

Net Neutrality Powers Energy and Forestalls Climate Change

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*Were you reaching for your freedom
When the gatekeeper called for the toll? Styx¹*

I. INTRODUCTION AND OVERVIEW: TRUMP-ERA COMMUNICATIONS AND ENERGY POLICIES IMPOSE TOLLS ON ENERGY RELIABILITY, RATES, SAFETY, COMPETITION, AND THE ENVIRONMENT

Net neutrality—the principle that users should be able to access and distribute the Internet content of their choice without an Internet Service Provider’s (ISP) interference—is essential to electric grid reliability, safety, cost-effectiveness, and the reduction of electric sector Greenhouse Gases (GHGs) and black carbon emissions that drive climate change.² Since 1996, the electric power system has been designated by law as “critical [i]nfrastructure” whose cyber and physical security are vital to the U.S. economy and national interest.³ Yet, in December 2017, the Federal Communications Commission (FCC) voted on party lines to repeal net

1. Styx, *What Have They Done to You, Brave New World* (Pumpkin Studios, 1999), <https://www.azlyrics.com/lyrics/styx/whathavetheydonetoyou.html>.

2. See Tim Wu, *Network Neutrality, Broadband Discrimination*, 2 J. TELECOMM. & HIGH TECH. L. 141, 145-46 (2003) (defining net as the principle that the networks that carry Internet traffic should be neutral as among Internet applications); CALIFORNIA AIR RESOURCES BOARD (CARB), 2017 EDITION CALIFORNIA GHG EMISSION INVENTORY (June 6, 2017), https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2015/ghg_inventory_trends_00-15.pdf [<https://perma.cc/4ZUC-4WA2>] (“Emissions from the electric power sector comprise 19% of 2015 [California] statewide GHG emissions.”); T.C. Bond, S.J. Doherty, et. al., *Bounding the role of black carbon in the climate system: A scientific assessment*, 118 J. OF GEOPHYSICAL RES. 5380, 5388 (June 2013), <http://onlinelibrary.wiley.com/doi/10.1002/jgrd.50171/pdf> [<http://perma.cc/ZA5A-3ZLK>] (finding that black carbon such as that produced by diesel exhaust ranks second only to carbon dioxide for its climate-warming effects).

3. Presidential Exec. Order No. 13010, 61 Fed. Reg. 37347, 1996 WL 33673768 (July 15, 1996); see Critical Infrastructures Protection Act of 2001 (CIPA), 42 U.S.C. § 5195c (Supp. I 2001), Pub.L. 107-56, Title X, § 1016, Oct. 26, 2001, 115 Stat. 400.

neutrality rules without considering their importance to critical infrastructure sectors, including energy.

This Article argues that enforceable net neutrality rules are necessary to protect critical infrastructure such as the energy, water, and communications sectors which are foundational to America's economy and democracy. This analysis contends that the FCC's failure to address the impact of net neutrality's repeal on critical infrastructure, the corruption of the FCC's comment process by those who allegedly used stolen identities to file comments, and the FCC's baffling tolerance of those allegedly false filings, merit vacatur of the FCC's Order as arbitrary and capricious decision-making in violation of the Administrative Procedures Act (APA).⁴

The Internet is an engine of innovation that has heretofore allowed content transmission without ISP permission or charges, apart from customer subscription fees.⁵ The FCC's 2018 "*Internet Freedom*" Order for the *first* time gives ISPs legal permission to erect toll booths between subscribers and content providers. The FCC authorized ISPs to charge content providers to transmit or speed ahead internet data, even if doing so degrades other users. The FCC Order imposes no limits on who—foreign or domestic—could buy paid priority. Nor are ISPs required to offer priority access to all, to charge buyers the same price for priority, or to safeguard other users from paid priority delays.⁶ Effective June 11, 2018, the FCC's *Internet Freedom* Order allows ISPs to manage internet traffic in their own business interest, repealing the FCC's March 2015 "*Open Internet*" Order's bright-line rules.⁷

4. APA, 5 U.S.C. § 551, *et. seq.*; 5 U.S.C.A § 706 (West) (Scope of Judicial Review); *see* Catherine Sandoval, Reply Comments, *In the Matter of Restoring Internet Freedom*, WC Docket No. 17-108, Aug. 30, 2017, at 2–3 [hereinafter Sandoval, *Internet Freedom Reply Comments*].

5. FCC, *In the Matter of Protecting & Promoting the Open Internet*, 30 F.C.C. Rcd. 5601, 5604 (2015), <https://docs.fcc.gov/public/attachments/FCC-15-24A1.docx> [<https://perma.cc/2QC9-YMFN>] [hereinafter FCC, *2015 Open Internet Order*] (“the *Verizon* court upheld the Commission’s finding that Internet openness drives a “virtuous cycle” in which innovations at the edges of the network enhance consumer demand, leading to expanded investments in broadband infrastructure that, in turn, spark new innovations at the edge”) (citing *Verizon v. FCC*, 740 F.3d 623, 659 (D.C. Cir. 2014)); Kevin Werbach, *A Layered Model for Internet Policy*, 1 J. TELECOMM. & HIGH TECH. L. 37, 58 (2002) (“A new service can be deployed simply by connecting two client devices capable of talking to one another, without requiring any approval or technical configuration inside the [Internet] network.”).

6. *See* Sandoval, *Internet Freedom Reply Comments*, *supra* note 4, at 27.

7. FCC, *In the Matter of Restoring Internet Freedom*, 33 FCC Rcd. 311, at ¶¶ 2–4, 220 (WC Docket No. 17-108) (2018) (adopted Nov. 22, 2017, released Jan. 4, 2018) (repealing FCC rules adopted in 2015 that prohibited ISPs from blocking, throttling, or paid prioritization of Internet traffic except for limited reasonable network management justifications) [hereinafter FCC, *Internet Freedom Order*]; *cf.* *2015 Open Internet Order*, *supra* note 5, at ¶¶ 215–216. David Shepardson, *U.S. “net neutrality” rules will expire on June 11: FCC*, REUTERS, May 10, 2018, <https://www.reuters.com/article/us-usa-internet/u-s-net-neutrality-rules-will-expire-on-june-11-fcc-idUSKBN1IB1UN> [<https://perma.cc/4HZQ-3DM9>].

The FCC's *Internet Freedom* Decision failed to take into account the billions invested in the U.S. electric grid to integrate communications and information technology including the internet. Energy reliability has been a federal priority since Congress adopted the Electricity Modernization Act (EMA) in 2005 which charged the Federal Energy Regulatory Commission (FERC) with adopting reliability standards.⁸ The Energy Independence and Security Act of 2007 (EISA) unleashed billions in "smart grid" investments spanning from the Smart Meter to the smart home to the smart phone to connect energy data, programs, and resources through the internet.⁹

Likewise, FERC omitted any consideration of the internet's role in achieving electric grid reliability in its 2017 proposal to pay more to energy resources with 90 days of fuel on hand, effectively—coal-and-nuclear-powered generators—to achieve nebulous reliability benefits.¹⁰ In January 2018, FERC rejected the NOPR, finding that it failed to show, as required under Section 206 of the Federal Power Act (FPA), that existing tariffs are unjust, unreasonable, unduly discriminatory or preferential, and that the proposal meets that standard.¹¹ Along with its rejection of the NOPR, FERC initiated a new proceeding, directing Independent System Operators (ISOs) and Regional Transmission Organizations (RTOs) which run wholesale energy markets under FERC jurisdiction, to submit reports examining how grid resiliency should be defined and assessed, and what additional steps are merited to promote resiliency.¹² Neither the 2017 FERC grid reliability proposal, nor FERC's January 2018 directive for ISO and RTO reports on grid resiliency, considered the role of Internet-enabled energy resources and the open Internet in energy grid resiliency, reliability, and cybersecurity.

Drawing on my experience as a Commissioner of the California Public Utilities Commission (CPUC) from January 2011 to January 2017, this Article explores the interdependence of the electricity sector and the open

8. Electricity Modernization Act of 2005, 42 U.S.C.A. § 15801, Pub. L. No. 109-58, § 1211, 119 Stat. 594, 941–46 (2005).

9. Public Law No. 110-140, 121 Stat. 1492 (2007) (The Energy Independence and Security Act of 2007 (EISA)); FERC, *Smart Grid Policy*, 127 FERC ¶ 61,139, 61,592 (May 19, 2009) (citing EISA, 121 Stat. 1492, Section 1301).

10. FERC, *Grid Resiliency Pricing Rule*, NOPR, 82 Fed. Reg. 194, 46,940 (Oct. 10, 2017) (Docket No. RM18–1–000) (to be codified at 18 C.F.R. pt. 35) [hereinafter FERC, *Grid Resiliency Pricing Rule*, NOPR].

11. FERC, Order Terminating Rulemaking Proceeding, Initiating New Proceeding, and Establishing New Procedures, 162 FERC ¶ 61,020, (Docket No. RM18-1-000) Jan. 8, 2018 [hereinafter FERC, *NOPR Termination and Grid Resiliency Rulemaking*].

12. *Id.* at ¶ 18.

and neutral internet. Section II of this Article discusses the evolution of critical infrastructure laws and policies. Section III examines California's energy loading order adopted in 2003 to increase energy reliability and protect the environment. Section IV analyzes the evolution of federal and state Smart Grid policies to infuse communications and information technologies including the internet into the energy ecosystem. Section V discusses FERC's authorization of demand response—the reduction of energy consumption on call—as a resource eligible to bid in FERC wholesale energy markets. Section VI examines the internet's role in electric grid reliability, public safety, and environmental protection as exemplified by California's response to: the outage of the San Onofre Nuclear Power plant beginning in 2012, natural gas shortages in California during the Polar Vortex of 2014, and the methane leak at the Aliso Canyon Natural Gas Storage field in Los Angeles beginning in November 2015 that diminished fuel resources for gas-fired electric power plants.

Section VII analyzes the FCC's 2018 *Internet Freedom* Order. It argues that the FCC's failure to consider critical infrastructure including energy in its net neutrality repeal order constitutes arbitrary and capricious decision-making under the APA. This section examines the potential harms of ISP paid priority deals for electric reliability, safety, rates, and the environment. It analyzes the limits of antitrust, unfair competition, consumer protection laws, and disclosure rules which provide no redress for harms to energy safety, reliability, costs, and the environment, in contrast to the FCC's 2015 Open Internet Order.¹³

Section VIII recommends that the FCC's *Internet Freedom* Order be vacated in light of its serious deficiencies under the APA.¹⁴ Identity thieves allegedly submitted millions of comments in the *Internet Freedom* Docket in other people's names without their authorization; the FCC's shockingly poor comment process flunks the APA.¹⁵ This Article argues that publicly traded

13. *Atl. Richfield Co. v. USA Petroleum Co.*, 495 U.S. 328, 334 (1990) (holding that antitrust laws were intended to prevent and protect against “antitrust injury” “attributable to an anti-competitive aspect of the practice under scrutiny.”).

14. *Fox Television Stations, Inc. v. FCC*, 280 F.3d 1027, 1048 (D.C. Cir. 2002), *opinion modified on reh'g*, 293 F.3d 537 (D.C. Cir. 2002) (citing *Allied-Signal, Inc. v. Nuclear Regulatory Comm'n*, 988 F.2d 146, 150–51 (D.C. Cir. 1993) (“The decision whether to depends on the seriousness of the order's deficiencies (and thus the extent of doubt whether the agency chose correctly) and the disruptive consequences of an interim change that may itself be changed.”).

15. 5 U.S.C. § 706(2)(A); Office of Attorney General Schneiderman, State of New York, *A.G. Schneiderman Releases Open Letter To FCC: Net Neutrality Public Comment Process Corrupted By “Massive Scheme,”* Nov. 21, 2017, <https://ag.ny.gov/press-release/ag-schneiderman-releases-open-letter-fcc-net-neutrality-public-comment-process> [<https://perma.cc/PWW6-RZVJ>]; Brian Naylor, *As FCC Prepares Net Neutrality Vote, Study Finds Millions of Fake Comments*, NAT'L PUB. RADIO, Dec. 14, 2017, <https://www.npr.org/>

companies should report the FCC’s *Internet Freedom* Order as a material and cybersecurity risk under Securities and Exchange Commission (SEC) Rules. It argues that states and state Public Utility Commissions (PUCs) and Public Service Commissions (PSCs) (collectively PUCs) should protect their residents through the exercise of the police power inherent in the states and PUC’s jurisdiction.¹⁶ This Article concludes in Section IX by urging the maintenance of legally enforceable net neutrality rules to protect critical infrastructure, energy reliability, the economy, national security, public safety, democracy, and the open Internet.

II. DEFEND BEYOND THE FORTRESS: PROTECT CRITICAL INFRASTRUCTURE VITAL TO AMERICA’S ECONOMY AND NATIONAL SECURITY

The Energy Sector, along with several other key segments of the American economy, has been designated as “critical infrastructure” since President Clinton’s 1996 Executive Order recognized the need to protect the nation from physical and cyber threats to these sectors. Executive Order No. 13010 recognized that “[c]ertain national infrastructures are so vital that their incapacity or destruction would have a debilitating impact on the defense or economic security of the United States.”¹⁷ President Clinton’s Executive Order designated as critical sectors “telecommunications, electrical power systems, gas and oil storage and transportation, banking and finance, transportation, water supply systems, emergency services (including medical, police, fire, and rescue), and continuity of government.”¹⁸

President Clinton’s 1996 Executive Order recognized two categories of threats to critical infrastructure: “physical threats to tangible property (‘physical threats’), and threats of electronic, radio-frequency, or computer-based attacks on the information or communications components that control critical infrastructures (‘cyber threats’).”¹⁹ Each of these categories remains

2017/12/14/570262688/as-FCC-Prepares-Net-Neutrality-Vote-Study-Finds-Millions-of-Fake-Comments [https://perma.cc/KFG2-VZ3T].

16. McKay Jewelers v. Bowron, 19 Cal.2d 595, 122 P.2d 543 (1942) (noting the “police power” is an attribute of state sovereignty founded on the duty of the state to protect its citizens and provide for the safety and general welfare); see, e.g. CAL. PUB. UTIL. CODE §§ 451, 701.

17. Presidential Exec. Order No. 13010, 61 Fed. Reg. 37347, 1996 WL 33673768 (July 15, 1996).

18. *Id.*

19. *Id.*

an important concern more than two decades later as physical and cyber threats have continue to evolve.

The September 11, 2001 attacks on America led to the passage of the Critical Infrastructures Protection Act of 2001 (CIPA) as part of the U.S.A. Patriot Act.²⁰ CIPA defines critical infrastructure as those “systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters.”²¹ CIPA “defines critical infrastructure *not* with reference to the identity of the target, but by the consequences of an attack on it.”²²

Congress recognized in CIPA “[t]he information revolution has transformed the conduct of business and the operations of government as well as the infrastructure relied upon for the defense and national security of the United States”²³ CIPA established as United States policy:

1. that any physical or virtual disruption of the operation of the critical infrastructures of the United States be rare, brief, geographically limited in effect, manageable, and minimally detrimental to the economy, human and government services, and national security of the United States;
2. that actions necessary to achieve the policy stated in paragraph (1) be carried out in a public-private partnership involving corporate and non-governmental organizations; and
3. to have in place a comprehensive and effective program to ensure the continuity of essential Federal Government functions under all circumstances.²⁴

Congress adopted these policies in light of its findings incorporated into CIPA that “[a] continuous national effort is required to ensure the reliable provision of cyber and physical infrastructure services critical to maintaining the national defense, continuity of government, economic prosperity, and quality of life in the United States.”²⁵ President Obama’s 2013 Presidential Executive Order directed federal agencies to support critical infrastructure cyber and physical security, consistent with CIPA’s mandates.²⁶

20. 42 U.S.C. § 5195c(e).

21. *Id.*

22. Nicholas Bagley, *Benchmarking, Critical Infrastructure Security, and the Regulatory War on Terror*, 43 HARV. J. ON LEGIS. 47, 51 (2006).

23. 42 U.S.C. 5195c (b)(1).

24. *Id.*

25. *Id.*

26. The White House, *Presidential Policy Directive—Critical Infrastructure Security and Resilience (PPD-21)*, Feb. 12, 2013, <https://obamawhitehouse.archives.gov/the-press->

The 2003 Great Eastern Blackout,²⁷ the California Electricity Crisis of 2000 to 2001,²⁸ and increasing concern about the need to ensure electric reliability for economic security and public safety spurred passage of the 2005 Energy Policy Act (EPA). In August 2003 a tree hit a line in Ohio leading to a cascading failure which left 50 million people without power for up to two days.²⁹ That blackout was one of America’s most widespread outages until Puerto Rico and parts of the U.S. Virgin Islands were plunged into darkness as the electric grid collapsed during hurricane Maria in September 2017.³⁰

President George W. Bush signed the EPA in 2005 to promote “dependable, affordable, and environmentally sound production and distribution of energy for America’s future.”³¹ The “Electricity Modernization Act of 2005,” Title XII of the EPA, requires electric power grid operators to ensure grid reliability.³² FERC Orders 888 and 889, adopted in 1996, authorized the

office/2013/02/12/presidential-policy-directive-critical-infrastructure-security-and-resil [https://perma.cc/RB88-HZXZ]; Dept. of Homeland Security, *Critical Infrastructure Sectors*, <https://www.dhs.gov/critical-infrastructure-sectors>, last visited Oct. 28, 2017, <https://www.dhs.gov/critical-infrastructure-sectors> [https://perma.cc/S65Y-3STL] [hereinafter *PPD-21*]; Exec. Order No. 13800, 82 Fed. Reg. 22391 § 2(d) (2017), *Presidential Executive Order on Strengthening the Cybersecurity of Federal Networks and Critical Infrastructure*, May 11, 2017, <https://www.whitehouse.gov/presidential-actions/presidential-executive-order-strengthening-cybersecurity-federal-networks-critical-infrastructure/> [https://perma.cc/8DWW-M7WS] [hereinafter *President Trump Executive Order on Cybersecurity*].

27. Kristoffer James S. Jacob, *Energy Jurisdiction in the Twenty-First Century*, 44 *ECOLOGICAL Q.* 375, 418 (2017).

28. See *Pub. Util. Comm’n of Cal. v. F.E.R.C.*, 462 F.3d 1027, 1036–37 (9th Cir. 2006) (providing a history of the events leading up to, during, and the regulatory proceedings and litigation following the California Electricity Crisis of 2000-2001 through 2006).

29. JR Minkel, *The 2003 Northeast Blackout—Five Years Later, Tougher regulatory measures are in place, but we’re still a long way from a “smart” power grid*, *SCI. AM.*, Aug. 13, 2008, <https://www.scientificamerican.com/article/2003-blackout-five-years-later/> [https://perma.cc/78F4-BDVS] (The 2003 blackout contributed to at least 11 deaths and cost an estimated \$6 billion).

30. Umair Irfan, *Hurricane Maria has now caused the longest blackout in US history, Only 30 percent of Puerto Ricans have power, extending the island’s lead in this outage*, *VOX*, Oct. 30, 2017, <https://www.vox.com/energy-and-environment/2017/10/30/16560212/puerto-rico-longest-blackout-in-us-history-hurricane-maria-grid-electricity>.

31. George W. Bush, *Statement on Signing the Energy Policy Act of 2005*, Aug. 8, 2005, <http://www.presidency.ucsb.edu/ws/?pid=64861> [https://perma.cc/QP9A-UB75].

32. Energy Policy Act of 2005, PL 109–58, Aug. 8, 2005, 119 Stat 594, 16 U.S.C. 824o, § 215(b) (“The Commission shall have jurisdiction, within the United States, over the ERO [Energy Reliability Organization] certified by the Commission under subsection (c), any regional entities, and all users, owners and operators of the bulk-power system, including but not limited to the entities described in section 201(f), for purposes of approving

formation of Independent System Operators (ISOs) or Regional Transmission Organizations (RTOs) to manage wholesale power trading and the electric grid.³³ Approximately “two-thirds of the nation’s bulk energy grid and wholesale markets are managed by seven RTOs and ISOs”³⁴ which work to ensure reliability. The bulk power system “refers to the network of interconnected generation and transmission lines, while the distribution system refers to the lower-voltage generally radial lines that deliver electricity to the final customer.”³⁵ EMA conferred FERC with the duty and jurisdiction to approve and enforce electric reliability standards developed by an Electric Reliability Organization (ERO). In July 2006, FERC certified the North American Electric Reliability Corporation (NERC) as the ERO to establish bulk transmission system standards for planning, preparation, contingency, and operations.³⁶

Electric reliability standards and practices often focus on preventing and responding to the “Severe Event, namely “one so damaging that afterwards the electricity services remained degraded for months or years.”³⁷ In

standards established under this section and enforcing compliance with this section. All users, owners and operators of the bulk-power system shall comply with reliability standards that take effect under this section.); Joe D. Whitley, George A. Koenig, Steven E. Roberts, *Homeland Security, Law, and Policy Through the Lens of Critical Infrastructure and Key Asset Protection*, 47 JURIMETRICS J. 259, 276–77 (2007) (citing Electricity Modernization Act of 2005, 42 U.S.C.A. § 15801 (2005)).

33. *Promoting Wholesale Competition Through Open Access Nondiscriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, Order No. 888, F.E.R.C. Stats. & Regs. ¶ 31,036, 61 Fed. Reg. 21,540 (1996), *clarified*, 76 FERC ¶¶ 61,009, 61,347 (1996) (“Order 888”), *on reh’g*, Order No. 888–A, F.E.R.C. Stats. & Regs. ¶ 31,048, 62 Fed. Reg. 12,274, *clarified*, 79 FERC ¶ 61,182 (1997), *on reh’g*, Order No. 888–B, 81 FERC ¶ 61,248, 62 Fed. Reg. 64,688 (1997), *on reh’g*, Order No. 888–C, 82 FERC ¶ 61,046 (1998); *Open Access Same-Time Information System and Standards of Conduct*, Order No. 889, F.E.R.C. Stats. & Regs. ¶ 31,035, 61 Fed. Reg. 21,737 (1996) (“Order 889”), *on reh’g*, Order No. 889–A, F.E.R.C. Stats. & Regs. ¶ 31,049, 62 Fed. Reg. 12,484 (1997), *on reh’g*, Order No. 889–B, 81 FERC ¶ 61,253 (1997). *See* Transmission Access Policy Study Grp. v. FERC, 225 F.3d 667, 681 (D.C. Cir. 2000), *aff’d sub nom.* New York v. FERC, 535 U.S. 1 (2002) (“Under these orders, utilities must now provide access to their transmission lines to anyone purchasing or selling electricity in the interstate market on the same terms and conditions as they use their own lines. By requiring utilities to transmit competitors’ electricity, open access transmission is expected to increase competition from alternative power suppliers, giving consumers the benefit of a competitive market.”).

34. Amy L. Stein, *Regulating Reliability*, 54 HOUS. L. REV. 1191, 1218–19 (2017).

35. *Id.* (citing Nat’l Renewable Energy Lab., Renewable Electricity Futures Study, Bulk Electric Power Systems: Operations and Transmission Planning 22-1 (2012), <http://www.nrel.gov/docs/fy12osti/52409-4.pdf> [<https://perma.cc/8FA6-7RQA>]).

36. *Id.*

37. Roland L. Trope & Stephen J. Humes, *Before Rolling Blackouts Begin: Briefing Boards on Cyber Attacks That Target and Degrade the Grid*, 40 WM. MITCHELL L. REV. 647, 652–53 (2014).

addition to widespread severe events such as the electric outage in Puerto Rico and the Virgin Islands, and the 2003 Northeastern Blackout, electric reliability issues often manifest through localized outages or risks. If not managed properly and quickly, localized outages can grow and cause problems including cascading outages as energy load leans on neighboring resources.

As U.S. economic sectors became more reliant on and intertwined with the Internet, President Obama updated critical infrastructure designations in 2013 through Presidential Policy Directive–Critical Infrastructure Security and Resilience (PPD-21).³⁸ That Executive Order designated sixteen sectors as “Critical Infrastructure: Chemical; Commercial Facilities; Communications; Critical Manufacturing; Dams; Defense-Industrial Base; Emergency Services; Energy; Financial Services; Food and Agriculture; Government Facilities; Healthcare and Public Health; Information Technology; Nuclear Reactors, Materials and Water; Transportation Systems; Water and Wastewater Systems.”³⁹ PPD-21 directed the Secretary of Homeland Security to develop situational awareness capability for critical infrastructure, requiring action to address evolving threats and consequences. PPD-21 remains in force, and President Trump has not changed critical infrastructure sector designations as of June 2018.

PPD-21 identifies “energy and communications systems as uniquely critical due to the enabling functions they provide across all critical infrastructure sectors.”⁴⁰ Energy and communications systems are key drivers for the U.S. economy, democracy, and national security, underlying the operations of nearly all businesses, public safety organizations, healthcare providers, education, and government.⁴¹

Energy and communications play a symbiotic role with each other; energy is necessary for almost all modern communications systems, and communications systems are increasingly integral to energy facilities and services. “Critical infrastructures and key assets are highly dependent on

38. *PPD-21*, *supra* note 26.

39. *Id.*

40. *Id.*

41. See Catherine J.K. Sandoval, *Opinion: Net neutrality safeguards democracy, the economy and national security*, MERCURY NEWS, Dec. 12, 2017 (arguing that following adoption of the FCC’s net neutrality repeal order “Health care providers who use the internet to access electronic medical records, educational institutions, water and energy companies, government institutions, businesses and individuals who post content become fair game for ISP priority-payment demands.”), <http://www.mercurynews.com/2017/12/12/opinion-net-neutrality-safeguards-democracy-the-economy-and-national-security/> [<https://perma.cc/3U4S-U5MN>].

each other. The failure of one critical infrastructure or key asset may quickly cascade and damage the functionality of nearby sectors.”⁴² The failures of water treatment and delivery following the loss of power in Puerto Rico, illustrates the interconnection between electricity and other critical infrastructure services.⁴³

Recognizing the pivotal role of communications to critical infrastructure, PPD-21 charges the FCC, to the extent permitted by law, to exercise its authority and expertise to partner with the Department of Homeland Security (DHS), the Department of State, and other Federal departments and agencies as appropriate, on:

(1) identifying and prioritizing communications infrastructure; (2) identifying communications sector vulnerabilities and working with industry and other stakeholders to address those vulnerabilities; and (3) working with stakeholders, including industry, and engaging foreign governments and international organizations to increase the security and resilience of critical infrastructure within the communications sector and facilitating the development and implementation of best practices promoting the security and resilience of critical communications infrastructure on which the Nation depends.

PPD-21 requires the FCC to do more than attend agency and stakeholder critical infrastructure meetings. This Executive Order requires the FCC to identify communications sector vulnerabilities including those raised by the FCC’s own rulemakings, and to address and mitigate those concerns.

42. Whitley, et al., *supra* note 32, at 269–70.

43. Sean Breslin, *Puerto Rico, One Month After Hurricane Maria: 3 Million Without Power, 1 Million Without Water*, WEATHER CHANNEL, Oct. 20 2017, <https://weather.com/storms/hurricane/news/2017-10-20-puerto-rico-hurricane-maria-by-the-numbers> [<https://perma.cc/WLF3-67K8>] (one month after Hurricane Maria approximately 3 Million people in Puerto Rico lacked power, 88 percent of the population; 1 Million lacked drinking water; all who had service restored are under a boil-water advisory, 29 percent of the population; 754 of 1,619 cell towers were working); Patrick Gillespie, *Misery in Puerto Rico: No power, no job, ‘enormous’ lines*, CNNMONEY, Oct. 18, 2017, <http://money.cnn.com/2017/10/16/news/economy/puerto-rico-unemployment/index.html> [<https://perma.cc/F3HD-XDRN>] (many Puerto Ricans have “no job along with no electricity or running water” after Hurricane Maria as the Island faces a long restoration process for energy, communications, and water service).

III. THE LOADING ORDER, RISK MITIGATION, AND ENVIRONMENTAL CONSIDERATIONS FOR CALIFORNIA’S ELECTRICITY SECTOR

Following the California Energy Crisis period of 2000 to 2001, when Enron and others engaged in market manipulation that dramatically increased energy prices and led to periodic blackouts,⁴⁴ California sought to transform its energy markets and secure its future. California adopted laws to reduce energy demand, diversify energy supply, and increase use and integration of renewable energy. The open Internet has been critical to achieving California’s energy and environmental goals.

In 2003, the CPUC and the California Energy Commission which is charged with long-term energy planning and energy siting issues, adopted the Energy Action Plan to establish goals for the state’s energy strategy.⁴⁵ The plan placed cost-effective energy efficiency and demand response at the top of the loading order to be dispatched first to meet energy needs, followed by renewable energy and distributed generation, then by fossil-fueled resources.⁴⁶ In 2004, the CPUC adopted procurement policies to implement the loading order and diversify California’s energy market in a manner that reduces its environmental impact.⁴⁷

In 2005, Assembly Bill (AB) 380 required the CPUC to establish resource adequacy requirements to ensure that adequate physical generating capacity would be available to meet peak demand. Energy resource planning includes procurement and steps to ensure that those resources can respond when called. The Internet facilitates calling energy resources to balance energy

44. Pub. Util. Comm’n of Cal. v. FERC, 462 F.3d at 1040 (“Under the ‘Death Star’ strategy, Enron allegedly sought to be paid for moving energy to relieve congestion without actually moving any energy or relieving any congestion. All of the demand was created artificially and fraudulently, creating the appearance of congestion, and then satisfied artificially, without the company providing any energy . . . On June 14, 2000, energy consumers in Northern California experienced their first wave of rolling blackouts. The California Parties allege that this occurred because of market . . . They claim that the data indicates that the large California generators utilized economic or physical withholding strategies 94% of the time during the May through November 2000 period.”).

45. State of California Energy Action Plan, CONSUMER POWER AND CONSERVATION FINANCING AUTH., ENERGY RES. CONSERVATION AND DEV. COMM’N, CAL. ENERGY COMM’N, CAL. PUB. UTIL. COMM’N (May 8, 2003), http://www.energy.ca.gov/energy_action_plan/2003-05-08_ACTION_PLAN.PDF [<https://perma.cc/28HD-26XN>].

46. *Id.* at 4.

47. CPUC D.04-09-060, *Order Instituting Rulemaking to Examine the Commission’s Future Energy Efficiency Policies, Administration, and Programs*, Sept. 23, 2004, http://docs.cpuc.ca.gov/publishedDocs/published/FINAL_DECISION/40212.htm [<https://perma.cc/TZL3-U2B9>].

supply and demand. The ability to reduce energy load on call lessens the need to engage supply side resources such as fossil-fueled power plants. By reducing demand during peak hours when energy demand is at its highest, Demand Response “can offset the need to run power plants that would be extremely costly to run at those peak hours,” lowering wholesale electricity prices during peak times.⁴⁸ Energy efficiency structurally embeds demand reduction, saving energy costs while diminishing GHG production.

In 2006 California Governor Arnold Schwarzenegger signed AB 32 which requires California to reduce its GHG emissions to 1990 levels by 2020—a reduction of approximately 15 percent below emissions expected under a “business as usual” scenario.⁴⁹ That same year he also signed Senate Bill 1368 which established a GHG emissions performance standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 lbs CO₂ per megawatt-hour (MWh).⁵⁰

Beginning in 1991, Public Utilities Code 701, required the CPUC to protect the environment by ensuring that IOUs increase total procurement of eligible renewable energy resources by at least an additional one percent of retail sales per year.⁵¹ In 2002 California Governor Gray Davis signed Senate Bill (SB) 1078, establishing a 20% renewable portfolio standard (RPS) for electric corporations to be achieved by 2017.⁵² Governor Schwarzenegger accelerated RPS standards in 2006 through California Senate Bill 107 which requires that twenty percent of electricity retail sales be served by renewable energy resources by 2010.⁵³ Governor Brown increased

48. Joel B. Eisen, *Who Regulates the Smart Grid?: FERC's Authority over Demand Response Compensation in Wholesale Electricity Markets* 4 SAN DIEGO J. CLIMATE & ENERGY L. 69, 78 (2013) [hereinafter, Eisen, *Who Regulates the Smart Grid?*].

49. *The California Global Warming Solutions Act of 2006*, A.B. 32, ch. 488, Statutes of 2006; California Air Resource Board, *Assembly Bill 32 Overview*, CAL. AIR RESOURCE BD., Aug. 4, 2014, <https://www.arb.ca.gov/cc/ab32/ab32.htm> [<https://perma.cc/3N5Z-C5W3>].

50. CAL. PUB. UTIL. CODE §§ 8340-41 (West 2009); Andrew F. Adams, *It's Getting Hot in Herre: California Senate Bill 1368 and the Dormant Commerce Clause*, 1 SAN DIEGO J. CLIM. & ENERGY L. 287, 314 (2009) (citing CAL. PUB. UTIL. CODE § 8341(b)(1)-(d)(2) requiring the CPUC to set the GHG performance standard at “no higher than the rate of emissions of greenhouse gases for combined-cycle natural gas baseload generation.”).

51. Kevin S. Golden, *Senate Bill 1078: The Renewable Portfolio Standard-California Asserts Its Renewable Energy Leadership*, 30 ECOLOGY L.Q. 693, 713 (2003) (citing Pub. Util. Code § 701.3, “Until the commission completes an electric generation procurement methodology that values the environmental and diversity costs and benefits associated with various generation technologies, the commission shall direct that a specific portion of future electrical generating capacity needed for California be reserved or set aside for resources.”).

52. S.B. 1078 § 3, 2001 Sen., Reg. Sess. (Cal. 2002) (amending Pub. Util. Code § 399.12(b) (Deering 2003)).

53. S.B. 107, ch. 464, Statutes of 2006, http://www.energy.ca.gov/portfolio/documents/documents/sb_107_bill_20060926_chaptered.pdf [<https://perma.cc/MZM6-PZCX>].

the RPS target in 2011 through Senate Bill X1-2, requiring 33% renewable energy generation resources by 2020.⁵⁴

In 2015, California adopted SB 350 which increased the energy RPS requirements to 50% by 2030 to reduce energy sector GHG emissions, a goal raised to 100% renewable energy by 2045 within the 2018 signature of SB 100.⁵⁵ SB 350 emphasized the integration of demand-side tools to reduce the need to build and run fossil-fueled plants, and required strategies to reduce the environmental burden of energy on “disadvantaged” communities.⁵⁶ Demand Response programs and resources “can offset the need to construct and dispatch polluting generation resources” often used to meet peak energy demand.⁵⁷

In 2017 California adopted a strategy to reduce Short-Lived Climate Pollutants (SLCP) including methane, diesel particulates, and other forms of black carbon that contribute to global warming and harm health such as diesel fuel, wood burning, and kerosene.⁵⁸ Black carbon ranks second only to carbon dioxide for its climate-warming effects.⁵⁹ “Although black carbon remains in the atmosphere for only a few days, one gram of black carbon warms the atmosphere several hundred times more during its short lifetime than one gram of carbon dioxide does during 100 years.”⁶⁰ California’s goal is to reduce methane emissions by 40% compared to 2013 levels by 2030.⁶¹ These laws require the CPUC to manage and plan energy in alignment with long-term environmental sustainability goals.

54. S.B. 2, 2011-12, Leg., 1st Extraordinary Sess., § 20(b)(2)(B) (Cal. 2011). See also S.B. 100, 2017-18 Leg., Reg. Sess., § 1(b) (Cal. 2018), https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100 [<https://perma.cc/KQB2-5STC>].

55. PUB. UTIL. CODE § 701.1, Stats. 2015, ch. 547 (S.B. 350), § 30, eff. Jan. 1, 2016.

56. *Id.*

57. Eisen, *Who Regulates the Smart Grid?*, *supra* note 48, at 79.

58. CARB, SHORT-LIVED CLIMATE POLLUTANT REDUCTION STRATEGY, Mar. 14, 2017, https://www.arb.ca.gov/cc/shortlived/meetings/03142017/final_slcp_report.pdf [<https://perma.cc/26D9-8CF2>] [hereinafter CARB, *SLCP Policy*].

59. Bond et al., *supra* note 2, at 5388.

60. Arne Jacobsen, Tami C. Bond, Nicholas L. Lam, Nathan Hultman, *Black Carbon and Kerosene Lighting: An Opportunity for Rapid Action on Climate Change and Clean Energy for Development*, BROOKINGS INSTITUTION, WASHINGTON, D.C. (UNITED STATES); GLOBAL ECONOMY & DEVELOPMENT, at 3, Apr. 15, 2013, <https://www.osti.gov/scitech/biblio/22110332> [<https://perma.cc/T35Y-C8DK>].

61. CARB, *SLCP Policy*, *supra* note 58, at 24.

IV. *GET SMART: INFUSING COMMUNICATIONS AND INFORMATION TECHNOLOGY INTO THE GRID AND TO CUSTOMERS TO INCREASE RELIABILITY, REDUCE COSTS, AND UNLEASH THE VIRTUAL POWER PLANT*

A. *Communications and Information Technology Makes the Grid Smart*

President George W. Bush spurred federal “Smart Grid” policies by signing the Energy Independence and Security Act of 2007 (EISA).⁶² The National Institute of Standards and Technology (NIST) defines the Smart Grid as the “two-way flow of electricity and information to create an automated, widely distributed energy delivery network.”⁶³ “Communications are fundamental to all aspects of the Smart Grid, including generation, transmission, distribution and consumption.”⁶⁴ Sensors, software, and the means to communicate two-way signals can make homes and customer premises negawatt generators which reduce electric load, effectively using “negawatts” to balance electric resources instead of increasing electric generation by producing more megawatts to satisfy electric demand. Communications and information technology can also detect and respond to electric system conditions, speed repair and recovery, increase reliability and resiliency, and improve public safety.

EISA enacted U.S. policy to “support the modernization of the nation’s electricity transmission and distribution system to maintain a reliable and secure electricity infrastructure that can meet future demand growth . . .”⁶⁵ Following EISA’s adoption, federal and state policy initiatives embedded communications and information technology throughout the energy ecosystem to increase electric reliability and public safety.

Since 2007 the federal and state governments and energy ratepayers have invested billions to create and harness the benefits of a connected grid, investments accelerated by economic stimulus funding in 2009 from ARRA grants. To modernize the electric grid and stimulate the economy, 200

62. Pub. L. No. 110-140, 121 Stat. 1492 (2007) (The Energy Independence and Security Act of 2007 (EISA)).

63. FCC, *Connecting America, The National Broadband Plan*, at 249, <https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf> [<https://perma.cc/43RZ-6PRX>] (citing ELEC. POWER RES. INST. (EPRI), REPORT TO NIST ON THE SMART GRID INTEROPERABILITY STANDARDS ROADMAP (2009), available at <http://www.nist.gov/smartgrid/InterimSmartGridRoadmapNISTRestructure.pdf> [<https://perma.cc/V3BL-Y3CE>]).

64. *Id.*

65. FERC, *Smart Grid Policy*, 127 FERC ¶¶ 61,139, 61,592 (May 19, 2009) (citing EISA, 121 Stat. 1492, § 1301).

electric utilities received an ARRA “Smart Grid Investment Grant from the U.S. Department of Energy.”⁶⁶

States such as California leveraged Smart Grid investments to increase energy data access. CPUC Decision 12-04-025 required utilities to develop and report on customer-facing portals to use smart grid data to improve energy management.⁶⁷ The Internet provides Smart Meter data access for customers, independent energy developers, academics, regulators, and others. Unleashing customer’s energy consumption data enables energy management and helps identify prudent energy efficiency measures.

Paper bills are still sent to many energy customers, some with smiley faces showing when the customer used less energy than comparable homes. Internet-based portals communicate data in more depth to enable analysis and action. Many customers use the Internet today to sign up for demand-side management programs such as demand response, air conditioning cycling programs, to get home energy audits, participate in the Energy Savings Assistance Program (ESAP) for low-income Californians, learn about outages, and more.

The Internet provides information to utility control room and dispatch operators, but is kept separate from utility controls as an “air gap” protection from potential hackers. California Independent System Operator (CAISO) electric grid managers use Internet access as part of their situational awareness and communications toolkit. FERC wholesale energy markets and CPUC utility procurement, planning, and many dispatch functions depend on the open Internet. All CAISO bidding is done on the Internet.⁶⁸

CAISO requires energy generators with a capacity of 10 MW or greater, who provide ancillary services (such as spin, non-spin, regulation), or serve as an “Eligible Intermittent Resource” to provide telemetry to communicate

66. Benlian v. PECO Energy Corp., 2016 WL 3951664, at *11 (E.D. Pa., July 20, 2016, No. CV 15-2128) (citing *Recovery Act: Smart Grid Investment Grants*, ENERGY.GOV, <http://energy.gov/oe/recovery-act-smart-grid-investment-grants> [<https://perma.cc/Z8X4-HX7X>]).

67. CPUC D.12-04-025, Decision Adopting Metrics to Measure the Smart Grid Deployments of Pacific Gas & Electric Company, Southern California Edison Company and San Diego Gas & Electric Company, Rulemaking 08-12-009, at 6, Apr. 19, 2012.

68. CAISO, *Market Optimization*, BUS. PRACTICE MANUAL, MARKET OPERATIONS, July 3, 2013, at A-5, https://bpmcm.caiso.com/BPM%20Document%20Library/Market%20Operations/Appendices-Market_Operations_V36_redline.pdf [<https://perma.cc/VET9-8MZF>] (“The public Internet is the method of transmitting the instruction and response information between CAISO and the SC [Scheduling Coordinator].”).

their operational status every four seconds.⁶⁹ In 2016 CAISO enabled energy generators to communicate operational visibility through secure Internet channels.⁷⁰ Almost every energy customer, supplier, generator, including Internet of Things (IoT) devices, energy market participants, as well as energy regulators, use the Open Internet.

The IoT was nascent when the FCC wrote its 2009 Broadband plan. “IoT is a ‘network of items—each embedded with sensors—which are connected to the Internet.’”⁷¹ IoT takes “everyday, physical objects, connect[s] them to the Internet, and monitor[s] and analyze[s] data while providing real-time feedback.”⁷² Without the Internet would-be IoT connected devices are just a thing.⁷³ Open access to the Internet allows device connection and data transmission without permission or charges from ISPs. The FCC’s 2018 repeal of rules to safeguard Open Internet access allows ISPs to erect a tollbooth in the IoT’s premise or path.

IoT proliferation illustrates the distributed energy ecosystem. We used to think of the home as the grid edge where people consumed electricity, but did not produce it. Dr. Mahmoud Daneshmand observed “the smart grid era is pushing sensors and, thus, visibility, into the distribution system, where the grid presumably “ends.” But the smart grid era is also an era in which distributed resources—in both utilities’ and customers’ hands—are making the “end,” or grid’s “edge” much more difficult to define.”⁷⁴ The Internet enables a home or a building to serve as an energy generator, or to decrease or shift energy on demand to aid the grid, save money, prevent blackouts, and protect the environment by reducing GHG emissions. The need to protect open and neutral Internet access for the energy sector is commensurate with the distributed energy ecosystem’s reach.

B. Cybersecurity: Evolving Threats to Critical Infrastructure Security, SEC Risk and Cybersecurity Reporting Requirements

The electric grid’s interdependence with communications networks including the Internet underscore the imperative of cybersecurity vigilance.⁷⁵

69. CPUC, *Assigned Commissioner’s Ruling Entering Workshop Report Into The Record And Seeking Comment*, RULEMAKING 13-12-011, Oct. 26, 2016, at Attach B, CAISO Presentation, at slides 2–3.

70. *Id.* at slide 5.

71. Robin Kester, *Demystifying the Internet of Things: Industry Impact, Standardization Problems, and Legal Considerations*, 8 ELON L. REV. 205, 206 (2016).

72. *Id.*

73. Thanks to my former CPUC Legal and Water Advisor Jamie Ormond for this insight.

74. Dr. Mahmoud Daneshmand, *Big Challenges for Big Data in the Smart Grid Era*, ECN MAG., Apr. 4, 2017, <https://www.ecnmag.com/blog/2017/04/big-challenges-big-data-smart-grid-era> [<https://perma.cc/4CTG-YLCC>].

75. FERC, *Smart Grid Policy*, 128 FERC ¶¶ 61,060, 61,335 (July 16, 2009).

In 2014, NERC promulgated “critical infrastructure protection guidelines referred to as CIP V5, which became binding in July 2016.”⁷⁶ The importance of protecting the electric grid’s physical infrastructure was highlighted by the shooting of electric equipment after assailants cut nearby communications lines at the Metcalf substation near San Jose, California in April 2014.⁷⁷ FERC issued Order No. 802 in 2014 to assess and protect physical assets that constitute the bulk-electric power system.⁷⁸

The Internet enables protection of physical assets through sensors and video technology. Internet-enabled cameras and sensors monitor energy facilities including generators, providing visibility into grid conditions, and facilitating response to physical threats. The Internet enables the public to monitor and communicate information about grid threats including fire or other dangers. Paired with software analytics and artificial intelligence, live video can be a powerful tool to detect grid threats or conditions.

The FCC’s decision to allow paid prioritization rested in part on AT&T’s assertion that paid priority would not typically degrade functions such as email, software updates, and cached video.⁷⁹ Yet, many utility facility physical security and fire condition monitoring systems require access to live, not cached video.⁸⁰ The FCC’s paid prioritization proposal would allow degradation of live video as a side-effect of priority deals, without consideration of its implications for critical infrastructure, another example of the Order’s failings under the APA.

President Obama in February 2013 directed NIST to lead the development of a Cybersecurity Framework to reduce cyber risks to critical infrastructure, and facilitate information sharing about cybersecurity risks.⁸¹ In July 2016

76. *Id.*; NERC, *CIP Standards*, <http://www.nerc.com/pa/Stand/Pages/CIPStandards.aspx> [<https://perma.cc/7WR4-VL5C>] (last visited Nov. 2, 2017).

77. Carolyn Tyler, *PG&E announces \$250K reward for substation sabotage info*, ABC7 NEWS, <https://abc7news.com/archive/9500018/> [<https://perma.cc/W85D-G3AE>] (“It was just after 1:30 a.m. last April when someone slipped into the Metcalf Substation. Fiber optic phone lines were cut and a rifle shot up transformers. More than \$15 million worth of damage was done.”) (last visited Nov. 2, 2017).

78. Order No. 802, 149 FERC ¶ 61,140 (2014) (codified at 18 C.F.R. § 40).

79. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 258 (citing AT&T Comments at 44–45).

80. *See e.g.*, Eric Olson, *Protecting the Power Grid*, SECURITY INFOWATCH, Dec. 15, 2017, <http://www.securityinfowatch.com/article/123822710/protecting-the-power-grid> [<https://perma.cc/U5QR-4BUG>] (describing the use of video analytics including live camera video to protect the power grid’s facility physical security).

81. Exec. Order No. 13636, *Improving Critical Infrastructure Cybersecurity*, 78 Fed. Reg. 11739, 2013 WL 596302 (Pres.), July 12, 2013.

President Obama issued Presidential Policy Directive/PPD-41 to coordinate federal response to cyber security incidents. PPD-41 requires assessment of cyber threat risks “to an entity, our national security, foreign relations, the broader economy, public confidence, civil liberties, or the public health and safety of the American people.”⁸²

President Trump recognized the crucial role of the open internet to the energy sector in his May 11, 2017 Executive Order on Cybersecurity and Critical Infrastructure.⁸³ That Executive Order declared “the policy of the executive branch to promote an open, interoperable, reliable, and secure internet that fosters efficiency, innovation, communication, and economic prosperity, while respecting privacy and guarding against disruption, fraud, and theft.”⁸⁴

As part of its risk assessment and alert system, the Department of Homeland Security (DHS) reported 31 cyber-attacks “on the energy sector” in 2011, and 161 cyber-attacks in 2014.⁸⁵ In October 2017, the DHS and the Federal Bureau of Investigation (FBI) warned “that the nuclear, energy, aviation, water and critical manufacturing industries have been targeted along with government entities in [cyber] attacks dating back to at least May.”⁸⁶ DHS issued a cybersecurity alert on March 15, 2018 reporting that the Russian government was targeting energy and other critical infrastructure facilities.⁸⁷ DHS reported “Russian government cyber actors” gained remote access into energy sector networks through malware and spear phishing attacks, and in June 2018 informed utility executives that Russians hackers had stolen hundreds of credentials to penetrate “air gapped” energy utility networks designed to be isolated from the open Internet.⁸⁸ These attacks underscore the need for vigilance to ward off hackers, intrusions, and actions that compromise data and operations. Neither DHS, the FCC, FERC, nor energy operators have recognized that malicious actors may seek to buy paid

82. The White House, *Presidential Policy Directive—United States Cyber Incident Coordination*, July 26, 2016, <https://obamawhitehouse.archives.gov/the-press-office/2016/07/26/presidential-policy-directive-united-states-cyber-incident> [<https://perma.cc/V3E9-R2Y7>].

83. *President Trump Executive Order on Cybersecurity*, *supra* note 26.

84. *Id.*

85. Stein, *Regulating Reliability* *supra* note 34, at 1229–30.

86. Jim Finkle, *U.S. warns public about attacks on energy, industrial firms*, REUTERS, Oct. 21, 2017, <https://www.reuters.com/article/us-usa-cyber-energy/u-s-warns-public-about-attacks-on-energy-industrial-firms-idUSKBN1CQ0IN> [<https://perma.cc/Z927-TMH9>].

87. UNITED STATES COMPUTER EMERGENCY READINESS TEAM (US-CERT), U.S. DEPT. OF HOMELAND SECURITY, RUSSIAN GOVERNMENT CYBER ACTIVITY TARGETING ENERGY AND OTHER CRITICAL INFRASTRUCTURE SECTORS, Alert (TA18-074A), Mar. 16, 2018, <https://www.us-cert.gov/ncas/alerts/TA18-074A> [<https://perma.cc/MM4C-ZN3D>].

88. *Id.*; Rebecca Smith, *Russian Hackers Reach U.S. Utility Control Rooms*, *Homeland Security Officials Say*, WALL ST. J., July 13, 2018, <https://www.wsj.com/articles/russian-hackers-reach-u-s-utility-control-rooms-homeland-security-officials-say-1532388110?ns=prod/accounts-wsj> [<https://perma.cc/H487-RZTQ>].

priority, or hack accounts with Internet priority, to compromise energy and critical infrastructure use of the Internet.

Many cybersecurity warnings focus on hackers, unauthorized intrusions, and “authorized users” who exceed their permission.⁸⁹ CIPA requires focus on the consequences of threats to critical infrastructure including cybersecurity,⁹⁰ not the actor. The FCC’s *Internet Freedom Order* allows ISPs to engage in paid priority deals even if doing so delays other traffic, with no safeguards for any users. Paid priority deals raise cyber security risks DHS, critical infrastructure sector operators, federal and state regulators, businesses, and those dependent on the Internet must examine and address.

California Senate Bill 822 recognizes that “[a]most every sector of California’s economy, democracy, and society is dependent on the open and neutral Internet that supports vital functions regulated under the police power of the state,” including “Utility services and infrastructure.”⁹¹ I appreciated the opportunity to recommend to the bill’s sponsor, Senator Wiener, and his staff, language in SB 822 recognizing the importance of the Internet to critical infrastructure services, the economy, businesses, and other activities regulated by the state’s police power.⁹²

The cybersecurity and operational risk of paid priority to Internet users make net neutrality’s repeal a reportable investment risk under SEC rules. Firms with SEC reporting requirements must disclose significant investment risks including cybersecurity risks.

The SEC defines Cybersecurity as “the body of technologies, processes and practices designed to protect networks, systems, computers, programs and data from attack, damage or unauthorized access.”⁹³ The SEC issued

89. See, e.g., Trope & Humes, *supra* note 37, at 659 (“as “smarter” devices with software flaws are deployed that create two-way communication channels and nodes that provide adversaries vulnerable points and attack vectors.”).

90. Bagley, *supra* note 22, at 51.

91. *Communications: broadband Internet access service*, CAL. S.B. 822, § 1(a)(3) (as passed by the California Senate, May 30, 2018, under consideration in the California Assembly), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB822 [<https://perma.cc/Y2YX-A62B>].

92. *Gonzales v. Oregon*, 546 U.S. 243 (2006) (states have authority under the police power to “legislate with regard to protection of the lives, limbs health, comfort, and quiet of all persons.”).

93. SEC, Div. of Corp. Fin., *CF Disclosure Guidance: Topic No. 2: Cybersecurity*, Oct. 13, 2011, <https://www.sec.gov/divisions/corpfin/guidance/cfguidance-topic2.htm> [<https://perma.cc/N3SR-YFLU>] [hereinafter *SEC, CF Disclosure Guidance*]; WHATIS?COM, available at <http://whatis.techtarget.com/definition/cybersecurity.html> [<https://>

cybersecurity risk disclosure guidelines in 2011.⁹⁴ The SEC requires that “a company must disclose enough information to meet SEC requirements and investors’ needs, but does not have to give would-be hackers a roadmap to the company’s technological weak spots.”⁹⁵

The SEC’s 2011 guidance on disclosure of cybersecurity risks notes that “Cyber attacks may also be carried out in a manner that does not require gaining unauthorized access, such as by causing denial-of-service attacks on websites.”⁹⁶ The SEC noted that the objective of a cybersecurity attack is not always financial or to steal data. “Cyber attacks may also be directed at disrupting the operations of registrants or their business partners,” the SEC warned.⁹⁷

During the past few years, SEC staff sent comments to registrants in industries reported as the target of cyber-attacks, and requested firms “to provide a separate discussion of the risks posed to the registrant’s operations from its dependence on technology or to the registrant’s business, operations or reputation by cyber-attacks”⁹⁸ SEC Chairman Jay Clayton’s September 20, 2017 statement highlighted the increasing types and number of cybersecurity threats, and underscored the importance of cybersecurity for firms subject to SEC regulation.⁹⁹ Yet, Chairman Clayton’s statement failed to recognize the cybersecurity and investment risks posed by allowing unregulated paid Internet priority.

Following the FCC’s January 2018 repeal of net neutrality rules, no government qualification process will be used to decide who can buy paid Internet priority. Unregulated paid priority is not like the “TSA Pre-Check lane” that requires government authorization before signup is completed. The 2015 Open Internet rules allowed ISPs such as AT&T to offer “qualified emergency service providers” to apply through a U.S. Homeland Security Application for limited call and data prioritization for communications AT&T

perma.cc/4WCZ-ZQJ3]. See also *cybersecurity*, MERRIAM-WEBSTER.COM, <http://www.merriam-webster.com/dictionary/cybersecurity> [<https://perma.cc/7XLG-V9FN>].

94. Jay Fishman & Mark Nelson, *Hot Topics in SEC Filings 2017: Regulatory Roll-Backs, Fintech, Cyber, and Blue Sky Offerings*, FED. SEC. L. REP. P. 2774208 (May 2017).

95. SEC, *CF Disclosure Guidance*, *supra* note 93; Howard M. Privette, D. Scott Carlton, Sarah Kelly-Kilgore, *The SEC Guidance on Cybersecurity Measures for Public Companies*, L.A. LAW., Sept. 2014, at 14, 18, <https://www.lacba.org/docs/default-source/lal-back-issues/2014-issues/september2014.pdf> [<https://perma.cc/TB32-E5YK>].

96. SEC, *CF Disclosure Guidance*, *supra* note 93.

97. *Id.*

98. Spencer G. Feldman, *The SEC Is Increasingly Eliciting Risk Factor Disclosure Describing Cybersecurity Risks and Past Cyber Attacks from All Public Companies*, SECURITIES LAW BLOG, Nov. 2, 2017, <https://www.olshanlaw.com/blogs-Securities-Law-Blog/the-sec-is-increasingly-eliciting-risk-factor> [<https://perma.cc/5GAK-3X3Q>].

99. SEC Chairman Jay Clayton, *Statement on Cybersecurity*, SECURITIES & EXCHANGE COMMISSION, Sept. 20, 2017, <https://www.sec.gov/news/public-statement/statement-clayton-2017-09-20> [<https://perma.cc/4C3W-LL2U>].

describes as “not originating from or traversing the Internet.”¹⁰⁰ In contrast, the FCC’s 2018 *Internet Freedom Order* gives ISPs complete discretion over who can buy priority, and how and when it will be triggered.

Paid priority deals would be bounded only by other applicable laws such as U.S. sanctions, antitrust, and consumer protection laws. “Sanctions form a limited deterrent as many sanctions only apply to named individuals or organizations or those working on behalf of a sanctioned government.”¹⁰¹ “ISPs could believe in good faith they are selling U.S. Internet priority to persons or entities not subject to sanctions,”¹⁰² but later find the purchaser was set up to attempt to circumvent sanctions.

While ISPs may not intend to disrupt other business operations through paid priority delays and network management, some paid priority buyers may harbor nefarious motives unknown to the ISP. Moreover, intent is not the relevant standard when examining cyber-risk. ISP priority deals that delay or degrade other traffic may have consequences similar to a denial-of-service attack characterized by the inability to access data or complete transmissions. The increased risk of ISP-induced delay due to paid priority, and the lack of safeguards for other Internet users or content providers appear to constitute reportable cybersecurity risks under SEC Item 503(c) for firms whose operations materially depend upon the Internet.

Cybersecurity risks also require action by critical infrastructure sector operators and regulators.¹⁰³ CPUC Decision 14-12-025 requires utilities to file General Rate Case (GRC) applications that assess risks and offer a plan to mitigate them. Utilities must manage and mitigate risk during their

100. Sandoval, *Internet Freedom Reply Comments*, *supra* note 4, at 30–31 (citing AT&T, *Wireless Priority* (providing priority for calls from Emergency Agencies available through an application from the U.S. Homeland Security site), <https://www.wireless.att.com/business-center/business-programs/government/wireless-priority.jsp> [<https://perma.cc/54V5-BACN>]; AT&T, *AT&T Dynamic Traffic Management–Public Safety* (allowing public safety agencies to “prioritize their mission-critical data traffic on the AT&T-owned domestic 4G LTE network,” a service “available only to qualified local, state and federal emergency management organizations (such as police and fire departments). The service is not available for unlimited plans and “does not apply to your [public safety agency] data traffic originated on or traversing over the Internet”), https://www.corp.att.com/stateandlocal/docs/ADTM-Public_Safety.pdf [<https://perma.cc/L2TJ-28KR>]. These services were offered under the 2015 Open Internet Order’s exemption of “specialized services” from the net neutrality rules.

101. *Id.* at 55.

102. *Id.* at 26.

103. 42 U.S.C. § 5195c(e).

daily operations.¹⁰⁴ California Public Utilities Code (CAL. PUB. UTIL. CODE) § 961 (d)(1) requires gas corporations to “[i]dentify and minimize hazards and systemic risks in order to minimize accidents, explosions, fires, and dangerous conditions, and protect the public and the gas corporation workforce.” The CPUC must ensure that utilities operate safely and reliably, and may ask for utility records and conduct investigations to address and mitigate risks to public safety, reliability, and the environment.¹⁰⁵

PG&E, a California utility that serves 5.3 million electric accounts and 4.4 million natural gas accounts, conducted a materiality assessment as part of its corporate sustainability report.¹⁰⁶ The Materiality Matrix identifies eighteen issues PG&E deems material to the utility’s long-term sustainability, each one of which is enabled by or depends in part on the open Internet: Public Safety, Non-Renewable Energy Supply, Renewable Energy, Rate Structure and Affordability, Environmental Footprint, Customer Engagement, Customer Energy Management, Infrastructure Reliability and Resilience, Distributed Generation, Greenhouse Gas and other Emissions, Water, Enabling Technologies, Community and Economic Vitality, Public Policy Engagement, Cybersecurity and Data Protection, Employee Engagement, Workforce Safety, and Workforce Planning.¹⁰⁷ The enabling technologies PG&E identified—those related to the smart grid, energy storage, electric vehicles and customer energy usage data—each depend in part on the open Internet.¹⁰⁸ PG&E’s materiality assessment highlights the need to address and report under SEC rules and as part of its CPUC risk assessment, the risks to electric and gas operations from the FCC’s repeal of net neutrality rules.

104. CPUC D.14-12-025, DECISION INCORPORATING A RISK-BASED DECISION-MAKING FRAMEWORK INTO THE RATE CASE PLAN AND MODIFYING APPENDIX A OF DECISION 07-07-004, 2-3,5, Dec. 4, 2014 (requiring utilities to file General Rate Case (GRC) applications to address and mitigate risks, and to act to manage and mitigate risk during their daily operations); CPUC D. 16-08-018, INTERIM DECISION ADOPTING THE MULTI-ATTRIBUTE APPROACH (OR UTILITY EQUIVALENT FEATURES) AND DIRECTING UTILITIES TO TAKE STEPS TOWARD A MORE UNIFORM RISK MANAGEMENT FRAMEWORK, at 5 (Application 15-05-002) (Aug. 18, 2016).

105. See CAL. PUB. UTIL. CODE § 451 (“Every public utility shall furnish and maintain such adequate, efficient, just, and reasonable service, instrumentalities, equipment, and facilities, including telephone facilities, as defined in Section 54.1 of the Civil Code, as are necessary to promote the safety, health, comfort, and convenience of its patrons, employees, and the public.”); CAL. PUB. UTIL. CODE § 701 (“The commission may supervise and regulate every public utility in the State and may do all things, whether specifically designated in this part or in addition thereto, which are necessary and convenient in the exercise of such power and jurisdiction.”)

106. PG&E, TOGETHER, BUILDING A BETTER CALIFORNIA, CORPORATE RESPONSIBILITY AND SUSTAINABILITY REPORT 2017, at 21, http://www.pgecorp.com/corp_responsibility/reports/2017/assets/PGE_CRSR_2017.pdf [<https://perma.cc/TZ7M-R5RR>].

107. *Id.* at 6.

108. *Id.* at 7.

Use of Internet-enabled technologies to manage energy operations and deploy resources has grown tremendously since 2000. FERC’s Order 745 adopted in 2011 authorized demand response to participate in wholesale energy markets, improve system reliability, and reduce the environmental impact of energy use. As discussed below, deployment of demand response resources is at risk from ISP gatekeeping behavior authorized by the FCC’s 2018 *Internet Freedom Order*.

V. DEPLOYING NEGAWATTS; FERC ORDER 745 ENABLES DEMAND RESPONSE AND ENERGY EFFICIENCY VIRTUAL POWER PLANTS

Demand Response has grown as a resource in wholesale energy markets since CAISO petitioned FERC in 2000 during the California Electricity Crisis to establish a tariff to allow load reduction to be offered and compensated as an energy resource.¹⁰⁹ FERC approved the CAISO demand response tariff as California faced market manipulation. FERC later found that Enron traders encouraged power plants to shut down for maintenance to create artificial energy shortages that drove up prices, and other evidence of market manipulation.¹¹⁰

In 2008, through Order No. 719, FERC ordered RTOs and ISOs to amend market rules to permit an aggregator of retail customers to bid retail customer demand response into wholesale markets.¹¹¹ FERC’s Order 719 allows an exception for states whose laws or regulations do not permit retail customer participation in wholesale markets through demand response aggregators.¹¹² This order also allowed the participation of energy efficiency resources, projects “designed to achieve a continuous . . . reduction in electric energy

109. California Independent System Operator Corp., *Order Conditionally Accepting for Filing Tariff Revisions*, 91 FERC ¶ 61,256 (2000), available at <https://www.ferc.gov/whats-new/comm-meet/2010/121610/E-5.pdf> [<https://perma.cc/NGS9-WDX>]; PJM Interconnection, L.L.C., *Order Accepting Tariff Sheets as Modified*, 95 FERC ¶ 61,306 (2001), available at http://www.energymarketers.com/Documents/Order_Approving_Load_Response_Program.pdf [<https://perma.cc/RZ3E-V3FC>].

110. See *Pub. Util. Comm’n of Cal. v. F.E.R.C.*, 462 F.3d at 1036–41 (providing a history of the events leading up to, during, and the regulatory proceedings and litigation following the California Electricity Crisis of 2000-2001 through 2006); see *State of California*, ex rel. Bill Lockyer, Attorney General of the State of California, 160 FERC ¶ 63,010 (July 28, 2017) (providing background on the California Energy Crisis market manipulation findings).

111. Wholesale Competition in Regions with Organized Electric Markets, Order No. 719, F.E.R.C. Stats. & Regs. ¶ 31,281, at 154 (2008).

112. *Id.*

consumption at the End-Use Customer's retail site.”¹¹³ FERC Order 719 was based on the Energy Policy Act of 2005's national policy that “unnecessary barriers to demand response participation in energy, capacity and ancillary service markets shall be eliminated.”¹¹⁴

In 2011 FERC adopted Order 745, authorizing demand response to participate as a resource in wholesale energy markets.¹¹⁵ “FERC Order No. 745 requires market operators to pay the same price to Demand Response providers for conserving energy as to generators for producing it, so long as a “net benefits test,” which ensures that accepted bids actually save consumers money, is met.”¹¹⁶ Demand response resources can be deployed through the Internet without environmental or siting review, or decade long proceedings to build power plants.

As the Supreme Court explains in *F.E.R.C. v. Electric Power Supply Ass'n*, generator bids are compensated based on the concept of “marginal pricing,” what it would cost to procure the next unit of energy:

Operators accept the generators' bids in order of cost (least expensive first) until they satisfy the LSEs' [load service entity such as a utility] total demand. The price of the last unit of electricity purchased is then paid to every supplier whose bid was accepted, regardless of its actual offer; and the total cost is split among the LSEs in proportion to how much energy they have ordered. So, for example, suppose that at 9 a.m. on August 15 four plants serving Washington, D.C.—can each produce some amount of electricity for, respectively, \$10/unit, \$20/unit, \$30/unit, and \$40/unit. And suppose that LSEs' demand at that time and place is met after the operator accepts the three cheapest bids. The first three generators would then all receive \$30/unit. That amount is (think back to Econ 101) the marginal cost—*i.e.*, the added cost of meeting another unit of demand—which is the price an efficient market would produce.¹¹⁷

The cost for the bids is known as the “locational marginal cost” or LMP.

FERC Order 745 imposes two conditions on demand response bidders to “ensure that a bid to use less electricity provides the same value to the wholesale market as a bid to make more.”¹¹⁸ “First, a demand response bidder must have “the capability to provide the service” offered; it must, that is, actually be able to reduce electricity use and thereby obviate the operator's need to secure additional power.”¹¹⁹ “Second, paying LMP for a demand response bid “must be cost-effective,” as measured by a standard

113. *Id.* at 154, ¶ 59 (citing *see* MISO Tariff, Attachment UU (EERs Measurement & Verification Procedures); ISO-NE Transmission, Markets and Services Tariff, I.2 Rules of Construction; Definitions) (emphasis in the original).

114. Eisen, *Who Regulates the Smart Grid?*, *supra* note 48, at 77.

115. *F.E.R.C. v. Elec. Power Supply Ass'n*, 136 S. Ct. 760, 763 (as revised Jan. 28, 2016).

116. *Id.* (citing FERC Order 745, § 35.28(g)(1)(v)).

117. *Id.* at 768–69.

118. *Id.*

119. *Id.*

called “the net benefits test.” That test makes certain that accepting a lower-priced demand response bid over a higher-priced supply bid will actually save LSEs (*i.e.*, wholesale purchasers) money.”¹²⁰ As discussed *infra* section VII (3), the FCC’s decision to allow ISPs to engage in paid prioritization of Internet traffic based on their private deals, even if it degrades other traffic, raises risks of non-compliance with both conditions for demand response bidding.¹²¹

F.E.R.C. v. Electric Power Supply Ass’n. found FERC Order 745 within FERC jurisdiction to ensure electric reliability and “just and reasonable” rates in wholesale electricity markets.¹²² “Wholesale demand response,” Justice Kagan observed in writing for the majority, “pays consumers for commitments to curtail their use of power, so as to curb wholesale rates and prevent grid breakdowns.”¹²³

Joel Eisen characterizes FERC Order 745 as consistent with “FERC’s mandate to ensure the reliability of the wholesale power system” by adopting incentives to “adjust regional supply and demand for electricity to ensure that rates are just and reasonable.”¹²⁴ Demand response contributes to lower energy prices, decreases the risk of blackouts and other service problems, and enhances reliability in the wholesale electricity market, the Court majority concluded.¹²⁵

In December 2017 FERC recognized “to the extent possible, energy efficiency solutions should be able to compete on an equal footing with demand response, generation, and transmission solutions.”¹²⁶ Demand response and energy efficiency have been critical tools for California’s efforts to enhance electric reliability, reduce GHGs, and save system and ratepayer costs. The Internet has been integral to enabling demand response participation by customers, aggregators, wholesale bidders, and resource deployment.

120. *Id.*

121. *Id.*

122. *Id.*

123. *Id.*

124. Joel B. Eisen, *FERC’s Expansive Authority to Transform the Electric Grid*, 49 U.C. DAVIS L. REV. 1783, 1838 (2016).

125. *FERC v. Elec. Power Supply Ass’n.*, 136 S. Ct. at 768–69.

126. 161 FERC ¶ 61,245, Dec. 1, 2017, at ¶ 60.

VI. DATA FUEL SECURE: INTERNET-ENABLED DEMAND RESPONSE,
RENEWABLES, AND COORDINATION PROMOTE
RELIABILITY, SAVE SYSTEM COSTS, REDUCE
GHGS, AND PREVENT BLACKOUTS

A. *Reliability, Resilience, and FERC's Proposal to Pay More to
Generators with Ninety Days of Fuel on Hand*

With the asserted goal of improving electric grid resiliency and reliability FERC issued a NOPR on October 10, 2017 proposing a Grid Resiliency Pricing Rule.¹²⁷ FERC's Grid Reliability NOPR cited the "premature" retirement of several coal-fired and nuclear plants as the basis for its concerns that grid resiliency is threatened.¹²⁸ The NOPR expressed concern about the ability to "withstand major fuel supply disruptions caused by natural or man-made disasters and, in those critical times, continue to provide electric energy, capacity, and essential grid reliability services"¹²⁹ or provide superior reliability benefits. The Rhodium Group's analysis of energy disturbance reports submitted to DOE found that fuel supply issues were a minor cause of outages over the past five years.¹³⁰ The Group's analysis showed that a vast majority of outages resulted from severe weather events such as hurricanes.¹³¹ FERC's Grid Resiliency NOPR cited the February 2014 Polar Vortex as an example of the incidents that allegedly justified its proposal. However, the NOPR neglected to mention that some coal-piles froze during the Polar Vortex, rendering certain coal-fired power plants unavailable.¹³²

FERC's Grid Resiliency NOPR proposed a tariff to compensate the "full cost" of energy generators with 90-days fuel on hand, "to provide electric energy, capacity, and essential grid reliability services."¹³³ The NOPR

127. Catherine Sandoval, Comments, FERC Grid Resiliency Docket No. RM18-1-000, Dec. 8, 2017, at 8 [hereinafter Sandoval, *FERC Grid Resiliency Comments*] (citing FERC, *Grid Resiliency Pricing Rule*, NOPR, *supra* note 10, at 46,941–42).

128. FERC, *Grid Resiliency Pricing Rule*, NOPR, *supra* note 10, at 46,941–42.

129. *Id.*

130. TREVOR HOUSER, JOHN LARSEN AND PETER MARSTERS, THE RHODIUM GROUP, THE REAL ELECTRICITY RELIABILITY CRISIS, Oct. 3, 2017, <http://rhg.com/notes/the-real-electricity-reliability-crisis> [<https://perma.cc/8DRY-HTKX>] ("Between 2012 and 2016, there were roughly 3.4 billion customer-hours impacted by major electricity disruptions. Of that, 2,382 hours, or 0.00007% of the total, was due to fuel supply problems (Figure 1). Interestingly, 2,333 of those customer hours were due to one event in Northern Minnesota in 2014. And it involved a coal-fired power plant.").

131. *Id.*

132. Amory B. Lovins, *Does "Fuel on Hand" Make Coal and Nuclear Power Plants More Secure*, FORBES, May 1, 2017, <https://www.forbes.com/sites/amorylovins/2017/05/01/does-fuel-on-hand-make-coal-and-nuclear-power-plants-more-valuable/#2f1f48c76902> [<https://perma.cc/A6KS-M7BP>].

133. FERC, *Grid Resiliency Pricing Rule*, NOPR, *supra* note 10, at 46,942.

characterized coal-fired and nuclear power plants as “fuel secure”¹³⁴ but offered no analysis to support its classification of such plants as “fuel secure.” Neither did the NOPR define “premature retirements.”

FERC rejected the Grid Resiliency NOPR on January 8, 2018 based on the proposal’s failure to show under FPA Section 206 that existing ISO and RTO tariffs are unjust, unreasonable, unduly discriminatory or preferential, and that the proposal meets that standard.¹³⁵ FERC directed ISOs and RTOs to submit reports by March 8, 2018, examining how grid resiliency should be defined and assessed, and recommending additional steps to promote resiliency.¹³⁶ Those reports are subject to public comment for analysis in the FERC Docket No. AD18-7-000.¹³⁷ White House Press Secretary Sarah Huckabee Sanders reported on June 1, 2018 that President Trump has ordered the DOE to take immediate steps to stall the retirement of coal and nuclear plants,¹³⁸ although no order has been officially signed as of August 16, 2018.

The procedural flaws and substantive shortcomings of FERC’s Grid Resiliency NOPR and President Trump’s proposal to require energy ratepayers to pay to stall coal and nuclear retirements are beyond the scope of this Article’s analysis. However, this Article informs those debates by underscoring the role of Internet-enabled resources and net neutrality to energy reliability and resiliency, cybersecurity, and other systemic threats such as the effects of climate change.

B. The San Onofre Nuclear Power Plant’s Outage is Mitigated by Demand Response, Distributed Energy Resources, System Upgrades, Community and Internet-based Coordination

California’s experience with the abrupt closure of the San Onofre Nuclear Generating Station (SONGs) illustrates nuclear power outage and reliability risks that persist even when generators have 90-days of fuel on hand. SONGs closed in January 2012 after several steam generator tubes deteriorated, causing

134. *Id.*

135. FERC, *NOPR Termination and Grid Resiliency Rulemaking*, *supra* note 11, at ¶ 14.

136. *Id.* at ¶ 18.

137. *Id.* at ¶ 19.

138. Brad Plumer, *Trump Orders a Lifeline for Struggling Coal and Nuclear Plants*, N.Y. TIMES, June 1, 2018, <https://www.nytimes.com/2018/06/01/climate/trump-coal-nuclear-power.html> [<https://perma.cc/2UFG-HHBZ>].

a leak at the station.¹³⁹ Between 2002 and 2011, SONGS produced approximately 18 percent of total electricity generation in the Southern California Edison (SCE) and San Diego Gas and Electric (SDG&E) CAISO zones.¹⁴⁰ SCE decided in mid-2013 to close the plant to avoid the more than \$1 million a day the utility was spending to keep the plant in a state of readiness to reopen upon regulatory approval.¹⁴¹

After the SONGS outage in January 2012, SCE and SDG&E upgraded energy infrastructure, improved grid operator visibility, and used the Internet to facilitate energy demand reduction. The CPUC ordered SCE and SDG&E to partner with community-based organizations (CBOs) in 2012-2014 to deploy trusted local messengers to communicate to Southern California's diverse communities about the need to save power.¹⁴² Many CBOs used the Internet to organize events and convey energy conservation information to a range of communities.¹⁴³ Both SDG&E and SCE reported that their demand response efforts were successful in reaching and educating customers about the importance of reducing energy usage.¹⁴⁴

In April 2012, the CPUC adopted Decision (D.) 12-04-045 to promote Demand Response as an IOU energy resource that complements energy bids into FERC wholesale markets. The CPUC also ordered transmission

139. Sandoval, *FERC Grid Resiliency Comments*, *supra* note 127, at 29–30 (citing CPUC D.14-11-040, Decision Approving Settlement Agreement As Amended And Restated By Settling Parties, (OII 12-10-013) Nov. 20, 2014, at 1-2).

140. *Id.* at 30 (citing U.S. Energy Information Administration (USEIA), *San Onofre Nuclear Outage Contributes to Southern California's Changing Generation Profile*, Nov. 4, 2012, <https://www.eia.gov/todayinenergy/detail.php?id=8770> [<https://perma.cc/8JDP-LDEL>] (“Between 2002 and 2011, SONGS generated an average of 16,218,635 megawatt hours of electricity each year” representing “18% of the total electricity generation in the Southern California Edison and San Diego Gas and Electric California ISO zones during this period.”)).

141. *Id.* (citing *See* CPUC D.14-11-040, at 1–2; Scott Cunningham, *Southern California Edison Announces Plans to Retire San Onofre Nuclear Generating Station*, Southern California Edison, June 7, 2013, <https://www.songscommunity.com/news/releases/southern-california-edison-announces-plans-to-retire-san-onofre-nuclear-generating-station> [<https://perma.cc/S34C-YFJD>]).

142. Sandoval, *FERC Grid Resiliency Comments*, *supra* note 127, at 31 (citing CPUC D.13-04-017, *Application of San Diego Gas & Electric Company (U-902-M) for Approval of Demand Response Program Augmentations and Associated Funding for the Years 2013 through 2014*, at 17, Apr. 18, 2013, <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M064/K342/64342913.PDF> [

(The “2012 Flex Alert Campaign results show that utilizing community-based organizations increased the number of customers, especially from hard-to-reach communities, benefiting from the knowledge provided.”).

143. *Id.* at 32.

144. *Id.* (citing CPUC D.13-04-017 at 24–25 (“The 2012 campaign targeted customers in the SONGS affected area, educating them on conservation steps to take during hot weather . . . SCE states that a study performed in August 2012 indicated that more than half of residential customers and one-third of small business customers made “a lot of effort during peak hours to reduce their energy consumption.”)).

system upgrades completed in 2013 and other facility investments to facilitate the flow of electricity in the Los Angeles and Orange County basins.¹⁴⁵ The CPUC commented in opposition to FERC’s Grid Resiliency NOPR, that in “the aftermath of a major leak at the Aliso Canyon natural gas storage facility and the unplanned closure of [SONGs]—California was able to rely on its diverse resource mix to meet demand despite the loss of large legacy infrastructure.”¹⁴⁶ A diverse resource mix including Internet-enabled energy resources and systems also improved California’s energy resiliency and reliability during the 2014 Polar Vortex which the NOPR cited to justify the Grid Resiliency proposal.¹⁴⁷

*C. The Polar Vortex: Demand Response, Renewables,
and Internet-Enabled Platforms Save the Sunny
California Polar Vortex Day, 2014*

As the Polar Vortex, a clash of arctic and warmer air masses, pushed freezing temperatures into Canada, the U.S. Midwest, and east on February 6, 2014, natural gas prices surged throughout the U.S.¹⁴⁸ That morning, SoCalGas which provides natural gas services to Southern California including San Diego and Los Angeles, informed CAISO that natural gas storage levels were near all-time lows as higher natural gas prices outside of California led to higher storage withdrawals.¹⁴⁹ The Polar Vortex in the east left Sunny California with insufficient natural gas supplies to fuel its natural-gas fired electric power plants as traders chased higher prices eastward.

CPUC rules in effect at the time largely allowed gas sellers to avoid fulfilling contracts to California buyers like electric power plant operators. The CPUC modified its rules in 2015 and 2016 to improve coordination

145. Catherine J.K. Sandoval, Commissioner, CPUC, *Safe, Reliable Service at Just and Reasonable Rates: Priorities, Challenges, and Opportunities*, Remarks at Stanford Law School (Apr. 25, 2013), at 9, http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/About_Us/Organization/Commissioners/Catherine_Sandoval/Stanford_2013_Presentation.pdf [<https://perma.cc/S798-Z84S>].

146. CPUC, *Grid Reliability and Resilience Pricing*, at 39 (Docket No. RM18-1-000) Oct. 23, 2017 [hereinafter, CPUC, *Comments, Grid Reliability and Resilience Pricing*].

147. Sandoval, *FERC Grid Resiliency Comments*, *supra* note 127, at 33.

148. Howard Gugel & James Merlo, NERC, *POLAR VORTEX REV.*, Sept. 2014, https://www.nerc.com/pa/rrm/January%202014%20Polar%20Vortex%20Review/Polar_Vortex_Review_29_Sept_2014_Final.pdf [<https://perma.cc/JHX6-NAVL>].

149. CPUC, *Comments, Grid Reliability and Resilience Pricing*, *supra* note 146, at 35.

between natural gas suppliers, IOUs, regulators, and demand needs to prevent shortages that could threaten California energy reliability.¹⁵⁰

CAISO reported that before 7 a.m. on February 6, 2014, “SoCalGas contacted the ISO with concerns over generating units’ gas usage rates. The ISO also received forced outage notifications from generating units based on gas usage limitations imposed by SoCalGas.”¹⁵¹ SoCalGas and ISO then directed all generating units located in the southern portion of its system not to increase their natural gas usage rates, while ISO dispatched other generating units and intertie resources to make up for the loss of electric supply.¹⁵²

During the Polar Vortex peak, CAISO issued demand response calls to reduce energy consumption while it sought other energy resources. “CAISO requested demand response from the public through a state-wide ‘Flex Alert’ to reduce electric and gas use to avoid blackouts, while curtailing the operation of a gas-fired power plant in Southern California.”¹⁵³ “[CA]ISO issued a grid warning notice at 13:00, explaining the gas use constraint; this grid warning notice also encouraged market participants to offer additional energy and ancillary service bids.”¹⁵⁴

As the day unfolded and natural gas supplies remained short of the anticipated peak demand in the evening (from 4:00 PM to 9:00 PM), “ISO . . . contacted utility distribution companies to request that they activate their interruptible load” and requested that “utilities call for demand response programs with consumers that have contracts for demand response.”¹⁵⁵ The Western Electric Coordinating Council (WECC) Reliability Coordinator

150. CPUC D.15-06-004, Decision Granting Application Of Southern California Gas Company and San Diego Gas & Electric Company For Low Operational Flow Order and Emergency Flow Order Requirements, June 11, 2015, <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M156/K155/156155528.docx> [<https://perma.cc/QC6K-CY7J>]; CPUC Resolution G-3511, Dec. 7, 2015, <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M156/K208/156208939.PDF> [<https://perma.cc/TM44-7MUF>]; CPUC D.16-12-016, Decision Granting The Joint Petition For Modification Of Decision 16-06-039, Dec. 1, 2016, <https://www.socalgas.com/regulatory/tariffs/tm2/pdf/4997-A.pdf> [<https://perma.cc/TL5J-457S>].

151. CAISO, *Gas Events and Market Results of Feb. 6, 2014*, TECHNICAL BULL. (May 2014), at 14, https://www.aiso.com/Documents/TechnicalBulletinGasEvents_MarketResults_Feb6_2014.pdf [<https://perma.cc/6JUZ-PRAX>] [hereinafter CAISO, *Gas Events and Market Results of Feb. 6, 2014*].

152. *Id.* at 14–15.

153. Written Statement of Commissioner Catherine J.K. Sandoval, Commissioner, California Public Utilities Commission, Before the Congressional Forum on Net Neutrality, Hosted by Congresswoman Doris O. Matsui, Sept 24, 2014, at 36 [hereinafter Commissioner Sandoval, *2015 Open Internet Ex Parte Comments*].

154. CAISO, *Gas Events and Market Results of Feb. 6, 2014*, *supra* note 151, at 16.

155. *Id.*

issued Energy Emergency Alerts to reduce energy consumption in regions interconnected to CAISO, freeing up export resources.¹⁵⁶

Several factors saved the day in California as the Polar Vortex wreaked havoc on the grid. Demand response programs deployed a virtual power plant to reduce energy consumption.¹⁵⁷ Demand response produced 800 megawatts (MW) of load reduction “during the evening ramp and peak of the electric demand . . . relieving pressure on the supply” in California on February 6, 2014.¹⁵⁸ This level of demand response is more than two and a half times the size of a 300 MW peaker plant.¹⁵⁹ CAISO reported demand response and Distributed Energy Resources (DERs) are well-tailored to address local needs in areas where gas-fired power plants were short on gas.¹⁶⁰

Internet-supported communications facilitated Demand Response and coordination between market participants, the public, WECC, generators, utilities, and market regulators. “CAISO uses many Internet-based channels and social media to communicate with the public, participants in the CAISO market, regulators and others including Twitter, Facebook, RSS feeds, Google Plus, and YouTube. CAISO encourages those who read its urgent messages to pass it on with a ‘Thanks for re-posting!’”¹⁶¹

CAISO reported that three main factors forestalled blackouts in California during the Polar Vortex peak: “demand response help[ed] to shave the load across the evening ramp and peak, ii) the wind generation picked up just right around the evening peak, and iii) given the projected tight conditions for the peak the ISO secured more interties to position the system for the evening peak.”¹⁶² Renewables also played a significant role in California during the Polar Vortex. “In the late afternoon, wind generation output increased as evening peak electric demand occurred, . . . further reduc[ing] the need for additional gas-fired generation to meet this demand and relieved

156. *Id.*

157. *Id.*

158. *Id.*

159. *Cf.* Barry Cassell, *New 800-MW natural gas-fired power plant begins operation early*, POWER ENGINEERING, May 17, 2013, <https://www.power-eng.com/articles/2013/05/new-800-mw-natural-gas-fired-power-plant-begins-operations-early.html> [<https://perma.cc/GVT5-E9B2>] (“Eight units with quick-starting and fast-ramping capability make the project a perfect fit for summer peak seasons, while also backing up California’s growing solar and wind farms that literally surround the plant” and providing 800-MW of capacity).

160. CAISO, *Gas Events and Market Results of Feb. 6, 2014*, *supra* note 151, at 16.

161. Commissioner Sandoval, *2015 Open Internet Ex Parte Comments*, *supra* note 153, at 36.

162. CAISO, *Gas Events and Market Results of Feb. 6, 2014*, *supra* note 154, at 18.

pressure on the overall supply side.”¹⁶³ This combination of resources “resulted in less demand and more supply available that help[ed] manage the gas supply limitations and that also resulted in the system clearing at a lower level in the supply stack.”¹⁶⁴

The CPUC’s June 2016 adoption of the Interconnection Decision I authored–D.16-06-052–increases the ability to integrate, manage, and dispatch renewables including wind, solar, and storage.¹⁶⁵ That decision facilitates deployment of “Smart inverters”¹⁶⁶ which convert direct current (DC) from solar arrays into the alternating current (AC) used in the electric distribution system. Smart inverters communicate between the DER, the utility, and the grid operator. Each in turn communicates to generators, customers, and providers throughout the grid using the Internet. Smart inverters can provide a variety of grid services, and are mandatory for new solar and wind systems installed in California after September 8, 2017.¹⁶⁷

The Union of Concerned Scientists faulted FERC’s Grid Resiliency NOPR for its failure to consider alternatives like inverters that may foster grid reliability. NERC-defined “essential reliability services” include, “a number of unpaid capabilities that can be provided by inverter-based generation (solar, wind and storage).”¹⁶⁸ Embedding communications capability throughout the energy network enhances deployment and reliability.

163. *Id.* at 16, fig. 14, Solar and Wind Production on Feb. 6, 2017.

164. *Id.* at 18.

165. CPUC D.16-06-052, Alternate Decision Instituting Cost Certainty, Granting Joint Motions To Approve Proposed Revisions To Electric Tariff Rule 21, And Providing Smart Inverter Development A Pathway Forward For Pacific Gas And Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company, June 23, 2016, <http://docs.cpuc.ca.gov/publisheddocs/published/g000/m164/k376/164376491.pdf> [<https://perma.cc/MS8Z-5ZVM>].

166. *Id.* at Finding of Fact 21, Attach. D, Filing Schedule.

167. CPUC, Smart Inverter Working Group, <http://www.cpuc.ca.gov/General.aspx?id=4154> [<https://perma.cc/HWF3-QBTA>] (adopting a Sept. 8, 2017 requirement for Phase I Smart Inverter autonomous functions, and a March 1, 2018 date or nine months after release of specified protocol certifications for Phase 2 Communications Protocols. Discussions about Phase 3 protocols continue within the Smart Inverter Working Group.)

168. Union of Concerned Scientists, *Comments, Grid Resiliency Pricing Rule, RM18-1-000*, at 3, Oct. 23, 2017.

*D. Aliso Canyon Natural Gas Storage Field Leak; Mobilizing
Internet-enabled Resources Through California's
Low-income Energy Savings Assistance Program
to Reduce Energy Demand and Balance
Supply Constraints, 2015 to 2020*

Strategies to reduce electricity and natural gas demand helped prevent energy shortages in the Los Angeles area—home to twenty-six million people—after a methane leak at the Aliso Canyon natural gas storage field, the largest in the LA region. A methane plume spewed into the atmosphere for months starting in October 2015 while SoCalGas, the storage field operator, worked to stop the leak.

In early 2016, the CPUC ordered SoCalGas to halt storage field use for natural gas supply after withdrawing some natural gas to reduce pressure and slow the methane leak.¹⁶⁹ The Aliso Canyon storage field was closed from late October 2015 to mid-2017, and since the field reopened, the CPUC has limited natural gas injections and withdrawals.¹⁷⁰

In 2016, the CPUC adopted measures to increase energy efficiency and demand response. The CPUC worked to embed demand response, connect with CBOs, solicit and approve contracts with DERs, and upgrade transmission resources to, “better withstand Aliso Canyon[’s outage] when the number one source of natural gas was no longer available.”¹⁷¹

To reduce energy demand the CPUC deployed its Energy Savings Assistance Program (ESAP or ESA) which strives to reduce energy burdens for low-income customers of Investor-Owned Utilities (IOUs). Section 2790 of the California Public Utilities Code directs the CPUC to, “require an electrical or gas corporation to perform home weatherization services for low-income customers . . . taking into consideration both the cost-

169. CPUC, ALISO CANYON WELL FAILURE, <http://www.cpuc.ca.gov/aliso/> [<http://perma.cc/HJM4-BU8S>] (last visited Nov. 2, 2017).

170. CPUC, CEC, STATE INSPECTIONS CONFIRM SAFETY OF ALISO CANYON NATURAL GAS STORAGE FACILITY, FACILITY CLEARED TO RESUME LIMITED ACTIVITY TO PREVENT ENERGY SHORTAGES, July 19, 2017, http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/News_Room/News_and_Updates/ReleaseStateInspectionsConfirmSafetyofAlisoCanyon.pdf [<https://perma.cc/SG2L-Q8UQ>]; Olga Grigoryants, *SoCal Gas will ramp up gas injections at Aliso Canyon*, L.A. DAILY NEWS, May 16, 2018, <https://www.dailynews.com/2018/05/16/socal-gas-will-ramp-up-gas-injections-at-aliso-canyon/> [<https://perma.cc/KWX2-K72K>].

171. Robert Mullin, *Sandoval: Nuke Shutdown, Auto-DR Aided Aliso Canyon Response*, RTO INSIDER, Nov. 21, 2016, <https://www.rtoinsider.com/sandoval-auto-dr-aliso-canyon-34586/> [<https://perma.cc/65PR-S72R>].

effectiveness of the services and the policy of reducing the hardships facing low-income households.”¹⁷²

ESA supports weatherization measure installation including “building conservation measures, energy management technology, energy-efficient appliances, and energy education programs determined by the commission to be feasible.”¹⁷³ AB 793 defined “energy management technology” to “include a product, service, or software that allows a customer to better understand and manage electricity or gas use in the customer’s home.”¹⁷⁴ This statutory definition of energy management technology includes connected thermostats, Internet access to energy consumption data transmitted to customers through the Open Internet from their Smart Meter data, and a range of other technologies.

ESAP complements California’s energy bill assistance for low-income households provided through California Alternative Rates for Energy (CARE). CARE provides up to a 33 percent discount on electricity and natural gas bills for IOU energy customers.¹⁷⁵ More than 4.49 million low-income California households received CARE bill assistance in 2014.¹⁷⁶ Between 2002 and 2016, over 3.5 million low-income California households received ESA weatherization treatments.¹⁷⁷ ESA participation is anticipated to increase following the CPUC’s November 2016 Decision, which adjusted CPUC rules to increase household and system energy benefits, and reduce GHG emissions.¹⁷⁸

172. CAL. PUB. UTIL. CODE § 2790 (Added by Stats. 1989, c. 462, § 2. Amended by Stats. 1999, c. 700 (A.B.1393), § 3; Stats. 2001-2002, 2nd Ex.Sess., c. 11 (S.B.2), § 5, eff. Aug. 8, 2002; Stats. 2015, c. 589 (A.B.793), § 2, eff. Jan. 1, 2016.)

173. A.B. § 793 (Quirk), ch. 589 (amending CAL. PUB. UTIL. CODE § 2790, and adding § 717 (2015) to the Public Utilities Code, relating to public utilities), https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB793 [<https://perma.cc/4AMC-ST9M>].

174. *Id.*

175. CPUC, CARE/FERA PROGRAMS, <http://www.cpuc.ca.gov/General.aspx?id=976> [<https://perma.cc/8PFF-VXDG>] (“Low-income customers that are enrolled in the CARE program receive a 30-35 percent discount on their electric bill and a 20 percent discount on their natural gas bill.”)

176. CPUC, ENERGY DIVISION, SUMMARY OF ENERGY LOW-INCOME PROGRAMS FOR THE EMERGING TRENDS COMMITTEE, Aug. 9, 2017, at 2, http://cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Test_Calendar/Slides%20for%20Peterman%20Emerging%20Trainers%20Committee_080217%20final.pdf [<https://perma.cc/XLT6-RUP8>].

177. *Id.*

178. CPUC D.16-11-022, DECISION ON LARGE INVESTOR-OWNED UTILITIES’ CALIFORNIA ALTERNATE RATES FOR ENERGY (CARE) AND ENERGY SAVINGS ASSISTANCE (ESA) PROGRAM APPLICATIONS (Application 14-11-009), at 13, Nov. 10, 2016 (adopting Alternate Proposed Decision of Commissioner Catherine J.K. Sandoval) [hereinafter CPUC, *CARE/ESA Decision 2016*]. Special thanks to staff of my Office while I served as a CPUC Commissioner, particularly Michael Colvin, Jamie Ormond, Ditas Katague, Bill Johnston, Amy Baker, Lolita Hajian, and Anna-Marie Madrigal, the CPUC Energy Division, the ALJ Division, and the Policy and Planning Division, and to the CPUC Commissioners and staff for contributions to this decision’s drafting and development. Special thanks to the parties who developed and contributed to the decision record. Thanks to the CPUC Low-Income Oversight Board (LIOB) members, including LIOB Chair Robert Castenada and former Chair Jose Hernandez, the CPUC staff

In April, 2016, an Interim Decision in the CPUC ESA proceeding directed SCE and SoCalGas to accelerate the deployment of energy savings and demand response measures through ESA.¹⁷⁹

In the summer of 2016, while Aliso Canyon remained closed, CAISO declared Flex Alerts on June 20, July 27, and July 28 in response to “reliability concerns related to high temperatures and high demand.”¹⁸⁰ During these Flex Alert days, SCE obtained over 300 MWs of demand response reduction through the Air Conditioner (AC) cycling program, an amount equivalent to the power generated by a peaker plant.¹⁸¹

To obtain the equivalent amount of energy from a gas-fired power plant, it can take years to site, gain regulatory approval for, and build a gas-fired power plant, and require substantial investment. In 2015 the CPUC approved a power purchase agreement for SDG&E to charge ratepayers \$2.6 billion to build a 500 MW gas-fired peaker plant.¹⁸² Regulatory approval for new gas-fired power plants is uncertain as indicated by the 2017 recommendation of two members of the California Energy Commission to reject NRG’s proposal to build a power plant in Oxnard, California.¹⁸³

who support LIOB, and those who attend LIOB meetings for their dedication to improving the lives of Californians; See also CPUC D.17-12-009, Decision Resolving Petitions for Modification of D.16-16-11-022 (Dec. 14, 2017) (granting in part and denying in part petitions for modification, and update the budget) [hereinafter CPUC, *CARE/ESA Modification Decision, 2017*].

179. CPUC D.16-04-040, DECISION ADOPTING MEASURES IN RESPONSE TO THE ALISO CANYON NATURAL GAS LEAK EMERGENCY, Apr. 21, 2016, <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M160/K091/160091266.PDF> [<https://perma.cc/FSX4-B2YY>].

180. *Id.* at 31; CAISO, *California ISO Declares Flex Alert for Southern California*, FLEXALERT.ORG, June 19, 2016, http://www.caiso.com/Documents/CaliforniaISODeclaresFlexAlertforSouthernCaliforniaforMonday_6-20-2016.pdf [<https://perma.cc/CAP3-98DC>]; CAISO, *California ISO extends Flex Alert through Thursday*, FLEXALERT.org, July 27, 2016, <http://www.caiso.com/Documents/CaliforniaISOExtendsStatewideFlexAlertThroughThursday.pdf> [<https://perma.cc/T2KY-CLAU>].

181. Mullin, *supra* note 171.

182. Eric Wesoff, *California PUC Approves 500MW of Gas for SD&GE, Rejects Alternative*, GTM, May 22, 2015, <https://www.greentechmedia.com/articles/read/california-puc-approves-500mw-of-gas-for-sdge-in-carlsbad-rejects-alterna#gs.Hoce5w8> [<https://perma.cc/2JMT-GJVQ>].

183. Darrell Proctor, *NRG Stops Plans for California Gas Plant*, POWER, Oct. 17, 2017, www.powermag.com/nrg-stops-plans-for-california-gas-plant [<https://perma.cc/8FR4-XFHB>]; STATUS OF ALL PROJECTS, CAL. ENERGY COMM’N, http://www.energy.ca.gov/sitingcases/all_projects.html [<https://perma.cc/W9S9-96DP>] (listing approved power plant siting decisions, projects not approved, withdrawn projects, and projects under review. Disapproved projects include the Sun Valley Energy Project, whose application for siting approval was filed Dec. 1, 2005, and rejected by the CEC Oct. 19, 2015).

In contrast, demand response requires no siting or environmental review, emits no GHGs or carbon, uses neither fuel nor water, and is enabled by the Internet for program enrollment and demand response signals. While Los Angeles faced a natural gas shortage, demand response shaved electricity and natural gas demand using Internet-enabled demand response. “This isn’t your father’s DR,” I reported to NARUC in November 2016, “this is auto-DR.”¹⁸⁴

In November 2016 the CPUC adopted the Alternate Proposed Decision that I authored, D.16-11-022, to invest an annual budget of \$1.3 billion in 2016-2020 for both CARE and ESAP.¹⁸⁵ The CPUC approved ESAP budget for 2017-2020 totaled over \$2.310 billion, including investments in Internet-enabled demand response services, energy education, customer enrollment, and energy management facilitated by the Internet.¹⁸⁶

The CPUC sought to extend the energy benefits associated with ratepayer spending on weatherization measures by using technology designed to enable customer and grid benefits. The CARE/ESAP Decision observed:

It is not enough to simply install a new thermostat, but a smart thermostat that is capable of recognizing behavior and adjusting temperatures accordingly. While installing an efficient Heating, Ventilation and Air Conditioning system in a common area of a multi-family building is good, a system that can respond to system constraints during a Flex Alert is even better.¹⁸⁷

The CARE/ESAP Decision approved ratepayer investments in several Internet-based services including, “a smart thermostat that can participate in a demand response program, or a lighting control that can be internet enabled to track entry/exit behavior.”¹⁸⁸

The CPUC invested ESAP funds in Internet-enabled demand response, customer and third-party facing Internet access to energy data to reduce energy demand “during peak energy use periods and in times of system constraints, such as Flex Alert days.”¹⁸⁹ The CPUC determined that in “the areas affected by the Aliso Canyon State of Emergency reducing low-income customer gas usage . . . help[s] all customers avoid blackouts and other threats to safety and reliability.”¹⁹⁰ The FCC’s 2015 Decision to prevent ISPs from engaging in blocking, throttling, or paid prioritization through enforceable

184. Mullin, *supra* note 171.

185. CPUC, *CARE/ESA Decision 2016*, *supra* note 178; *see also* CPUC D.17-12-009, *supra* note 178.

186. CPUC, *CARE/ESA Decision 2016*, *supra* note 178, at 38; Sandoval, *Internet Freedom Reply Comments*, *supra* note 4 (citing CPUC, *CARE/ESA Decision 2016*, *supra* note 178, at 52).

187. CPUC, *CARE/ESA Decision 2016*, *supra* note 178, at 7.

188. *Id.* at 53.

189. *Id.* at 54.

190. *Id.* at 106.

rules and jurisdiction gave my CPUC colleagues and me the confidence to authorize billions in energy and water ratepayer investments directed to harness the Internet to save energy and water.¹⁹¹

To help meet energy system needs and reduce energy hardships for ESA-eligible customers, the CPUC required large IOUs to educate ESA-eligible customers about demand response or tariffs that might reduce energy bills.¹⁹² The CPUC concluded that, “[I]everaging the investments in the ESA program to facilitate participation in demand response programs will extend the energy related benefits of this program.”¹⁹³

The CARE/ESA Decision facilitates low-income household enrollment in demand response programs, a grid-balancing and environmental asset. Demand response, verifiable by meter and consumption data, can reduce the need to invest in additional generation capacity. Demand response enhances grid flexibility and adaptability, reduces localized energy demand to increase reliability, improve safety, and reduce energy system costs.

Through the CPUC’s CARE/ESA Decision, the Smart Grid extends to the smart phone. D.16-11-022 orders energy utilities and contractors to enroll customers who have an active email address and home or mobile Internet access in energy education programs, and to facilitate the ability of customers to use mobile or stationery computers to enroll in ESAP.¹⁹⁴ D.16-11-022 also ordered upgrades to the My Energy/My Account program to enable mobile and computer notification about high energy usage to help avoid high bills, lower energy consumption, and provide grid-level benefits.¹⁹⁵

191. Sandoval, *Internet Freedom Reply Comments*, *supra* note 4, at 51.

192. *Id.* at 54.

193. *Id.*

194. *Id.* at 171, 318; CPUC, *CARE/ESA Modification Decision 2016*, *supra* note 178, at 8 (directing IOUs to develop by Dec. 31, 2017 mobile versions of their Internet websites, including MyEnergy/MyAccount, to allow for ESA and CARE program enrollment, post enrollment verification, and program recertification on mobile phones.”).

195. CPUC, *CARE/ESA Decision 2016*, *supra* note 178, at 318–19.

VII. RISKS OF ISP GATEKEEPING BEHAVIOR TO THE ENERGY ECOSYSTEM; THE FCC 2018 *INTERNET FREEDOM ORDER*

A. *Repeal Without Replace: The 2018 Internet Freedom Order Leaves Critical Infrastructure and Internet Users Without Protection for a Range of Harms*

The FCC’s January 2018 *Internet Freedom Order* repealed FCC rules adopted in 2015 that prohibited ISPs from blocking, throttling, or paid prioritization of Internet traffic with some limited exceptions for reasonable network management.¹⁹⁶ The FCC’s *Internet Freedom Order* repealed the Title II classification of ISPs as common carriers subject to non-discrimination obligations under the Communications Act of 1934 adopted in the FCC’s 2015 Open Internet Order.¹⁹⁷ Title II categorization provided the legal grounding for the 2015 Order’s prohibitions of blocking, throttling, and paid priority.¹⁹⁸

Instead, the FCC’s 2018 Order classified ISPs as information service providers, a category that allows the FCC to impose disclosure obligations on ISPs and limits FCC enforcement authority to breaches of ISP disclosure rules.¹⁹⁹ The D.C. Circuit held in 2014 in *Verizon v. FCC* that the information service provider categorization offers no legal authority for non-discrimination, net neutrality rules.²⁰⁰

The FCC’s *Internet Freedom Order* drops the 2015 Open Internet Order’s proscription of throttling, blocking, or paid-prioritization except for reasonable network management that must be “primarily motivated by a technical network management justification rather than other business justifications.”²⁰¹ The *Internet Freedom Order* requires disclosure of blocking and throttling practices except for “reasonable network management” which it redefines as a practice “appropriate and tailored to achieving a legitimate network management purpose, taking into account the particular network architecture and technology

196. FCC, *Internet Freedom Order*, *supra* note 7, at ¶¶ 2–4; *cf.* FCC, *2015 Open Internet Order*, *supra* note 5, at ¶¶ 14, 21, 32.

197. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 2.

198. FCC, *2015 Open Internet Order*, *supra* note 5, at ¶¶ 2, 326, 336 (“concluding that broadband Internet access service is a telecommunications service”); *cf.* *Verizon v. FCC*, 740 F.3d at 655–56 (overturning FCC net neutrality rules as imposing common carrier obligations despite classifying ISPs as information service providers and not common carriers under Title II).

199. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 2.

200. *Verizon v. FCC*, 740 F.3d at 655–56 (overturning FCC net neutrality rules as imposing common carrier obligations despite classifying ISPs as information service providers and not common carriers under Title II).

201. FCC, *2015 Open Internet Order*, *supra* note 5, at ¶¶ 215–216.

of the broadband Internet access service.”²⁰² This new definition allows ISPs to manage Internet traffic in their business interest.

The *Internet Freedom* Order provides the *first* express FCC authorization for ISPs to engage in paid prioritization by lifting enforceable proscriptions of the practice.²⁰³ This Order gives ISPs legal permission to charge for Internet priority, content distribution or access, even when doing so harms other Internet users or uses. The FCC reached this conclusion without examining paid priority’s consequences for other Internet users including critical infrastructure, violating the APA for failure to consider relevant factors and important issues.²⁰⁴

Under the FCC’s Order, an ISP must disclose that it offers paid priority. Tracking the words of the FCC’s required disclosure, an ISP’s terms of service could state that it engages in a “practice that directly or indirectly favors some traffic over other traffic, including through use of techniques such as traffic shaping, prioritization, or resource reservation, in exchange for consideration, monetary or otherwise.”²⁰⁵ The FCC’s 2018 Order does not require ISPs to disclose the parties to or terms of paid priority transactions, the execution of such deals, or their consequences. Neither does the FCC’s Order require ISPs to get their subscriber’s consent to paid priority deals. Disclosure that an ISP engages in paid priority or traffic shaping does not inform consumers, content providers, or regulators of priority deals, or when and how the ISP will launch priority or degrade other service.

The FCC’s *Internet Freedom* Order dismisses as “small” any unaddressed harms from paid priority. “To the extent that our approach relying on transparency requirements, consumer protection laws, and antitrust laws does not address all concerns, we find that any remaining unaddressed harms are small relative to the costs of implementing more heavy-handed regulation,”²⁰⁶ the FCC’s order concludes. The FCC stated no reasons to

202. *Id.* at ¶ 216.

203. FCC, *Internet Freedom Order*, *supra* note 7, at ¶¶ 2–4.

204. *Michigan v. EPA*, 135 S. Ct. 2699, 2706 (2015) (“agency action is lawful only if it rests “on a consideration of the relevant factors.”); *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (“[A]n agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.”).

205. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 216.

206. *Id.* at ¶ 116.

justify its conclusion that likely harms of paid priority are small; this lack of reasoned decision-making and explanation violates the APA.²⁰⁷

The Order does not discuss or analyze in any detail harms that may arise from its decision which are not compensable in antitrust law, by the FTC Act, or consumer protection laws such as harms to democracy, national security, critical infrastructure sectors, and the environment. The FCC's Order failed to deliberate the impact of net neutrality repeal on critical infrastructure including energy, sectors for which cybersecurity vigilance is mandatory.²⁰⁸ A court may uphold agency action "only on the grounds that the agency invoked when it took the action."²⁰⁹ The FCC's failure to examine these concerns in the *Internet Freedom* Order or to explain its reasoning violates the APA, and raises risks for critical infrastructure as discussed below.²¹⁰

B. Paid Priority Without Condition Increases Risks to Critical Infrastructure and Other Internet Users

The FCC's 2018 *Internet Freedom* Order imposes no conditions on paid priority offerings. In contrast, many scholars who have examined whether the FCC and Congress should permit paid priority or "Quality of Service" (QoS) Internet offerings recommended it only if other Internet users or applications are protected from degraded service.

Barbara van Schweick proposed to allow user-controlled QoS guarantees, a form of paid priority if:

- (1) the different classes of service are available equally to all applications and classes of applications;
- (2) the user is able to choose whether, when, and for which application to use which class of service;⁴⁷⁶ and
- (3) the network provider is allowed to charge only its own Internet service customers for the use of the different classes of service.²¹¹

Professor van Schweick envisions user-determined priority, consistent with the principle of "innovation without permission."²¹² Michael Katz argues that a "menu of usage-sensitive pricing options that allow end users to choose the

207. *Michigan v. EPA*, 135 S. Ct. 2699, 2710 (citing *SEC v. Chenery Corp.*, 318 U.S. 80, 87 (1943)).

208. 42 U.S.C. § 5195c(e).

209. *Id.*

210. *Michigan v. EPA*, 135 S. Ct. at 2706 ("Federal administrative agencies are required to engage in "reasoned decisionmaking.") (citing *Allentown Mack Sales & Serv., Inc. v. NLRB*, 522 U.S. 359, 374 (1998)); *id.* at 2706, 2712 (holding that EPA unreasonably interpreted § 7412(n)(1)(A) of the Clean Air Act when it deemed cost irrelevant to the decision to regulate power plants)).

211. Barbara van Schweick, *Network Neutrality and Quality of Service: What A Nondiscrimination Rule Should Look Like*, 67 *STAN. L. REV.* 1, 133 (2015).

212. *Id.* at 136.

quality of their connections on an edge-provider-specific basis” would foster “consumer choice [that] neutralizes the net neutrality regulations.”²¹³ Katz argues against a flat ban on paid priority but acknowledges that the effects of paid prioritization are fact specific.²¹⁴

Phil Weiser recommended “a reasonable level of best efforts access” for other users and applications concurrent with any QoS or priority offering.²¹⁵ In 2015 the FCC rejected proposals to allow individualized negotiations for fast Internet access with minimum speed guarantees for other users and applications, citing my comments filed when I served as a CPUC Commissioner. “[A]ny of the minimum level of access standards the FCC proposes would be insufficient to support the needs of a diversity of Internet users including Critical Infrastructure.”²¹⁶

Daniel Lyons argues that ISP regulations grounded in the common carrier non-discrimination rules of Section 202 of the Communications Act, “would permit a broadband provider to offer a tiered-service model, as long as premium tier service was generally available to all interested content and application providers at similar rates.”²¹⁷ Similarly, Christopher Yoo argued that, “Title II reclassification would not necessarily prevent broadband access providers from offering premium services at premium prices.”²¹⁸

Adam Candeub and Daniel McCartney contend that “to defend an open Internet does not require (to borrow the phrase from employment law) ‘equal, non-discriminatory treatment’ of bits or traffic . . . but ‘equality of outcomes,’ i.e., equality of Internet experience, for user applications.”²¹⁹ Rob Frieden argues the FCC’s 2015 Open Internet Order, “could have prevented possibly harmful regulatory uncertainty by establishing a simple and clear

213. Michael L. Katz, *Wither U.S. Net Neutrality Regulation?*, 50 REV. OF INDUS. ORG. 441, 461 (2017), <https://link.springer.com/content/pdf/10.1007%2Fs11151-017-9573-0.pdf> [<https://perma.cc/35JM-CWSJ>].

214. *Id.* at 30.

215. Philip J. Weiser, *The Next Frontier for Network Neutrality*, 60 ADMIN. L. REV. 273, 320 (2008).

216. FCC, *2015 Open Internet Order*, *supra* note 5, at ¶ 114, n.254 (citing Letter from Catherine J.K. Sandoval, Commissioner, California Public Utilities Commission, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-28, 10-127, Attach. at 14 (filed Oct. 14, 2014)) [hereinafter Commissioner Sandoval, *Ex Parte Letter*].

217. Daniel A. Lyons, *Net Neutrality and Nondiscrimination Norms in Telecommunications*, 54 ARIZ. L. REV. 1029, 1059 (2012).

218. Christopher S. Yoo, *Wickard for the Internet? Network Neutrality After Verizon v. FCC*, 66 FED. COMM. L.J. 415, 444 (2014).

219. Adam Candeub & Daniel McCartney, *Law and the Open Internet*, 64 FED. COMM. L.J. 493, 497–98 (2012).

rule that ISPs can offer [QOS] enhancements that help expedite the delivery of [Internet Protocol Television] IPTV without degrading their conventional, best efforts traffic routing.”²²⁰ James B. Speta argued after *Verizon v. FCC* that if the FCC did not classify ISPs as common carriers under Title II, the FCC should focus on competitive effects of ISP conduct and, “forbid Internet carrier actions that foreclosed competition.”²²¹

In contrast to the suggestion of several scholars as discussed above, the FCC’s *Internet Freedom Order* does not restrict Internet priority to that generated by user control. The FCC’s Order places no limits on ISP payment demands from edge providers, nor does it restrain paid priority practices. Neither does the Order require ISPs to make paid priority available to all customers on equal terms. Nor does it require ISPs to shield other Internet users from service degradation due to paid priority.

Such restraints would arguably impose common carrier duties on ISPs not to discriminate among Internet traffic, and thus would require the Title II classification imposed in the 2015 Open Internet Order.²²² Instead, the FCC repealed the Title II classification, and with it, the authority to constrain ISP paid priority and to protect Internet users from degraded service.

The FCC downplayed the scope and magnitude of anticipated delays from the paid priority its decision authorizes. The FCC grounded its rationale for rejecting concerns about paid priority on AT&T’s assertion that, “[l]ast-mile access is not a zero-sum game, and prioritizing the packets for latency-sensitive applications will not typically degrade other applications sharing the same infrastructure,” examples of which the FCC listed such as email, software updates, or cached video.²²³ The FCC concludes that “[b]ecause of these practical limits on paid prioritization, we reject the argument that non-profits and independent and diverse content producers, who may be less likely to need QoS guarantees, will be harmed by lifting the ban.”²²⁴

The FCC’s conclusion does not analyze the qualifiers in AT&T’s explanation that prioritizing latency-sensitive application packets will not *typically* degrade other applications sharing the same infrastructure. AT&T’s statement recognizes degradation is possible but projects that it would not be *typical* for other applications, while the FCC only conjectured its effect on “email, software updates, or cached video.” The FCC failed to analyze paid priority’s

220. Rob Frieden, *Network Neutrality and Consumer Demand for “Better Than Best Efforts” Traffic Management*, 26 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 71, 102 (2015).

221. James B. Speta, *Unintentional Antitrust: The FCC’s Only (and Better) Way Forward with Net Neutrality after the Mess of Verizon v. F.C.C.*, 66 FED. COMM. L.J. 491, 501–02 (2014).

222. *Verizon v. FCC*, 740 F.3d at 655–56.

223. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 258 (citing AT&T Comments at 44–45).

224. *Id.* at ¶ 254.

affect on applications such as “specialized software and Google Sheets” used by the Santa Clara County, California fire department’s Office of Emergency Service incident support unit during fires such as California’s 2018 Mendocino Complex Fire “to do near-real-time resource tracking through the use of cloud computing over the Internet.”²²⁵ The FCC’s list omits analysis of paid priority’s impact on streaming video or audio, large file transfers, mapping, and other common applications.

Notably, utility work crews commonly use mapping applications for service calls, maintenance, and emergency response, as do millions of Americans. Live stream video is becoming increasingly important to monitoring energy system conditions, physical and cyber security, and daily operations. The California Office of Emergency Services (CalOES) review of Sonoma County’s response during the 2017 Wine Country fires notes that “the availability of social media, 24-hour news services, and wireless devices have led citizens to assume that they will receive prompt and useful information about current events including disasters.”²²⁶

Furthermore, the FCC does not limit priority Internet access deals to latency-sensitive applications. The FCC speculates that, “in practice, paid prioritization is likely to be used to deliver enhanced service for applications that need QoS guarantees.”²²⁷ In fact, some content providers may seek priority access to ensure their messages are promptly transmitted.²²⁸ For example, priority may be sought to be first in line for court filings, whether or not such priority delays other filers or even court communications. Others

225. *Id.*; *cf.* Addendum to Brief for Gov. Petitioners, Mozilla Corp. et. al. v. FCC, USCA Case # 18-1051, Declaration of Fire Chief Anthony Bowden at ¶ 6 (declaring that Santa Clara County Fire Department’s emergency services incident support unit “relied heavily on the use of specialized software and Google Sheets to do near-real-time resource tracking through the use of cloud computing over the Internet.”); ¶ 6 (“In large and complex fires, resource allocation requires immediate information. Dated or stale information regarding the availability or need for resources can slow response times and render them far less effective. Resources could be deployed to the wrong fire, the wrong part of a fire, or fail to be deployed at all. Even small delays in response translate into devastating effects, including loss of property, and, in some cases, loss of life.”).

226. PUBLIC ALERT AND WARNING PROGRAM ASSESSMENT FOR SONOMA COUNTRY, CALOES, Feb. 26, 2018, [http://code.pressdemocrat.com/pdf/Sonoma%20Assessment%20with%20Cover%20Letter.022618\[3\].pdf](http://code.pressdemocrat.com/pdf/Sonoma%20Assessment%20with%20Cover%20Letter.022618[3].pdf) [<https://perma.cc/RZ6C-QR2J>].

227. *Id.* at ¶¶ 216, 254.

228. FCC, *Internet Freedom Order*, *supra* note 7, at n.942 (citing but not analyzing Engine Reply at 6–7 (“While ISPs are fond of noting that telemedicine and autonomous vehicle services are far more latency-sensitive than email traffic, these types of unique services are likely to represent a tiny fraction of the prioritization deals ISPs will seek to cut if the existing ban on paid prioritization is removed.”)).

may want to buy Internet priority just before elections or at other important times. ISPs could sell priority in economically or strategically-sensitive locations, like priority triggered by events or conditions such as stock market or economic indicators. People or entities may seek paid priority deals to increase their economic, political, or competitive advantage. An examination of the potential impact of paid priority on demand response, and thus energy reliability, safety, costs, and the environment, highlights the risks of net neutrality's repeal.

C. Video Game Priority Kills the Energy Star: The FCC Allows ISP Video Game Paid Priority Deals to Trump Energy Reliability, Safety, Just and Reasonable Rates, and the Environment

In the FCC *Internet Freedom* Docket, several ISPs argued for the repeal of the 2015 Open Internet Order's rule prohibiting ISP paid priority deals. Comcast argued for "a more flexible approach to prioritization" than the 2015 order's ban, citing the example that, "a telepresence service tailored for the hearing impaired requires high-definition video that is of sufficiently reliable quality to permit users 'to perceive subtle hand and finger motions' in real time."²²⁹ Comcast highlighted the potential benefits of paid priority for autonomous vehicles but offered no safeguards for other Internet users.²³⁰

Verizon stated, "[w]e support rules that prevent providers from charging content suppliers a fee to deliver their Internet traffic faster than the Internet traffic of others where the result is harm to competition or consumers."²³¹ Any "prohibition on paid prioritization," Verizon argued, "needs to be focused on the instance where a provider might slow a consumer's access to a particular website or application in favor of another, competing one."²³² Verizon's comments address neither the non-competition harms of paid priority nor the definition of "consumer harm." Instead, Verizon argued for user-controlled paid priority that allows consumers, "to choose to prioritize certain content or applications, where technologically practicable."²³³

229. Comments of Comcast Corporation, *In the Matter of Restoring Internet Freedom*, WC Docket No. 17-208, at 56 (July 17, 2017), <https://ecfsapi.fcc.gov/file/107171777114654/2017-07-17%20AS-FILED%20Comcast%202017%20Open%20Internet%20Comments%20and%20Appendices.pdf> [<https://perma.cc/MY2Z-UM64>].

230. Jacob Kastrenakes, *Comcast says it should be able to create internet fast lanes for self-driving cars*, THE VERGE, July 17, 2017, <https://www.theverge.com/2017/7/17/15985114/comcast-paid-prioritization-autonomous-cars> [<https://perma.cc/5RW3-D68C>].

231. Comments of Verizon, *In the Matter of Restoring Internet Freedom*, 17-108, at 4, July 17, 2017, <https://ecfsapi.fcc.gov/file/10717390819816/2017%2007%2017%20Verizon%20comments%202017%20Open%20Internet%20Notice.pdf> [<https://perma.cc/8DZ9-HLFB>].

232. *Id.* at 20.

233. *Id.*

AT&T argued that eliminating the bar on paid priority would allow it to, “begin implementing isolated paid-prioritization arrangements to support [QoS] for unusually latency-sensitive applications, such as high-definition videoconferencing or massively multiplayer online gaming (MMOG).”²³⁴ AT&T presupposes but does not define an “isolated paid-prioritization arrangement.”

AT&T’s example of a paid priority deal with an online gaming provider illustrates the predicaments such deals pose for content providers and subscribers who are not parties to that deal. An ISP’s priority deal with a video game provider—whether foreign or domestic—could impact a range of communications to and from the subscriber’s account. The ISP’s priority transmission of the video game may delay the grid operator’s or utility’s signal to a demand response aggregator, and the energy resource’s reply. It may delay a demand response communication with an Internet-connected thermostat or a DER, or a DER’s response to a request to provide voltage support. Such conduct undermines electric reliability for the sake of the ISP’s profit and the video game’s benefit.

Paid priority delays may raise energy costs and decrease grid, demand response, and Internet-enabled energy resource reliability. FERC Order 745 requires that a, “demand response bidder must have ‘the capability to provide the service’ offered; it must . . . actually be able to reduce electricity use and thereby obviate the operator’s need to secure additional power.”²³⁵ Second, the price paid for a demand response bid “must be cost-effective,” as measured by “the net benefits test” of whether it will save money for wholesale purchasers.²³⁶

Order 745 raises risks of non-compliance with both conditions for demand response bidding: capability to provide the service and cost-effectiveness. Demand response is sensitive to delayed communication and is ineffective if power reduction is not quickly deployed when called. To comply with NERC reliability rules, CAISO requires “fast-acting” demand response to

234. Comments of AT&T Services Inc., *In the Matter of Restoring Internet Freedom*, 17-108, at 5 (July 17, 2017), <https://ecfsapi.fcc.gov/file/10717906301564/AT%26T%20Internet%20Freedom%20Comments.pdf> [<https://perma.cc/DT5S-RB5Y>].

235. FERC v. Elec. Power Supply Ass’n., 136 S. Ct. at 763.

236. CPUC, 2017 Filing Guide for System, Local and Flexible Resource Adequacy (RA) Compliance Filings 7–8, Sept. 20, 2016, www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442450957 [<https://perma.cc/JPA2-PZCT>] (explaining that fast response DR [demand response] and gas-fired resources must be able to respond within 20 minutes including notification time so CAISO has 10 minutes to make any adjustments to maintain supply and demand balance and avoid problems including blackouts).

provide energy reduction within twenty minutes.²³⁷ In dismissing concerns about the consequences of paid priority, the FCC relied on AT&T's statement that paid priority would not "typically" slow uses such as email, software updates, and cached video.²³⁸ This projection fails to assess the range of paid priority consequences, including its effects on energy resource dispatch, costs, safety, reliability, the environment, and competition.

As discussed *infra* VII(6), the FCC's Order allows ISPs to ask energy resources, the grid operator, and utilities to pay the ISP for priority treatment for timely Internet transmission, or face delays. The ability to deliver demand reduction is already incorporated into energy wholesale market bids. If those bids must take into account ISP charges for fast Internet access or protection from delay, energy prices may rise, a factor the FCC's *Internet Freedom* Order did not consider.

ISP priority for video games at the expense of other Internet signals could cause harms that multiply as hundreds, thousands, or millions play a video game. Other content providers and even the subscriber may be powerless to interrupt the ISP's priority deal. The FCC leaves it up to the ISP to determine how to execute priority treatment. The ISP may launch priority when the user plays the video game, effectively erecting barriers that delay other Internet traffic. If advertisers could buy priority, a user's search on a web page may launch priority for an ad streaming audio and video in the sidebar, even if the user doesn't play the video game.

Congressional Hearings conducted in October 2017, during the pendency of the *Internet Freedom* Proceeding, examined more than 3,000 ads Russian operatives bought on Facebook during the 2016 election.²³⁹ This Article warns that paid priority could be used to accelerate ads or other communications, while slowing access to other messages. Paid priority that degrades other Internet users can harm national security, democracy, the economy, public safety, energy reliability, and the environment.

ISP priority deals may reduce the ability to reliably harness energy resources. State PUCs would have to consider measures to restore energy system reliability including authorizing construction of new power resources at additional cost to energy ratepayers and the environment. Such ISP conduct would put electric reliability, public safety, and the environment at risk—all harms not compensable by Antitrust, Unfair Competition, and consumer protection law.

237. Id.

238. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 258 (citing AT&T Comments at 44–45).

239. Leslie Shapiro, *Anatomy of a Russian Facebook ad*, WASH. POST, Nov. 1, 2017, https://www.washingtonpost.com/graphics/2017/business/russian-ads-facebook-anatomy/?utm_term=.91a1e8411bae [<https://perma.cc/5FLM-X6BH>].

*D. ISP Participation in the Home Energy Management Market and
Limits of FERC Market Manipulation Rules to Address
Harms of Paid Priority Delays*

Some ISPs also offer home energy management services and bid into ISO markets through a demand response aggregator. Comcast expanded into the home automation market through, “cameras and thermostats that can be controlled remotely—for consumers who reside in apartments and condominiums.”²⁴⁰ Comcast ranked fourth in smart home market share in 2017, while CenturyLink and Time Warner Cable (now owned by Charter) also placed in the top ten smart home providers.²⁴¹

AT&T ranks third, “among U.S. smart home service providers, behind two companies with roots in the home security business—Vivint and ADT.”²⁴² APX Holdings—which operates under the brand name Vivint—disclosed in its December 2016 10-K SEC report the operational risk of ISP gatekeeping behavior.²⁴³ “Interference with our services or higher charges to customers by broadband service providers for using our products and services could cause us to lose existing subscribers, impair our ability to attract new subscribers and materially and adversely affect our business, financial condition, results of operations and cash flows,”²⁴⁴ APX cautioned. In March 2018 following the FCC’s January 2018 Order repealing net neutrality rules, APX’s 10-K advised investors that, “[w]hile it is difficult to predict what would occur in the absence of such rules, it is possible that as a result of the lack of network neutrality rules, we could incur greater operating expenses which could harm our results of operations.”²⁴⁵

240. Anjali Athavaley, *Comcast builds out ‘smart home’ strategy as cable shrinks*, REUTERS, Aug. 28, 2017, <https://www.reuters.com/article/us-comcast-security/comcast-builds-out-smart-home-strategy-as-cable-shrinks-idUSKCN1B90EV> [<https://perma.cc/ZL9G-YRCJ>].

241. Joan Engebretson, *Report: AT&T Third in Smart Home Market Share*, TELECOMPETITOR, Jan. 24, 2017, <http://www.telecompetitor.com/report-att-third-in-smart-home-market-share/> [<https://perma.cc/KUD2-GTQR>].

242. *Id.*

243. APX Group Holdings Inc., 10-K, U.S. Securities and Exchange Commission, Dec. 31, 2016, at 16–17, <https://www.sec.gov/Archives/edgar/data/1584423/000158442317000002/apx12311610kdocument.htm#sFF5765B8F651ABB0F4D488DC0ECC9D8D> [<https://perma.cc/92DK-RUCC>] [hereinafter *APX Dec. 2016 10-K*].

244. *Id.*

245. APX Group Holdings Inc., 10-K, U.S. Securities and Exchange Commission, Mar. 7, 2018, at 20, <file:///I:/WORKSTUDY/JCEL/JCEL%20V.9%20Book%202017-18/Sandoval%20WF/e7941876-ee0-40aa-ba0c-49282def37f2.pdf> [<https://perma.cc/ZY9M-GR59>] [hereinafter *APX March 2018 10-K*].

Comcast offers customers in select markets a bundle combining, “Sunrun’s rooftop solar arrays and Brightbox battery system with Comcast’s Xfinity Home security and energy efficiency management platform.”²⁴⁶ Comcast plans to use its base of 27 million customers and Comcast’s “vast communications network to promote the offering.”²⁴⁷ AT&T plans to work with SunPower to wirelessly connect 100,000 SunPower solar arrays with SunPower’s data systems within the next two years.²⁴⁸

An ISP’s broadband business arguably competes in a separate product market than its home energy services, though both use the same Internet platform. In 2015, the FCC recognized that, “[b]roadband providers’ networks serve as platforms for Internet ecosystem participants to communicate, enabling broadband providers to impose barriers to end-user access to the Internet on one hand, and to edge provider access to broadband subscribers on the other.”²⁴⁹ The 2018 *Internet Freedom* Order allows an ISP to use its broadband platform to charge for content that competes with its home energy management business, subject to antitrust and unfair competition laws. ISP priority deals with video game providers and others may also affect the home energy management market and other markets due to paid priority delays.

Broadband services and ISP home energy management services arguably compete in separate, vertical markets, similar to the competitive posture of video service sold separately from Internet capacity. The ISP’s home energy management business competes in a horizontal product market for wholesale energy resources or for utility contracts with demand response aggregators, independent thermostats, or DER operators.

To pursue a monopoly leveraging theory that ISP conduct, in its broadband business, constitutes an unlawful attempt to monopolize the energy resources market, an antitrust plaintiff must show the defendant: “(1) possessed monopoly power in one market; (2) used that power to create a dangerous probability of monopolizing another market; and (3) caused injury by such anticompetitive conduct.”²⁵⁰ In 45.2 percent of U.S. markets, two ISPs offer high-speed broadband (defined by the FCC as 25 mbps down and 3 mbps up), reflecting

246. Charly Fasano, *Comcast Bundles Solar with Sunrun*, SOLAR REVIEWS, Aug. 25, 2017, <https://www.solarreviews.com/news/comcast-bundles-solar-into-home-solar-offerings-with-sunrun-082517/> [<https://perma.cc/NXQ9-JYNL>].

247. *Id.*

248. Chris Meehan, *AT&T, SunPower Partner to Market Home Solar*, SOLAR REVIEWS, Apr. 26, 2016, <https://www.solarreviews.com/news/att-sunpower-partner-home-solar-marketing-042616/> [<https://perma.cc/DN95-5AGY>].

249. FCC, *2015 Open Internet Order*, *supra* note 5, at ¶ 80.

250. *A.I.B. Express, Inc. v. FedEx Corp.*, 358 F. Supp. 2d 239, 246–47 (S.D.N.Y. 2004) (citing *Verizon Comm’ns, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 124 S. Ct. 872, 883 n.4 (2004)).

market share levels likely insufficient to demonstrate broadband market monopoly power.²⁵¹ Competitive bidding energy markets are designed to encourage price competition for resources that can meet energy needs. Demonstrating a dangerous probability of monopolizing the wholesale energy market is a high bar. Although monopoly leverage analysis is beyond this Article’s scope, it appears that no antitrust law umbrella protects energy market participants from ISP gatekeeping behavior.

An ISP may entice customers to enter into bundle deals that include home energy management, which the ISP will prioritize. An ISP may offer paid priority to other energy market participants and have its home energy division pay its affiliated broadband division for priority at the same price, or even at a lower price, than it would charge third parties. AT&T’s “zero-rating” exempts content providers who pay for sponsored data from Internet plan data caps.²⁵² The right pocket pays the left pocket, when an ISP’s affiliated content company pays its sister broadband provider for priority, or is not required to pay at all. For third parties, priority payments would not be intracompany transfers, but payments to another company.

Priority payments may become a means to raise rivals’ costs,²⁵³ and thus the costs of business for customers of those firms. Ellen P. Goodman suggests that a regulator could reasonably conclude that zero-rating practices which, “produce the least benefits to users, with the greatest harm to edge providers . . . are likely too harmful and should be presumptively banned, depending

251. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 125.

252. See Letter from Jon Wilkins, Chief, Wireless Communications Bureau, FCC to Robert W. Quinn, Jr., Senior Executive Vice President, External and Legislative Affairs, at 2, Dec. 1, 2016, https://cdn3.vox-cdn.com/uploads/chorus_asset/file/7575775/Letter_to_R_Quinn_12.1.16.0.pdf [<https://perma.cc/8DJK-YB9H>] (expressing concern about AT&T’s sponsored data program under which AT&T “incurs no comparable cost to offer its own DIRECTV Now service on a zero-rated basis.” AT&T seems to present the unaffiliated provider with a choice, “either pay a Sponsored Data rate (resulting in a \$16-\$47 per month - or higher - incremental cash cost not incurred by AT&T) that would make it very difficult, if not infeasible, to offer a competitively-priced service, or instead require its customers to pay significant amounts for their own usage of data while AT&T’s zero-rated DIRECTV Now service offers customers the same usage for free.”).

253. See, e.g., Thomas Krattenmaker & Steven Salop, *Anticompetitive Exclusion: Raising Rivals’ Costs to Achieve Power Over Price*, 96 YALE L.J. 209 (1986) (examining as a potential antitrust violation the tendency of a vertical restraint to increase the production costs, and thereby the prices, of rival producers, and the ability of the firm increasing rivals’ costs to increase their own prices in those circumstances); cf. John J. Tharp, *Raising Rivals’ Costs: Of Bottlenecks, Wine, and Bottled Soda*, 84 NW. U. L. REV. 321, 324 (1989) (arguing that the theory of raising rivals’ cost as evidence of anticompetitive conduct ignores efficiency considerations of exclusionary restraints).

on the state of broadband competition and the background state of user connectivity.”²⁵⁴

The FCC under Chairman Tom Wheeler expressed concern about the competitive effects of AT&T’s zero-rating practice.²⁵⁵ FCC Chairman Ajit Pai ended that inquiry shortly after his appointment as Acting Chairman when he stated that the FCC will not stymie consumer free data access.²⁵⁶

ISP priority for its own energy management signals over those of independent resources could be subject to a FERC market manipulation investigation under the FPA.²⁵⁷ CAISO monitors evidence of market manipulation to “maintain an open and competitive market,” and provides that “no participant should be able to take unfair advantage of the rules or procedures or concentrate market power and inhibit competition.”²⁵⁸ If energy prices rise due to market manipulation, an application can be made to FERC for refund of the excess above just and reasonable rates.²⁵⁹

A utility or energy market participant who enters a paid priority deal with an ISP may risk allegations that such a deal makes them a party to energy market manipulation. The FCC allows paid priority deals to slow or degrade other users’ signals. Other energy market participants may use the

254. Ellen P. Goodman, *Zero-Rating Broadband Data: Equality and Free Speech at the Network’s Other Edge*, 15 COLO. TECH. L.J. 63, 91 (2016).

255. Letter from Jon Wilkins, *supra* note 252, at 1 (“Our concern is that AT&T’s Sponsored Data program—i.e., the terms and conditions on which AT&T makes its own network available to similarly situated unaffiliated providers denies unaffiliated third parties the same ability to compete over AT&T’s network on reasonable terms.”).

256. Brian Fung, *The FCC is dropping its probe into Internet providers over this controversial practice*, WASH. POST, Feb. 3, 2017, https://www.washingtonpost.com/news/the-switch/wp/2017/02/03/the-government-is-dropping-its-probe-into-a-controversial-practice-by-your-internet-provider/?utm_term=.c5341726c918 [<https://perma.cc/P7NM-7JJA>].

257. See *In re Enron Corp.*, 326 B.R. 257, 264 (Bankr. S.D.N.Y. 2005) (noting that FPA 16 U.S.C. § 824(e) “provides FERC with broad remedial authority to address anti-competitive behavior” supporting FERC’s authority to order disgorgement of money in excess of just and reasonable rates upon a finding of market manipulation during the California Energy crisis of 2000 to 2001).

258. CAISO 2018-19, Market Monitoring, <http://www.caiso.com/market/Pages/MarketMonitoring/Default.aspx> [<https://perma.cc/7GHM-82GJ>] (last visited Dec. 27, 2017).

State of California, *ex rel.* Bill Lockyer, Attorney Gen. of the State of California, 125 FERC ¶¶ 61,016, 61,042 (Oct. 6, 2008) (“evidence from the 2000-2001 power crisis demonstrates that numerous sellers engaged in repeated and pervasive acts of market manipulation, collectively causing prices to be unjust and unreasonable, many of which manipulations involved the exercise of market power”); *Pub. Util. Comm’n of Cal. v. FERC*, 462 F.3d at 1043 (“FERC issued an order on July 25, 2001 in the Refund Proceedings establishing the framework for _____ of past sales in the spot markets operated by CalPX and Cal-ISO.

259. *San Diego Gas & Elec. Co. et al.*, 96 FERC ¶ 61,120 (2001) (“July 25, 2001 Order”). FERC ordered limited refunds for the rates it had determined to be unjust and unreasonable and established a mitigated market clearing price (“MMCP”) in an attempt to replicate what it believed to be the just and reasonable rates that an unmanipulated competitive energy market would have produced.”).

same Internet platform to reach the same subscriber's or IoT's account. FERC, ISOs and state PUCs should review the potential for delay and energy market manipulation from ISP paid priority deals. Rate refund beyond those that are just and reasonable would not, however, provide a remedy for harms to safety, reliability, or environmental harm from having to call on more or build more GHG-emitting peaker plants.

Not all ISPs participate in home energy services or participate in wholesale energy markets, limiting the reach of FERC market manipulation rules to address such conduct. A full analysis of the applicability of FERC market manipulation rules is beyond this Article's scope, but this example highlights risks of ISP paid priority delays the FCC's *Internet Freedom* Order failed to consider.

An ISP priority deal with a video game distributor that degrades independent thermostat or DER function and responsiveness may be difficult to detect due to the limited disclosures the FCC requires. The California Energy Crisis litigation was delayed by the difficulty of discovery of Enron's and other market participants' conduct. Tapes of Enron traders who laughed at traffic accidents during blackouts revealed the range of market manipulation schemes and Enron's intent to increase its profit at the expense of others.²⁶⁰ There may be no tapes of ISP priority deals due to the limited disclosures the FCC's *Internet Freedom* Order requires. The FCC does not mandate disclosure of parties to or terms of paid priority deals, their execution, or consequences. *Post facto* discovery of ISP financial and operational records of such transactions and analysis of consequent Internet performance will be a daunting job for plaintiffs including regulators and utility operators. Neither do *post facto* rate refunds compensate for lost reliability, public safety, and environmental risks.

E. ISP Incentives to Abuse Their Gatekeeper Position on the Internet and the Terminating Access Monopoly

ISPs have long fought for authority to enter into paid priority arrangements to create a new revenue stream. In 2013 Verizon's lawyer lamented during

260. Cf. Michael Flanagan, *Evidence That Speaks Volumes: Best Practices for Collection, Preservation and Review of Audio Recordings*, ACC DOCKET, Sept. 1, 2013, at 34, 36, available at <http://www.accdocket.com/articles/resource.cfm?show=1347139> [<https://perma.cc/KPX3-YWP3>] (“One Nevada lawyer described the [Enron] recordings as not just a smoking gun, but rather as an “audiotape of the gun being fired, the bullet hitting the victim, and the murderer standing over the victim laughing.”).

oral argument in the *Verizon v. FCC* case that the FCC’s then-existing prohibitions on Internet blocking, throttling, and paid prioritization were “foreclosing potential revenue streams.”²⁶¹ The FCC’s *Internet Freedom* Decision releases legal restraints on ISP financial incentives to collect revenues from content providers. ISP shareholders may encourage them to pursue these revenue opportunities.

In 2014, the D.C. Circuit recognized in *Verizon v. FCC* that “[b]roadband providers also have powerful incentives to accept fees from edge providers, either in return for excluding their competitors or for granting them prioritized access to end users.”²⁶² “In fact, there appears little dispute that broadband providers have the technological ability to distinguish between and discriminate against certain types of Internet traffic,”²⁶³ the D.C. Circuit emphasized. The FCC’s 2015 Open Internet Order recognized “that broadband providers have both the incentive and the ability to act as gatekeepers standing between edge providers and consumers” and can undermine the “virtuous cycle” of innovation the Internet drives.²⁶⁴

“Broadband providers can exploit this role by acting in ways that may harm the open Internet, such as preferring their own or affiliated content, demanding fees from edge providers, or placing technical barriers to reaching end users,”²⁶⁵ the 2015 Open Internet Order concluded. “As gatekeepers . . . [ISPs] can block access altogether; they can target competitors, including competitors to their own video services; and they can extract unfair tolls.”²⁶⁶ In 2016 the D.C. Circuit in *USTA v. FCC* upheld the FCC’s 2015 Open Internet Order citing the FCC’s analysis that “convincingly detailed how broadband providers’ [gatekeeper] position in the market gives them the economic power to restrict edge-provider traffic and charge for the services they furnish edge providers.”²⁶⁷

261. *Verizon v. FCC*, 740 F.3d at 649.

262. *Id.* 645–46.

263. *Id.* at 646.

264. FCC, *2015 Open Internet Order*, *supra* note 5, at ¶ 7 (citing *Verizon v. FCC*, 740 F.3d at 659; see Mark Wigfield, *FCC Adopts Strong, Sustainable Rules To Protect The Open Internet*, NEWS FCC, Feb. 16, 2015, [https://docs.fcc.gov/public/ attachments/DOC-332260A1.docx](https://docs.fcc.gov/public/attachments/DOC-332260A1.docx) [<https://perma.cc/LQ2Z-3QME>] (“Internet openness drives a “virtuous cycle” in which innovations at the edges of the network enhance consumer demand, leading to expanded investments in broadband infrastructure that, in turn, spark new innovations at the edge.”)).

265. FCC, *2015 Open Internet Order*, *supra* note 5, at ¶ 80.

266. *Id.* at ¶ 20.

267. *U.S. Telecom Ass’n. v. FCC*, 825 F.3d 674, 694 (D.C. Cir. 2016) (citing *Verizon v. FCC*, 740 F.3d at 646 (upholding the FCC’s 2015 Open Internet Order transparency rules and reversing the rules against blocking and throttling as common carrier-type restrictions, not supported by the FCC’s classification of ISPs as information service providers)).

The FCC’s 2015 Open Internet Order concluded that ISP gatekeeper power gives the ISP bargaining power with edge or content providers.²⁶⁸ “[R]egardless of the competition in the local market for broadband Internet access, once a consumer chooses a broadband provider, that provider has a monopoly on access to the subscriber.”²⁶⁹ The D.C. Circuit recognized that ISPs effectively have a “terminating access monopoly,”²⁷⁰ a concept rooted in antitrust law. The FCC’s 2015 Open Internet Order recognized that “[o]nce the broadband provider is the sole provider of access to an end user, this can influence that network’s interactions with edge providers, end users, and others.”²⁷¹

Jonathan E. Nuechterlein and Christopher S. Yoo describe a “terminating access monopoly” in a communications network as one which “possesses monopoly power vis-à-vis third-party senders of communications traffic to its customers.”²⁷² Nuechterlein and Yoo express concern about potential abuse of an ISP’s terminating access monopoly position in limited circumstances such as when “the interconnecting provider or its customer has a particularized need to reach the customer set of the terminating access provider,” though they anticipated market solutions might correct such problems.²⁷³ As discussed below, IoT devices subject to energy demand response calls are examples of the class of customers about which Nuechterlein and Yoo expressed concern, since they are usually “single-homed,” reachable through a single Internet connection, and need to respond within a short period of time.

The FCC’s *Internet Freedom Order* dismisses the terminating access monopoly theory as applied to broadband, arguing that “end users do not single home, but subscribe to more than one platform (e.g., one fixed and one mobile) capable of granting the end user effective access to the edge provider’s content (i.e., they multi-home).”²⁷⁴ The Order concludes: “to the extent multihoming occurs in the use of an application, there is no terminating monopoly.”²⁷⁵

268. FCC, *2015 Open Internet Order*, *supra* note 5, at ¶ 80.

269. *Id.*

270. *Verizon v. FCC*, 740 F.3d at 645–46.

271. FCC, *2015 Open Internet Order*, *supra* note 5, at ¶ 80.

272. Jonathan E. Nuechterlein & Christopher S. Yoo, *A Market-Oriented Analysis of the “Terminating Access Monopoly” Concept*, 14 COLO. TECH. L.J. 21 (2015).

273. *Id.* at 22.

274. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 136.

275. *Id.*

The multi-homing theory assumes that the subscriber's multiple platforms access more than one Internet account, not just more than one device. Subscribers may have home, business, and mobile bundles subject to the same terms of service and ISP practices. Customers with separate accounts may also face similar network management terms across multiple providers.

The FCC does not account for single-homed IoT devices connected to one residential or business account. A connected thermostat, light, battery or solar array, or a DER using CAISO's secure Internet platform to transmit signals every four seconds about its visibility, is likely single-homed and linked to one Internet account. Sending a demand response, deployment, or grid services signal to another account the subscriber may hold would not reach a single-homed thermostat or solar array. Even if a consumer can control and access their connected thermostat's data from their phone, the Internet-connected thermostat cannot change accounts to circumvent ISP delays that favor other applications on the platform the thermostat uses. Mark Armstrong observed that "platforms have monopoly power over providing access to their single-homing customers for the multi-homing side."²⁷⁶ The energy grid operator or IOU faces a terminating access monopoly to reach devices connected to a particular Internet platform at the time the signal is sent. Even if a subscriber could switch to another high-speed ISP, that switch may lag behind a demand response or load shifting call needed for energy reliability, system, or public safety.

The FCC's 2018 *Internet Freedom* Order questions whether ISPs have sufficient incentives to engage in network management practices that undermine access to content as "ISPs themselves recognize that their businesses depend on their customers' demand for edge content."²⁷⁷ The 2018 Order agrees that "when a broadband provider acts as a gatekeeper, it actually chokes consumer demand for the very broadband product it can supply."²⁷⁸

The 2018 FCC Order concludes that it is "unlikely that any ISP, except the very largest, could exercise market power in negotiations with Google or Netflix, but almost certainly no small wireless ISP, or a larger but still small rural cable company or incumbent LEC, could do so."²⁷⁹ The FCC anticipates—without analysis—that Google or Netflix could withstand ISP market or gatekeeper power. This conjecture ignores the discretion the FCC's *Internet Freedom* Order confers on ISPs to charge any content provider, whether large or small, for speedy data transmission, or to prevent relegation to slow or stalled lanes.

276. Mark Armstrong, *Competition in Two-Sided Markets*, 37 RAND J. OF ECON. 668, 669 (2006).

277. FCC, *Internet Freedom Order*, *supra* note 7, at 117.

278. *Id.*

279. *Id.* at ¶ 136.

The FCC concedes that “platforms must vigorously compete for single-homing end users, but have less need to compete for edge providers, who subscribe to all platforms. This means each ISP faces strong pressures to cut price to end users, but does not face similar pressures in pricing to edge providers.”²⁸⁰ This observation recognizes that ISPs have the ability and incentive to demand charges from edge or content providers to reach ISP subscribers.

F. Paid Priority Exacts Tolls on Internet Content Including Energy Communications

The FCC’s *Internet Freedom Order* authorizes ISPs to request payments to transmit or receive data, apart from ISP subscription fees. Nothing in the FCC’s Order precludes ISPs from charging critical infrastructure sectors, the government, educational institutions, healthcare providers, or the military to distribute Internet content, or for protection from paid priority delay.

ISPs could, for example, seek payments from utilities, demand response bidders, energy market participants, grid operators, and regulators to ensure speedy Internet traffic delivery or prevent diversion to the slow lane. The utility’s legal duty to provide safe, reliable service at just and reasonable rates²⁸¹ increases ISP incentive to seek payment from that utility to stave off ISP-induced delays. Payments for priority or protection from Internet delays can raise energy prices and erect barriers for Internet-enabled energy resources.

My comments to the FCC’s 2015 Open Internet proceeding pointed out that for “utilities with millions of customers such as [IOU] Southern California Edison (SCE) . . . regulated by the CPUC, with over 4.9 million customer connections, negotiating Internet access agreements with multiple ISPs to reach their 14 million customers would be costly, risky, and fraught with uncertainty.”²⁸² ISPs may ask utilities to pay to reach customers, their supply chain, regulators, public safety personnel, researchers, the media, and others needed for safe and reliable operations.

Utilities may seek to recover paid priority costs from energy ratepayers through General Rate Case applications to their state PUC. Post-expenditure rate recovery applications would be subject to a regulator’s “reasonableness

280. *Id.* at ¶ 137 (citations omitted).

281. *See* CAL. PUB. UTIL. CODE § 451, *supra* note 105.

282. Commissioner Sandoval, *2015 Open Internet Ex Parte Comments*, *supra* note 153, at 3.

review.” If the PUC finds the utility’s conduct was not reasonable, rate recovery may be denied. Either utility customers or shareholders will likely be asked to shoulder the burden and expense of ISP charges to pay for priority or protect against delayed and degraded service.

The FCC’s 2018 Open Internet Order “expect[s] that eliminating the ban on paid prioritization will help spur innovation and experimentation, encourage network investment, and better allocate the costs of infrastructure, likely benefiting consumers and competition.”²⁸³ This projection reflects the FCC’s expectation that ISPs will charge content providers to access subscribers. Yet, the FCC failed to analyze the impact of ISP content or paid priority charges on energy prices, and the prices of other goods and services, an omission that reflects arbitrary and capricious decision-making.²⁸⁴

The FCC imagines that ISPs will pass profits from content provider charges in excess of total costs to subscribers stating that “no ISP can earn supranormal profits, so any markups earned from edge providers in excess of total costs are generally passed through to [broadband] end users.”²⁸⁵ The FCC does not explain why it believes ISPs would not keep markups as profit. Neither does the potential for content providers to pay for the costs of broadband diminish the “waterbed effect” of rising prices in other markets such as energy services made to pay ISPs to deliver content on the Internet platform.²⁸⁶

The hypothetical bar to supranormal profits depends on competition for broadband services, a goal the FCC has pursued since the dial-up days. Competition for High-speed Internet service is limited.²⁸⁷ In 2015 the FCC defined 25 mbps down and 3 up as high-speed Internet offering “advanced telecommunications capability.”²⁸⁸ The FCC reported that in 2016, 40% of Americans had the choice of only one provider offering high-speed Internet

283. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 253.

284. *Michigan v. EPA*, 135 S. Ct. at 2706 (“Federal administrative agencies are required to engage in “reasoned decisionmaking”); *Motor Vehicle Mfrs. Ass’n v. State Farm*, 463 U.S. at 43 (administrative agency decision-making must consider important issues under the APA).

285. FCC, *Internet Freedom Order*, *supra* note 7, at 137 (citing Armstrong, *supra* note 276, at 669–70; Rysman, *The Economics of Two-Sided Markets*, 23 J. ECON. PERSP. 125 (2009)).

286. *Cf. Katz*, *supra* note 213, at 15 (“there is a ‘waterbed effect’: forcing BIAS providers to charge lower prices to edge providers creates incentives for BIAS providers to charge higher prices to [broadband] end users.”).

287. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 125.

288. *In re* FCC, INQUIRY CONCERNING THE DEPLOYMENT OF ADVANCED TELECOMMUNICATIONS CAPABILITY TO ALL AMERICANS IN A REASONABLE & TIMELY FASHION, & POSSIBLE STEPS TO ACCELERATE SUCH DEPLOYMENT PURSUANT TO SECTION 706 OF THE TELECOMMUNICATIONS ACT OF 1996 (as amended by the Broadband Data Improvement Act, 30 F.C.C. Red. 1375, ¶ 3 (2015) (determining that “advanced telecommunications capability” requires access to actual download speeds of at least Mbps and actual upload speeds of at least 3 Mbps)).

at 25 mbps up and 3 down, 45.2% had the choice of two, 5.9% had three, while 8.9% had none.²⁸⁹

Professor van Schweick underscored the lack of competitive alternatives for Internet speeds of 50 mbps down and 3 up: “61% of homes in the United States have only one service provider—the cable provider—that can offer peak speeds of more than 50 Mbps down and 3 Mbps up. Only 16% have access to two such providers, and 21% do not have access to such service at all.”²⁹⁰ New entrants to the broadband market face barriers to entry such as access to poles, conduits, and rights-of-way already occupied by incumbents, and interconnection challenges.²⁹¹

G. Promises, No Promises, and Gatekeeper Incentives

The *Internet Freedom Order* notes that “many ISPs have committed to refrain from blocking or throttling lawful Internet conduct notwithstanding any Title II regulation,”²⁹² citing comments from AT&T, Comcast, Verizon, Cox, and Frontier. The ISP statements upon which the FCC relies “are neither written in the language of promise nor condition, nor are they integrated into user agreements, rendering them unenforceable in contract.”²⁹³

Notably absent from these policy statements is any promise to forswear from paid priority deals. Neither do major ISPs pledge to protect other users from delayed or degraded service as a result of paid priority. The FCC’s 2018 *Internet Freedom Order* omits discussion of the absence of ISP promises

289. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 125.

290. van Schewick, *supra* note 211, at 90–91.

291. CPUC D.16-12-025, Order Instituting Investigation into the State of Competition Among Telecommunications Providers in California, and to Consider and Resolve Questions Raised in the Limited Rehearing of Decision 08-09-042, at 3, Dec. 1, 2016 (“Competitive bottlenecks and barriers to entry in the telecommunications network limit new network entrants and may raise prices for some telecommunications services above efficiently competitive levels. One particular bottleneck is access to utility poles, where the Commission’s safety mandate meets, and must be reconciled with, the Commission’s goal of a competitive market.”); FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 169 (repealing the authority to consider disputes about Internet carrier interconnection claims, anticipating that parties may reach mutually agreeable commercial arrangements).

292. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 117 (citing Comcast Comments at 54–55, 64; Frontier Comments at 6; Cox Comments at 20–21; Verizon Comments at 20; AT&T Comments at 101).

293. Catherine J.K. Sandoval, *Protect the Open Internet*, DAILY J., May 19, 2017, available at <https://law.scu.edu/news/catherine-sandovals-article-protect-the-open-internet-published-by-the-daily-journal/> [<https://perma.cc/A3TE-GFFX>] [hereinafter *Protect the Open Internet*].

to renounce paid priority or to protect other Internet users from degraded service from its decision to allow paid priority. This analytical gap violates the APA for failure to consider important aspects of the issue in the administrative proceeding.²⁹⁴

During my remarks at the National Association of Regulatory Utility Commissioners (NARUC) Winter Conference in February 2017, I reported that on more than one occasion a representative of an ISP told me while I was a CPUC Commissioner that the ISP could prioritize energy or water utility Internet signals if regulators let them do so.²⁹⁵ The ISP representative's comments were consistent with their longstanding advocacy of paid priority deals and their comments subsequently filed in the *Internet Freedom* Proceeding.

Such remarks communicate ISP willingness and ability to –for a price– prioritize energy, water, or other critical infrastructure communication. The lack of any safeguards for users who do not or cannot pay for priority reflects the misaligned regulatory incentives the FCC created. Energy, water, and telecommunications utilities face duties under state law to provide safe, reliable service, at just and reasonable rates.²⁹⁶ Wholesale energy market participants are required to provide reliable service at just and reasonable rates under the FPA, and to comply with other federal safety rules.²⁹⁷ The regulatory incentive mismatch the FCC created between ISPs and Internet users undermines safe and reliable energy service at just and reasonable rates. These misaligned incentives recall the circumstances that facilitated Enron's market manipulation during California's energy crisis.

These risks cannot be resolved by exempting critical infrastructure sectors from net neutrality repeal. In the energy sector, for example, Internet

294. *Dist. Hosp. Partners, L.P. v. Burwell*, 786 F.3d 46, 57 (D.C. Cir. 2015) (quoting *Motor Veh. Mfrs. Ass'n v. State Farm*, 463 U.S. at 43); *Am. Wild Horse Pres. Campaign v. Zinke*, 2017 WL 4349012, at *18 (D. Idaho, Sept. 29, 2017, No. 1:16-CV-00001-EJL) (“The BLM’s decision in this case is arbitrary and capricious because it did not consider the significant impacts its decision may have on the free-roaming nature of the herd [an important issue in that case] nor explain why its decision is appropriate despite those impacts.”) (citing *Motor Vehicle Mfrs. Ass'n v. State Farm*, 463 U.S. at 43).

295. Catherine Sandoval, *Panel V. Telecom Infrastructure and the USF: New Administration, New Policies, and the Current Fund, Staff Subcommittee on Telecommunications*, REMARKS TO STAFF SUBCOMMITTEE ON TELECOMMUNICATIONS, Feb. 12, 2017 (2017 NARUC Winter Meeting).

296. See, e.g., CAL. PUB.UTIL. CODE § 451.

297. *Trope & Humes*, *supra* note 38, at 782 (noting that the Electricity Modernization Act of 2005, 42 U.S.C.A. § 15801 (2005) (Energy Policy Act of 2005, Pub. L. No. 109-58, § 1211, 119 Stat. 594 (codified as amended at 16 U.S.C. § 8240 (2012)) added section 215 to the Federal Power Act (FPA), which authorized FERC to certify an organization as the national “Electric Reliability Organization,” which would be charged with establishing and enforcing mandatory standards); FPA, 16 U.S.C.A. § 824 (“transmission of electric energy in interstate commerce and the sale of such energy at wholesale in interstate commerce is necessary in the public interest.”).

communications are important for utilities, grid managers, and their customers, suppliers, and regulators. Customers use the Internet to send demand response and DER signals, to enroll in utility programs, use energy data, get updates on blackouts and local energy conditions. Suppliers, regulators, researchers, public safety personnel, energy generators, and more, all use the Internet for energy-related communications. In the distributed energy ecosystem, the ability to communicate with a wide range of people and things is crucial to energy reliability, safety, just and reasonable rates, and the environment. ISP conduct that unduly slows Internet communication at any point in the energy ecosystem puts energy performance and values at risk.

Following the release of the FCC’s November 2017 draft order permitting paid priority, Comcast stated that it “hasn’t entered into any paid prioritization agreements. Period. And we have no plans to do so.”²⁹⁸ Jon Brodtkin points out that Comcast’s “public Open Internet commitment says only that ‘We do not block, slow down or discriminate against lawful content,’ without making any statement about whether it will engage in paid prioritization.”²⁹⁹ “Earlier this year, [Brodtkin notes,] the same webpage said that Comcast stated ‘Comcast doesn’t prioritize Internet traffic or create paid fast lanes,’”³⁰⁰ while later posts dropped the corporate policy against creating fast lanes.³⁰¹

The FCC’s 2011 approval of Comcast’s acquisition of NBC required that Comcast adhere for seven years to the net neutrality rules the FCC adopted in 2010, regardless of the outcome of the legal appeal of those rules.³⁰² The FCC recognized that Comcast’s acquisition of an interest in

298. Marguerite Readon, *Comcast denies plans to offer internet ‘fast lanes’*, CNET, Nov. 28, 2017, <https://www.cnet.com/news/comcast-denies-plans-to-offer-internet-fast-lanes/> [http://perma.cc/U73Q-E8ZG].

299. Jon Brodtkin, *Comcast hints at plans for paid fast lanes after net neutrality repeal, Comcast still won’t block or throttle but paid priority may be on the way*, ARS TECHNICA, Nov. 27, 2017, <https://arstechnica.com/tech-policy/2017/11/comcast-quietly-drops-promise-not-to-charge-tolls-for-internet-fast-lanes/> [https://perma.cc/TU6M-J9PB].

300. *Id.*

301. *Id.*

302. *In re Applications of Comcast Corp., Gen. Elec. Co. & NBC Universal, Inc.* 26 F.C.C. Rcd. 4238, 4275 (2011), at 38, available at <https://www.fcc.gov/document/applications-comcast-corporation-general-electric-company-and-nbc-1> [https://perma.cc/UV2C-KBLR] (“The Applicants have agreed that, in their provision of broadband Internet access services, neither Comcast nor Comcast-NBCU shall affiliated Internet content over unaffiliated Internet content. In addition, any Comcast or Comcast-NBCU broadband Internet access service offering that involves caps, tiers, metering, or other usage-based pricing shall not treat affiliated network traffic differently from unaffiliated network traffic. Comcast and Comcast-NBCU shall also comply with all relevant FCC rules, including the rules adopted by the Commission in GN Docket No. 09-191, and, in the event of any judicial challenge

Hulu, which broadcasts entertainment content through the Internet “increased risk that Comcast will engage in blocking or discrimination when transmitting network traffic over its broadband service.”³⁰³ The FCC found “that Comcast’s acquisition of additional programming content that may be delivered via the Internet, or for which other providers’ Internet-delivered content may be a substitute, will increase Comcast’s incentive to discriminate against unaffiliated content and distributors in its exercise of control over consumers’ broadband connections.”³⁰⁴

From December 2010 through January 2014, the FCC’s 2010 Open Internet rules required ISP transparency about network management practices, no blocking, no unreasonable discrimination, and reasonable network management.³⁰⁵ The FCC’s 2010 Order provided that ISPs “*shall not unreasonably discriminate in transmitting lawful network traffic over a consumer’s broadband Internet access service,*” and barred ISPs from charging fees to content providers to avoid being blocked.³⁰⁶

The appeal of that order was decided in January 2014, in *Verizon v. FCC*, leaving the transparency rules in place, but striking other restrictions as imposing common carrier rules which were not supported by the FCC’s classification of ISPs as information service providers.³⁰⁷ Comcast’s pledge to observe the 2010 rules survived the appellate court’s decision to strike down those rules in 2014, but its pledge expired in January 2018.³⁰⁸ Comcast’s November 2017 statement that it has no plans to enter into paid priority arrangements will not constrain its action once that merger condition expires.

After the June 11, 2018 effective date for the *Internet Freedom Order*, paid priority deals may begin. Negotiations and arrangements for priority deals may already be underway.

affecting the latter, Comcast-NBCU’s voluntary commitments concerning adherence to those rules will be in effect.”)

303. *Id.*

304. *Id.*

305. FCC, *In the Matter of Preserving the Open Internet*, 25 F.C.C. Rcd. 17905, 17931 (GN Docket No. 09-191), Dec. 21, 2010, available at https://docs.fcc.gov/public/attachments/FCC-10-201A1_Rcd.pdf [<https://perma.cc/HC7Z-BTHK>] [hereinafter FCC, *2010 Open Internet Order*].

306. *Id.* at 17943–17944 (emphasis in the original).

307. *Verizon v. FCC*, 740 F.3d at 659.

308. Jon Brodtkin, *Comcast to be “unleashed” on rivals when NBC merger conditions expire, Breakup of Comcast and NBC should be explored, senator says*, ARS TECHNICA, Dec. 15, 2017, <https://arstechnica.com/tech-policy/2017/12/comcast-to-be-unleashed-on-rivals-when-nbc-merger-conditions-expire/> [<https://perma.cc/28YN-5S7C>] (noting that the FCC conditions for FCC approval of Comcast’s acquisition of NBC included “that expire in January include net neutrality provisions similar to the ones repealed by the FCC yesterday” on December 14, 2017).

*H. Antitrust in Lieu of Net Neutrality Protects Only Harm to
Competition and Leaves Energy Reliability, Safety,
Cost, Environmental, and Other Harms
Without Redress*

The 2018 Order cites ISP promises to refrain from “blocking or throttling lawful Internet conduct notwithstanding any Title II regulation,” and “existing consumer protection and antitrust laws” as sufficient to protect consumers from gatekeeper abuse in lieu of net neutrality rules.³⁰⁹ The *Internet Freedom Order* fails to discuss the legal principle that antitrust and unfair competition law remedy only *injuries to competition*,³¹⁰ a limitation my August 2017 Reply Comments to the FCC highlighted. The FCC failed to consider the need to remedy non-competition harms resulting from its decision such as those to energy reliability, safety, rates, and the environment, reflecting arbitrary and capricious decision-making under the APA.³¹¹

FTC Acting Chair Ohlhausen argued that “[m]arket forces and antitrust policy can not only protect competition in ISP-related markets, but also safeguard nonmonetary goals like free speech and openness, at least to the extent that consumers share those values.”³¹² She contends “assuming for now that consumers share the full array of nonmonetary values embraced by net neutrality advocates, it follows that ISPs have an incentive in contested markets to provide broadband access that caters to those values.”³¹³

309. FCC, *Internet Freedom Order*, *supra* note 7, at ¶¶ 116–117.

310. Sandoval, *Internet Freedom Reply Comments*, *supra* note 4, at 34 (citing *Atl. Richfield Co. v. USA Petroleum Co.*, 495 U.S. at 334; *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477, 489 (1977) (holding that an antitrust plaintiff must prove injury which reflects the anticompetitive effect either of the alleged violation or of anticompetitive acts made possible by the alleged violation of antitrust laws); *A.I.B. Express, Inc. v. FedEx Corp.*, 358 F. Supp. 2d at 246 (“The injury should reflect the anticompetitive effect either of the violation or of the anticompetitive acts made possible by the violation.”).

311. *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 516 (2009) (“a reasoned explanation is needed for disregarding facts and circumstances that underlay or were engendered by the prior policy.”); *Encino Motorcars, LLC v. Navarro*, 136 S. Ct. 2117, 2125 (2016) (“where the agency has failed to provide even that minimal level of analysis, its action is arbitrary and capricious and so cannot carry the force of law”) (citing 5 U.S.C. § 706(2)(A); *Motor Vehicle Mfrs. Ass’n v. State Farm*, 463 U.S. at 43 (an agency must “articulate a satisfactory explanation for its action[,] including a ‘rational connection between the facts found and the choice made’” (quoting *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1962))).

312. Hon. Maureen K. Ohlhausen, *Antitrust over Net Neutrality: Why We Should Take Competition in Broadband Seriously*, 15 COLO. TECH. L.J. 119, 133 (2016).

313. *Id.* at 143.

Energy reliability, safety, just and reasonable rates are legal requirements of federal and state energy regulation. California law mandates GHG and black carbon reduction goals for the energy sector. Whether broadband Internet consumers independently value energy laws, they are legal requirements, the breach of which antitrust law cannot remedy.

Consumer protection laws offer no safe haven for consumers if the ISP limits its promises. ISPs who do not promise “unfettered access to all the content, services, and applications that the internet has to offer”³¹⁴ or similarly broad terms may limit exposure to FTC Act deceptive conduct claims by tailoring their promises. ISPs who never promise to safeguard consumers from slowdowns to accommodate higher paying customers, and never promise minimum speeds or performance may cite their limited promises to defend against consumer protection and FTC Act complaints. ISP terms of service may also limit consumer claims for breach of contract.³¹⁵

The FCC does not acknowledge that the 2015 Open Internet Order covered a broader range of potential harms of blocking, throttling, and paid priority including those to public safety, free expression, democracy, the environment, energy, and competition.³¹⁶ In support of its rules against paid priority, the FCC’s 2015 Open Internet Order cited my comments filed when I served as a CPUC Commissioner that expressed concern that “paid prioritization undermines public safety and universal service, and increases barriers to adopting Internet-based applications such as Internet-enabled demand response communications electric and gas utilities use to prevent power blackouts, forestall the need to build fossil-fueled power plants, promote environmental sustainability, and manage energy resources.”³¹⁷

Likewise, the FCC’s 2010 Open Internet rule rejected the argument that “only ‘anticompetitive’ discrimination yielding ‘substantial consumer harm’ should be prohibited by our rules.”³¹⁸ The FCC concluded in 2010 that maintaining an open Internet ecosystem “cannot be achieved by preventing only those practices that are demonstrably anticompetitive or harmful to consumers.”³¹⁹

314. Catherine J.K. Sandoval, *Disclosure, Deception, and Deep-Packet Inspection: The Role of the Federal Trade Commission Act’s Deceptive Conduct Prohibitions in the Net Neutrality Debate*, 78 *FORDHAM L. REV.* 641, 645 (2009).

315. Sandoval, *Protect the Open Internet*, *supra* note 293.

316. See e.g., FCC, *2015 Open Internet Order*, *supra* note 5, at 5654–55 n.292 (citing People of the State of Illinois and State of New York Comments at 6 (asserting that “[i]f broadband providers can discriminate among content, they can effectively pick winners and losers, interfering with the public’s ability to freely educate itself about political, cultural, and social issues—education that is critical to our democracy”).

317. *Id.* at n.291 (citing Commissioner Sandoval, *Ex Parte Letter*, *supra* note 216, at 2).

318. FCC, *2010 Open Internet Order*, *supra* note 305, at ¶ 78.

319. *Id.*

The FCC’s 2015 Open Internet Order considered the needs of critical infrastructure sectors in rejecting proposals to allow for paid priority or other individualized negotiations for fast Internet access with a “minimum speed” guaranteed.³²⁰ The 2015 Open Internet Order cited my comments that paid prioritization could harm public safety and the environment among the reasons to ban ISP paid priority.³²¹

The CPUC’s Comments in the 2017 *Internet Freedom* Proceeding emphasized “as the 2015 *Open Internet Order* discusses, the absence of strong anti-discriminatory rules could undermine critical infrastructure and public safety.”³²² The CPUC cautioned “without non-discriminatory rules, providers of emergency services or public safety agencies might have to pay extra for their traffic to have priority.”³²³ The CPUC warned “[i]f states, cities, and counties were required to pay for priority access, their ability to provide comprehensive, timely information to the public in a crisis could be profoundly impaired.”³²⁴

The *Internet Freedom* Order repeals enforceable net neutrality protections adopted in 2015, without offering a replacement that covers harms the previous Order addressed. This gap leaves internet users including critical infrastructure sectors and their customers at risk. The FCC does so by assuming without explanation that “unaddressed harms are small relative to the costs of implementing more heavy-handed regulation.”³²⁵

The Supreme Court in 2016 in *Encino Motorcars, LLC v. Navarro*, held that the APA requires that “the agency must at least “display awareness that it is changing position” and “show that there are good reasons for the new policy.”³²⁶ The “unexplained inconsistency” in agency policy is “a reason for holding an interpretation to be an arbitrary and capricious change from

320. FCC, *2015 Open Internet Order*, *supra* note 5, at 49 n.254 (citing Commissioner Sandoval, *Ex Parte Letter*, *supra* note 216, Attachment at 14 (“[A]ny of the minimum level of access standards the FCC proposes would be insufficient to support the needs of a diversity of Internet users including Critical Infrastructure.”)).

321. FCC, *2015 Open Internet Order*, *supra* note 5, at 55 n.291 (citing Commissioner Sandoval, *Ex Parte Letter*, *supra* note 216, at 2).

322. CPUC, Comments, *In the Matter of Restoring Internet Freedom*, at 29 (WC Docket No. 17-108) (July 17, 2017) (citing *2015 Open Internet Order*, 30 F.C.C. Rcd. 5601, ¶¶ 114, 126, 150).

323. *Id.*

324. CPUC, Comments, *In the Matter of Restoring Internet Freedom*, at 29.

325. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 116.

326. *Encino Motorcars, LLC v. Navarro*, 136 S. Ct. at 2126.

agency practice.”³²⁷ “An ‘arbitrary and capricious’ regulation of this sort is itself unlawful and receives no *Chevron* deference” to an administrative agency’s interpretation of an ambiguous statute.³²⁸ A reviewing court is not authorized to conjecture an explanation the agency did not offer. It is a “foundational principle” that “a court may uphold agency action only on the grounds that the agency invoked when it took the action.”³²⁹ These omissions are fatal flaws under the APA, providing grounds for *vacatur* of the Order, and remand to the FCC for a new proceeding in light of the massive infection of the *Internet Freedom* Comment Process.³³⁰

VIII. CALL OF DUTY: PROTECT THE OPEN INTERNET, ENERGY
RELIABILITY, SAFETY, JUST AND REASONABLE
RATES, AND ENVIRONMENTAL GAINS THROUGH
ENFORCEABLE RULES THAT RESTRAIN
ISP GATEKEEPING BEHAVIOR

A. State Action to Protect Energy Reliability, Public Safety, Just and Reasonable Rates, and the Environment

Several states are suing to overturn the FCC’s net neutrality repeal.³³¹ Twenty-nine state legislatures have introduced net neutrality legislation; three states, Oregon, Vermont, and Washington, have enacted neutrality legislation as of June 11, 2018, the effective date of the FCC’s net neutrality repeal.³³² Governors of six states—Hawaii, Vermont, New Jersey, New York, Washington, and Montana—have signed legislation requiring ISPs to observe net neutrality rules to be eligible for state contracts.³³³

327. *Id.* at 2126 (citing *Nat’l Cable & Telecomm. Ass’n v. Brand X*, 545 U.S. 967, 981 (2005)).

328. *Id.* (citing *United States v. Mead Corp.*, 533 U.S. 218, 227 (2001)).

329. *Michigan v. EPA*, 135 S. Ct. at 2710 (citing *SEC v. Chenery Corp.* 318 U.S. at 87).

330. *See Fox Television Stations, Inc. v. FCC*, 280 F.3d at 1048.

331. Klint Finley, *After FCC Abandons Net Neutrality, State Take Up Fight*, WIRED, Dec. 15, 2017, <https://www.wired.com/story/after-fcc-abandons-net-neutrality-states-take-up-the-fight/> [<https://perma.cc/A7M2-4BVV>] (reporting New York Attorney General Eric Schneiderman said he would lead a multistate lawsuit against the FCC to preserve net neutrality regulations).

332. Danielle Dean, *Net Neutrality Legislation by State*, NCSL, Aug. 27, 2018, <http://www.ncsl.org/research/telecommunications-and-information-technology/net-neutrality-legislation-in-states.aspx> [<https://perma.cc/TKZ6-BNDC>].

333. Ryan Johnson, *Vermont Governor Becomes 5th to issue net neutrality order*, STATE SCOOP, Feb. 20, 2018, <http://www.statescoop.com/Vermont-Governor-Becomes-5th-to-protect-net-neutrality> [<https://perma.cc/EP72-TSKJ>].

The FCC’s Open *Internet Order* contends that its policy of deregulation preempts inconsistent state action.³³⁴ That Order purports to “preempt any state or local measures that would effectively impose rules or requirements that we have repealed or decided to refrain from imposing in this order or that would impose more stringent requirements for any aspect of broadband service that we address in this order.”³³⁵ While a full analysis of preemption is beyond this Article’s scope, some observations are offered to examine the legal infirmities of the *Internet Freedom Order*’s attempt to preempt states and state PUCs.

Preemption can occur through three mechanisms:

- (1) where Congress expressly specifies that its enactment preempts state law (express preemption); (2) where the scheme of federal regulation is so pervasive that there is a reasonable inference Congress intended to dominate the field and state laws on the same subject are precluded (field preemption); and (3) where federal law actually conflicts with state law and it is impossible for a private party to comply with both requirements (conflict).

The FCC’s Order leaves harms created by its rules—such as harms to energy reliability, safety, costs, and the environment, as well as harms to democracy and national security—without a remedy under federal law. This remedy and regulatory gap reveals that the FCC’s *Internet Freedom Order* has not pervasively occupied the field, so its adoption did not result in field preemption of state law.

Chris Laughlin argues on behalf of the Institute for Public Representation, Georgetown University that “once broadband is classified as an information service, the FCC lacks authority to impose any conduct rules on ISPs. The Commission cannot thereafter assert that it has a policy goal of removing

334. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 194 n.726 (citing *cf.*, e.g., *Ark. Elec. Coop. Corp. v. Ark. Pub. Serv. Comm’n*, 461 U.S. 375, 383 (1983) (“[A] federal decision to forgo regulation in a given area may imply an authoritative federal determination that the area is best left *unregulated*, and in that event would have as much pre-emptive force as a decision *to regulate*.”) (emphasis added by the FCC Order); *Bethlehem Steel Co. v. N.Y. State Labor Relations Bd.*, 330 U.S. 767, 774 (1947) (state regulation precluded “where failure of the federal officials affirmatively to exercise their full authority takes on the character of a ruling that no such regulation is appropriate or approved pursuant to the policy of the statute”); *Minn. Pub. Util. Comm’n v. FCC*, 483 F.3d 570, 580–81 (8th Cir. 2007) (“[D]eregulation” is a “valid federal interest[] the FCC may protect through preemption of state regulation.”)).

335. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 195.

336. *Monarch v. Southern Pac. Transp. Co.*, 70 Cal. App. 4th 1197, 1204–05 (1999) (citing *English v. Gen. Elec. Co.*, 496 U.S. 72, 78–79 (1990); *Indus. Truck Ass’n, Inc. v. Henry*, 125 F.3d 1305, 1309 (9th Cir.1997)).

regulations for something over which it has no authority.”³³⁷ Thus, no conflict preemption occurs.³³⁸

States have authority under the police power inherent in our federalist system to “legislate with regard to protection of the lives, limbs, health, comfort, and quiet of all persons.”³³⁹ The CPUC’s comments opposing net neutrality’s repeal stressed, the “CPUC and California utilities have an obligation under state law to protect the safety and health of the public. Protection of public safety is a core exercise of a state’s police powers”³⁴⁰ The CPUC emphasized the “FCC cannot diminish this state police power to protect public safety and welfare, notwithstanding whether it reclassifies BIAS [Broadband Internet Access Service], or otherwise attempts to preempt state action regarding utility poles.”³⁴¹

The FCC’s *Internet Freedom* Order does not diminish state authority under state constitution and state statutes to ensure utility safety, reliability, just and reasonable rates, and compliance with state environmental laws.³⁴² The FCC’s attempt to preempt states exceeds its statutory authority and must be vacated.³⁴³

337. Cf. Letter from Chris Laughlin, Institute for Public Representation, Georgetown University, to Marlene Dortch, Secretary-Federal Communications Commission, on Restoring *Internet Freedom*, WB Docket No. 17-108, at 3, Dec. 7, 2017, <https://ecfsapi.fcc.gov/file/1207093350065/OTI%20Preemption%20Ex%20Parte.pdf> [<https://perma.cc/L5YF-XX27>].

338. *Id.* at 2 (citing *Cal. v. FCC*, 905 F.2d 1217, 1242 (9th Cir. 1990) (noting that conflict or impossibility preemption requires that the Commission “demonstrate that the order is narrowly tailored to preempt only such state regulations as would negate valid FCC regulatory goals.”)).

339. *Gonzales v. Oregon*, 546 U.S. 243 (2006).

340. CPUC Comments, *In the Matter of Restoring Internet Freedom*, WC Docket No. 17-108, at 5, available at <https://ecfsapi.fcc.gov/file/107172199528427/WC%20Docket%20No.%2017-108%20CPUC%20Comments%20on%20Restoring%20Internet%20Freedom.pdf> [<https://perma.cc/3UZZ-YL7R>]. The police power is an attribute of a state’s sovereignty and is an essential element of the power to govern, which is reserved to the states. 72 Am. Jur. 2d States, etc. § 21 (citing *CLEAN v. State*, 130 Wash. 2d 782, 928 P.2d 1054 (1996) (as amended Jan. 13, 1997); *Baton Rouge v. Ross*, 654 So. 2d 1311 (La. 1995); *Norfolk & W. Ry. Co. v. Pa. Pub. Util. Comm’n*, 489 Pa. 109, 413 A.2d 1037 (1980) (rejected on other grounds by, *Kurms v. A.W. Chesterton Inc.*, 620 F.3d 392 (3d Cir. 2010))).

341. CPUC, Comments, *In the Matter of Restoring Internet Freedom*, at 5.

342. Cf. Laughlin, *supra* note 337, at 2 (noting that the Communications Act of 1934 Section 152(b) prohibits the FCC from exercising “jurisdiction with respect to . . . charges, classifications, *practices*, services, facilities, or regulations for or in connection with *intrastate* communication service by wire or radio of any carrier.”) (emphasis added by Laughlin); *Id.* (citing *Nat’l Ass’n of Reg. Util. Comm’rs v. FCC*, 880 F.2d 422, 428 (D.C. Cir. 1989) (finding that section 152(b) “fences off from FCC reach or regulation intrastate matters”)).

343. *All Am. Telephone Co., Inc. v. FCC*, 867 F.3d 81, 89 (D.C. Cir. 2017) (“An order from the Commission that exceeds the scope of its statutory authority is, by definition, not in accordance with the law and subject to vacatur. *See, e.g., Am. Library Ass’n v. FCC*, 406 F.3d 689, 708 (D.C. Cir. 2005).”).

Some ISPs or their affiliates hold a state or PUC Certificate of Public Convenience and Necessity (CPCN), Franchise, or license (collectively referred to as a “state license”) used to obtain access to poles, conduits, and rights of way to deploy physical facilities that provide Internet service. State PUCs must ensure that ISPs comply with state license terms, and not undermine the operation, reliability, and safety of other utilities.

State PUCs should ask entities under their jurisdiction to report to the state Commission any ISP requests for payment or anything of value for Internet priority or protection against delayed or degraded service. Most state PUCs have extensive authority to request records of entities under their jurisdiction and from license, franchise, or authority holders.³⁴⁴ This information will allow state PUCs to monitor paid priority requests and take action to protect public safety and the reliability of utility services. States and ISOs should also examine whether energy market participant paid priority deals or offerings, including those through affiliated company deals with aggregators, are consistent with energy market rules.

B. Risky Business: SEC Rules Require Firms to Disclose Significant Risks to Operations Including Cybersecurity Risks

This Article contends that publicly-traded companies that rely on the Internet for their operations including energy utilities must report in their SEC disclosures the increased risk of ISP gatekeeping behavior from the FCC’s repeal of net neutrality rules and the limited reasonable network management exception. For firms highly dependent on the Internet, ISP disruptions or delays may constitute “significant factors that make the offering speculative or risky” under Item 503, triggering SEC reporting requirements.³⁴⁵ The “sufficiency of Item 503(c) disclosures generally tracks the materiality standard under Section 10(b) of the Securities Act.”³⁴⁶ “Disclosure is fundamental to the intersection of securities law and cybersecurity as

344. CPUC § 313 (“The commission may require, by order served on any public utility, the production within this State at such time and place as it designates, of any books, accounts, papers, or records kept by the public utility in any office or place without this State, or, at its option, verified copies in lieu thereof, so that an examination thereof may be made by the commission or under its direction.”).

345. 17 C.F.R. § 229.503(c).

346. *Plymouth Cty. Ret. Ass’n v. Primo Water Corp.*, 966 F. Supp. 2d 525, 561 (M.D.N.C. 2013) (citing *City of Roseville Emp. Ret. Sys. v. EnergySolutions, Inc.*, 814 F. Supp. 2d 395, 426 (S.D.N.Y.2011)).

investors depend on the transparency disclosures provide to make investment decisions.”³⁴⁷

ISP-induced delays resulting from the FCC’s *Internet Freedom* Order may also constitute a reportable cybersecurity risk under Item 503(c). SEC cybersecurity risk reporting guidelines recognize cyber acts that deliberately slow business operations as reportable.³⁴⁸

Some corporations have recognized and discussed the risk of net neutrality repeal in their SEC filings. In the *Internet Freedom* Docket the Benton Foundation filed its 2017 review of SEC filings reporting that 26 companies expressed concerns about the risks of ISP gatekeeping behavior to their operation.³⁴⁹ Among those reporting risks to business operations if net neutrality rules were repealed was APX Group Holdings, Inc., a large smart home and security product and services company which operates under the brand name Vivint.³⁵⁰ APX uses the Internet to offer home energy management, and reported in its December 31, 2016 10-K:

Our operations depend upon third-party cellular and other telecommunications providers to communicate signals to and from our subscribers in a timely, cost-efficient and consistent manner. The failure of one or more of these providers to transmit and communicate signals in a timely manner could affect our ability to provide services to our subscribers. There can be no assurance that third-party telecommunications providers and signal-processing centers will continue to transmit and communicate signals to or from our third-party providers and the monitoring stations without disruption. Any such disruption, particularly one of a prolonged duration, could have a material adverse effect on our business.³⁵¹

APX’s March 2018 10-K explained that its services “are accessed through the Internet and our security monitoring services are increasingly delivered using Internet technologies,” while Vivint’s “distributed cloud storage solution . . . is dependent upon Internet services for shared storage.”³⁵² Failure to timely transmit internet signals harms not only APX’s security and home

347. Dustin Mauck & Kornel Rady, *Cybersecurity Meets Securities: What Should Be Done*, 45 No. 3 SEC. REG. L.J. art. 3 (Fall 2017).

348. *Id.*

349. Benton Foundation, Notice of *Ex Parte*, Nov. 17, 2017 (WC 17-108) (Attaching memo containing research of SEC filings conducted by Jaime Petenko, Associate, Institute for Technology Law & Policy at Georgetown Law), <https://www.fcc.gov/ecfs/filing/11171233430900>.

350. APX Group Holdings Inc., Investor Relations (Operating under the brand name Vivint. “Vivint is a leading provider of smart home technology. Vivint delivers services through a cloud-based platform that integrates a wide range of wireless features and components to provide simple, affordable home security, energy management and home automation”), <http://investors.vivint.com/press-releases/press-release-details/2016/Dec-APX-Group-Holdings-Inc-to-Present-at-the-Imperial-Capital-2016-Security-Investor-Conference/default.aspx> [<https://perma.cc/EAG9-32Z4>].

351. *APX Dec. 2016 10-K*, *supra* note 243, at 16.

352. *APX March 2018 10-K*, *supra* note 245, at 20.

energy business and electric grid reliability; it also puts at risk APX subscriber safety.

APX’s December 2016 10-K discusses risks that some broadband providers may take actions such as “degrading the quality of the data packets we transmit over their lines, giving those packets low priority, giving other packets higher priority than ours, blocking our packets entirely or attempting to charge their customers more for using our services or terminating the customer’s contract.”³⁵³ APX’s March 2018 10-K warned:

Some providers of broadband access may take measures that affect their customers’ ability to use these products and services, such as degrading the quality of the data packets we transmit over their lines, giving those packets low priority, giving other packets higher priority than ours, blocking our packets entirely or attempting to charge their customers more for using our services or terminating the customer’s contract.³⁵⁴

The FCC’s *Internet Freedom Order* allows ISPs to engage in the precise conduct APX identified as a material risk. SEC reports must reflect this increased risk.

Buying paid priority is insufficient to mitigate risks. To ensure Internet traffic is not delayed, firms would also have to pay *every* ISP that provides service to its customers, suppliers, regulators, and others in its business and regulatory chain. Those steps may not cover all incoming and outgoing Internet traffic. The FCC’s Order does not mention the transaction costs of negotiating paid priority deals.³⁵⁵ Neither did the FCC calculate paid priority costs for Internet users. Nor did the FCC discuss the costs and consequences of delayed or stymied transmissions for those without priority. Failure to consider important aspects of these problems or to explain its analysis of these costs and consequences violates the APA.³⁵⁶

Firms should evaluate the business and operational risks, SEC reporting obligations, and regulatory duties the FCC’s *Internet Freedom Order* creates. My June 2018 review of the Edgar database of SEC filings found several companies that reported concerns about operational risks raised by the

353. APX Dec. 2016 10-K, *supra* note 243, at 16.

354. APX March 2018 10-K, *supra* note 245, at 20.

355. Sandoval, *Internet Freedom Reply Comments*, *supra* note 4, at 50.

356. *Motor Vehicle Mfrs. Ass’n v. State Farm*, 463 U.S. at 43 (“An action is arbitrary and capricious “if the agency. . . entirely failed to consider an aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.”).

repeal of net neutrality.³⁵⁷ That June 2018 Edgar search of the Utility and Transportation Sector Industrial Code found no SEC filings by electric, natural gas, or water utilities discussing concerns about net neutrality repeal. Neither PG&E, nor SCE, nor SDG&E, major electric IOUs that serve California, filed SEC disclosures listing the operational, investment, and cybersecurity risk arising from net neutrality's repeal. Firms facing increased risks due to the *Internet Freedom* Order including energy, water, and communications utilities and regulated entities, should include those risks in their SEC filings.

This Article recommends that firms for whom the Internet is integral to its business (a category which includes small businesses such as hairdressers to large investor-owned or municipal utilities), should object to Congress, the states, and in court proceedings about the FCC's lack of consideration of the risks to business operations and cybersecurity that depend on the open Internet. Such firms should also support state and federal legislation to restore enforceable net neutrality rules. While the U.S. Senate passed Senate Joint Resolution 52 on May 16, 2018 to use the Congressional Review Act to restore net neutrality by repealing the FCC's *Internet Freedom* Order, the House has not brought that resolution to the floor for a vote.³⁵⁸ The legal uncertainty about net neutrality exposes firms, families, institutions, critical infrastructure, and democracy to risks that require SEC disclosures and merit action to protect the Internet and Internet users.

357. See, e.g., U.S. SECURITIES AND EXCHANGE COMMISSION, RESEARCHING PUBLIC COMPANIES THROUGH EDGAR: A GUIDE FOR INVESTORS, <https://www.sec.gov/edgar/searchedgar/webusers.htm> [<https://perma.cc/E3FX-CPNL>]. DocuSign Inc. (Form 10-Q) (filed June 8, 2018), at 45, <https://seekingalpha.com/filings/pdf/12805767.pdf> [<https://perma.cc/2XCT-359A>] (“To the extent network operators attempt to interfere with our services, extract fees from us to deliver our solution or otherwise engage in discriminatory practices, our business could be adversely impacted. With such a regulatory environment, we could experience discriminatory or anti-competitive practices that impede our domestic and international growth, cause us to incur additional expense or otherwise negatively affect our business.”); Roku Inc. (Form 10-Q) 46 (May 11, 2018), <https://ir.roku.com/node/7141/html> [<https://perma.cc/NX6L-86KY>] (“To the extent the courts or the agencies do not uphold or adopt sufficient safeguards to protect against discriminatory conduct, network operators may seek to extract fees from us or our content publishers to deliver our traffic or otherwise engage in blocking, throttling or other discriminatory practices, and our business could be harmed.”).

358. S.J. Res. 52, A joint resolution providing for congressional disapproval under chapter 8 of title 5, United States Code, of the rule submitted by the Federal Communications Commission related to “Restoring *Internet Freedom*,” Congress.gov (as passed by Senate, May 16, 2018, pending in the House), <https://www.congress.gov/bill/115th-congress/senate-joint-resolution/52> [<https://perma.cc/C6QG-JUDE>].

*C. APA Deficiencies Merit Freedom Order’s Vacatur
and Remand for a New Proceeding to Protect
the Open Internet*

Several State Attorneys General and public interest organizations announced their intent to file suit to challenge the FCC’s net neutrality repeal decision as legally deficient, and have since filed along with other government and public interest petitioners.³⁵⁹ This Article argues that the FCC’s failure to consider the effects of net neutrality repeal on the energy reliability, safety, costs, and the environment, and its failure to consider critical infrastructure cyber security, safety, and operational concerns is arbitrary and capricious under the APA.³⁶⁰ The FCC’s order failed to discuss consequences of paid priority for other users beyond glib consideration of projections that delay would not “typically” be experienced for email, software updates, and cached video.³⁶¹ This is insufficient analysis under the APA, which requires consideration and discussion of important issues.³⁶² “An arbitrary and capricious regulation of this sort is itself unlawful and receives no *Chevron* deference.”³⁶³

The submission of comments that allegedly used identity theft to advocate a position in the *Internet Freedom* Docket criminally hijacks democratic decision-making tools.³⁶⁴ My August 2017 remarks to the Conference of Western Attorneys General and my Reply Comments filed that month urged FCC, state, and federal investigations into the identity theft and false filing allegations perpetrated in the FCC *Internet Freedom* Proceeding.³⁶⁵ The New York Attorney General’s Office reported in December 2017 that “as many as two million comments misused the identities of real Americans, including over 100,000 comments per state from New York, Florida, Texas,

359. Finley, *supra* note 331.

360. Motor Vehicle Mfrs. Ass’n v. State Farm, 463 U.S. at 43.

361. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 258 (citing AT&T Comments at 44-45).

362. Cal. v. FCC, 4 F.3d 1505, 1511 (9th Cir. 1993); Anglers of the Au Sable v. U.S. Forest Serv., 565 F. Supp. 2d 812, 816 (E.D. Mich. 2008) (“The Forest Service’s failure to consider important aspects of the problem before approving [exploratory gas and oil] drilling [on a parcel of land within a nation forest] constitutes arbitrary and capricious agency action in violation of the Administrative Procedures Act.”).

363. Encino Motorcars, LLC v. Navarro, 136 S. Ct. at 2126 (citing United States v. Mead Corp., 533 U.S. at 227).

364. See Sandoval, *Internet Freedom Reply Comments*, *supra* note 4, at 13.

365. See Conference of Western Attorneys General, Speaker, Panel on FCC and Internet Regulation, Aug. 17, 2017, <https://meetings.cwagweb.org/wp-content/uploads/2017/07/AGENDA-Master-7.26.2017.pdf> [<https://perma.cc/JNR4-UM3J>].

and California.”³⁶⁶ The New York AG’s Office created tools that continue to identify false comments filed in the FCC’s *Internet Freedom* Docket.³⁶⁷

The FCC’s tolerance of false filings based on identity theft fails the most basic tenants of fairness required by the APA. The D.C. Circuit in *Prometheus Radio Project v. FCC*, found that irregularities in the procedural conduct of an FCC rulemaking constituted arbitrary and capricious decision-making in violation of the APA.³⁶⁸ The FCC’s conduct of the *Internet Freedom* Rulemaking exceeds the procedural irregularities of *Prometheus* by countenancing criminal behavior in the comment process. The FCC’s apparent tolerance of criminal conduct in this proceeding demonstrates “willful and unreasoning disregard of the facts and circumstances,” and arbitrary and capricious decision-making in violation of the APA.³⁶⁹

The FCC’s 2018 Open Internet Order asserts that the Commission complied with the APA’s obligation to adequately consider “important aspect[s] of the problem,”³⁷⁰ consider all “relevant matter” received, and to “reasonably respond to those comments that raise significant problems.”³⁷¹ This Article contends that the FCC did not consider “important aspect[s] of the problem” including the range of consequences of paid priority delays for other Internet users and uses such as energy management and public safety.³⁷²

366. Office of Attorney General Barbara G. Underwood, State of New York, A.G. Schneiderman Releases New Details on Investigation Into Fake Net Neutrality Comments, Dec. 13, 2017, <https://ag.ny.gov/press-release/ag-schneiderman-releases-new-details-investigation-fake-net-neutrality-comments> [<https://perma.cc/26WV-UNTD>].

367. *Id.* (reporting that as of December 13, 2017 “over 5,000 people have filed reports with the Attorney General’s office regarding identities used to submit fake comments to the Federal Communications Commission on the repeal of net neutrality, on which the FCC is scheduled to vote tomorrow, December 14, 2017. People can check whether their identity was misused and report it to the Attorney General’s office at ag.ny.gov/FakeComments.”).

368. 652 F.3d 431, 450 (3d Cir. 2011).

369. Office of Comm’n of United Church of Christ v. FCC, 425 F.2d 543, 547 (D.C. Cir. 1969), available at <https://www.leagle.com/decision/1969968425f2d5431836> [<https://perma.cc/C7L8-9AVF>].

370. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 344 (*citing* Motor Vehicle Mfrs. Ass’n v. State Farm, 463 U.S. at 43).

371. *Id.* (*citing* Vt. Pub. Serv. Bd. v. FCC, 661 F.3d 54, 63 (D.C. Cir. 2011) (refusing to credit a three-sentence comment with no supporting evidence); North Carolina v. FAA, 957 F.2d 1125, 1135 (4th Cir. 1992) (noting an agency “need not respond to every comment”); Vt. Yankee Nuclear Power Corp. v. Nat. Res. Def. Council, 435 U.S. 519, 553 (1978) (“[C]omments must be significant enough to step over a threshold requirement of materiality before any lack of consideration becomes of concern.”); Nat’l Ass’n of Mfr. v. EPA, 650 F.3d 921 (D.C. Cir. 2014) (noting an agency needs to address only “the more significant comments”).

372. Nuvio Corp. v. FCC, 473 F.3d 302, 307 (D.C. Cir. 2006) (“The Commission is required to consider public safety by both its enabling act. See Communications Act of 1934 § 1, 47 U.S.C. § 151 ... and the Wireless Communications and Public Safety Act of 1999 § 3, 47 U.S.C. § 615”); Public Citizen v. Fed. Motor Carrier Safety Admin., 374 F.3d

The FCC’s Order does not provide any systematic analysis of public comment filed as Express Comments, or address the identity theft allegations in the comments filed in this proceeding. The FCC Order states the “Commission focused its review of the record on the submitted comments that bear substantively on the legal and public policy consequences of the actions we take today.”³⁷³ The FCC notes “it appears that 7.5 million identical one-sentence comments were submitted from about 45,000 unique e-mail addresses, all generated by a single fake e-mail generator website. Moreover, we received over 400,000 comments supporting Internet regulation that purported to be from the same mailing address in Russia.”³⁷⁴ The FCC contends its “decision to restore *Internet Freedom* did not rely on comments devoid of substance, or the thousands of identical or nearly identical non-substantive comments that simply convey support or opposition to the proposals in the *Internet Freedom NPRM*.”³⁷⁵

The Order reports in a footnote that “the Commission devoted substantial resources to a review and evaluation of the content of the approximately 23 million express comments filed in this proceeding, which are shorter submissions that are made directly into a web form and do not require supporting file attachments.”³⁷⁶ The FCC reports that “Staff individually analyzed distinct form comments and standard or unique comments for substantive issues, and developed a systematic process for review of the non-form, non-standard comments, consistent with the recommendations of the Administrative Conference of the United States.”³⁷⁷ The Order contains few citations to comments filed by individuals through the Express Comment portal.³⁷⁸ The Order provides no synopsis of the staff analysis of the comments.

The FCC created the “Express Comment” category to make it easy to file short comments, but neither its web site nor the *Internet Freedom NPRM* indicate that express comments will be treated differently than other comments

1209, 1216 (D.C. Cir. 2004) (“the final rule is arbitrary and capricious because the agency neglected to consider a statutorily mandated factor.”).

373. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 344.

374. *Id.* at n.1178.

375. *Id.* at ¶ 344.

376. *Id.* at n.1182.

377. *Id.*

378. See e.g. *id.*, *supra* note 176 (rejecting commenters’ assertions that the primary function of ISPs is to simply transfer packets and not process information, citing comments including Harold Hallikainen Comments at 1; Ryan Blake Comments at 1–2).

filed in the proceeding.³⁷⁹ The FCC did not cite or discuss any of the 1,835 Express Comments containing the text “lack of competition.”³⁸⁰ Some of those comments contest the basis for the FCC’s conclusion that “in this industry, even two active suppliers in a location can be consistent with a noticeable degree of competition, and in any case, can be expected to produce more efficient outcomes than any regulated alternative.”³⁸¹

The FCC’s *Internet Freedom* Order contends that it has complied with APA obligations to “reasonably respond to those comments that raise significant problems.”³⁸² The FCC’s conclusion cites the Supreme Court’s decision in *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council* which requires that under the National Environmental Policy Act (NEPA) “comments must be significant enough to step over a threshold requirement of materiality before any lack of consideration becomes of concern.”³⁸³ *Vermont Yankee* interpreted the “threshold test” under NEPA that “places upon an agency the obligation to consider every significant aspect of the environmental impact of a proposed action.”³⁸⁴ *Vermont Yankee* did not establish a “threshold requirement of materiality” for consideration of comments under the APA.

The FCC’s disregard of the vast majority of public comments filed as “Express Comments” does not cure the identity theft and false comment infection of its proceeding.³⁸⁵ The statute governing federal rulemaking, 5 U.S.C. 553, requires the agency to seek and take public comment into account, and explain its reasoning relevant to those comments,³⁸⁶ not to treat the

379. See Sandoval, *Internet Freedom Reply Comments*, *supra* note 4, at 21 (“The FCC cannot now change its policy *sub silentio* and wholesale discount comments filed through the Express Comment portal or ignore the allegations of identity theft and false filings being committed in the FCC proceeding through the FCC record and comment filing system.”).

380. ECFS Search for filings with the term in full text “lack of competition,” for Rulemaking 17-108, conducted on Feb. 18, 2018, https://www.fcc.gov/ecfs/search/filings?proceedings_name=17-108&q=%22lack%20of%20competition%22&sort=date_disseminated,DESC [<https://perma.cc/TE9K-CHAP>].

381. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 126.

382. *Id.* at ¶ 344, n.1177.

383. *Id.* (citing *Vt. Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. at 553).

384. *Id.*

385. The FCC created the “Express Comment” category to make it easy to file short comments, but neither its web site nor the *Internet Freedom* NPRM indicate that express comments will be treated different than other comments filed in the proceeding. See Sandoval, *Internet Freedom Reply Comments*, *supra* note 4, at 21.

386. *Perez v. Mortgage Bankers Ass’n*, 135 S. Ct. 1199, 1203 (2015) (“An agency must consider and respond to significant comments received during the period for comment.” (citing *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 416 (1971)); *Int’l Snowmobile Mfrs. Ass’n v. Norton*, 340 F. Supp. 2d 1249, 1265 (D. Wyo. 2004) (vacating the Record of Decision of the National Park Service’s Final Environmental Impact report regarding a snowmobile ban in Yellowstone and Grand Teton National Parks finding that “a predetermined political decision that did not seriously consider public

public like an “interloper.”³⁸⁷ The FCC may not dismiss or diminish public comment in its rulemaking by according public comment little weight or analysis, and failing to analyze allegations of criminal manipulation of the public comment process.³⁸⁸

The FCC “reject[ed] calls to delay adoption of this Order out of concerns that certain non-substantive comments (on which the Commission did not rely) may have been submitted under multiple different names or allegedly ‘fake’ names.”³⁸⁹ The FCC’s *Internet Freedom* Order does not discuss the allegations, including those my Reply Comments raised, that some of those comments are not merely “fake,” but were allegedly based on identity theft.³⁹⁰

The FCC cites *Vermont Yankee* for its contention that the “Commission is under no legal obligation to adopt any ‘procedural devices beyond what the APA requires, such as identity-verification procedures.’”³⁹¹ The Court in *Vermont Yankee* rejected the contention that procedural devices such as a formal hearing were necessary under the APA or NERA.³⁹² The holding that NEPA does not require a formal hearing is inapposite to the steps necessary to insure the integrity of the notice and comment rulemaking process.

The FCC’s 2018 Order stated that “the Commission has previously decided not to apply its internal rules regarding false statements in the rulemaking context because we do not want “to hinder full and robust public participation in such policymaking proceedings by encouraging collateral wrangling

comments and performed mere *pro forma* compliance with NEPA [National Environmental Protection Act]” and that the agency ignored the “purposes and procedures of NEPA and the APA.”).

387. See *supra* note 370, at 546.

388. *Perez v. Mortg. Bankers Ass’n*, 135 S. Ct. at 1203; Sandoval, *Internet Freedom Reply Comments*, *supra* note 4, at 17.

389. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 345 (citing *see, e.g.*, Brian Fung, *FCC net neutrality process ‘corrupted’ by fake comments and vanishing consumer complaints, officials say*, WASH. POST (Nov. 24, 2017), https://www.washingtonpost.com/news/the-switch/wp/2017/11/24/fcc-net-neutrality-process-corrupted-by-fake-comments-and-vanishing-consumer-complaints-officials-say/?utm_term=.a39fdc7b0318 [<https://perma.cc/HZ7S-76GH>]).

390. Sandoval, *Internet Freedom Reply Comments*, *supra* note 4, at 1–3, 6–25, 58.

391. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 345, n.1180 (citing *Vermont Yankee*, 435 U.S. 519, 548); *cf.* Sandoval, *Internet Freedom Reply Comments*, *supra* note 4, at 9–10 (recommending that the FCC comment filing system should “display a note informing filers that submission constitutes the filer’s certification under penalty of perjury that the filer is authorized to submit the material on behalf of the named commenter.”).

392. *Vermont Yankee*, 435 U.S. 519, 529, 548.

over the truthfulness of the parties' statements."³⁹³ The *Internet Freedom NPRM* provided no notice that the FCC intended to apply this standard to the *Internet Freedom Rulemaking*. Neither did it examine whether this standard should be adjusted in light of the bot filings the FCC allows.³⁹⁴

The FCC anticipated in 2003 that “[w]e do not see rulemakings of general applicability and declaratory rulings as raising enforcement issues of the same urgency” as adjudicatory and investigatory proceedings.³⁹⁵ “While we expect parties to be truthful in rulemakings and declaratory ruling proceedings,” the FCC commented, “we are mindful that such proceedings typically involve wide-ranging discussions of general policy rather than specific facts to be weighed in an adjudicatory manner.”³⁹⁶

The FCC’s 2003 ruling did not anticipate false filings allegedly made by impersonating others. Such criminal conduct, and the FCC’s blind eye to corrosive impact of allegedly falsified comments based on identity theft, achieves the opposite of the FCC’s stated goal of “full and robust public participation.”³⁹⁷

Federal Rulemaking under 47 U.S.C. § 553(c) requires that “the agency shall give interested persons an opportunity to participate in the rulemaking through submission of written data, views, or arguments with or without opportunity for oral presentation.”³⁹⁸ The notice-and-comment rulemaking statute, 47 U.S.C. § 553(c), does not provide a license to file comments by purloining other people’s identities.³⁹⁹ Neither does the rulemaking statute or the APA allow the agency to ignore such conduct which distorts the administrative record before the court, the agency, Congress, and the public.

The FCC has taken no public steps to separate out false from authentic comments, and cannot create a record with integrity as required by the APA “without analyzing which [comments] are false and which are authentic, and who is behind the manipulation of the FCC’s decision-making process.”⁴⁰⁰

393. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 345, n.1181 (citing *Amendment of Section 1.17 of the Commission’s Rules Concerning Truthful Statements to Commission*, citing GN Docket No. 02-37, Report and Order, 18 FCC Rcd 4016, 4021–22, ¶ 13 (2003)); 47 CFR § 1.17.).

394. See *Nat. Res. Def. Council, Inc. v. EPA*, 822 F.2d 104, 121 (D.C. Cir. 1987) (“It is, of course, elementary in our law that rulemaking requires notice sufficient to ‘fairly apprise interested persons of the ‘subjects and issues’ before the Agency.”). Cf. *In Matter of Restoring Internet Freedom*, Notice of Proposed Rulemaking, 32 F.C.C. Rcd. 4434, ¶¶ 120–122 (2017) (describing Comment Filing Procedures but making no reference to a proposal not to apply the truthfulness standard of 47 CFR § 1.17, or the 2003 decision in 18 FCC Rcd 4016).

395. GN Docket No. 02-37, Report and Order, 18 FCC Rcd 4016, 4021–22, ¶ 13 (2003).

396. *Id.*

397. FCC, *Internet Freedom Order*, *supra* note 7, at ¶ 345, n.1181.

398. *Prometheus Radio Project v. FCC*, 652 F.3d at 449 (citing 47 U.S.C. § 553(c)).

399. *Id.* at 17.

400. Sandoval, *Internet Freedom Reply Comments*, *supra* note 4, at 20.

“False filings based on identity theft hack the tools of democratic decision-making for an ulterior motive,” my Reply Comments emphasized.⁴⁰¹ The FCC’s *Internet Freedom* Proceeding flunks the APA.

The D.C. Circuit recognized that “when the Commission commits legal error, the proper remedy is one that puts the parties in the position they would have been in had the error not been made.”⁴⁰² In light of the seriousness of the FCC’s APA errors, vacatur is warranted.⁴⁰³

IX. CONCLUSION

This Article explores an overlooked topic in academic and policy debates about net neutrality: the importance of an open and neutral Internet to electric reliability, safety, cost reduction, and harnessing competitive energy sources including renewables that reduce the energy sector’s GHG and carbon emissions. A decade of Smart Grid investments embedded communications and information technology and services including the open Internet throughout the distributed energy ecosystem. These investments unlocked energy resources such as demand response and DERS located at customer households, businesses, and a variety of locations. The distributed nature of critical infrastructure sectors such as energy, water, health care, underscore the need for open and neutral Internet access for all American businesses, families, and institutions.

The FCC *Internet Freedom* Order’s decision to allow ISPs to manage the Internet in their business interest, remove legally enforceable prohibitions against ISP blocking and throttling, allow paid priority even if it degrades other users and uses, and permit ISPs to collect revenues from any content provider, constitute cyber security threats to critical infrastructure under CIPA.⁴⁰⁴ The FCC’s failure to consider the consequences of its net neutrality repeal decision for critical infrastructure, national security, the environment,

401. *Id.* at 13.

402. *AT&T Corp. v. FCC*, 448 F.3d 426, 433 (D.C. Cir. 2006) (citing *Exxon Co. v. FERC*, 182 F.3d 30 (D.C. Cir. 1999) (quoting *Pub. Util. Comm’n of Cal. v. FERC*, 988 F.2d 154, 168 (D.C. Cir. 1993)).

403. *Fox Television Stations, Inc. v. FCC*, 280 F.3d at 1048 (citing *Allied-Signal, Inc. v. Nuclear Regulatory Comm’n*, 988 F.2d at 150–51 (“The decision whether to depends on the seriousness of the order’s deficiencies (and thus the extent of doubt whether the agency chose correctly) and the disruptive consequences of an interim change that may itself be changed.”)).

404. *See* 42 U.S.C.A. § 5195c.

public safety, freedom of expression, and democracy constitutes arbitrary and capricious decision-making in violation of the APA.⁴⁰⁵

The FCC's unfathomable tolerance of identity theft in its proceeding, delayed investigation, and other irregularities in its comment process constitute grounds for vacating the FCC's Order.⁴⁰⁶ The *Internet Freedom Order's* failure to discuss public comment filed through the Express Comment process manifests the FCC's apparent plan to ignore the millions of Americans who submitted comment in this proceeding. The FCC's conduct demonstrates "willful and unreasoning disregard of the facts and circumstances."⁴⁰⁷ This is the worst FCC comment process I have witness in my nearly twenty-five years of practice in this field. The FCC's inexcusably poor comment process and dismissive attitude toward public comment disrespects the public, abrogates the FCC's duties under the Communications Act, and constitutes arbitrary and capricious decision-making in violation of the APA.⁴⁰⁸

Critical infrastructure sector participants and regulators including state PUCs, FERC, local, and tribal governments should support the repeal of the *Internet Freedom Decision* to ensure that ISPs are not able to exercise their gatekeeper power over the Internet. States, state PUCs, municipal utility regulators, local and tribal governments, as well as FERC should use their jurisdiction to ensure that ISP conduct does not compromise public safety, energy reliability, safe utility operations, just and reasonable utility rates, and the environment.

Firms with SEC reporting obligations whose business materially depends on the Internet must inform investors under Item 503(c) about the increased risks including cyber security risks the FCC's *Internet Freedom Order* poses for their operations. Those firms should also support state and federal legislation to restore enforceable net neutrality rules as the FCC failed to fully consider the repeal Order's risks to American business and the economy.

Congress Member Blackburn introduced a bill to codify a ban on ISP blocking and throttling, but her bill allows paid priority and preempts any state net neutrality laws such as those introduced in California and

405. *Motor Vehicle Mfrs. Ass'n, Inc. v. State Farm*, 463 U.S. at 43; *Cal. v. FCC*, 4 F.3d at 1511; *Anglers of the Au Sable v. U.S. Forest Service*, 565 F. Supp. 2d at 816 ("The Forest Service's failure to consider important aspects of the problem before approving [exploratory gas and oil] drilling [on a parcel of land within a nation forest] constitutes arbitrary and capricious agency action in violation of the Administrative Procedures Act.").

406. *See Fox Television Stations, Inc. v. FCC*, 280 F.3d at 1048; *Prometheus Radio Project v. FCC*, 652 F.3d at 450.

407. *Office of Commc'n of United Church of Christ v. FCC*, 425 F.2d at 547.

408. *Prometheus Radio Project v. FCC*, 652 F.3d at 450; *Office of Commc'n of United Church of Christ v. FCC*, 425 F.2d at 547.

Washington.⁴⁰⁹ The Internet Association, a coalition that includes Amazon, Google, Microsoft, and other companies, opposed the bill stating, “The proposal circulated today does not meet the criteria for basic net neutrality protections.”⁴¹⁰ Congress is unlikely to pass a bill on net neutrality in this session. Under the current structure of the Communications Act, only classification of ISPs under Title II can be used to prohibit ISP discriminatory conduct such as blocking, throttling, and paid priority.⁴¹¹

More than a decade ago Susan Crawford argued for the need “to reframe communications law to support what matters.”⁴¹² “What matters are communications themselves, and the increasingly diverse and valuable ideas they produce,” Professor Crawford argued.⁴¹³ In 2018, energy sector Internet-based communications between people and things supports innovation, research, competition, energy reliability, public safety, just and reasonable rates, and environmental protection. A user-centric principle of Internet governance that considers the needs of critical infrastructure sectors and the public they serve is necessary to protect America’s economy, national security, public safety, environment, and democracy. Legally enforceable net neutrality rules grounded in Title II of the Communications Act prevent ISP gatekeeping behavior. Net neutrality powers energy and forestalls climate change, and merits continued support.

409. Adi Robertson, *The Republican Net Neutrality Bill Doesn’t Save Net Neutrality*, THE VERGE, Dec. 19, 2017, <https://www.theverge.com/2017/12/19/16797778/congress-open-internet-preservation-act-marsha-blackburn-net-neutrality-bill> [<https://perma.cc/2BA8-FY28>].

410. *Id.*

411. *Verizon v. FCC*, 740 F.3d at 659.

412. Susan P. Crawford, *The Internet and the Project of Communications Law*, 55 UCLA L. REV. 359, 407 (2007).

413. *Id.*

