Smoothing the RPM Supply Curve

MIC

July 11, 2013

Keri Dorko

Joe Bowring

Monitoring Analytics

Current Method (IMM)

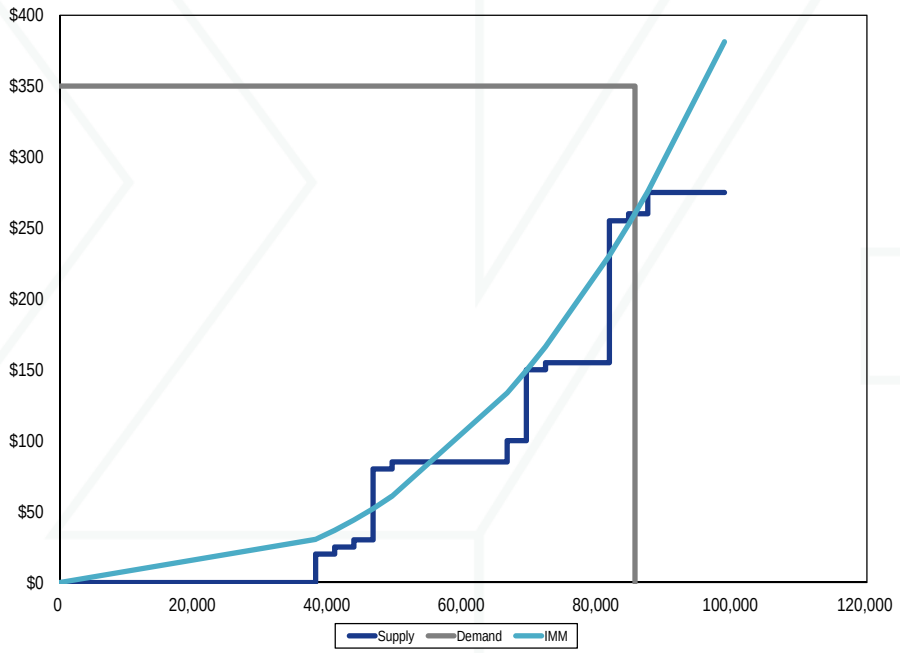
- **The current smoothing method uses the better fit between two functional forms:**

$$y = Ax^B \qquad\qquad y = Ae^{Bx}$$

- **Each function is constrained only by forcing the curve through a point of intersection with the demand curve equal to the clearing price.**

Current Method: Example

- **Note: Data is for example purposes and is not actual auction supply.**



Monitoring Analytics

Alternative Proposed by Exelon: Polynomial Form

- **One proposed alternative is to use a polynomial equation of the form:**

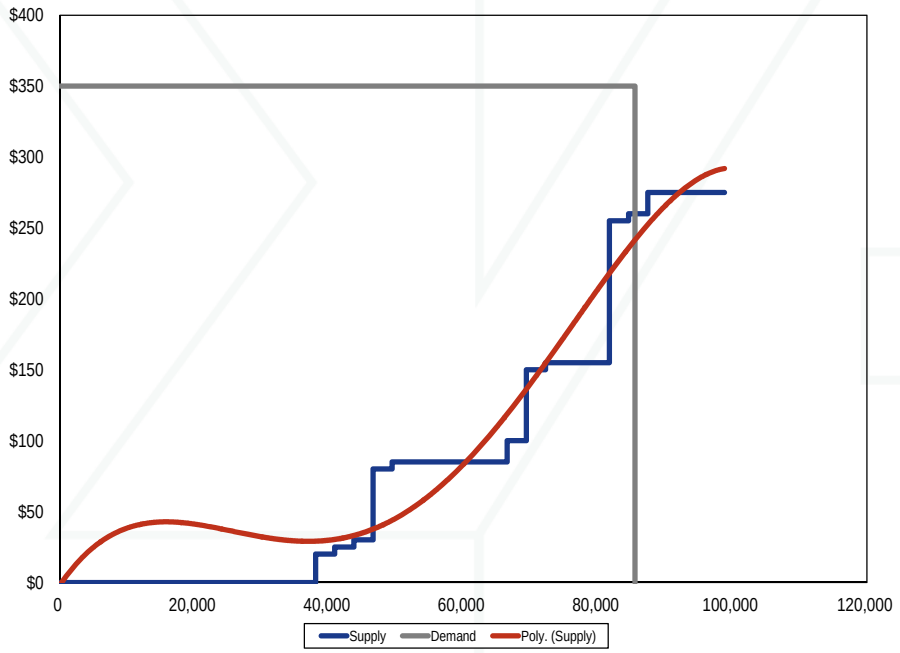
$$y = a_0 + a_1 x + a_2 x^2 + a_3 x^3 + a_4 x^4 + \cdots$$

- **Unless the equation is subject to constraints, it is possible that the best fit line may not intersect the point at which supply equals demand.**

- **Unless the equation is subject to constraints, the best fit polynomial line may be decreasing at points, which is not desirable.**

Polynomial Method: Example

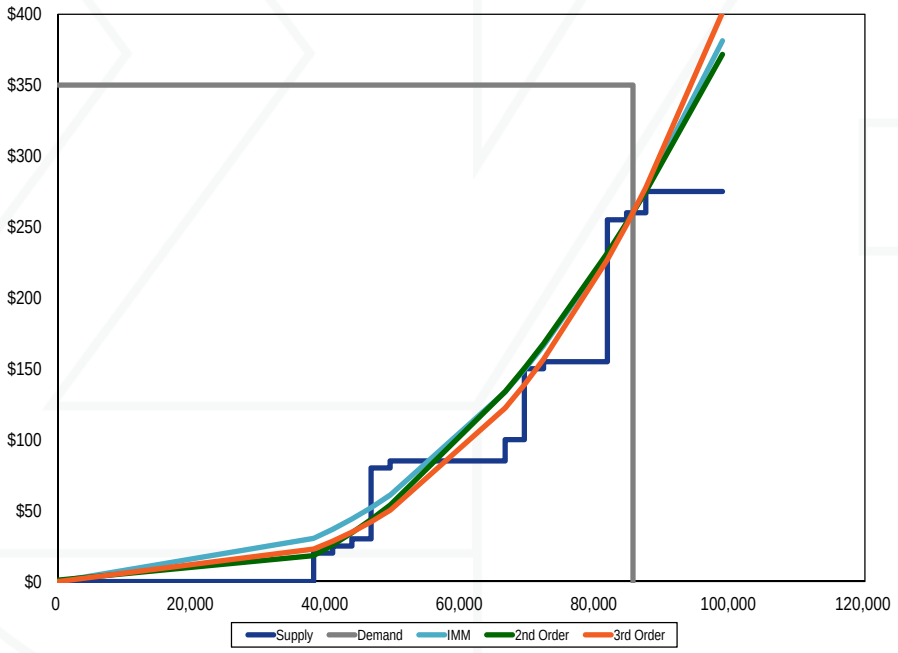
- **Example of a supply curve and the best-fit 4th order polynomial equation, with no constraints:**



Monitoring Analytics

Polynomial Method: Example

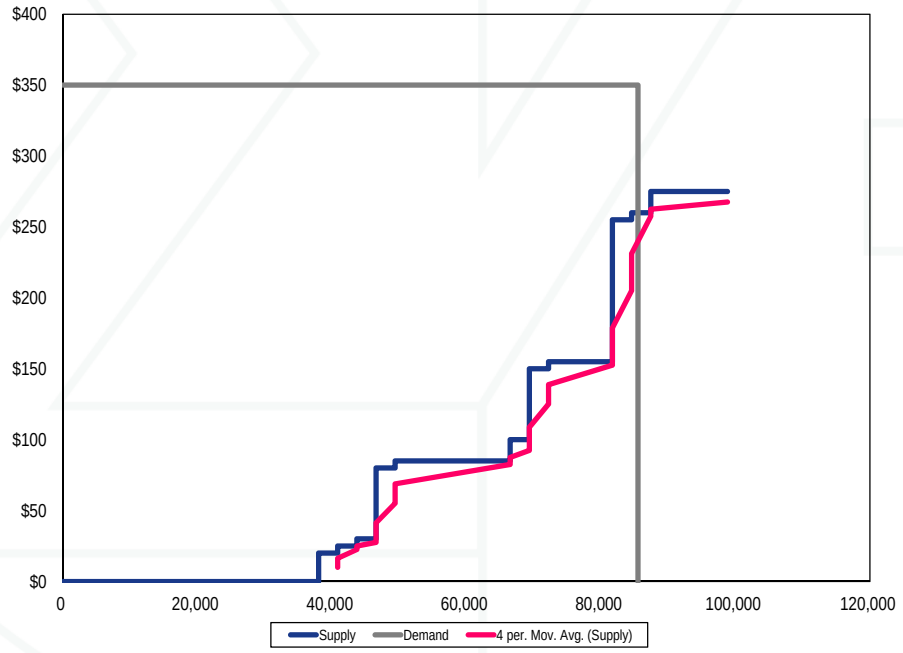
- **Polynomial equations, with constraints:**
  - **Must intersect the point at which supply equals demand**
  - **Must be a non-decreasing function**
- **For comparison, the current method (IMM) is also shown**



Monitoring Analytics

Alternative Proposed by Exelon: Moving Average

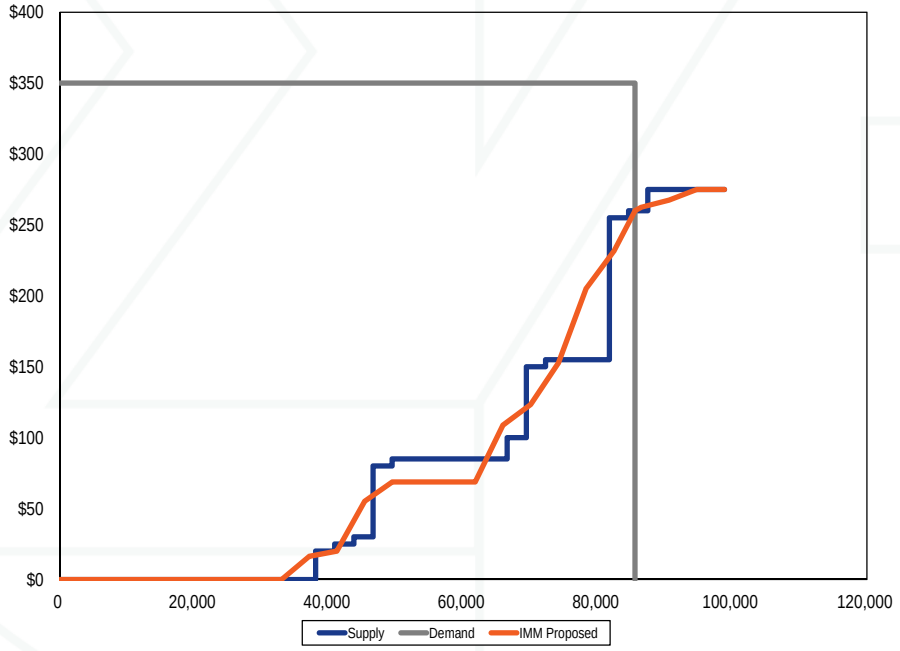
- **A moving average is unlikely to pass through the point at which supply equals demand because supply is an increasing function.**



Monitoring Analytics

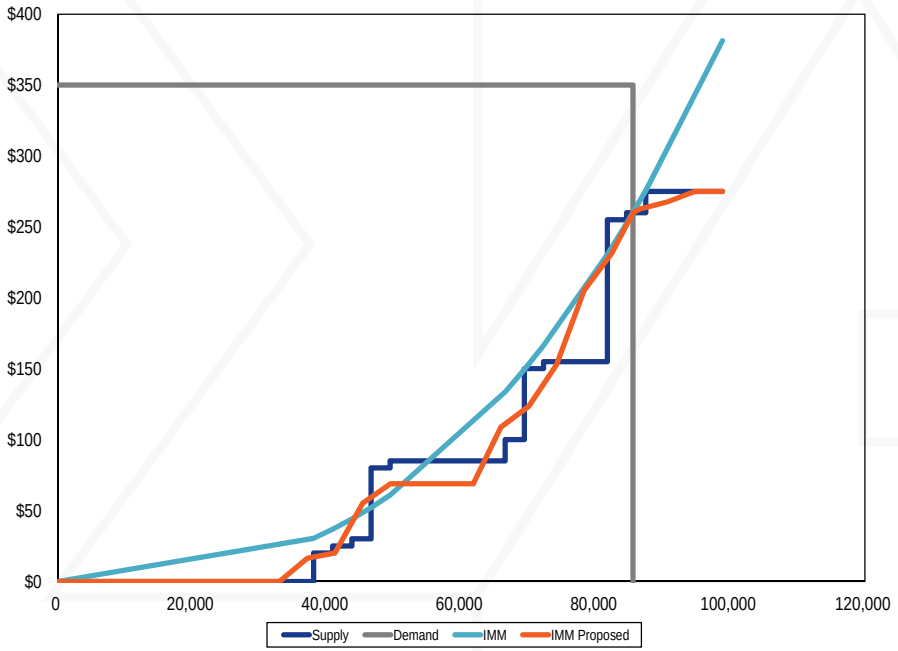
IMM Alternative

- **Divide the supply curve into distinct segments of equal MW;**
- **Plot the average price within each segment;**
- **Force the adjusted line through the clearing point.**



Monitoring Analytics

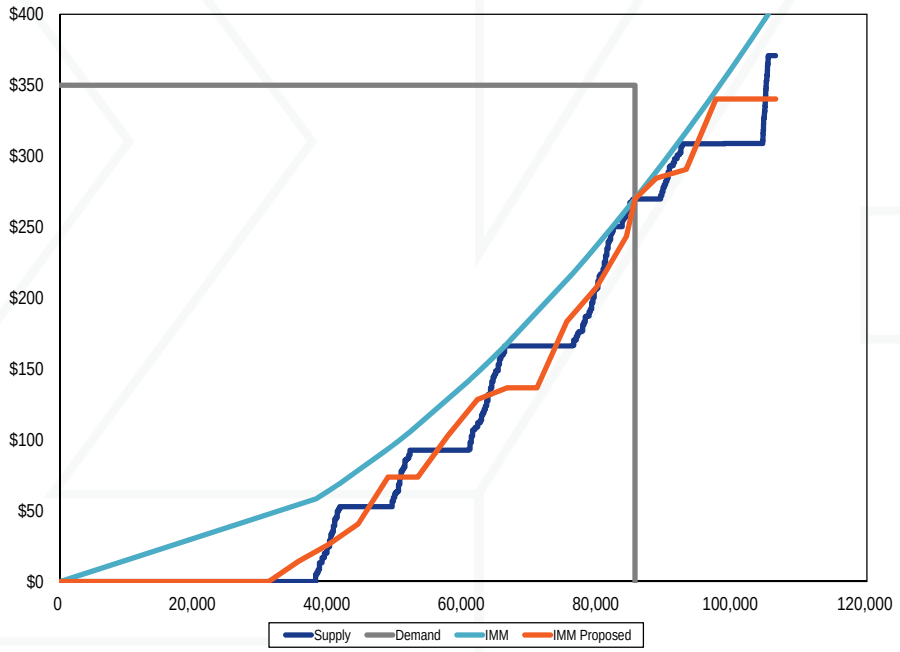
Comparison of Current Method to the IMM Alternative Method



Monitoring Analytics

Comparison of Current Method to the IMM Alternative Method

- **Note that as the magnitude of jumps in supply decreases, the IMM proposed alternative will more closely track the true offer curve.**



Monitoring Analytics

Monitoring Analytics, LLC
2621 Van Buren Avenue
Suite 160
Eagleville, PA
19403

(610) 271-8050

MA@monitoringanalytics.com

www.MonitoringAnalytics.com