

# Power Budget v2

Team Number:	305						
Project Name:	Home Room Weather Control System						
Team Member Names:	Diego Rodriguez, Uriah Villa, Jack Windle, Nicholas Dunn						
Version:	2						

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

All Major Components	Component Name	Part Number	Supply	#	Absolute	Total	Unit
	PIC18	PIC18F27J53-I/SO	3.3V	1	50	50	mA
	ESP32	ESP32-Devkit-v1	3.3V	1	280	280	mA
	Motor	MD3B-14280-R	12V	1	1000	1000	mA
	Motor Driver	DRV8847SPWR	3.3V	1	5	5	mA
	Light Sensor	VEML7700-TT	3.3V	1	0.05	0.05	mA
	Temp Sensor	TC74A4	3.3V	1	0.2	350	mA

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

+12V Power Rail	Component Name	Part Number	Supply	#	Absolute	Total	Unit
	Motor	MD3B-14280-R	12V	1	1000	1000	mA
						0	mA
					<b>Subtotal</b>	1000	mA
					<b>Safety Margin</b>	25%	
					<b>Total Current Required on +12V Rail</b>	1250	mA
<b>c1. Regulator or Source Choice</b>	Plug-in Wall Supply	(full part number)	12V	1	5000	5000	mA
					<b>Total Remaining Current Available on +12V Rail</b>	3750	mA
+3.3V Power Rail	Component Name	Part Number	Supply	#	Absolute	Total	Unit
	PIC18	PIC18F27J53-I/SO	3.3V	1	50	50	mA
	ESP32	ESP32-Devkit-v1	3.3V	1	280	280	mA
	Motor Driver	DRV8847SPWR	3.3V	1	5	5	mA
	Light Sensor	VEML7700-TT	3.3V	1	0.05	0.05	mA
	Temp Sensor	TC74A4	3.3V	1	0.2	0.2	mA
					<b>Subtotal</b>	335.25	mA
					<b>Safety Margin</b>	25%	
					<b>Total Current Required on +3.3V Rail</b>	419.0625	mA
<b>c2. Regulator or Source Choice</b>	+3.3V switching regulator	LM2575	+4V - 40V	3.3V	1000	1000	mA
					<b>Total Remaining Current Available on 3.3V Rail</b>	580.9375	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</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</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>
<b>Power Source 1 Selection</b>	Plug-in Wall Supply	(full part number)	110VAC	+12V	5000	5000	mA
<b>Power Rails Connected to External Power Source 1</b>						0	mA
						0	mA
	+3.3V switching regulator	LM2575	+4V - 40V	3.3V	1000	1000	mA
	<b>Total Remaining Current Available on External Power Source 1</b>					4000	mA
<b>E. Calculate Battery Life (if applicable). For each battery, also check the worst-case lifetime of the battery by</b>							
	<b>Component Name</b>	<b>Part Number</b>	<b>Supply</b>		<b>Capacity</b>	<b>Required</b>	
	N/A	N/A	N/A	N/A	N/A	N/A	
					<b>Battery Life</b>	N/A	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							