## Energy Constraint Shortest Path Algorithm

Searching for the cheapest path and adding the new ones into the current path set is one critical step to solve the traffic assignment problem. Here we develop a shortest path searching algorithm based on dynamic programming to deal with the energy constraint of EVs, which is easy to be programmed.

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| **Algorithm:** Energy Constraint Shortest Path Algorithm |
| 1. Extend each node  in the original expanded network to several state nodes, which stands for different possible discrete energy states from the origin node. The state nodes are connected according to the energy consumption of the original links, while the weight of the new links are set as the travel cost of the original links. |
| 1. Solve the shortest path problem between the origin node and other nodes through the Dijkstra algorithm. |
| 1. Find the cheapest feasible states among the destination node group and generate the corresponding path. |

