Minimize:

$$\sum_{s \in SOURCE} Cost_s \times \sum_{t \in TIMESTEP} Generation_{s,t} \times Coef_{s,t} [\$]$$

Subject to:

$\forall s \in \text{Renewables excluding solar and hydro}, Coef_{s,t} = 1$
$\forall s \in \text{Base load source}, Coef_{s,t} = Coef_{s,t+1} \geq 0$
$\forall s \in \text{Load following source}, Coef_{s,t} \geq 0$
$\forall s = \text{Solar}, Coef_{s,t} = \text{Scale of solar}$
$\forall s \in \text{Hydro sources}, Coef_{s,t} \times Generation_{s,t} \leq \overline{Generation_s}$
$\forall t \in TIMESTEP, \sum_{s \in SOURCE} Generation_{s,t} \times Coef_{s,t} = \sum_{s \in SOURCE} Generation_{s,t}$

where,

$Generation$: Original generation data from the database
$New\ Generation$: Original generation data with solar generation replaced with our input
$Scale\ of\ solar$: The fraction of solar generation to be deployed over all solar potential

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Minimize:

$$\sum_{b \in BUSES, t \in TIMESTEP} Discharge \times LCOS + \sum_{b \in BUSES, t \in TIMESTEP} Peaker \times LCOE [\$]$$

Subject to:

$\forall b \in BUSES, t \in TIMESTEP, Discharge_{b,t} \leq \overline{Discharge_b}$
$\forall b \in BUSES, t \in TIMESTEP, Charge_{b,t} \leq \overline{Charge_b}$
$\forall b \in BUSES, t \in TIMESTEP, Storage_{b,t} \leq \overline{Storage_b}$
$\forall b \in BUSES, t \in TIMESTEP, t > 1, Storage_{b,t} = Storage_{b,t-1} + Charge_{b,t} - Discharge_{b,t}$
$\forall b \in BUSES, t \in TIMESTEP, Transmission_{\rightarrow b,t} \leq Generation_{b,t} + Discharge_{b,t} + Peaker_{b,t}$
$\forall b \in BUSES, t \in TIMESTEP,$
$Discharge_{b,t} + Generation_{b,t} + Peaker_{b,t} + (1 - Loss) \times Transmission_{\rightarrow b,t} \geq$
$Charge_{b,t} + Load_{b,t} + Transmission_{b \rightarrow,t}$