

The name of an output file is composed of 5 elements:

1. Location id: L1, L2, ..., L30
2. Customer id: C1, C2, R1, RC1
3. Number of customers: 100 for all instances
4. Improvement strategy: ImpStr1, ImpStr2, ImpStr3, ImpStr4
5. Demand profile: DemPro1, DemPro2, DemPro3, DemPro4

There are total  $30 \times 4 \times 4 \times 4 = 1920$  output files in four zip files:

1. "OUTPUT\_DemPro1\_480\_instances.zip"
2. "OUTPUT\_DemPro2\_480\_instances.zip"
3. "OUTPUT\_DemPro3\_480\_instances.zip"
4. "OUTPUT\_DemPro4\_480\_instances.zip"

The information in output files is self-explanatory. Essential descriptions are provided below.

Variable/Abbreviation	Description
sp	Total primary echelon and secondary echelon cost
vrp_cost	Direct transportation cost
Material_cost	Transportation cost from plants to warehouses
OPF	Open primary facility (i.e. located warehouse)
OSF	Open secondary facility (i.e. located hub)
best_OPF_x5	Set of internal id of located warehouses over planning horizon
user best_OPF_x5	Set of user-specified id of located warehouses over planning horizon
best_OPF__g_x3	Set of internal id of located warehouses for each product over planning horizon
user best_OPF__g_x3	Set of user-specified id of located warehouses for each product over planning horizon
best_OPF_enter_time__g_x3	Set of entering periods for located warehouses corresponding to best_OPF__g_x3
best_OPF__t_g_x1	Set of internal id of located warehouses for each period and product
best_OSF_x5	Set of internal id of located hubs over planning horizon
user best_OSF_x5	Set of user-specified id of located hubs over planning horizon
best_OSF__g_x3	Set of internal id of located hubs for each product over planning horizon
user best_OSF__g_x3	Set of user-specified id of located hubs for each product over planning horizon
best_OSF_enter_time__g_x3	Set of entering periods for located hubs corresponding to best_OSF__g_x3
best_OSF__t_g_x1	Set of internal id of located hubs for each period and product