The graph (top) shows vertices V_1 through V_7 with edges:
- $V_1 \to V_2$: 0.05
- $V_2 \to V_2$: 0.1
- $V_2 \to V_3$: 0.3
- $V_2 \to V_5$: 0.25
- $V_3 \to V_4$: 0.1
- $V_5 \to V_4$: 0.5
- $V_5 \to V_7$: 0.4
- $V_5 \to V_6$: 0.2
- $V_6 \to V_4$: 0.15

i	$|V_i|$	$|\tilde{V}_i|$
1	1000	10
2	250	2.5
3	100	1
4	500	5
5	300	3
6	400	4
7	150	1.5

Block connection prob. p_{ij}

0	0.05	0	0	0	0	0
0	0.1	0.3	0	0.25	0	0
0	0	0	0.1	0	0	0
0	0	0	0	0	0	0
0	0	0	0.5	0	0.2	0.4
0	0	0	0.15	0	0	0
0	0	0	0	0	0	0

Cost $\quad c_{ij} := \dfrac{1}{p_{ij}|\tilde{V}_i||\tilde{V}_j|}$

0	0.8	0	0	0	0	0
0	0	1.33	0	0.53	0	0
0	0	0	2	0	0	0
0	0	0	0	0	0	0
0	0	0	0.13	0	0.42	0.56
0	0	0	0.33	0	0	0
0	0	0	0	0	0	0

Path:
$$\mathcal{P} = \{V_1, V_2, V_5, V_4\}$$

Path length:
$$\ell(\mathcal{P}) = t_{12}c_{12} + t_{25}c_{25} + t_{54}c_{54}$$
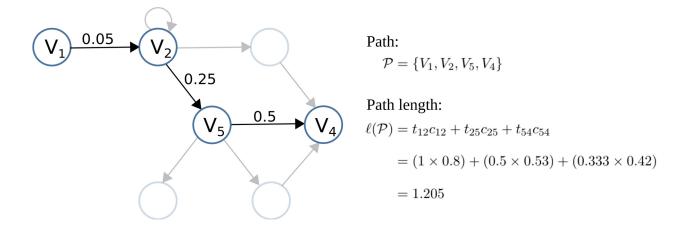$$= (1 \times 0.8) + (0.5 \times 0.53) + (0.333 \times 0.42)$$
$$= 1.205$$

Figure S1: An illustrative example for calculating the path length of a random walk on the circuit.