empty = ~~4.8V~~ 5V as buck drops at 4.1V

range 8 → 4

at 8V → 3.3V

so choose $R_1 = 100k$

$$V_{out} = \frac{V_{in} R_2}{(R_1 + R_2)}$$

$$\frac{V_{out} R_1}{V_{in}} + \frac{V_{out} R_2}{V_{in}} = R_2$$

$$\frac{V_{out}}{V_{in}} R_1 = R_2 \left(1 - \frac{V_{out}}{V_{in}}\right)$$

$$\frac{8}{3.3} \times 100e3 \left(1 - \frac{8}{3.3}\right) = 70k$$

$$V_{out} R_1 + V_{out} R_2$$

$$V_{out} R_1 = (V_{in} - V_{out}) R_2 = 70k$$

so $R_1 = 100k$

$R_2 = 70k = 68k$

8 → 3.238V

~~4~~.5V → 2V ✓