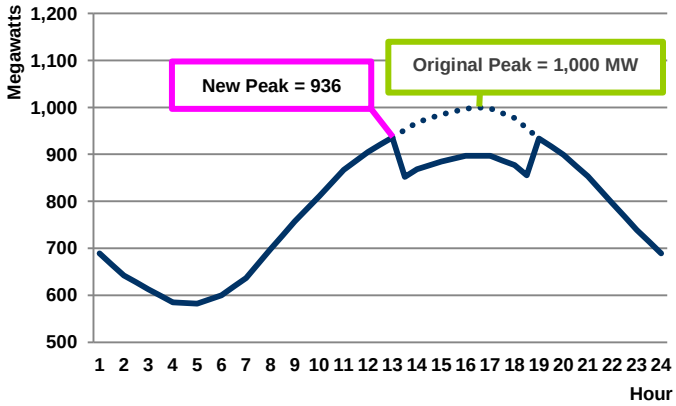
The Summer-Only Demand Response Senior Task Force (SODRSTF) is tasked with investigating potential opportunities to value summer-only Demand Response resources through the load-forecasting process or other mechanisms that would serve as an alternative to supply-side participation in the capacity market. PJM proposes valuing these resources through a load forecast adjustment (LFA) that assumes peak shaving when the temperature humidity index (THI) surpasses a threshold determined by each resource's respective program.

When a megawatt doesn't equal a megawatt

Introducing peak shaving into the load forecast does not reduce the forecasted peak by the full shaved amount. Instead, the peak shifts to a different hour. Figure 1 gives the example of a system that would see a forecasted peak summer load of 1,000 megawatts without peak shaving at 5 in the afternoon. When 100 megawatts of peak shaving are included in the forecast, the new peak of 936 megawatts occurs four hours earlier. If 100 megawatts of peak shaving only reduces the forecasted peak by 64 megawatts, then peak shaving does not have a one-to-one effect on the load forecast, it has a 0.64 to one impact.

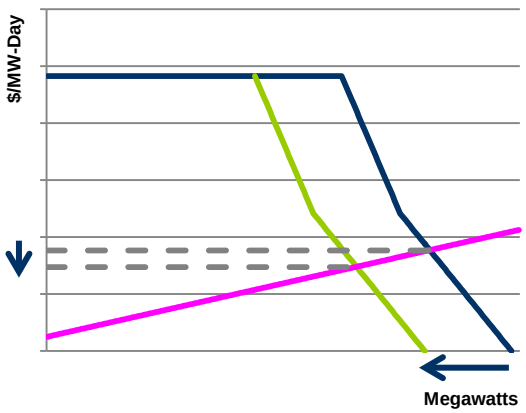
Figure 1. Example of peak shaving moving the peak load



Why does this matter?

The variable resource requirement (VRR) curve – the demand curve in the capacity market – does not begin sloping downward until the quantity of megawatts procured in the capacity market surpasses the installed reserve margin (IRM), which is the amount of capacity required to operate to a one in 10 year loss of load expectation. The IRM is based on the forecasted summer peak.

Figure 2. The VRR Curve shifts left



From the previous example, if 100 megawatts of peak shaving are included in the load forecast and the impact of those resources only reduces the forecasted summer peak by 64 megawatts, then the VRR curve shifts left by the change in the reliability requirement associated with 64 megawatts (green line, Figure 2). This does not mean that only 64 megawatts of load interruption is needed – all 100 megawatts of interruption is needed to create the leftward shift of the curve. If fewer than 100 megawatts of peak shaving are included in the forecast, then the forecasted peak will be reduced. If the threshold of a peak shaving program is triggered, then PJM expects all 100 megawatts to be there (i.e., to turn off).

What is the benefit of the load forecast adjustment?

When the VRR curve shifts left, the supply curve intersects with the VRR curve at the lower clearing price (gray lines, Figure 2). The value of PJM incorporating an LFA into the load forecast is calculated by subtracting the total customer payments with the LFA from what the total payments would have been without the adjustment. If, in the previous example, the LFA caused the zonal capacity price to drop from $70/MW-day to $69/MW-day, the annual savings would be approximately $1.97 million dollars for 100 megawatts of peak shaving ((1000 MW * $70 - 936 MW * $69) * 365 days). Customers will experience the benefit through reduced capacity payments every day of the year.