```
function LCOH_EES_HST
Constraints = [];
P_pv_sum(m,:)=N_pv(m,1)*P_pv(m,:);
for k =1:n
    Constraints=[Constraints,P_pv_sum(m,k)+P_grid_buy(m,k)+P_ba_d(m,k)      ==
P_ba_c(m,k)+P_el(m,k)+P_com(m,k)];
end
for k =1:n
    Constraints=[Constraints,0<=N_pv(m,1)];
    Constraints=[Constraints,0<=P_grid_buy(m,k)];
    Constraints=[Constraints,sum(P_grid_buy(m,:))=0.5*sum(P_el(m,:))];
    Constraints=[Constraints,0<=P_el(m,k)<=P_el_0(m,1)];
    Constraints=[Constraints,0<=P_el_0(m,1)];
end
for k=1:n

Constraints=[Constraints,0<=P_ba_d(m,k)<=P_ba_d_max*U_ba_d(m,k),0<=P_ba_c(
m,k)<=P_ba_c_max*U_ba_c(m,k)];
    Constraints=[Constraints,U_ba_d(m,k)*U_ba_c(m,k)==0];
end
for k=1:n
    E_ba(m,1)=0.5*E_ba_0;
    E_ba(m,k+1)=E_ba(m,k)-E_ba(m,k)*a_ba+(a_ba_c*P_ba_c(m,k)-
P_ba_d(m,k)/a_ba_d);
    Constraints=[Constraints,E_ba(m,n+1)==0.5*E_ba_0];
    Constraints=[Constraints,0.2*E_ba_0<=E_ba(m,k)<=0.8*E_ba_0];
    Constraints=[Constraints,0<=E_ba_0(m,1)];
end
for k=1:n
    Constraints=[Constraints,H_el(m,k)== P_el(m,k)*0.613/33.3];
    Constraints=[Constraints,P_com(m,k)== n_hst_c(1,k)*2];
    Constraints=[Constraints,H_el(m,k)==H_el_out(m,k)+n_hst_c(1,k)];
end
%% %%
for k = 1:n
    H_el_out_sum(m,k)=H_el_out(m,k);
    n_hst_d_sum(m,k)=n_hst_d(m,k);

Constraints=[Constraints,H_el_out_sum(m,k)+n_hst_d_sum(m,k)==H_out/8760];
end
for k=1:n
    n_hst(1,1)=0.5*n_hst_0;
    n_hst(1,k+1)=n_hst(1,k)+(n_hst_c(1,k)-n_hst_d(1,k));
    Constraints=[Constraints,
```

```
0<=n_hst_d(1,k)<=U_hst_d(1,k)*n_hst_d_max,0<=n_hst_c(1,k)<=U_hst_c(1,k)*n_h
st_c_max];
        Constraints=[Constraints,U_hst_d(1,k)*U_hst_c(1,k)==0];
        Constraints=[Constraints,0*n_hst_0<=n_hst(1,k+1)<=1*n_hst_0];
        Constraints=[Constraints,n_hst(m,n+1)==0.5*n_hst_0];
        Constraints=[Constraints,0<=n_hst_0(m,1)];
end
for k=1:n
        C_grid(m,k)=C_grid_buy(m,1)*P_grid_buy(m,k);
        CA_grid(m,k)=a_tan_grid(m,1)*P_grid_buy(m,k);
end
Cost_inv_pv(m,1)=(C_pv*N_pv(m,1));
Cost_inv_el(m,1)=C_el_0*P_el_0(m,1);
Cost_inv_ba(m,1)=C_ba_0*E_ba_0(m,1);
Cost_inv_hst(m,1)=C_hst_0*n_hst_0(m,1);
Cost_inv_com(m,1)=C_com_0*P_com_0(m,1);
Cost_inv(m,1)=C_el_0*P_el_0(m,1)+C_pv*N_pv(m,1)+C_ba_0*E_ba_0(m,1)+C_hs
t_0*n_hst_0(m,1)+C_com_0*P_com_0(m,1);
for y=1:N
        Cost_om_pv(m,y)=((C_om_pv*N_pv(m,1)))/(1+r)^y;
        Cost_om_el(m,y)=(C_om_el*P_el_0(m,1))/(1+r)^y;
        Cost_om_ba(m,y)=(C_om_ba*E_ba_0(m,1))/(1+r)^y;
        Cost_om_hst(m,y)=(C_om_hst*n_hst_0(m,1))/(1+r)^y;
        Cost_om_com(m,y)=(C_om_com*P_com_0(m,1))/(1+r)^y;

Cost_om(m,y)=Cost_om_pv(m,y)+Cost_om_el(m,y)+Cost_om_ba(m,y)+Cost_om_h
st(m,y)+Cost_om_com(m,y);

Cost_grid(m,y)=(C_grid_sum(m,1)+P_grid_buy_0*(c_grid_fix_1+c_grid_fix_2/0.85)
)/(1+r)^y;
        LCCA_pv(m,y)=(P_pv_sum_total(m,1)*a_tan_PV)/(1+r)^y;
        LCCA_grid(m,y)=(CA_grid_sum(m,1))/(1+r)^y;
        LCCA(m,y)=(P_pv_sum_total(m,1)*a_tan_PV+CA_grid_sum(m,1))/(1+r)^y;
        Cost_c(m,y)=C_tan/1000*LCCA(m,y);
        Cost_H(m,y)=H_out/(1+r)^y;
end
Cost_om_pv_sum(m,1)=sum(Cost_om_pv(m,:));
Cost_om_el_sum(m,1)=sum(Cost_om_el(m,:));
Cost_om_ba_sum(m,1)=sum(Cost_om_ba(m,:));
Cost_om_hst_sum(m,1)=sum(Cost_om_hst(m,:));
Cost_om_com_sum(m,1)=sum(Cost_om_com(m,:));
Cost_om_sum(m,1)=sum(Cost_om(m,:));
Cost_grid_sum(m,1)=sum(Cost_grid(m,:));
Cost_c_sum(m,1)=sum(Cost_c(m,:));
```

```
Cost_H_sum(m,1)=sum(Cost_H(m,:));
LCCA_sum(m,1)=sum(LCCA(m,:));
LCCA_pv_sum(m,1)=sum(LCCA_pv(m,:));
LCCA_grid_sum(m,1)=sum(LCCA_grid(m,:));
LCLCCA(m,1)=LCCA_sum(m,1)/Cost_H_sum(m,1);
%%  LCOH2  %%
LCOH2(m,1)=(Cost_inv(m,1)+Cost_om_sum(m,1)+Cost_grid_sum(m,1)+Cost_c_su
m)/Cost_H_sum(m,1);
tt=LCOH2(m,1);
ops = sdpsettings('solver', 'gurobi');
optimize(Constraints,tt,ops);
```