



SELF-COMMITMENTS IN SPP'S DAY-AHEAD MARKET

SPP continually works toward a level of self-commitments in its markets that appropriately balances reliability and economic considerations, and finds that nearly all self-committed energy in its markets are already the most economic option.

Southwest Power Pool (SPP) has evaluated both reliability and economic aspects of self-committed resources. SPP does not advocate for any particular market participant, generator or generator-type but instead dispatches least-cost generation available and as needed to maintain reliability. Participation in SPP's market is voluntary. Market participants may choose whether to offer a generating unit into the market or self-commit. Self-committed units are "price-takers" that commit to run no matter the price at which the market compensates them for electricity sold.

RELIABILITY & UNCERTAINTY

Resources requiring long lead-time start notices represent the majority of self-committed capacity in SPP. They offer a high availability factor and are designed to generate for long periods with little downtime. Frequently cycling them on and off may improve marginal energy costs but also poses challenges.

A report from the U.S. Department of Energy's National Energy Technology Laboratory¹ estimates an increase of approximately 10% in total fixed operation and maintenance costs when increasing the cycling of long lead-time coal units. These units consume a large amount of fuel that is mostly wasted during the startup period, so the more frequently they are cycled off and back on, the more fuel is wasted.

Frequent cycling of these resources may also degrade the bulk power system's reliability. Repeatedly heating

and cooling components shortens their life span. This increases maintenance and capital costs associated with these units' operation and requires more downtime for repairs. Because these units play a critical role in system reliability, significant outages and derates could reduce reliability of the grid.

As the expansion of wind and solar generation increases in our footprint, so does uncertainty over the availability of our generation supply in real time. The result is that an increase in variable energy resources requires us to keep more long lead-time and fast-start units online to serve in instances where wind or solar resources suddenly deviate from forecast levels. Fast-start gas units with ramping capability and long lead-time generation both play a critical role in maintaining reliability during such periods. SPP is developing a fast-start market product to compensate generation for its availability to produce energy.

Example: SPP set a wind-peak record of 17,861 megawatts (MW) on Dec. 11, 2019. Less than 21 hours later, wind output bottomed out at just 1,745 MW. This 16,116 MW downward swing in less than a day required SPP's market to commit the equivalent of approximately 32 conventional generators in a matter of hours to cover the deficit. Some of these units take up to two days to produce energy.

¹ National Energy Technology Laboratory, Impact of Load Following on the Economics of Existing Coal-Fired Power Plant Operations, US Department of Energy, 2015

ECONOMICS

SPP analyzed the impact of committing resources that had been self-committed, assessing six scenarios that included high and low summer and winter peak loads, high and low daily overall production costs and significant variations in wind. The results indicated small increases in marginal energy costs (Table 1) and small reductions in overall production costs (Table 2) when all self-committed units were treated as though they were committed by the market. Energy and no-load production costs slightly decreased, while startup costs for analyzed periods slightly increased.

Table 1: Average marginal energy cost (MCE) in \$1000s

STUDY WEEK	BASE	REMOVED SELFS
Aug. 4-10, 2019	\$27.91	\$29.44
Sept. 1-7, 2019	\$25.79	\$28.04
Oct. 20-26, 2019	\$17.27	\$20.19
Nov. 10-16	\$24.98	\$26.15
Feb. 9-15, 2020	\$19.73	\$21.39
April 26-May 2, 2020	\$12.93	\$14.49
All	\$21.44	\$23.28

SPP's analysis found that in all six scenarios, 85-95% of self-committed generation was committed and dispatched economically when converted to market-offered status. These results are promising and indicate that while improvements can be made, the majority of self-committed MWs in SPP are already economic. On average, only 10% of self-committed generation would not have been chosen for commitment and dispatched on a least-cost basis.

CURRENT DEVELOPMENT AND VOLUNTARY CONSIDERATIONS

In its first six years of operation, SPP's Integrated Marketplace has seen steady reductions of self-committed generation, from 70% in 2015 to 50% this year, according to the SPP Market Monitoring Unit's (MMU) December 2019 report, "[Self-committing in SPP Markets: Overview, impacts and recommendations.](#)"

Despite this trend, self-commitments will likely continue to exist at some level. SPP's July 23, 2019, "[Holistic Integrated Tariff Team \(HITT\) Report](#)" recommends development of a multiday economic assessment to enable more cost-effective market-commitment decisions by SPP market participants. The SPP MMU's December 2019 report similarly recommends SPP and stakeholders reduce the incidence of self-commitments by adding an additional day to the market optimization period.

Even with multiday optimization, there are many reasons a resource might still self-commit. These include federal and state regulatory exemptions, testing, weather, fuel contracts and operational limitations such as long lead times, long minimum run times and high startup costs. SPP and the SPP MMU have discussed the possibility of modeling these restrictions in the resource offer.

SPP is developing a market design enhancement to include a multiday commitment and pricing forecast that will further improve the unit-commitment process. This and other market enhancements will represent a step toward assessing changes in the voluntary nature of asset owners' decisions to market-commit their resources. These incremental optimizations of SPP's Integrated Marketplace will reinforce the balance between economics and system reliability.

Table 2: Weekly change in day-ahead resource costs (in \$1000s)

STUDY WEEK	ENERGY COSTS	START-UP COSTS	NO-LOAD COSTS
Aug. 4-10, 2019	\$35	\$261	(\$83)
Sept. 1-7, 2019	(\$1,064)	\$148	\$86
Oct. 20-26, 2019	(\$1,829)	\$114	(\$191)
Nov. 10-16, 2019	(\$890)	(\$10)	(\$537)
Feb. 9-15, 2020	(\$1,340)	\$123	(\$140)
Apr. 26-May 2, 2020	(\$841)	(\$65)	(\$172)
TOTAL	(\$5,927)	\$571	(\$1,037)