The appropriate capacitor size can be found when a constant current is drawn from a capacitor bank. First, note the voltage of a capacitor is given in equation E.1, and the current of a capacitor is given in equation E.2.

$$V_c(t) = V_o e^{\frac{-t}{RC}} \tag{E.1}$$

$$I_c(t) = \frac{V_o}{R} e^{\frac{-t}{RC}} \tag{E.2}$$

The derivative of the voltage gives equation E.3, and by observing the current term of equation E.2 present in the derivative, it can be set equal to a constant current, I, since current discharge is constant over time. This is shown in equation E.4.

$$\frac{dV_c(t)}{dt} = -\frac{V_o}{RC} e^{\frac{-t}{RC}} \tag{E.3}$$

$$\frac{dV_c}{dt} = -\frac{I}{C} \tag{E.4}$$

So, with a linear voltage change over time, the appropriate capacitance can be solved with design constraints that the capacitor changes from V_1 to V_2 over a time t_1 to t_2 in equations E.5.

$$C = -\frac{I(t_2 - t_1)}{V_2 - V_1} \tag{E.5}$$