

# Parameters

$i \in [1, N]$  : Charging station location

$j \in [1, M]$  : Demand hotspot

$k \in [1, K]$  : Demand type

$\alpha_{i,j}$  : Fraction of demand at  $j$  assigned to station  $i$

$D_{j,k}$  : Demand for type  $k$  at demand hotspot  $j$

$S_{i,j}$  : Distance (by road) between station location  $i$  and demand hotspot  $j$

$B_i$  : Estimated cost of building a station at location  $i$

$C_{i,k}$  : Capacity of the station at  $i$  (if built) for demand type  $k$

$G$  : Total budget available for building the charging network

Other variables used:

$L_j$  : Penalty/Loss incurred by vehicles at  $i$  to travel to a station for charging

# Decision Variable

$$x_i = \begin{cases} 0, & \text{if station should be built at location } i \\ 1 & \text{otherwise} \end{cases}$$

# Objective Function

$$\text{minimize} : \sum_{k=1}^K \sum_{j=1}^M D_{j,k} \times L_j$$