

SUPERPOWER: ONE MAN'S QUEST TO TRANSFORM AMERICAN ENERGY

By Russell Gold

Reviewed by Kenneth A. Barry[*]

I. INTRODUCTION

A book rarely comes along that delves so deeply into the engineering and business intricacies of transmission expansion and wind generation, yet reads so like a novel. This is the remarkable achievement of Russell Gold's *Superpower: One Man's Quest to Transform American Energy*.[1]

Gold, a senior energy reporter with the *Wall Street Journal*, has painstakingly researched the origins and evolution of the U.S. grid in general and wind power in particular, along with the personal journeys of a colorful cast of characters animating the story. Gold's focus, while sometimes expanding to national efforts to develop promising wind resources, wherever they are found in America, centers on the Oklahoma panhandle region. Solar energy also figures in the mix at times, but the aspirations of wind developers and the institutional challenges they face comprise the essence of Gold's narrative.[2]

The "one man" in the book's title is the enterprising, nearly indefatigable, Michael Skelly. An infrastructure project developer who clearly relishes a challenge, Skelly first met true believers in the energy potential of three "big and windy and sunny" western Oklahoma counties in 2009. He left with a vision of developing a "720-mile electricity expressway" capable of carrying 4000 MW of renewable energy east to a terminus near Memphis (tying into the TVA system). The details of scaling the often slippery slopes of numerous impediments – financial, technical, regulatory, and political – to achieve the ambitious goals of Clean Line Energy Partners, as Skelly's company was called, become the grist for the tale.[3]

Though he tucks in a good deal of technical information about transmission facilities and wind farm development (told in a manner appealing to the lay reader), Gold puts equal emphasis on the human side of the equation. The triumphs

* Kenneth A. Barry is the former Chief Energy Counsel of Reynolds Metals Company, and has served as Counsel in the energy regulatory section of Hunton Andrews Kurth's Washington, D.C. office. He has also been a regular contributor to two energy law publications, and is currently a Vice-Chair of EBA's International Energy Law and Transactions Committee.

1. RUSSELL GOLD, SUPERPOWER: ONE MAN'S QUEST TO TRANSFORM AMERICAN ENERGY (2019).

2. Gold is also the author of RUSSELL GOLD, THE BOOM: HOW FRACKING IGNITED THE AMERICAN ENERGY REVOLUTION AND CHANGED THE WORLD (2014).

3. Importantly, Clean Line's projects were conceived as merchant transmission, not as cost-of-service, rate-based facilities. Under Skelly's business model, his transmission lines would sell bundled, renewable power at the terminal points for negotiated rates, hoping to profit from the differential between investment/operating costs and the market value of energy at the points of delivery.

and travails experienced by Skelly and his associates serve as a constant reminder that progress depends on exceptional individuals willing to incur daunting risks – and take their lumps along the way.

II. THE TECHNOLOGY

Skelly turned to direct current (DC) technology to realize his vision of conveying abundant wind and solar energy from Oklahoma to eastern load centers. This "expressway" transmission design leads Gold to an interesting digression on historic precedents for incorporating DC technology in long-line projects. The reader learns, for example, that in the 1950s and 60s a kind of "arms race" developed in which both the Soviet Union and the United States competed, within their respective countries, to build the longest and highest-capacity DC lines ever, as a bold demonstration of their engineering prowess. Stepping back further in time, we also learn about early 20th century grid pioneers who urged that the localized nature of the first power generation/distribution systems had to give way to much longer, higher capacity power lines that could link up local systems and provide access to distant, more economical generation sources (as well as reduce the redundancy requirements for generation units). The term "Superpower" in the title of Gold's book echoes the title of W. S. Murray's 1925 proposal for a "giant grid" that would allow existing, essentially local networks to be superseded by larger and more efficient regional power plants.[4]

The book also chronicles the remarkable strides in cost-effectiveness of wind generation technology that paralleled Skelly's nearly decade-long campaign to build Clean Line's showpiece DC line from the Oklahoma panhandle to Tennessee as well as four other embryonic DC projects.[5] With larger and more efficient turbine designs being continually introduced, Skelly was able to lower his price offers to potential customers: from an initial proposal in the $70/MWh range (delivered) to prices falling to and eventually below the $30/MWh range. Such aggressive pricing was also feasible because of the quality of the wind resources in the Oklahoma panhandle: Skelly's engineers estimated a roughly 50% capacity factor from wind farms located there.

III. POLITICAL AND GRASS-ROOTS HEADWINDS

Gold's account of Skelly's journey weaves constantly between hope and discouragement, as his hero navigates institutional and human obstacles. For historical context, the book delineates the early struggles – and conquests – of independent power producers preceding the main events of *Superpower* to reach markets dominated by traditional vertically integrated monopolies. Skelly himself encounters lingering reluctance on the part of the regulated monopolies to deal forthrightly with upstart wind entrepreneurs, although this subsides as wind

4. *See* WILLIAM SPENCER MURRAY, SUPERPOWER, ITS GENESIS AND FUTURE (1925).

5. Skelly favored launching multiple projects as a risk-mitigating strategy, giving Clean Line more chances to succeed if one or more projects proved futile. The book, however, notes the downside that the company had to spread more resources, which were limited, among more nascent projects, rather than pouring everything into one or two.

power becomes more respectable and "green energy" more fashionable, even in the oil-and-gas-rich Southwest.

But the greatest and most exasperating challenges for Clean Line awaited Skelly and his team in the hills and rice fields of Arkansas and the corridors of TVA's bureaucracy. The 720-mile DC line had to pass through Arkansas but was marketed, originally, as a way to zip Oklahoma energy to TVA and the Southeast, through the latter's interconnections. "What's in it for Arkansas?" asked activists led by Julie Morton, a major character in the tale. Morton, with her visceral dislike for a parade of transmission towers blemishing the landscape, found sympathy not only among like-minded landowners but also the politicians to whom they complained.

The Arkansas Public Service Commission could not, as the book details, find any clear statutory basis for treating Clean Line as a public utility with eminent domain rights – placing the project in limbo. Clean Line then petitioned the U.S. Department of Energy (DOE) to rescue the project through a never-before-used provision – Section 1222 of the Energy Policy Act of 2005[6] – that creates a federal eminent domain power for joint federal/private transmission projects. Eventually, after an enormous persuasive effort by Clean Line during the Obama Administration, the DOE assented to support the project pursuant to Section 1222, so long as the company agreed to assert federal eminent domain in specific cases "only as a last resort." Clean Line's success with the DOE did not deter Arkansas's Congressional delegation from aiding the grassroots opponents with bills proposing a new, local-veto provision. The legislative wrangling (supplemented by litigation brought in an Arkansas federal district court) slowed down, but did not ultimately kill the project.[7]

More trenchant was the resistance encountered at TVA, whose willingness to purchase a large chunk of the 4000 MW of Oklahoma renewable energy was a critical piece of Clean Line's puzzle. It was Skelly's particular misfortune that one of Tennessee's senators, Lamar Alexander, had a longstanding animus towards wind energy, centering on aesthetic impacts. While Clean Line's leaders thought they were making headway in persuading TVA that supplementing (or displacing) its traditional thermal resources with a large block of competitively priced renewable energy was good for its customers and the environment, the senator was pulling TVA in the opposite direction. This tug of war, which went on for months with TVA's CEO Bill Johnson in the middle and Clean Line's financial wherewithal slowly ebbing,[8] makes for dramatic storytelling about the project's shriveling hope, despite an increasingly compelling value proposition.

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6. Energy Policy Act of 2005 § 1222, 42 U.S.C. § 16421 (2005).

7. *See Downwind LLC v. United States Dep't of Energy*, No. 3:16-CV-207-DPM, 2017 WL 6542747 (E.D. Ark. Dec. 21, 2017), *vacated and remanded*, No. 18-1399, 2018 WL 3648283 (8th Cir. Apr. 18, 2018), and *vacated*, No. 3:16-CV-207-DPM, 2018 WL 3641027 (E.D. Ark. Apr. 19, 2018).

8. During the entire time, Clean Line was a business with a large staff incurring major development costs, but receiving no revenues, since its projects could not be completed. Although financial support from major industry players was not lacking, no business can fund itself indefinitely without sales revenues to balance costs.

IV. A CAUTIONARY TALE

Gold's final chapters present a no less dramatic story. One of Skelly's chief collaborators on the Oklahoma wind farm development side strikes a deal of his own, following covert negotiations with another major integrated power company that does not need nearly as much new transmission infrastructure, while at the same time concluding that a big plunge into green energy would be good for its public image. Thereafter, Clean Line must conduct a fire sale of its Oklahoma lease and right-of-way interests to another big utility known for its interest in renewable resources.

Cycling back and forth, as the author often does, between Clean Line's sobering tale and assorted studies and proposals advanced by other big thinkers in renewable energy, Gold describes a detailed computer model developed by a "brainy young mathematician" named Christopher Clack suggesting that, by building a new grid based on shorter DC lines (as opposed to Skelly's multi-state lines), the U.S. purportedly could "eliminate more than 90% of its carbon emissions . . . while also cutting costs of 20%."

Then, Gold deflates the balloon this way: "Clack's vision is wonderful, but it's worth remembering that it lives in the binary world of computers. The real world is messier, with politicians and their preferences, outdated studies, angry residents, entrenched utilities, and a dozen other factors." You cannot put the passions of a Julie Morton or a Senator Alexander into a computer model, he cautions.

V. CONCLUSION

Occasionally, professionals in the field might find something askew in Gold's critique of the *status quo* that made Clean Line's project both necessary and difficult to achieve. For example, he seems to regard the current transmission grid as hopelessly balkanized, giving short shrift to the Federal Energy Regulatory Commission's strenuous efforts over the last 25 years, in partnership with industry planners, to make the interstate grid more seamless, robust, and independent of vested interests. He states: "[Skelly] had learned an important lesson. There really is no national grid – or federal grid oversight. The contiguous United States might as well be forty-eight different grids, each overseen by an individual state and state officials, looking to protect their local interests."

Gold also does not directly address how the drop in short and the long-term outlook for thermal energy costs – especially natural gas – has impacted the relative cost effectiveness of renewable resource projects, though he makes a strong case for the latter's costs falling apace.

In such a complex and controversial field, it is inevitable that knowledgeable readers will intermittently take issue with some representations in the book; but on the whole Gold has done an admirable job of researching and explaining, in plain yet lively terms, the halting but inexorable progress of wind energy in becoming an important component of America's energy portfolio. The devotion, contributions, and sacrifices to the cause made by the central character, Michael Skelly, will not be easily forgotten once the book is put down.