

Power Budget Example							
Team Number:	Team 207						
Project Name:	Mobile Weather Station						
Team Member Names:	Manuel, Michaela, Isaac, JJ						
Version:							

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

All Major Components		Component Name	Part Number	Supply	#	Absolute	Total	Unit
Microcontroller	PIC18LF26K40	PIC18LF26K40-I/SC	3.3V	1	250mA		250	mA
Integrated Circuit	Motor Driver SPI	IFX9201SGAUMA1	3.3V	1	30mA		30	mA
Actuator	9V Gear motor	114090046	9V	1	650mA		650	mA
Humidity Sensor	Humidity Sensor I2C	HIH6030-021-010	3.3V	1	0.65mA		0.65	mA
Wifi Board	ESP32	ESP32WROOM32	3.3V	1	500 mA		500	mA

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

[illegible]

+3.3V Power Rail	Component Name	Part Number	Supply	#	Absolute	Total	Unit
Integrated Circuit	Motor Driver SPI	IFX9201SGAUMA1	3.3V	1	30mA	30	mA
Humidity Sensor	Humidity Sensor I2C	HIH6030-021-010	3.3V	1	0.65mA	0.65	mA
Microcontroller	PIC18LF26K40	PIC18LF26K40-I/SC	3.3		250mA	250	mA
Wifi Board	ESP32	ESP32WROOM32	3.3V	1	500 mA	500	mA
					Subtotal	780.65	mA
					Safety Margin	25%	
					Total Current Required on +3.3V Rail	975.8125	mA
c2. Regulator or Source Choice	+3.3V Regulator	LM2575D2T-3.3F	3.3 V	1	1000	1000	mA
					Total Remaining Current Available on +3.3V Rail	24.1875	mA

<b>C. For each power rail above, select a specific voltage regulator using the same process as for major component selection. Confirm that the Total</b>							
<b>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 the power</b>							
<b>External Power Source 1</b>	<b>Component Name</b>	<b>Part Number</b>	<b>Supply</b>	<b>Output</b>	<b>Absolute</b>	<b>Total</b>	<b>Unit</b>
Power Source 1 Selection	Amazon 9V Battery	CR9V-2PK	+9V	9V	1200	1200	mA
Power Rails Connected to External Power Source 1	9 V Motor	114090046	9 V	1	650	650	mA
	Motor	IFX9201SGAUMA1	9V	1	30	30	mA
	3.3V Regulator	LM2575D2T-3.3R4	3.3 V	1	500	500	mA
<b>Total Remaining Current Available on External Power Source 1</b>						20	mA
<b>Reg <math>\ln(V_{out} \cdot I_{out}) / (V_{in} \cdot \text{efficiency})</math></b>							
<b>External Power Source 2</b>						<b>Total</b>	<b>Unit</b>
Power Source 2 Selection							mA
Power Rails Connected to External Power Source 2							mA
<b>Total Remaining Current Available on External Power Source 2</b>						0	mA
<b>E. Calculate Battery Life (if applicable). For each battery, also check the worst-case lifetime of the battery by indicating the</b>							
	<b>Component Name</b>	<b>Part Number</b>	<b>Supply</b>		<b>Capacity</b>	<b>Required</b>	
	Amazon 9V Battery	CR9V-2PK	9V		1200	1150	
					<b>Battery Life</b>	1.043478261	hours
<b>Notes</b>							
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							