Power Budget Example

Team Number:	303
Project Name:	**G.M.W.S - 01**
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Version:	**V1**

A. List ALL major components (active devices, integrated circuits, etc.) except for power sources, voltage regulators, resistors, capacitors, or

All Major Components	Component Name	Part Number	Supply	#	Absolute	Total	Unit
	Microcontroller	PIC18F27Q10	3.3V	1	250	250	mA
	ESP32 Wifi Module	ESP32-DEVKIT-V1	3.3V	1	500	250	mA
	Temperature Sensor	TC74A4-3.3VCTTR	3.3V	1	350	200	mA
	Barometer	SM9543-005M-D-C-3-S	3.3V	1	4	2	mA
	Motor Driver	IFX9201SGAUMA1	4-40V	1	15	15	mA
	Motor	Gebildet DC3V-12V DC	6-12V	1	200	150	mA

B. Assign each major component above to ONE power rail below. Try to minimize the number of different power rails in the design.

+8.4V Power Rail	Component Name	Part Number	Supply	#	Absolute	Total	Unit
	Motor Driver	IFX9201SGAUMA1	7 - 8.4V	1	13	13	mA
	Motor	Gebildet DC3V-12V DC	7 - 8.4V	1	200	200	mA
						0	mA
						0	mA
						0	mA
					Subtotal	213	mA
					Safety Margin	25%	
					Total Current Required on +12V Rail	266.25	mA
c1. Regulator or Source Choice	no regulator needed		7-8.4V	1	1500	1500	mA
					Total Remaining Current Available on +8.4V Rail	1233.75	mA

+3.3V Power Rail	Component Name	Part Number	Supply	#	Absolute	Total	Unit
	Microcontroller	PIC18F27Q10	1.8-5.5V	1	200	200	mA
	ESP32 Wifi Module	ESP32-DEVKIT-V1	2.3-3.6 V	1	100	100	mA
	Temperature Sensor	TC74A4-3.3VCTTR	2.7-5.5V	1	350	350	mA
	Barometer	SM9543-005M-D-C-3-S	3-3.6V	1	4	4	mA
	Motor Driver	IFX9201SGAUMA1	0-5.5V	1	15	15	mA
						669	mA
					Safety Margin	25%	

					Total Current Required on +5V Rail	836.25	mA
c2. Regulator or Source Choice	+3.3V Switching Regulator	LM2575	(range)	1	1000	1000	mA
C. For each power rail above, select a specific voltage regulator using the same process as for major component selection. Confirm that the							
D. Select a specific external power source (wall supply or battery) for your system, and confirm that it can supply all of the regulators for all of							
External Power Source 1	**Component Name**	**Part Number**	**Supply**	**Output**	**Absolute**	**Total**	**Unit**
Power Source 1 Selection	Battery	1781 Adafruit Industrie	+8.4V	8.4V	3600	3600	mA
Power Rails Connected to External Power Source 1	3.3 Regulator	LM2575	3.3V	1	1000	1000	mA
	Motor	Gebildet DC3V-12V DC	6-8.4V	1	200	200	mA
	Motor Driver (Leakage Currer	IFX9201SGAUMA1	4-8.4V	1	13	13	mA
	Total Remaining Current Available on External Power Source 2					2387	mA
E. Calculate Battery Life (if applicable). For each battery, also check the worst-case lifetime of the battery by							
	Component Name	**Part Number**	**Supply**		**Capacity**	**Required**	
	Battery	(full part number)	+12V		3600	1213	
					Battery Life	2.96784831	hours
Notes							
External Supply Voltage should be determined by the dropout voltage for highest-voltage regulator (e.g., +14V for a +12V regulator).							
If you have multiple units in your design (e.g., a base unit and remote unit) then you need a separate power budget for each unit							