\$ 15,487	\$ 15,487	\$ 15,487	\$ 14,487	\$ 15,487	\$ 15,487

**Jane.Dykstra:**  
\$75 per event. 290 events per year times .5

**Jane.Dykstra:**  
\$75 per event. 290 events per year times .75

**Jane.Dykstra:**  
\$75 per event - 290

**Jane.Dykstra:**  
labor of \$19/event + fuel of \$1.93/event, 4 hours of maintenance at \$48.23/hour

**Jane.Dykstra:**  
add \$1000 for replacement batteries

**Jane.Dykstra:**  
add \$1000 for replacement batteries

If there are anticipated additional outflows (e.g. operating costs, or replacement parts) those costs must be included in the cash flow.

**Step 3 - Understand your discount rate**

The discount rate is the minimum expected rate of investment, based on analyzing other alternate investment options. In the District's case, we usually use the average of the LAIF rate over the past 10 years.

That rate is currently:

#### Step 4 - Calculate ROI Factors

Non-discounted cash flow		
Outflow	\$	(33,000) Assume beginning of year one
Net Inflows (outflows) - Year 1	\$	7,647 Assume end of year
Year 2	\$	11,557
Year 3	\$	15,466
Year 4	\$	14,487
Year 5	\$	15,487
Year 6	\$	15,487
Year 7	\$	15,487
Year 8	\$	14,487
Year 9	\$	15,487
Year 10	\$	15,487
Net (outflow) inflow	\$	108,082 over the life of the asset

*Discount the cash flow. You must take into consideration the time value of money.*

**Net Present Value is calculated by discounting all future income amounts based on the discount rate and adding the discounted income stream.**

Net Present Value of Project                      90,841

**Internal Rate of Return is the discount rate that makes the Net Present Value equal to 0.**

Internal Rate of Return of Project                      36%

**Payback Period is how long it will take to recover the amount invested in a project - using the discounted cash flow**

	Net cash flow	Discounted Net Cash Flow	Cummulative
Year 1	\$ 7,647	\$ 7,476	\$ 7,476
Year 2	\$ 11,557	\$ 11,045	\$ 18,521
Year 3	\$ 15,466	\$ 14,451	\$ 32,972
Year 4	\$ 14,487	\$ 13,233	\$ 46,205
Year 5	\$ 15,487	\$ 13,830	\$ 60,035
Year 6	\$ 15,487	\$ 13,520	\$ 73,555
Year 7	\$ 15,487	\$ 13,217	\$ 86,772
Year 8	\$ 14,487	\$ 12,087	\$ 98,859
Year 9	\$ 15,487	\$ 12,632	\$ 111,491
Year 10	\$ 15,487	\$ 12,349	\$ 123,841

Year where cumulative discounted cash flow exceeds initial invesment

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### Step 5 - Analyze ROI factors

#### This Project's factors:

NPV	\$ 90,841
IRR	36%
Payback Period	4 years

#### General Analysis Matrix:

	Value	Comments
Net Present Value	Positive	Acceptable - Invest in a project with a higher NPV
	Zero	May or may not be acceptable - consider other factors
	Negative	Usually not acceptable
IRR	Number	Invest in a project with a higher IRR
Payback Period	Number	Invest in a project with a smaller payback period