Quick Take

The Final Clean Power Plan Rule: Drivers of Changing Asset Values

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The Environmental Protection Agency's (EPA's) final Clean Power Plan (CPP) rule will drive shifts in market prices and unit dispatch that will significantly impact generation asset values, especially in coal-intensive regions such as western PJM Interconnection LLC, Midcontinent Independent System Operator, Inc., and others.[1] To illustrate these potential effects, this Quick Take provides a sample analysis using the assumption that each state adopts a state-based mass-standard which covers new sources to address EPA's leakage requirement.

Our analysis found a wide range of outcomes. The key drivers of differences in asset value included 1) fuel type of the plant, 2) location of that plant, 3) scheme for the allocation of allowances, 4) carbon compliance strategy, and 5) type of carbon policy (i.e., mass rather than rate based). In general, combined cycles (CCs), gas turbines, and renewables gain in value—and coal plants decline. CCs in regions with a high carbon intensity (i.e., in coal regions) gain the most relative to gas based regions. They can become a distressed asset play because these plants tend to be mid-merit without any carbon policy in place. Renewables may play a spoiler role in that they tend to limit the potential upside on gas plants in certain markets. We also find that coal units show discounts in value across all regions, but with an allocation of allowance scheme, values could improve above their baseline.

[1] For an overview of the impacts of the changes in the final rule, see ICF Quick Take The Final Clean Power Plan Rule: Four Implications Point to Harder Choices, Bigger Upside to Getting It Right.

The First Step: Capturing the Effect of Pricing Carbon Dioxide (CO_2) into the Market

Under a mass-based standard, affected sources must acquire allowances to cover every ton of CO_2 emissions during a year or compliance period. The demand and supply of those allowances within a state determines the allowance price (i.e., cost) in dollars per ton that generators must pay. As a variable cost of generation, the CO_2 price will be factored into the dispatch cost of generators, thereby impacting the market price for power, changing the margins and competitive positions of units within the market. A key point to recognize is that to the extent that a generator is setting the power price in a market, its margin will remain unchanged because the price will incorporate its full CO_2 cost. Inframarginal units, on the other hand, may see a reduction in their margin because their CO_2 costs rise more than the power price, depending on their CO_2 emission rate relative to the marginal unit.

CCs Prosper

Unsurprisingly, given the lower emissions of CCs, we see positive effects for both their existing and new valuations (Exhibit 1). In both gas- and coal-intensive regions, the CPP increases CC valuation when compared with the business as usual case (BAU), (i.e., without a CO_2 policy): gains vary from 0 to 38 percent, with an average increase of 15 percent. Importantly, the valuations of these plants increase even without combined cycles receiving an allocation of CO_2 credits to compensate for their additional compliance costs. The reasons: wholesale power prices rise faster than compliance costs, and dispatch increases an average of 5 percent. This rise is especially true in coal-intensive zones. Existing coal plants emit approximately 2.5 times the CO_2 per MWh compared with advanced natural gas-fired CC plants. As a result, these plants experience a higher cost increase that they partially pass on to the market price. New, advanced CCs also have higher valuations on average than existing CCs due to their lower heat rate.

EXHIBIT 1.
GAS UP, COAL DROPS, BUT A WIDE RANGE OF EFFECTS

Change in Asset Value by Type Across Regions, Mass Region Case

Wind Benefits, Combustion Turbines (CT) Up but All Over the Map

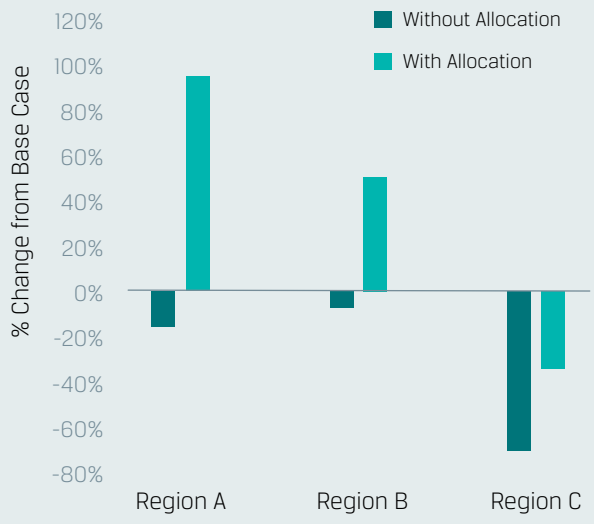
Because of CPP's positive impact on energy prices in all regions and as zero-carbon emitters, all wind farms analyzed show value accretion. Although not classified as an affected source in the final rule, simple cycle gas turbines also exhibit a mostly positive movement, albeit within a wide range of impacts. Gas turbines with higher value impacts tend to be in locations where capacity values are low, reflecting a surplus condition. This effect results from a capacity play: as the CPP tends to burden high carbon emitters, retirements increase relative to the BAU case, tightening regions with surplus conditions and driving a higher value for capacity.

Coal: Negative but Allocation Matters

The effect on coal plant valuations is negative but much more varied—from as little as a 5 percent reduction to as much as a 70 percent decrease nationwide, with an average reduction of 30 percent. The variation is driven by regional markets: coal plants in gas-intensive areas decrease significantly compared with coal-dominant regions. When coal is on the margin in a significant number of hours, CO_2 costs are more readily passed through in power prices. In natural gas-dominant regions, less CO_2 is emitted by the marginal gas-fired plant, and thus compliance costs cannot be passed through as easily. In other words, compliance costs are rising faster than energy prices, and thus margins are compressed. On the positive side, under CPP, EPA gives states the flexibility to specify allowance allocations to generators. States may choose to auction allowances, as practiced by the states in the Regional Greenhouse Gas Initiative, or allocate some or all of the allowances for free to affected sources or others. In its proposed Federal Implementation Plan, EPA allocates allowances to affected sources under a mass-standard based on their share of total generation from affected sources in the 2010–2012 period.

This approach could have a substantial impact on value, as seen in Exhibit 2. A coal plant located in Region A almost doubles in value compared with its baseline, while in Region C, a plant is still at a discount but sees some improvement. In B, as in A, a unit can go from

EXHIBIT 2.
ALLOCATION HAS A SIGNIFICANT IMPACT ON ASSET VALUE
Change in Coal Asset Value With and Without Allocation, Multiple Regions, Mass Region Case



losing value without allocation to a significant gain. In the extreme, the absence of allocation would mean equity values would in some cases disappear. The Region A asset shows an especially large improvement because it is in a coal-intensive state and has a high historical percentage share of generation, thereby ensuring a large allowance budget.

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