Fig. 1: Wireless mesh networks with renewable power supplies.
Fig. 2: Illustration of TCGBP.
Fig. 3: Performance comparison for different numbers of users.

Fig. 4: Performance comparison for different user demands.
Fig. 5: Impact of the number of candidate locations.

Fig. 6: Impact of charging capabilities.
Algorithm 1: Two-phase Constrained Green BS Placement algorithm (TCGBP)

\[ W \leftarrow \emptyset; \]
\[ p^0 \leftarrow \min(P^-); \]
for all \( w \in C \) do
    \[ p_v \leftarrow p^0; p_w \leftarrow p^0; \]
    Determine the VP region of BS \( w, VP_w; \)
end for
for all \( v \in VP_w \) do
    Establish link \((v, w)\);
    if QoS and energy constraints can not be met then
        BREAK;
    end if
end for
end for
while All BSs can find no more user to add do
    \( w^* \leftarrow \{w|\max(|S_w|)\}; \)
    for all \( p^-_{w^*} \in P^- \) do
        for all \( v \in V, v \notin VP_{w^*} \) do
            Calculate preference level \( pl_{v,w^*} \);
        end for
    Sort users in increasing order of \( pl_{v,w^*} \);
    for all Sorted \( v \in V, v \notin VP_{w^*} \) do
        Establish link \((v, w^*)\);
        if QoS and energy constraints can not be met then
            BREAK;
        end if
    end for
    Record \((p^-_{w^*}, S_{w^*})\);
end for
Assign power level \( \{p^-_{w^*} | \max(|S_{w^*}|)\} \) to BS \( w^*; \)
Establish and delete links according to \( S_{w^*}; \)
\( W \leftarrow w^*; \)
Delete \( w^* \) from \( C; \)
end while
RETURN \(|W|\);
Algorithm 2 Exhaustive Search

for all BS placements do
    for all combinations of BSs’ power do
        for all combinations of client-BS connections do
            if Energy and traffic constraints can be met then
                Return |W|; {The minimum cost is found}
            end if
        end for
    end for
end for