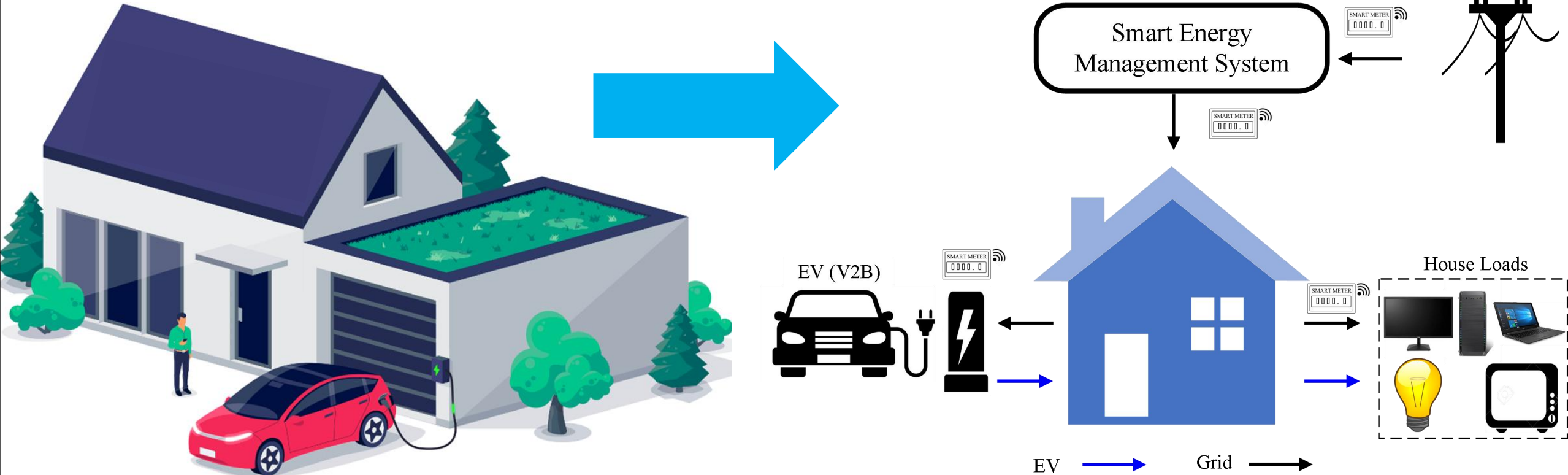➢ Step 1: Choose the type of user (house or apartment) to create the load profile.

➢ Step 2: Where the user is located in terms of Energy Price (SE1, SE2, SE3, SE4)?

➢ Step 3: Which user type is defined in your project (student, nurse, farmer, professor)?

➢ Step 4: Make an assumption for the SoC% in the morning and afternoon.

➢ Step 5: Add a PV system production in the project (Scenario 2).

Max Power for the User	Energy Price Zone	Max PV Production	Daily V Production	BESS Capacity	BESS CH & DIS	EV Battery Capacity	EV Battery SoC (M & E)	Daily Energy from Grid	Daily Energy Cost	Daily Energy from Grid
(Scenario 3).				Battery Management Service Course (BMS)					2/8/2024	1

Grid

Smart Energy Management System

SMART METER

EV (V2B)

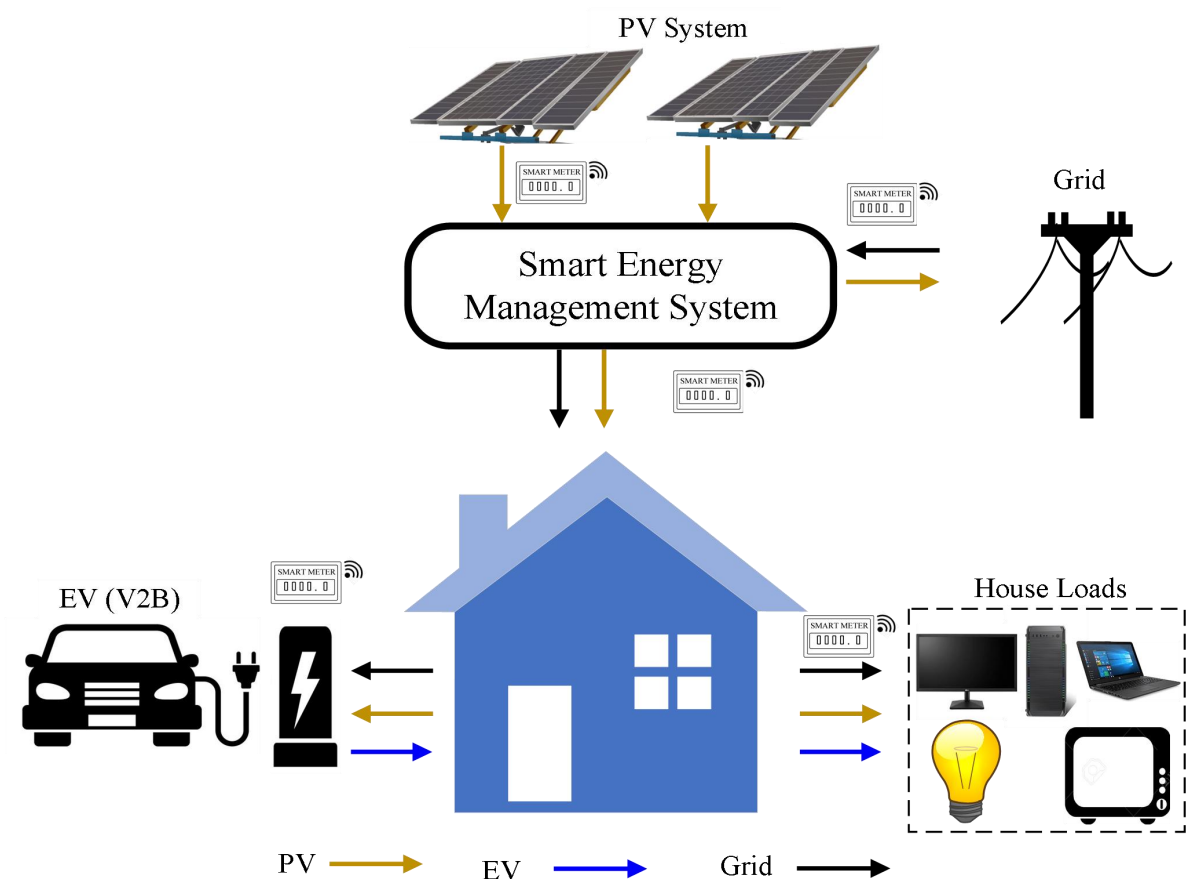House Loads

SMART METER

SMART METER

SMART METER

EV ⟶ Grid ⟶

OF=Min (Total Energy Costs)

Pgrid(t) = PgridtoHouse(t) + PgridtoEV(t)

Max Power for the User	Energy Price Zone	Max PV Production	Daily PV Production	BESS Capacity	BESS CH & DIS	EV Battery Capacity	EV Battery SoC (M & E)	Total Daily Energy from Grid	New Daily Energy from Grid	Daily Energy Cost
6.5	SE3	NE	NE	NE	NE	44	83, 40	92,105	78,53	49

PV System

Grid

Smart Energy Management System

EV (V2B)

House Loads

PV → EV → Grid →

OF=Min (Total Energy Costs) = Pgrid(t) * Ecost(t)

Pgrid(t) = PgridtoHouse(t) + PgridtoEV(t)

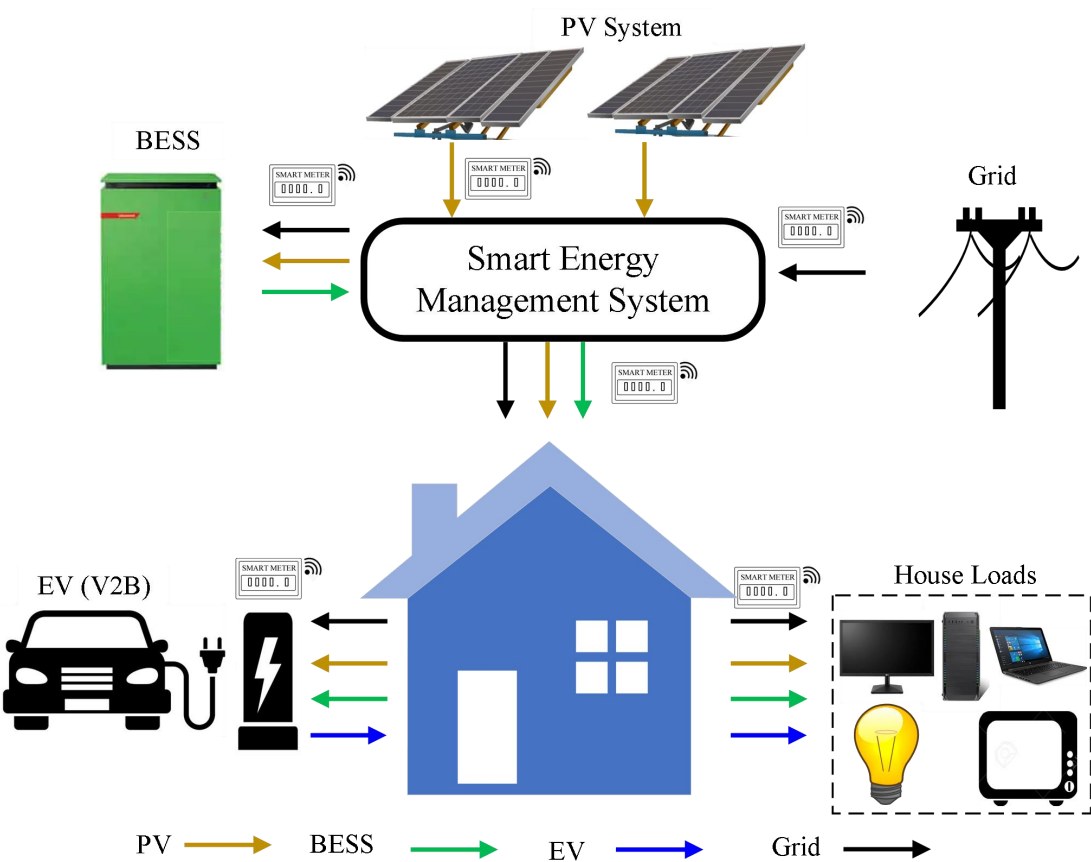| Max Power for the User	Energy Price Zone	Max PV Production	Daily PV Production	BESS Capacity	BESS CH & DIS	EV Battery Capacity	EV Battery SoC (M & E)	Total Daily Energy from Grid	New Daily Energy from Grid	Daily Energy Cost
6.5	SE3	11. 71	51.56	NE	NE	44	85, 40	89	78 .53	32

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OF=Min (Total Energy Costs)

Pgrid(t) = PgridtoHouse(t) + PgridtoEV(t)

Max Power for the User	Energy Price Zone	Max PV Production	Daily PV Production	BESS Capacity	BESS CH & DIS	EV Battery Capacity	EV Battery SoC (M & E)	Total Daily Energy from Grid	New Daily Energy from Grid	Daily Energy Cost
6.5	SE3	11	56	18	6.4, 5.84	44	85, 40	89	49	40