# Appendix

## Proof of Proposition 1

According to the price-taker assumption, the revenue maximization problem is defined as

When , the revenue is independent of , which is not our focus. Then, one recognizes that this is a linear function defined on a compact set. We can obtain its derivative

It is obvious that the revenue is monotonically decreasing when . Conversely, when , the revenue is monotonically increasing. Consequently, according to the sign of , the optimal solution would be located at the left or right endpoint of interval , respectively.

Finally, the optimal bid for the problem (4) is

## Proof of Proposition 2

According to the price-maker assumption, the revenue maximization problem is defined as

With the regression coefficient , the revenue is a quadratic function defined on a compact set. After the simple calculation, the revenue maximization problem can be rewritten as a general convex optimization problem.

Then, the Lagrangian for this problem is written as

According to the Karush-Kuhn-Tucker (KKT) conditions, the optimal solution should satisfy

When and , one has

When and , one has

When and , one has

When and , one has

and

indicating that there is no solution for , i.e., .

Finally, we have

where denotes the optimal decision without considering the installed capacity of renewable energy producer.