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Commercial strategies to capture value from today's changing power markets

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Power markets have changed, but many commercial dispatch and trading strategies have not caught up and value is escaping.

Recently, a chief operating officer of a utility found himself perplexed. Like all deregulated power generators in the United States, his fleet was suffering from low power prices caused by shale gas and stagnant demand. When he pressed his trading desk about how it was responding to changing conditions, the answers were vague and discouraging. The traders were unable to explain their actions with practical clarity, and further questioning did not yield good visibility: What strategies were being pursued and what effects were they having on the company over time? How much value were the strategies putting at risk? What approaches did the wholesale-dispatch group use to offer power into the market? What was being done to maximize value for the company's shareholders?

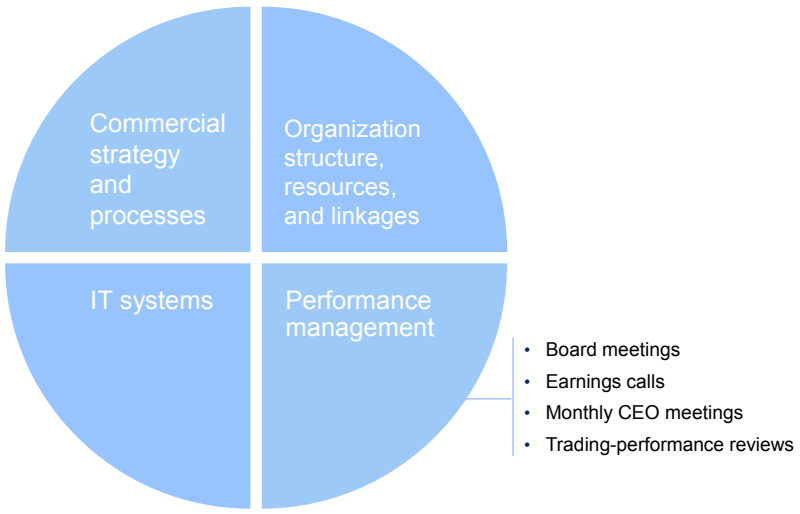
The changed market

This hypothetical situation will be familiar to many industry leaders. The back-and-forth exchange, often unsatisfying, between executives and traders is a common real-world occurrence. The new market realities of shale-gas economics and low wholesale power prices have forced most generators to improve plant capabilities, operations, and capital productivity. Few companies, however, have applied the same rigor in adapting their commercial function, including plant dispatch and power trading, to the new environment. Accountability for commercial performance is usually fragmented throughout an organization, and asset management and operations share some responsibility. Commercial value is neither well understood nor easy to identify. Business units often lack aligned incentives or the ability to optimize the entire commercial and operating equation.

Our experience shows that improving the commercial function at both regulated and unregulated power generators can quickly lead to $8 million to $12 million annually of additional before-tax earnings per gigawatt of commercially sound installed capacity—with little or no capital investment required. However, many power generators lack the structural capabilities to identify, evaluate, and capture the full commercial potential of their fleet. These capabilities include commercial strategy and processes; organization structure, resources, and linkages; IT systems; and performance-management capabilities that are geared to managing the commercial group (Exhibit 1).

Other market factors are also making it harder for a commercial function to monetize the full commercial value of generating assets. For instance:

Exhibit 1 We have identified four capabilities of commercial performance.



- Independent system operators (ISOs) have implemented more complex and stringent physical-market measures, including nodal instead of zonal pricing and performance markets for ancillary services.

- Combined-cycle gas turbines are playing a more important role in many generating fleets. Operators have a spectrum of ways to offer these units to the market given their multiple configurations, each more flexible than traditional baseload coal.

- Extreme volatility can sometimes be observed in the real-time market. Trading groups can struggle to monetize this volatility.

A further issue is that markets have become far less liquid due to the effects of new regulations on the commodity-trading activities that banks are allowed to do. The lack of liquidity represents a higher risk for unsophisticated traders, but it is also an opportunity for sophisticated traders to gain additional margin by replacing the banks in providing liquidity in markets and deals where assets are used to mitigate the associated risks.

The structural challenges

To create optimal conditions for sustained commercial profitability, companies will have to adjust the ways in which trading, dispatch, asset management, operations, and risk management work together to answer crucial questions: Is the potential value associated with our generating capacity fully realized in the market? Are we using the right fuel cost when thermal generating capacity is tied to some volume obligations (for example, take or pay)? Has our hedging strategy become confused with opportunistic sales, or vice versa? The list goes on.

Competitive power companies will usually face organizational barriers as they reassess and seek to improve their dispatch strategies and long-term risk management. Companies frequently struggle with the following challenges.

- **Old strategies are taken as gospel.** "That's the way we always do things around here" is a typical organizational issue. In commercial power, the same unit-offering strategies are often pursued through all market conditions and are not reviewed as markets change. No adjustments are made to unit-offer curves and maintenance adders, pricing of ancillary services, start-up times, minimum downtimes, or other dispatch parameters.

- **Divided responsibilities can cause waste across the fleet.** When management responsibilities for assets are shared by different groups, waste can result that might have been avoided with unified control. One regulated power-generation company, for example, divided management of thermal and hydro assets between two groups. An analysis revealed that the thermal group was running simple-cycle gas-peaking units for many hours while the hydro group was using pumped storage to balance the grid. As a result, the company was buying expensive peaking power from itself to pump hydro, when it would have been more cost-effective to use its pumped storage during peak hours.

- **Performance-management processes are inadequate.** Performance management will suffer when senior managers lack the background to scrutinize their commercial organization. Many senior executives, with their experience in power-plant operations or transmission and distribution, have not had the experience needed to understand the dispatch and trading operations of power generators adequately. Nor do most performance-management reporting systems allow good visibility into the performance of the trading desks. Reports from commercial groups to senior management are often impenetrable or incomplete—or both. From such reports, senior managers may not be able to ask the right questions that will reveal critical issues and effectively drive performance dialogues.

- **The commercial desk has an inadequate understanding of the critical operating limits of all plants in the fleet.** Ordinarily, the commercial desk understands the basic operating parameters of each plant, such as start-up time, ramp rate, and minimum and maximum load. However, plant dispatchers are often removed from and less familiar with other equally critical operational considerations, including the effects of frequent unit cycling, or the merits of taking a maintenance outage with minimal opportunity cost, or even the importance of minimum downtimes. Misalignment between the operations and commercial divisions results in lost profits; it can damage trust and respect between

the two groups and inhibit working relationships and thus opportunities for joint problem solving.

- **Without a single owner for profit and loss (P&L), optimizing plant P&L is unnecessarily complicated.** P&L responsibility is often divided between the commercial and operations divisions. Commercial might be responsible for plant revenues (dispatching the plant in the energy and ancillary markets) and fuel purchases, while operations manages operations and maintenance costs and is responsible for unit availability. If not designed correctly, the incentives attending such divisions can have perverse effects. Operations, for example, might not spend maintenance dollars on jobs that would improve heat rate, or commercial might not allow maintenance outages for jobs that are likely to improve reliability—since the financial incentives for the commercial group do not penalize them for forced outages.

- **The commercial staff may be discouraged from experimenting with new strategies.** A strong barrier to optimization arises when the commercial staff believes that it will be held responsible for lost profit opportunities should experiments with a new strategy fail. Fears arise over the possible reactions of system operators and market monitors, as well as what the effect might be on the overall portfolio, including financial assets, of modifying dispatch strategies. Many power-generation companies allow these fears to excuse inaction, reinforcing a common organizational paradigm in which sins of commission are punished, while sins of omission can be overlooked. In other words, employees (and not just dispatch and trading) often feel safe in continuing to do things as they have always done them, preferring not to attract the scrutiny that would come with trying something new.

The way forward

In the face of these challenges, power companies can successfully adjust their dispatch and trading strategies to changing market conditions. To get most of the way there, three changes are needed: one, (re)model the portfolio and challenge old assumptions; two, strengthen the relationship between the commercial and operations groups; and three, establish advanced performance management. These changes can be led by the chief operating officer or chief financial officer, depending on the organizational reporting lines of a given company, but close senior-management involvement in any case is deeply important to their success.

1. (Re)model the fleet

The company needs a clear and current understanding of the value of its assets in order to update the portfolio strategy for current market conditions. The commercial group should earn a certain amount with its assets "no matter what." This is the intrinsic value of the plants, and it derives from their capacity, heat rate, fuel type, operating parameters, location on the grid, and so on. To maximize this intrinsic value across the fleet, the commercial group needs to look at assets and strategies with fresh eyes and take a clean-sheet view of its dispatch models. The following questions can help spark creative thinking during the reassessment:

- How should we offer the units into the market, given the potentially changed positions of each unit on the dispatch curve?

- How should we think about maximizing margins given changing ISO rules and relative valuations for ancillary services?

- What is the right maintenance factor to use for each unit, given changing generation profiles and capacity factors?

- How can the physical limits of the plant, such as minimum-maximum loads and ramp rates, be tested and stretched?

- Are we certain that the plant is being pushed to its optimum level?

- Do we understand the cost implication related to the obligations tied to our fuel contracts?

2. Strengthen the relationship between the commercial and operations groups

The dispatch desk's understanding of how different types of power plants really work often needs to be deepened. For the commercial team to maximize profits for the fleet and properly control trading risk, it must understand the operating parameters and limitations of each plant beyond simple numbers such as minimum downtimes, ramp rates, and maximum loads. Power-generating companies can

increase collaboration and knowledge sharing between dispatch and operations in a variety of ways—secondments between the two groups, joint working teams tasked with solving mutual problems, and shared performance indicators that better tie the performance of one group to the other and link performance bonuses to overall plant results.

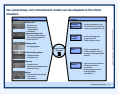
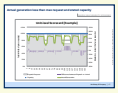
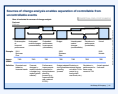
We emphasize that the burden of better communications does not rest entirely with the dispatch desk: companies can and should create value by improving communications in both directions. In a good-faith effort to provide reliable power, for example, many power plants will hold back some of their unit capabilities when communicating with dispatch. We often see power plants "underoffer" their units to their own dispatch desk by five megawatts or more, or increase minimum loads above required levels in order to make doubly sure that they do not have an emissions exceedance. Sometimes companies limit the amount of ancillary services available to the market, to reduce stress on their equipment. Improving communications between operations and dispatch can help shine a light on these issues by creating more joint problem-solving opportunities between the two groups. One power generator was able to extend the limits of its plants by creating more detailed daily reports from operations to dispatch, such that minimum load, maximum load, and ancillary services were varied on an hourly basis according to the weather forecast.

A deeper, mutually transparent relationship between operations and the commercial function will allow for a structured analytical approach to identifying opportunities for commercial enhancement (Exhibit 2).

3. Establish advanced performance management

To achieve effective performance management, companies must ensure that the right data get into the hands of the right people at the right time. Then managers must be armed with the right questions to ask. Senior leaders who find themselves managing a commercial group whose activities they do not fully understand can take several actions to close the knowledge gap. First, they can take a crash course—"Power markets 101"—to study what their commercial groups

Exhibit 2 A structured approach to identifying and quantifying opportunities can improve the commercial function.

Phase	Optimizing analyses		Description
Quantify value at stake	Value-leakage waterfall		▪ Quantification of value lost from commercial and operating activities; forms the foundation for understanding improvement opportunities
	Dispatch-optimization model		▪ Sophisticated linear program customizable to **(re)model the fleet**: allows rapid idea generation and testing of dispatch and wholesale strategies
Identify opportunities to plug the gap	Dispatch playbooks		▪ Strategies for capturing wholesale-market opportunities identified through extensive data analysis, interviews, and back testing of market dynamics
	Unit capabilities challenge-and-update process		▪ Transparent accounting of true plant capabilities through internal and external comparisons to uncover cost of hidden reserves and operator variability
Rigorously implement	Forensic process mapping and interface analysis		▪ Dashboards to understand real time and monthly performance and ensure transparency to **strengthen the commercial and operations bond**
	Transformation value tracker		▪ **Advanced performance management**: tracking results to ensure transparency and accountability for improving performance

do. Second, they can hire as chief risk officer (CRO) an individual with deep experience in power markets. A CRO can support the senior leadership in managing and pushing the commercial group. Many companies have established this position but still need to think through the reporting structure for the risk group in order to ensure objectivity.

Finally, with the help of the CRO, senior managers can develop a comprehensive risk and performance-management reporting system that addresses the following questions:

- What value is our commercial group creating, as distinct from the value inherent in our plants?
- How does our trading perform against forecasts? What are the major sources of variance?
- How are our core strategies performing? What is driving over- or underperformance?
- Do we adequately understand major shortfalls or windfalls?
- To what market trends are we most exposed (a question also known as "What team are we rooting for?")?
- What will drive future performance? How much of the gap can we influence or close?

Exhibit 3 How are the strategies of power-generating companies performing, and why?

Gross margins by strategy
$ million

	Key strategies	Plan	YTD actual	Variance	Explanation
Power-assets optimization	• DA/RT[1] arbitrage • Intramonth allocation	45	37	(8)	• Lower realized DA/RT prices than forecast • Missed opportunities to monetize the volatility associated with BOM[2]
Gas-assets optimization	• Equity-volume uplift • Storage optimization	7	4	(3)	• Depressed time spreads decreased storage optimization ($3.5 million) • Price uplift $0.10/mmBTU lower than expected
Origination	• Structured transactions • Third-party resellers • Midmarket transactions	72	82	8	• Increase in full-requirements deals ($8 million) • Increase in power-reseller volumes ($5 million) • Decrease in renewables deals ($3 million)
Gas proprietary trading	• NYMEX[3] • Physical basis • Pipeline-release capacity	34	40	6	• Increase in basis-optimization volumes and prices ($4 million)
Power proprietary trading	• Term • Prompt • Shape	51	30	(21)	• Lower realized margins in term and prompt strategies ($15 million) • 50% of projected volumes for shape strategy
Total margin		**209**	**193**	**(16)**	

1 Day ahead/real time.
2 Balance of month.
3 New York Mercantile Exchange.

With optimized performance management in place, power-company managers will be able to understand how their commercial strategies are performing, and why (Exhibit 3).

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For power-generating companies, a great deal of value is at stake in the dispatch and trading strategies pursued by the commercial group. Experience has shown that $8 million to $12 million annually of additional earnings before interest and taxes per gigawatt of "at the money" installed capacity can be created without capital investment. To capture this value, companies will need to implement changes along the lines of our foregoing discussion. By adapting their commercial function to the new environment in these ways, companies will be able to achieve transparency on commercial performance and adjust commercial strategies with greater sensitivity to ever-changing market conditions.

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