

# The Electricity Fuel Mix of the Future

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The National Academy of Engineering maintains a list of the greatest engineering achievements of the twentieth century.<sup>1</sup> Number one is electrification. The twentieth century was about building up infrastructure, expanding capital investments, and ultimately, opening markets.<sup>2</sup> If we can now move toward a sustainable, low- or zero-emission grid, surely future generations will view that transformation as among the greatest achievements of the twenty-first century.

During the Obama administration, significant progress toward a decarbonized grid took shape under federal leadership. Most prominently, the Environmental Protection Agency's ("EPA") Clean Power Plan ("CPP") envisioned an increasingly greener grid.<sup>3</sup> And although the CPP is currently stayed pending litigation,<sup>4</sup> other developments offer great promise. For example, some competitive wholesale electricity market operators are considering market rules that would account for the price of carbon, subject to approval by the Federal Energy Regulatory Commission ("FERC").<sup>5</sup>

As I write this *Foreword* in early November 2016, however, the energy and environmental community is wrestling with the implications of a Trump administration.<sup>6</sup> Earlier this spring, Trump tweeted that climate change is a hoax

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1. GREATEST ENGINEERING ACHIEVEMENTS OF THE 20TH CENTURY, NAT'L ACAD. OF ENGINEERING (2016), <http://www.greatachievements.org/>.
2. For a detailed history, see generally STEVE ISSER, *ELECTRICITY RESTRUCTURING IN THE UNITED STATES: MARKETS AND POLICY FROM THE 1978 ENERGY ACT TO THE PRESENT* (2015).
3. Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,661 (Oct. 23, 2015) [hereinafter CPP].
4. North Dakota v. EPA, No. 15A793 (U.S. Feb. 9, 2016).
5. Suedeon G. Kelly & Shawn Whites, *Pricing Carbon in Wholesale Electricity Markets: RTOs/ISOs Looking at a Carbon Price to Integrate Regional Public Policy Goals*, AKIN GUMP STRAUSS HAUER & FELD L.L.P. (Oct. 21, 2016), <https://www.akingump.com/en/experience/industries/energy/speaking-energy/pricing-carbon-in-wholesale-electricity-markets-rtos-isos.html>; William Opalka, *New England Roundtable Considers Carbon Pricing, State PPAs*, RTO INSIDER (Oct. 3, 2016), <https://www.rtoinsider.com/new-england-restructuring-roundtable-carbon-pricing-32271/>.
6. On November 8, 2016, Donald J. Trump became President-Elect of the United States.

created by the Chinese government.<sup>7</sup> The head of his EPA transition team is a known climate change denier.<sup>8</sup> The CPP seems doomed,<sup>9</sup> and it is unlikely that a Federal Energy Regulatory Commission dominated by Trump appointees would approve market rules that account for carbon.<sup>10</sup>

Although the immediate future for a green grid seems bleak, the pages of this Symposium Edition of the *George Washington Journal of Energy and Environmental Law* offer a great deal of hope. They reflect both vision—which will not be extinguished over a mere presidential term—and pragmatic thinking that provides insights into how green grid policies can get the most traction in the near future.

I will turn to those insights momentarily, but first, a more general word of introduction may be helpful. The George Washington University Law School's annual J.B. and Maurice C. Shapiro Environmental Law Symposium of 2016 was directly aimed at environmental, economic, and governance issues for the electricity mix in the coming decades. Over the course of the two-day, multi-disciplinary symposium, participants discussed topics ranging from incorporating environmental attributes into the rules of electricity dispatch, to modeling the future electricity fuel mix, to integrating non-generation resources and new technologies into the grid's infrastructure. One theme was especially strong throughout these discussions: All levels of governance—federal, regional, state, and local—matter to the electricity mix of the future.

Therein lie the insights of the articles collected in the coming pages. Although the 2016 Symposium was conceived against a backdrop of important federal activity, we would do well to recall that, prior to the Obama administration, the states were at the leading edge of the project of grid decarbonization. Even if the federal momentum is temporarily lost, there is reason for excitement about what can be accomplished in other fora.

As Professor Joel B. Eisen explains in his work *Dual Electricity Federalism Is Dead, But How Dead, and What Replaces*

7. Louis Jacobsen, *Yes, Trump Did Call Climate Change a Chinese Hoax*, POLITIFACT (June 3, 2016, 12:00 PM), <http://www.politifact.com/truth-ometer/statements/2016/jun/03/hillary-clinton/yes-donald-trump-did-call-climate-change-chinese-h/>.
8. Robin Bravender, *Trump Picks Top Climate Skeptic to Lead EPA Transition*, SCI. AM., Sept. 26, 2016, <https://www.scientificamerican.com/article/trump-picks-top-climate-skeptic-to-lead-epa-transition/>.
9. Keith Goldberg, *Trump Win Could Moot Cases Over Obama Climate Regs*, LAW360, Nov. 9, 2016.
10. There are currently two vacancies at FERC, with another one coming in July 2017. Under the Federal Power Act, all of these vacancies may be filled by Republicans. See 42 U.S.C. § 7171(b) (2012) ("Not more than three members of the Commission shall be members of the same political party.").

*It?*,<sup>11</sup> three recent U.S. Supreme Court decisions have ended the (always fictional) neat divide between state and federal spheres of authority over the electric grid.<sup>12</sup> Acknowledging that both states and the federal government simultaneously are influencing matters like the amount of renewable energy on the grid, Professor Eisen argues that a system of shared authority is preferable to the Federal Power Act's paradigm of the two systems operating independently.<sup>13</sup> His account demonstrates important pathways for FERC leadership going forward, but, in so doing, he also illustrates the authority of states to exercise creativity and innovation in the green-grid endeavor.<sup>14</sup>

The focus is squarely on state public utility commissions ("PUCs") in Professor James M. Van Nostrand's *Keeping the Fox From Managing the Henhouse: Why Incumbent Utilities Should Not Be Allowed to Operate the Distribution System Platform*.<sup>15</sup> In this work, Professor Van Nostrand considers PUCs' efforts to reformulate the utility business model against the backdrop of developments like distributed generation and demand-side management.<sup>16</sup> Using lessons learned from the federal electricity restructuring experience, he critiques New York's Reforming the Energy Vision ("REV") proceeding for empowering incumbent utilities to operate the distribution grid, raising potential conflicts of interest and barriers to the retail grid of the future.<sup>17</sup> As states continue to innovate, Professor Van Nostrand reminds them to be cognizant of the mistakes of the past.

Professor Steve Ferrey takes us more deeply into state initiatives in *The Poles of Power: Magnetic Bi-Directional Turn of the Meter*.<sup>18</sup> In this work, Professor Ferrey provides a thoughtful analysis of one of the biggest battlefields in state electricity policy: net metering.<sup>19</sup> In describing the full spectrum of variation among state net metering policies, Professor Ferrey demonstrates how the failure to value the benefits and costs of distributed resources opens states to litigation that may

further hinder the development of these important carbon-free sources of electricity.<sup>20</sup>

The next article takes a step back and asks about the usefulness of energy models for predicting the electricity mix of the future and informing regulatory design. Through Righetti et al., *The Role of Energy Models: Characterizing the Uncertainty of the Future Electricity System to Design More Efficient and Effective Laws and Regulations*,<sup>21</sup> we gain a better understanding of the many inputs to, and uncertainties within, such models. Even so, the authors offer dynamic law principles—like adaptive management, contingency rules, and duration rules—as means to enable smart regulatory decisionmaking even when so much is unknown about what the future holds.<sup>22</sup>

Finally, Heather Payne's *All of the Above: One Way State Regulatory Frameworks Impact the Utility of the Future*,<sup>23</sup> takes us to the core of state regulatory power in her detailed look at a utility rate case. Although capital spending has historically been at the core of rate cases, Ms. Payne shows that a transition is needed to attain the regulatory system of the future while maintaining acceptable electricity rates.<sup>24</sup> She emphasizes the important leadership role state PUCs can take in ushering in this transition to a cleaner grid.<sup>25</sup>

These articles—written months before the November 2016 election—illustrate two things. First, they are prescient in their careful attention to state power, given the likely loss of federal leadership in greening the grid over the next four years. Second, they embody some of the best contributions of academic scholarship to the long-term matter of grid decarbonization. They leverage legal doctrine, governance considerations, and on-the-ground facts to show just how much we can accomplish if we put our minds to it. At this time of uncertainty for progressive climate policies, here's to achieving a sustainable grid right now.

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11. Joel B. Eisen, *Dual Electricity Federalism Is Dead, But How Dead, and What Replaces It?*, 8 GEO. WASH. J. ENERGY ENVTL. L. 3 (2016).

12. *Id.* at 6–10.

13. *Id.* at 5.

14. *E.g., id.* at 8 (describing California initiative).

15. James M. Van Nostrand, *Keeping the Fox From Managing the Henhouse: Why Incumbent Utilities Should Not Be Allowed to Operate the Distribution System Platform*, 8 GEO. WASH. J. ENERGY ENVTL. L. 23 (2016).

16. *Id.*

17. *Id.* at 29–32.

18. Steve Ferrey, *The Poles of Power: Magnetic Bi-Directional Turn of the Meter*, 8 GEO. WASH. J. ENERGY ENVTL. L. 39 (2016).

19. *Id.*

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20. *Id.* at 54–55.

21. Tara Righetti et al., *The Role of Energy Models: Characterizing the Uncertainty of the Future Electricity System to Design More Efficient and Effective Laws and Regulations*, 8 GEO. WASH. J. ENERGY ENVTL. L. 56 (2016).

22. *Id.* at 71–76.

23. Heather Payne, *All of the Above: One Way State Regulatory Frameworks Impact the Utility of the Future*, 8 GEO. WASH. J. ENERGY ENVTL. L. 78 (2016).

24. *Id.* at 82–85.

25. *Id.* at 85–86.