Clean Coalition
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Market Responsive Pricing
Policy Mechanism Brief

The success of an energy procurement program often hinges upon determining the appropriate fixed price paid for energy. Market Responsive Pricing (MRP) is an effective and easy-to-implement mechanism that addresses the critical need to set the correct price at which energy is purchased, while also lowering risk to ratepayers. When purchasing electricity wholesale from an independent generator, utilities should utilize MRP in setting the price for long-term power purchase agreements (PPA). The essential feature of MRP is to adjust prices offered over time under CLEAN (feed-in tariff) programs based on the market response to the price offered. With high interest in the particular procurement program, the price adjusts downward. With low interest, the price adjusts upward for future PPAs. MRP has emerged as a best practice for accurate price discovery, through ongoing polling of the market, over the duration of an energy procurement program.

Background

Fixed-price, long-term contracts are proven to be the world's most effective policy to facilitate the development of small-to-medium scale energy generation projects that sell energy directly to a utility. This type of contract, generally described as CLEAN (Clean Local Energy Available Now) or feed-in tariff contracts, guarantees the future revenue stream for the seller, while also providing cost certainty to the utility, ratepayers and policymakers. That is, fixed-price contracts are a major benefit in terms of hedging price volatility for fossil fuel resources like natural gas and coal. Since renewable energy generation facilities have zero fuel and low operations & maintenance costs, these facilities generally require long-term contracts to amortize the initial capital investment and attract lower financing rates.

Determining the appropriate fixed price paid for energy is a major challenge in designing fixed-price, long-term contracts. Historically, the most widely used mechanisms to set a price for energy have been administrative, top-down price setting and auctions. However, both of these mechanisms have been criticized on several fronts. Administratively set fixed-prices are only optimal if the administratively set price matches actual market prices. If the price is set too low, there is insufficient participation in the program, and if the price is set too high, then a "gold rush" may ensue and the buyer will overpay for energy.

Auctions — another popular mechanism for energy pricing — also have design flaws. Auctions do not send clear and consistent pricing signals to the market, in the form of a predictable price, necessary for investment and development of energy projects. Additionally, the high cost for bid preparation and qualification, combined with low certainty of success, discourages participation. These factors allow manipulation of the auction process, including speculative "low-ball" bids prone to high failure rates, which lead to higher energy prices over time due to increased risk and uncertainty in procurement.

MRP Overview

Market Responsive Pricing allows the price offered to developers to adjust as the market responds to the program. This policy mechanism has been proven as a worldwide best-practice for designing wholesale procurement programs. MRP is based around Market Response Tiers, which are blocks of generating capacity that can be contracted at a particular given price. MRP designers must determine the capacity for each Tier, the magnitude of price adjustments, and the length of the time in each Tier to gauge market response before the price is adjusted. In each Tier, if very few generators take the price after the predefined period, then price automatically adjusts upwards in the Tier. Conversely, if a full Tier is contracted at the offered price, then the offered price automatically adjusts downward for the next Tier. The price offered continues to adjust for each Tier until the full capacity of the procurement program is contracted. This market responsiveness allows programs to find and offer the best price for developers and ratepayers, and adjust as market conditions change. A price floor and price ceiling should also be part of well-designed MRP policies, as discussed below.

Advantages

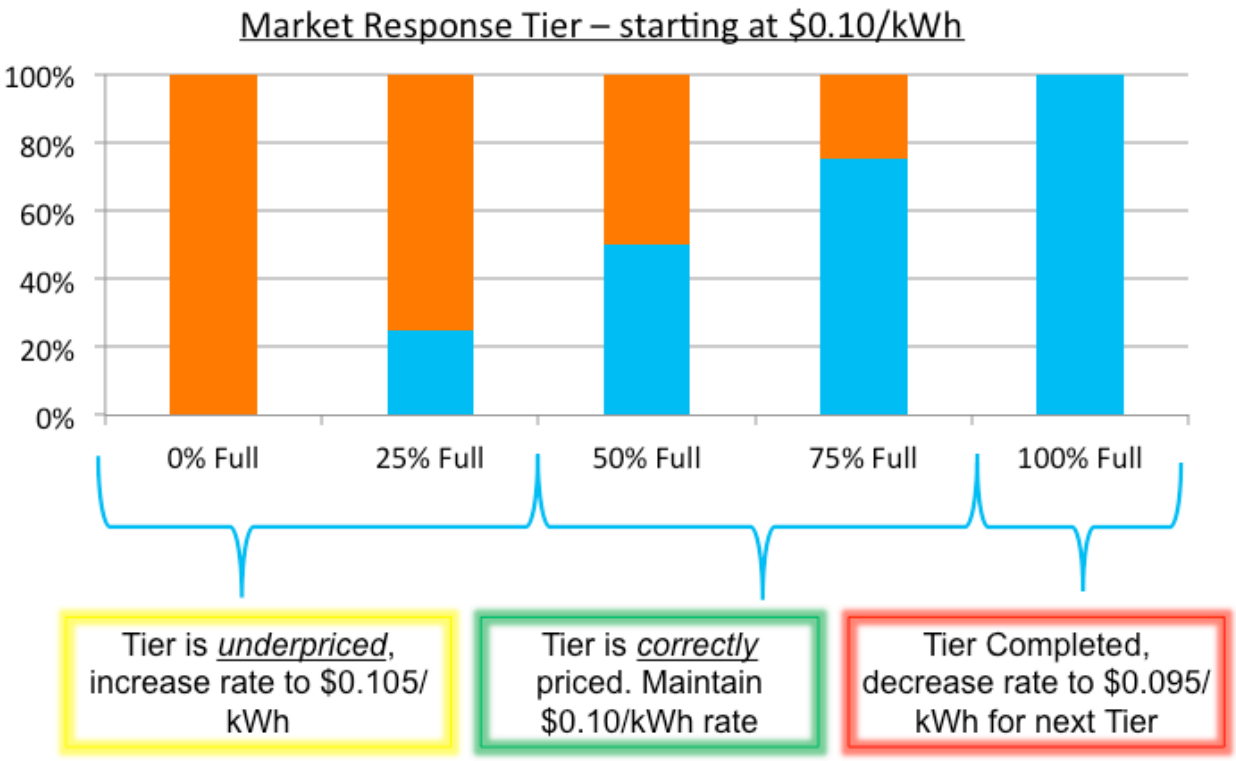
There are several advantages of MRP over competing pricing mechanisms and methods. MRP allows the contract price offered to developers to adjust as the market responds, which enables a program to efficiently meet its procurement target without administrative recalculation to estimate the correct price. Pricing with MRP is also fully transparent, resulting in market efficiency and a drive towards the lowest viable prices, while also limiting risky speculation through being forced to place bids at prices that are unreasonably low, as happens with auction programs. Another key advantage of MRPs is driving competition between sellers, which results in predictable reductions in the price of energy. MRP results in a lower project failure risk when compared to an auction mechanism, as generators are not trying to win a bid, and are far less likely to contract at a price that is too low for the project to be built. Finally,

MRP offers visibility and control over program costs. Market Response Tiers limit the amount of energy/capacity contracted at the offered price, so policymakers are able to control the rate of uptake, the maximum price paid for energy, and total expenditures for purchased energy.

MRP Design

There are several important characteristics of a well-designed MRP mechanism. Policymakers implementing the mechanism must decide the total generation capacity desired for each market segment, defined by the characteristics of technology and project size. Next, the market segment should be divided into Market Response Tiers, with equal amounts of capacity in each Tier. A Market Interest Queue is created for each market segment, and generators can submit an application to the program to be placed in a first-come, first-served queue to be offered a contract.

Using MRP means the starting price does not need to be precisely right. A program launches with a starting price for each segment set to match the applicable avoided cost to the utility, based on the most comparable market data for the first Market Response Tier. At the end of each month or period, for each segment, the utility reviews the amount of capacity in the current Tier that has been contracted in order to determine future pricing. If less than 50% of the current Tier has been contracted, and the Queue has a sufficient number of interested parties, the current Tier remains open and the price for new contracts is increased by 5%, effective immediately. If 100% or more of the current Tier has been contracted, the current Tier is closed and the price for new contracts is decreased by 5% for the next Tier, which is opened immediately. Finally, if between 50% and 100% of the current Tier has been contracted, the current Tier remains open and the price for new contracts is unchanged.

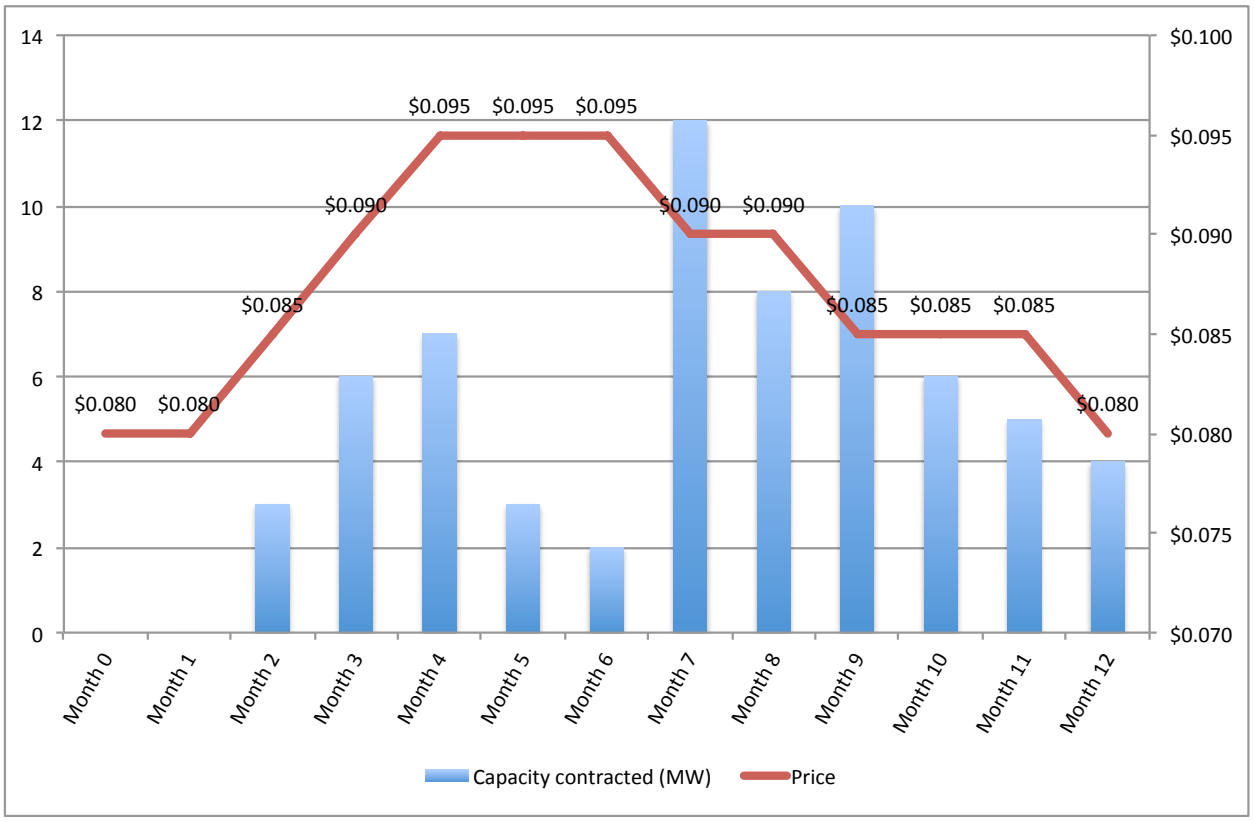


Design Considerations

Key considerations must be taken into account when designing a Market Responsive Pricing mechanism. The number and size of the Tiers should be balanced so that there are a sufficient number of adjustment opportunities, but also more than a handful of projects per Tier. Additionally, the percentage change per adjustment depends on the speed at which the program should change to find the market price. For example, if the starting price is very low and adjustment sizes are small, the program may not be sufficiently dynamic to respond to the market, and there may be low interest in the program for many months. Alternatively if the price is very high and adjustment sizes are small, then the utility and ratepayers may overpay a significant amount. Program designers should also incorporate a **price floor** to discourage risky speculation and provide a firm price signal to the market in terms of the lowest price that will be offered, as well as a **price ceiling** to limit ratepayer liability to reasonable levels. A price floor, price ceiling and a set program size (in MW) will allow program designers to provide firm figures as to the upper and lower limits ($x) of ratepayer liability. Finally, a stable period should be designated in the MRP timeline within which the price does not change, preventing the price from fluctuating up and down at every time period because the market has shown that the price offered is at the "goldilocks level."

The below chart demonstrates how the contract price and capacity contracted in an energy procurement program utilizing MRP change over time. Each month (marked on the X-axis), the price (blue line) is adjusted based on the capacity contracted from the previous month (red bars) within a 20 MW Market Response Tier, and this process continues through the duration of the program.

MRP Mechanism – Dynamic Price Changes



Price changes in this example (20 MW Tiers):

- Months 1-4, less than 10 MW contracted so price rises
- Months 5-6, total MW contracted over 10 but below 20 MW so price holds steady
- Month 7, first Tier is completed and price decreases
- Months 8-9, second Tier is filled up and price decreases again
- At third Tier price, takes 3 months to complete before price decreases

Summary

Market Responsive Pricing (MRP) is a policy mechanism that allows the price offered in fixed-price power purchase agreements (CLEAN or feed-in tariff programs) to adjust according

to the market, and has emerged as a worldwide best-practice for designing wholesale energy procurement programs. The key feature is responsiveness to market volume, which enables programs to find the best price for developers and ratepayers by ensuring that the price offered rises and falls as market conditions change, with no administrative recalculation required. Finally, MRP can be customized and tailored to particular program and community objectives, through setting appropriate sizes for the overall procurement program, Market Response Tiers, price floors and ceilings, adjustment levels, and adjustment time periods.