Power Budget

Team Number:	313
Project Name:	**FireBox**
Team Member Names:	**Tyler,Sophie,Dan,Luke**
Version:	**Final**

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

All Major Components	Component Name	Part Number	Supply	#	Absolute	Total	Unit
	Temperature sensor	LM92CIMX/NOPB	-0.3V-6.3V	1	20	20	mA
	Shift Register	74HC595PW-Q100	-0.5V-7V	1	70	70	mA
	Pressure/Humidity sensor	BME280	-0.3V-4.25	1	1	1	mA
	ESP32-S3	ESP32-S3-WROOM	-.03V-3.6V	1	400	400	mA
	3.3V regulator	LM2575D2T-3.3R4	45V	1	1000	1000	mA

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

+3.3V Power Rail	Component Name	Part Number	Supply	#	Absolute	Total	Unit
	Temperature sensor	LM92CIMX/NOPB	-0.3V-6.3V	1	20	20	mA
	Shift Register	74HC595PW-Q100	-0.5V-7V	1	70	70	mA
	Pressure/Humidity sensor	BME280	-0.3V-4.25	1	1	1	mA
	ESP32-S3	ESP32-S3-WROOM	-.03V-3.6V	1	400	400	mA
					Subtotal	491	mA
					Safety Margin	25%	
					Total Current Required on +3.3V Rail	613.75	mA
c4. Regulator or Source Choice	+3.3V Buck regulator	LM2575D2T-3.3R4	45V	1	1000	1000	mA
					Total Remaining Current Available on 3.3V Rail	386.25	mA

C. For each power rail above, select a specific voltage regulator using the same process as for major component selection. Confirm that

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

External Power Source 1	Component Name	Part Number	Supply	Output	Absolute	Total	Unit
Power Source 1 Selection	9V Battery	6LF22XWA/B	9V	9V	400	400	mA
Power Rails Connected to External Power Source 1	+3.3V Buck regulator	LM2575D2T-3.3R4	45V	1	1000	1000	mA
					Total Remaining Current Available on External Power Source 1	-600	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)	9V		400	1000	
					Battery Life	0.4	hours