Nomenclature

A. Sets

C	Set of costumers
H	Set of hours of the day
N	Set of all nodes
S	Set of scenarios

B. Index

h	Hour index
i	Origin node index
j	Destination node index
s	Scenario index
q	Charging station node index

C. Parameters

α	Net present value
δ	Energy consumption/distance
ϕ	Interest rate
λ	Penalty weight for electric vehicle operating time
η^c	Battery charging efficiency
η^d	Battery discharging efficiency
η^{CH}	Electric vehicle charging efficiency
η^{dE}	Electric vehicle discharging efficiency
π_s	Probability of each scenario s
$\bar{\tau}$	Maximum operating time of electric vehicle
ω	Battery percentage at the start and end of the day
c_b	Cost of a battery unit
c_d	Cost of traveling unit distance
c_p	Cost of photovoltaic panel unit
c_{fuel}	Average fuel cost
C^f	Average fuel consumption
d_{ij}	Distance between nodes i and j
$E^{BAT,nom}$	Nominal battery power
f	Emission of carbon dioxide factor
N^{years}	Number of years of electric vehicle battery useful life
N^{days}	Number of working days in the year
$P^{BAT,nom}$	Nominal power of each battery

$\overline{P}^{EV}$	Maximum charging power of electric vehicle
SOC_0	Electric vehicle initial state of charge
$\overline{SOC}$	Maximum state of charge of the electric vehicle
$\underline{SOC}$	Minimum state of charge of the electric vehicle
t^{dep}	Departure time from the depot
v	Constant speed of the electric vehicle

D. Variables

β_h	Binary variable that is active if the vehicle arrives at the station at the hour h and 0 otherwise.
ε	Emissions of carbon dioxide
γ_{hs}	Binary variable that is 1 if the electric vehicle is at the charging station at the hour h and 0 otherwise, at scenario s
Δ_{ij}	Continuous variable for linearization of the calculation of the state of charge of the electric vehicle between nodes i and j
Δ_{ij}^{t}	Continuous variable for linearizing the calculation of electric vehicle travel time between nodes i and j
τ_s^{CH}	Electric vehicle charging time in scenario s
E_{hs}^{BAT}	Battery energy in h at scenario s
E_{fuel}	Expense fuel
$P_{hs}^{BAT,c}$	Battery charge power in h at scenario s
$P_{hs}^{BAT,d}$	Battery discharge power in h at scenario s
P_{hs}^{EV}	Electric vehicle charge power in h at scenario s
SOC_j	Electric vehicle state of charge at node j
t_j	Electric vehicle arrival time at node j
U_i	Auxiliary integer variable to eliminate subroutes
x_{ij}	Binary variable of the state of arc ij: 1 if it is traveled and 0 otherwise
y	Integer variable of the number of batteries of the sizing
z	Integer variable of the number of panels of the sizing