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November 8, 2017

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Room 1-A209
Washington, D.C. 20426

Re: Docket No. RM18-1-000 – Grid Reliability and Resilience Pricing.

Dear Secretary Bose:

Attached please find my Reply Comments submitted in my individual capacity as a Law Professor at Santa Clara University School of Law. I teach Energy Law, Communications Law, Antitrust Law, and Contracts, and served a six-year term as a Commissioner of the California Public Utilities Commission from January 2011-January 2017. Due to Internet access issues these comments were filed in the early morning hours of November 8, 2017. I would appreciate your acceptance and consideration of these Reply Comments.

Sincerely,

///Catherine Sandoval//

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**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Grid Reliability and)
Resilience Pricing)

Docket No. RM18-1-000

**COMMENTS OF PROFESSOR CATHERINE J.K. SANDOVAL, ASSOCIATE
PROFESSOR, SANTA CLARA UNIVERSITY SCHOOL OF LAW,
COMMISSIONER EMERITUS, CALIFORNIA PUBLIC UTILITIES COMMISSION
(JANUARY 2011-JANUARY 2017)**

Submitted via Electronic Filing,
November 8, 2017

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(JANUARY 2011-JANUARY 2017)¹**

Submitted via Electronic Filing,
November 8, 2017

I. FERC Grid Resiliency and Reliability NOPR Fails the Federal Power Act’s Requirement that FERC Promote Just and Reasonable Rates, and the Administrative Procedures Act

These Reply Comments are filed in my individual capacity as a tenured Law Professor at Santa Clara University School of Law where I teach and conduct research on Energy Law, Communications Law, Antitrust Law, and Contracts. I served a six-year term as a Commissioner of the California Public Utilities Commission from January 2011 to January 2017, appointed by Governor Brown and unanimously confirmed by the California State Senate. I authored and voted on many decisions to promote electric grid reliability, just and reasonable rates, public safety, and protect the environment during my term as a CPUC Commissioner. I submit these reply comments in opposition to the Notice of Proposed Rulemaking (NOPR) in FERC Docket No. RM18–1–000, published October 10, 2017 seeking comment on a Grid Resiliency Pricing Rule “to ensure that certain reliability and resilience attributes of electric

¹ Professor Catherine Sandoval is a tenured Associate Professor at Santa Clara University School of Law in Santa Clara, California where she teaches and conducts research on Energy Law, Communications Law, Antitrust Law, and Contracts. She served a six-year term as a Commission of the California Public Utilities Commission from January 2011-January 2017, and was appointed to that post by Governor Edmund G. Brown, Jr., and unanimously confirmed by the California State Senate.

generation resources are fully valued.”² I file this Reply Comments as an individual and have received no compensation for preparing or filing these comments, apart from my ordinary salary as a Law Professor.

FERC’s Grid Resiliency Pricing Rule NOPR [hereinafter *Grid Resiliency NOPR*] contends that a tariff to compensate the “full cost” of certain types of generation with 90-days fuel on hand is merited based on its unsupported assertion that:

“The resiliency of the nation’s electric grid is threatened by the premature retirements of power plants that can 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. These fuel-secure resources are indispensable for the reliability and resiliency of our electric grid—and therefore indispensable for our economic and national security.”³

The NOPR does not define what it characterizes as “premature retirements,” nor does it provide factual support for its assertion that any such retirements merit a nation-wide tariff proposed in the NOPR. Neither does it provide any analysis to show that such plants have superior capability to withstand fuel supply disruptions or to contribute to electric reliability. The NOPR characterizes coal-fired and nuclear power plants as “fuel secure” plants, many of which have been retired or are forecasted to retire,⁴ but offers no any analysis to support its classification of such plants as “fuel secure.”

As discussed in Section II and III *infra*, the failure to offer any analysis of the factual basis for alleging that “premature retirements” of certain types of plants threaten reliability, or to analyze the effect of its proposal on FERC’s duty under the Federal Power Act (FPA) to promulgate just and reasonable rates fails both the FPA and the Administrative Procedures Act. The *Grid Resiliency NOPR* offers no reasoned analysis to support the rationale for the drastic

² FERC, *Grid Resiliency Pricing Rule, NOPR*, 18 CFR Pt. 35, Federal Register, Vol. 82, No. 194, 46940, (Docket No. RM18–1–000) Oct. 10, 2017 [hereinafter *FERC, Grid Resiliency Pricing Rule, NOPR*].

³ *Id.* at 46941.

⁴ *Id.* at 46942.

actions it proposes that would upend market-based pricing, usurp state responsibility for electric generation resources for retail service, and ignores state environmental and reliability laws.

FERC's NOPR ignores relevant evidence including California's experience in maintaining electric reliability despite the outage of the San Onofre Nuclear Power Generating Station (SONGs) commencing in 2012, the effect of the Polar Vortex on California's energy market as gas flowed back east in February 2014, and California's success in avoiding electricity shortages while the Aliso Canyon Natural Gas storage field was unavailable from November 2015 through August 2017. Each of these incidents occurred during my term as a CPUC Commissioner, and my colleagues and I worked with CAISO, the California Energy Commission, and others to maintain electric reliability in California. We were successful in increasing electric reliability as California phased out reliance on coal-fired plants, increased the number of renewable energy resources including demand response and energy efficiency, and integrated these resources into a Internet-enabled Smart Grid that increased flexibility and unlocked new power. In 2016 PG&E submitted a proposal currently under consideration by the CPUC to retire California's remaining operating nuclear power plant at Diablo Canyon. PG&E argues that flexible resources are needed to meet California's energy resource needs, not a large, inflexible baseload nuclear plant. FERC's *Grid Resiliency NOPR* is deficient under the FPA and the APA in considering none of these issues or alternatives to its proposal.

California has increased its renewable generation resources since the California Energy Crisis Period of 2000-2001 when the state suffered blackouts and high prices due to market manipulation, poor rules and flawed market design. California adopted a 20% renewable goal under Governor Davis in 2002. In 2015 under Governor Brown California adopted a law requiring that 50% of energy generation come from renewable sources by 2030. California

increased its use of demand response after FERC Order 747 adopted in 2011 authorized demand response participation in FERC wholesale markets where State Commissions such as the CPUC requested that the FERC provide for such demand response programs for their ISOs and RTOs.⁵

Demand response and deployment of distributed energy resources (DERs) including renewables, and many Internet-enabled resources connected in part through the Open Internet to enable quick response to grid operator and Investor-Owned Utility (IOU) signals. These resources, critical to California's reliability, are omitted from mention or consideration in FERC's *Grid Resiliency NOPR*. FERC's *Grid Resiliency NOPR* is deficient under the FPA and the APA for its failure to consider these alternatives or the impact of its proposal on just and reasonable rates, state jurisdiction, and state environmental and reliability laws.

FERC also fails to consider other risks to reliability raised by the Federal Communications Commission's "lead proposal" in its 2017 *Internet Freedom* Notice of Proposed Rulemaking (NPRM) to repeal the basis for enforceable rules and reclassifying Internet Service Providers (ISPs), the entities that provide the gateway to the Internet, as information service providers.⁶ The FCC's NPRM proposes remove the jurisdictional basis and rules that prohibit on ISP blocking, throttling, and paid prioritization adopted under Title II after the D.C. Circuit rejected such restrictions based on an information services classification the FCC adopted in 2010.⁷ An open and neutral internet—net neutrality—is necessary to fulfill federal and state energy regulatory responsibilities and to protect critical infrastructure that provides the foundation for the American economy.⁸

The FCC's Internet Freedom NPRM fails to mention the consequences of the proposed net neutrality repeal for energy or other sectors designated as critical infrastructure.⁹ The NPRM

⁵ CPUC, Comments, Grid Reliability and Resilience Pricing, at 17, Docket No. RM18-1-000.

⁶ Professor Catherine Sandoval, Reply Comments, In the Matter of Restoring Internet Freedom, WC Docket No. 17-108, FCC 17-60, Aug. 30, 2017, ¶ 100 [hereinafter, *Sandoval, Internet Freedom Reply Comments*]

⁷ *Verizon v. FCC, Verizon v. F.C.C.*, 740 F.3d 623 (D.C. Cir. 2014).

⁸ See Zhen Zhang, *Cybersecurity Policy for the Electricity Sector: The First Step to Protecting Our Critical Infrastructure from Cyber Threats*, 19 B.U. J. SCI. & TECH. L. 319, 366 (2013) (citing Presidential Decision Directive 63 (May 22, 1998), <http://www.fas.org/irp/offdocs/pdd/pdd-63.htm>).

⁹ FCC, *In the Matter of Restoring Internet Freedom*, 82 FR 25568, WC Docket No. 17-108, FCC 17-60, Notice of Proposed Rulemaking (rel. May 23, 2017) (hereinafter *Internet Freedom NPRM*).

fails to consider the harm to other Internet users of proposals to repeal rules preventing ISP discrimination and degradation that fails to safeguard other Internet users including the energy ecosystem resulting from ISP deals that further the ISP's business interests.¹⁰

FERC must recognize the risk to reliability the FCC's proposal increases, including the FCC's failure to consider the consequences of its proposals for the energy sector, designated by federal law as critical infrastructure. Internet-enabled resources including demand response have been crucial to reliability in California. The FCC's proposal to allow ISPs to enter into paid prioritization deals even if they degrade energy users— including energy customers who need access to the Open Internet to analyze their energy data and CAISO who conducts bidding wholly through the Open Internet—threatens energy reliability, public safety, and undercuts just and reasonable rates. FERC, state Public Utility Commissions and Public Service Commissions, and electric and natural gas corporations with duties under federal and state law to protect reliability must voice their objection to the FCC's proposal that undercuts reliability and public safety and will likely increase energy costs.

II. FERC Grid Resiliency NOPR Fails the Laws and Standards of the Federal Power Act

The Federal Power Act requires that “[a]ll rates and charges . . . by any public utility for or in connection with the transmission or sale of electric energy . . . and all rules and regulations affecting or pertaining to such rates or charges” must be “just and reasonable” and not “undu[ly] preferen[tial].” 16 U.S.C. § 824d(a), (b). FERC's Grid Resiliency NOPR fails to incorporate a finding of unjust and unreasonable rates under section 206 of the Federal Power Act to support its proposal to adopt a tariff imposing a new rate structure to compensate the types of generation the NOPR characterizes as eligible. This failure violates the FPA and the bedrock concept that FERC regulation of wholesale energy markets is designed to promote just and reasonable rates under Section 206 of the FPA.

¹⁰ *Sandoval, Internet Freedom Reply Comments, supra* note 6.

“Where, as here, the Commission is considering imposing new tariff requirements on public utilities, the Commission must invoke section 206 and prove that existing rates are “unjust, unreasonable, unduly discriminatory or preferential,” and then “determine the just and reasonable rate.” 16 U.S.C. § 824e(a); *see* 16 U.S.C. § 824e(b); *Advanced Energy Mgmt. Alliance v. FERC*, 860 F.3d 656, 662–63 (D.C. Cir. 2017) (under section 206, Commission has “burden to prove the reasonableness of its change” in affirming Commission’s section 206 finding in *PJM Interconnection, LLC*, 151 FERC ¶ 61,208, *order on reh’g*, 155 FERC ¶ 61,157 (2016) (internal quotation omitted)). As the D.C. Circuit has ruled, the Commission “may unilaterally impose a new rate scheme on a utility or Regional Transmission Organization only under [section 206],” *NRG Power Mktg., LLC v. FERC*, 862 F.3d 108, 114 n.2 (D.C. Cir. 2017), and “it will ordinarily be an abuse of the Commission’s discretion not to make the . . . finding [that existing rates are unjust or unreasonable under section 206] explicit.” *Papago Tribal Util. Auth. v. FERC*, 723 F.2d 950, 958 (D.C. Cir. 1983) (Scalia, J.); *see also Maine v. FERC*, 854 F.3d 9, 24-25 (D.C. Cir. 2017) (discussing the Commission’s burden under section 206).”¹¹ “In order to make any change in an existing rate or practice under Section 206 of the Federal Power Act, FERC bears the burden of proof “that the existing rates or practices are unjust, unreasonable, unduly discriminatory or preferential . . . [and] that its proposed changes are just and reasonable.” *PPL Wallingford Energy LLC v. FERC*, 419 F.3d 1194, 1199 (D.C. Cir. 2005) (quoting 16 USC §824e(a)).¹² FERC has been reversed where it failed to meet its “dual burden” under Section 206 to both find an existing rate structure unjust and unreasonable and a

¹¹ Comments of Attorneys General of Massachusetts, California, Connecticut, Illinois, Maryland, North Carolina, Oregon, Rhode Island, Vermont, and Washington, Connecticut Dept. of Energy and Environmental Protection, Rhode Island Division of Public Utilities and Carriers, and New Hampshire Office of the Consumer Advocate, Comments, Grid Resiliency Pricing Rule, Oct. 23, 2017, at 4 (Docket No. RM18–1–000) [hereinafter *Attorneys General of 10 States, Connecticut, Rhodes, Island and New Hampshire Comments*].

¹² CPUC, Comments, Grid Resiliency, *supra* note 5, at 15.

replacement rate structure to be just and reasonable. *Maine v. FERC*, 854 F.3d 9, 27 (D.C. Cir. Apr. 14, 2017).¹³

FERC's NOPR fails to argue that existing rates are unjust, unreasonable, unduly discriminatory or preferential under 16 U.S.C. § 824e(a); *see* 16 U.S.C. § 824e(b). Instead it argues that "implementation of these reforms is important to ensure rates remain just and reasonable," citing this rationale as the reason that "proposed that tariff changes filed in response to a Final Rule in this proceeding must become effective no more than 15 days after compliance filings are due."¹⁴ This is not an allegation or finding that current rates are unjust, unreasonable, or unduly discriminatory or preferential. To the contrary, FERC's Grid Resiliency NOPR argues that the proposed tariff is necessary to ensure that rates "remain just and reasonable," indicating FERC's recognition that current rates are just and reasonable. No discussion is provided in the NOPR to support any contention that current rates are unjust, unreasonable, unduly discriminatory or preferential.

FERC bears the burden of making such findings supported by fact. Its failure to do so renders FERC incapable of adopting the proposed tariff and the NOPR wholly inadequate under the FPA. FERC should withdraw this proposal which does not meet the most fundamental standards of the FPA or even attempt to carry FERC's burden.¹⁵

FERC's NOPR proposed "rule allows the full recovery of costs of certain eligible units physically located within the Commission-approved organized markets" without provide any analysis of what is included in the full recovery of costs of certain eligible units," or whether that

¹³ *Id.* at 16.

¹⁴ *FERC, Grid Resiliency Pricing Rule, NOPR, supra* note 2, at 46946.

¹⁵ *Advanced Energy Mgmt. Alliance v. FERC*, 860 F.3d 656, 662–63 (D.C. Cir. 2017) (under section 206, Commission has "burden to prove the reasonableness of its change" in affirming Commission's section 206 finding in *PJM Interconnection, LLC*, 151 FERC ¶ 61,208, *order on reh'g*, 155 FERC ¶ 61,157 (2016) (internal quotation omitted)).

recovery is consistent with just and reasonable rates.¹⁶ The FPA requires FIRST that FERC find that rates are unjust, unreasonable, or unduly discriminatory or preferential, BEFORE imposing any new tariff that is based on just and reasonable rates. FERC's NOPR fails to even attempt a finding of the first prong, and does not intimate that existing rates are unjust and unreasonable, but suggests only that its proposed tariff is needed to "maintain" just and reasonable rates. This does not satisfy FERC's burden with regard to the first prong, and is not reasoned decision-making under the APA or compliant with the FPA regarding the first or second prong.

FERC fails to provide an assessment of the resulting costs or to describe in any detail how this proposal would be implemented and affect wholesale energy prices. Such an assessment and detailed description is required by the FPA. *TransCanada Power Mktg. Ltd. v. FERC*, 811 F.3d 811 F.3d 1, 11 (D.C. Cir. 2015) (without information about portion of reliability program's costs attributable to profits and risk premiums, Commission "could not properly assess whether the Program's rates were just and reasonable").¹⁷

FERC's NOPR seeks to promote reliability without defining reliability and its relationship to standards defined pursuant to the Federal Energy Policy Act, NERC rules, or state reliability standards. It seeks a tariff for "fuel-secure" resources without any reference to their cost. As the Comments of 10 State Attorney Generals and several state organizations noted, "when [the Commission] chooses to refer to non-cost factors in rate setting [under the Federal Power Act], it must . . . offer a reasoned explanation of how the [relevant] factor[s] justif[y] the resulting rates." *TransCanada Power Mktg. Ltd. v. FERC*, 811 F.3d 1, 13 (D.C. Cir. 2015) (quoting *Farmers Union Cent. Exch., Inc. v. FERC*, 734 F.2d 1486, 1502 (D.C. Cir. 1984))."

¹⁶ *FERC, Grid Resiliency Pricing Rule*, *supra* note 2, at 46945.

¹⁷ *Attorneys General of 10 States, Connecticut, Rhodes, Island and New Hampshire Comments*, *supra* note 11, at 6.

The NOPR offers no rationale to explain how its bare reference to reliability or allegedly “fuel-secure” resources justifies the resulting rates, not does it describe the resulting rates. Neither does FERC acknowledge the many incidents in which resources with 90-days fuel on hand have been insecure and unreliable such as during the Polar Vortex, or the outage of the San Onofre Nuclear Power plant. These facts undercut both the assertion of reliability enhancing benefits from FERC’s proposal, in addition to the absence of any rate impact analysis in violation of the FPA.

III. FERC Grid Reliability NOPR Violates the Administrative Procedures Act

FERC’s *Grid Reliability NOPR* fails to provide adequate notice of its proposals in violation of the APA. The NOPR omits discussion of how the “full cost” recovery it would be implemented in ISO markets, its relationship to economic dispatch, day-ahead and real time markets, its relationship to state resource planning and responsibility, and its blindness to state environmental laws. The lack of description of the proposal and its application and relationship to state responsibility leaves parties unable to respond and without adequate notice in violation of the APA. This is not fair public notice. The Proposal fails to “provide sufficient factual detail and rationale for the rule to permit interested parties to comment meaningfully,” violating the APA. *Am. Water Works Ass’n v. EPA*, 40 F.3d 1266, 1274 (D.C. Cir. 1994).

The lack of detail about the meaning of the proposed “full recovery of costs of certain eligible units physically located within the Commission-approved organized markets” or how the of this propose rule can be “consistent between the day-ahead and real-time markets” fails to provide sufficient notice about the range of alternatives being considered or the impact of FERC’s proposal. The D.C. Circuit determined in *Prometheus Radio Broad. v. FCC* that an agency must “describe the range of alternatives being considered with reasonable specificity.

Otherwise, interested parties will not know what to comment on, and notice will not lead to better-informed agency decision-making.”¹⁸ The APA requires that “the final rule the agency adopts must be ‘a logical outgrowth’ of the rule proposed.”¹⁹ FERC’s proposal provides insufficient detail to support any logical outgrowth of its proposed rule as it does not analyze the cost implications of its proposal, its inconsistency with just and reasonable rates, or state law authority or environmental rules.

As stated by the ISO/RTO Council, “The failure of notice is compounded by the extraordinarily short time allowed for public comment in this proceeding and FERC’s denial of request to extend the time for comment without any explanation. First, the truncated period for public comment makes it impossible for interested parties to provide thorough analysis and comments sufficient to enable the Commission to build a comprehensive and meaningful record to aid its decision-making process.”²⁰ The D.C. Circuit determined in *Prometheus* that the lack of notice of the range of alternatives being considered, coupled with irregularities in the comment process, supported the court’s conclusion that the FCC failed to satisfy the APA and engaged in arbitrary and capricious rulemaking.²¹ The extraordinarily short comment process for this NOPR is unreasonable, particularly given the magnitude of this proposal to upset economic dispatch, usurp state regulatory roles, increase cost of energy service, and fail to consider the environmental consequences of this proposal. This flawed comment process, and missing analysis violates the APA.

¹⁸ *Prometheus Radio Broad. v. FCC*, 652 F.3d 431, 450 (citing *Horsehead Res. Dev. Co., Inc. v. Browner*, 16 F.3d 1246, 1268 (D.C.Cir.1994)).

¹⁹ *Id.* citing *Long Island v. Care at Home Ltd. v. Coke*, 551 U.S. 158, 174 (quoting *Nat’l Black Media Coal. v. FCC*, 791 F.2d 1016, 1022 (2d Cir.1986)).

²⁰ Comments of ISO/RTO Council, Comments, Grid Resiliency Pricing Rule, Oct. 23, 2017, at 3 (Docket No. RM18–1–000).

²¹ *Id.*

The NOPR fails to provide record support for the proposition that the electric grid is unreliable, or that the “solution” to reliability is its proposed tariff applicable to plants with 90-days fuel on hand in ISO markets with energy and capacity markets. As discussed in section { *infra*, the NOPR ignores evidence of other strategies to achieve reliability and withstand severe events including the Polar Vortex. The failure to analyze and weigh alternatives including existing resources. *Michigan v. EPA*, ___ U.S. ___, 135 S. Ct. 2699, 2707 (2015) (“Consideration of cost reflects the understanding that reasonable regulation ordinarily requires paying attention to the advantages *and* the disadvantages of agency decisions.”).

IV. Secretary Perry’s Letter and the FERC Grid Resiliency and Reliability NOPR

U.S. Department of Energy (DOE) Secretary Perry through a September 28, 2017 letter to FERC purported to order FERC to consideration an NPRM that would consider adjustments to FERC market cost-recovery rules.²² Secretary Perry’s letter asserted that current FERC rules resulted in an “undervaluation of grid reliability and resiliency benefits provided by traditional baseload resources such as coal and nuclear.”²³ Secretary Perry cited as a reason to support payments for the “full cost” of coal-fired and nuclear power plants the dispatch of some coal-fired and nuclear resources in the PJM ISO market during the polar vortex.²⁴ As discussed in Section VII *infra*, Secretary Perry’s letter and FERC’s NOPR fail to mention the unavailability of many coal-fired and nuclear assets during the Polar Vortex, or alternative ways in which ISO regions such as CAISO maintained reliability while there was price competition and arbitrage for

²² Letter from Rick Perry, Secretary, U.S. DOE, to Neal Chatterjee, Cheryl A. LaFleur, Rober F. Powelson, Commissioners, Federal Energy Regulatory Commission, Sept. 28, 2017, at 1 (attaching a suggested NPRM in RM17-3-003, <https://energy.gov/sites/prod/files/2017/09/f37/Notice%20of%20Proposed%20Rulemaking%20.pdf>).

²³ *Id.*

²⁴ *Id.* at 3.

natural gas resource during that cold weather event. Secretary Perry’s letter asserted that the “2014 Polar Vortex was a warning that the current and scheduled retirements of these fuel-secure units could threaten the reliability and resilience of the electric grid.”²⁵

Secretary Perry relies on this assertion to argue for payments to physical energy resources with a 90-day fuels on site to recover their “full cost” without any analysis of the impact of this proposal on the FPA’s requirement for just and reasonable rates. Echoing Secretary Perry’s letter, FERC’s excludes virtual assets including demand response that produces negawatts through Internet-enabled commands, and distributed energy resources that use renewables or natural gas.

FERC’s NOPR worries that “current and scheduled retirements of fuel-secure plants could threaten the reliability and resiliency of the electric grid.”²⁶ The NOPR argues that *Short-run markets may not provide adequate price signals to ensure long-term investments in appropriately configured capacity...The increased importance of system resilience to overall grid reliability may require adjustments to market mechanisms that enable better valuation.*²⁷

FERC proposes a rule that would allow “the full recovery of costs of certain eligible units physically located within the Commission-approved organized markets” without defining what “full recovery of costs” entails or conducting any analysis of the impact of this proposal on just and reasonable rates.²⁸ FERC proposes that eligible units must also be able to provide essential energy and ancillary reliability services and have a 90-day fuel supply on site in the event of supply disruptions caused by emergencies, extreme weather, or natural or man-made disasters.²⁹

²⁵ *Id.*

²⁶ FERC, *Grid Resiliency Pricing Rule, NOPR*, *supra* note 2, at 46942.

²⁷ *Id.*, at 46942-3 (emphasis in the original).

²⁸ *Id.* at 46945.

²⁹ *Id.*

Eligible resources must comply with federal, state, and local environmental regulations and not be subject to cost of service rate regulation by any state or local regulatory authority.³⁰

The NOPR claims that it proposes “just and reasonable rate tariffs for the recovery of costs and a fair rate of return” but omits any analysis to show that existing rates are not just and reasonable, or demonstrating that its proposed tariff is just and reasonable. This failure violates Section 206 of the Federal Power Act which allocates to FERC the burden of proof to show “that the existing rates or practices are unjust, unreasonable, unduly discriminatory or preferential ... [and] that its proposed changes are just and reasonable.” *PPL Wallingford Energy LLC v. FERC*, 419 F.3d 1194, 1199 (D.C. Cir. 2005) (quoting 16 USC §824e(a)).³¹ FERC must also show that its proposed rate is just and reasonable and FERC has been reversed where it failed to meet its “dual burden” under Section 206 to both find an existing rate structure unjust and unreasonable and a replacement rate structure to be just and reasonable. *Maine v. FERC*, 854 F.3d 9, 27 (D.C. Cir. Apr. 14, 2017).³²

FERC’s Grid Resiliency NOPR proposes without adequate support or analysis the establishment of a tariff for each ISO subject to the proposed rule for the:

- (iii) (I) Purchase of electric energy from an eligible reliability and resiliency resource; and
- (2) recovery of costs and a return on equity for such resource dispatched during grid operations.
- (B) The just and reasonable rate shall include pricing to ensure that each eligible resource is fully compensated for the benefits and services it provides to grid operations, including reliability, resiliency and on-site fuel-assurance, and that each eligible resource recovers its fully allocated costs and a fair return on equity.
- (iv) *Reliability and resiliency costs.* Compensable costs shall include, but not be limited to, operating and fuel expenses, costs of capital and debt, and a fair return on equity and investment.³³

³⁰ *Id.* at 46948.

³¹ CPUC, Comments, Grid Resiliency, *supra* note 5, at 15.

³² *Id.* at 16.

³³ *FERC, Grid Resiliency Pricing Rule supra* note 2, *supra* note 2, at 46948.

The proposed rule is unclear about its potential application and whether it would be limited to existing merchant resources, not subject to cost-of-service regulation, or it would also apply to new resource. CAISO cautioned that the “NOPR provides no justification to guarantee cost recovery for future coal or nuclear resources (or any other type of resource) not yet in service. The proposed rule does not suggest that future generating plants should also be given similar compensation, nor should it. The Commission should not incentivize the construction of new resources that are not needed in a region to meet reliability but that developers may pursue simply to avail themselves of guaranteed cost recovery.”³⁴ I concur that FERC’s Grid Resiliency NOPR is unclear about the scope of its application in terms of eligible resource and applicable ISO markets. Moreover, this proposed is unsupported by the reasoned analysis required by the FPA or the APA and should be withdrawn as infirm.

FERC’s grid reliability NOPR states that it applies “to Commission-approved independent system operators or regional transmission organizations with energy and capacity markets and a tariff that contains a day-ahead and a real-time market or the functional equivalent. The application of this rule must be consistent between the day-ahead and real-time markets.”³⁵ As CAISO and the CPUC point out in their comments, the Grid Reliability NOPR which proposes a blanket rule for all FERC wholesale markets “would not apply to the CAISO because the CAISO does not have a capacity market. Further, there are no baseload coal or nuclear resources physically located in the CAISO balancing authority area (BAA) that would be eligible for the compensation scheme in the proposed rule.”³⁶ The absence of a market structure and resources that fit the ill-tailored grid reliability proposal highlight the need under the APA to examine the experience and characteristics of states such as California that have successfully

³⁴ CAISO, Comments, Grid Resiliency Pricing Rule, Oct. 23, 2017, at 14-15 (Docket No. RM18-1-000).

³⁵ FERC, *Grid Resiliency Pricing Rule, NOPR*, *supra* note 2, at 46948.

³⁶ CAISO, Comments, Grid Resiliency Pricing Rule, *supra* note 34, at 2-3.

increased electric reliability without the types of resources or the unspecified market incentives FERC’s grid reliability NOPR contemplates.

As stated in their comments “CAISO does not support adoption of the proposed rule,” and neither does the California Public Utilities Commission.³⁷ Despite FERC’s assertion that the application of the proposed rule “must be consistent between the day-ahead and real-time markets,” FERC does not discuss how its proposal to compensate those few generators it deems eligible for the special proposal tariff for “full costs” fits with the economic dispatch in the day-ahead and real-time markets that has brought both assurance of just and reasonable rates and reliability. These omissions fail both the FPA and the APA’s requirements.

Secretary Perry’s letter and FERC’s Grid Resiliency NOPR have engendered considerable debate about whether such units are “fuel secure” and the role they play in ensuring reliability. Forbes pointed out that during the polar vortex as “electric loads neared or surpassed all-time records, the cold disabled nearly 30% of the mid-Atlantic PJM power pool’s capacity—one-fourth because gas plants couldn’t get gas at any price, the rest mainly because coal-fired plants’ coal-handling equipment or coal piles froze.”³⁸ FERC’s NOPR states cites the Polar Vortex as an example demonstrating the need for resilient energy supply stating that during that event “PJM Interconnection (PJM) struggled to meet demand for electricity because a significant amount of generation was not available to run.”³⁹

The New York Public Service Commission noted that the referenced paragraph in the DOE Staff Report Secretary Perry’s letter cites to argue that the Polar Vortex illustrates the need for “fuel-secure” resources opens with a sentence omitted by the Secretary which details the

³⁷ *Id.*

³⁸ 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>.

³⁹ *FERC, Grid Resiliency Pricing Rulem NOPR, supra* note 2, at 46942.

unavailability of many coal plants during the Polar Vortex. “Many coal plants could not operate due to conveyor belts and coal piles freezing, which—coupled with outages across other fuels and high electricity demand—led operators to call on older plants nearing the end of their useful lives.”⁴⁰ PJM reported that at the height of the Polar Vortex, more than 15,000 MW of its coal and nuclear resources were offline.⁴¹ The NOPR does not mention that some of the coal-fired power plants that the NOPR characterizes as “fuel-secure” were unavailable as coal piles froze during the cold snap.

The CPUC emphasizes that “the requirement for a 90-day fuel stockpile is unexplained and seemingly arbitrary. Generally, both outages and recovery from adverse events are not 90 days in duration.”⁴² The CPUC cites:

For example, in 2004, Hurricane Ivan left more than 800 thousand customers in Alabama without power. Power was restored in 8 days. As further example, power was restored within 3 days of the 1994 Northridge Earthquake in Southern California. The CPUC is not aware of any reliable research that suggests 90 days of fuel storage on site at a given generator is a superior (or even useful) metric for assessing contributions to system resilience. The Rhodium Group notes that fuel supply was the cause of only 0.00007% of major power disruptions over the past five years. In addition, California’s three main investor-owned utilities all reported SAIDI values of under 135 in 2016, suggesting consumers were without power for no longer than 135 minutes on average. Given this (and assuming fuel stockpiles were an appropriate indicator of resilience), why wouldn’t

⁴⁰ New York Public Service Commission, Comments, Grid Reliability and Resilience Pricing, Docket No. RM18-1-000, at 23(citing DOE Staff Report at 98, citing, PJM Interconnection, Analysis of Operational Events and Market Impacts during the January 2014 Cold Weather Events (PJM Interconnection, May 8, 2014) (PJM 2014 Cold Weather Report), available at: <http://www.pjm.com/~media/library/reports-notice/weather-related/20140509-analysis-of-operational-events-and-market-impacts-during-the-jan-2014-cold-weather-events.ashx>).

⁴¹ PJM Interconnection, *Analysis of Operational Events and Market Impacts During the January 2014 Cold Weather Events* at 26 (May 8, 2014), available at <http://www.pjm.com/~media/library/reports-notice/weather-related/20140509-analysis-of-operational-events-and-market-impacts-during-the-jan-2014-cold-weather-events.ashx>. See also *id.* at 4 (“Equipment issues associated with both coal and natural gas units caused the greatest proportion of forced outages. Natural gas interruptions comprised approximately 25 percent of the total outages.”); *id.* at 24 (“All conventional forms of generation, including natural gas, coal and nuclear plants, were challenged by the extreme conditions.”). See also MISO, *2013-2014 MISO Cold Weather Operations Report* at 25 (Nov. 2014), available at <https://www.misoenergy.org/Library/Repository/Report/Seasonal%20Market%20Assessments/2013-2014%20Cold%20Weather%20Operations%20Report.pdf> (“[G]enerating units of all fuel types in MISO’s footprint were affected by weather-related forced outages during the January 2014 polar vortex.”).

⁴² CPUC, Comments, Grid Resiliency, *supra* note 5, at 48.

seven days or even two days of storage on hand suffice for California? Second, fuel supplies can be at risk in the event of disaster. We point, again, to the case of the meltdown of Fukushima Daiichi. Nuclear plants are also well known potential terrorist targets.”⁴³

The comments of the Union of Concerned Scientists provides other example the FERC NOPR fails to mention of reliability risks for coal and nuclear units due to freezing temperatures limiting coal operation, warm water, or drought limiting nuclear operation and plants that require water for cooling.⁴⁴

The failure of the Grid Resiliency NOPR to even acknowledge these failures of the resources FERC proposed to compensate for “full recovery of costs” to “maintain reliability” without considering the reliability issues with such resources is arbitrary and capricious decision-making under the APA and violates the FPA’s requirement to recognize or consider alternatives including existing resources such as demand response to foster reliability. *Michigan v. EPA*, ___ U.S. ___, 135 S. Ct. 2699, 2707 (2015) (“Consideration of cost reflects the understanding that reasonable regulation ordinarily requires paying attention to the advantages *and* the disadvantages of agency decisions.”).

V. FERC’s Grid Resiliency NOPR Ignores State Law Authority to Regulate Retail Energy Resources and State Reliability, Safety, and Environmental Laws

California’s experience in promoting grid reliability through planning, coordination, integration of distributed energy resources (DERs) and Demand Response (DR), and commitment to reliability, safety, just and reasonable rates, and environmental goals provide lessons for reliability that FERC must consider in evaluating its grid reliability NOPR. FERC’s NOPR makes no mention of state success in promoting reliability, nor state coordination with ISOs, neither does it consider how its proposal intrudes on state jurisdiction or laws.

⁴³ *Id.*

⁴⁴ Union of Concerned Scientists, Comments, Grid Resiliency Pricing Rule, RM18–1–000, at 9-10, Oct. 23, 2017.

California has an extensive energy resource planning process coordinated with the CPUC, CAISO, and the California Energy Commission. After the California Energy Crisis of 2000-2001, CAISO developed more detailed market manipulation rules and procedures including the need to inform CAISO of any unplanned shutdowns. Prevention of market manipulation requires jurisdiction, enforceable *ex ante* rules, the ability to level penalties for breaking rules, and vigilance.

In the wake of market manipulation enabled by poorly constructed rules and markets, California increased its planning, procurement, and resource adequacy standards to promote energy reliability, resilience, and to reduce climate change. The California legislature in 2002 enacted AB 57 “to return energy procurement responsibilities to the utilities. The legislation required the CPUC to adopt a Long Term Procurement Plan to ensure sufficient resource availability over time.”⁴⁵ These resource adequacy rules sought to match supply resources to energy demand forecasts. This forward-looking planning required procurement of supply including measures to structurally embed energy efficiency and thereby reduce energy use. It also spurred consideration of demand response as way to reduce energy supply need. It set forth a procurement process for supply-side resources based on projected demand levels that reflected energy demand reduction initiatives. AB 57 adopted guidelines for “energy procurement solicitations, cost recovery of power purchases and integrating renewable resources into long term planning.”⁴⁶ California’s energy resource mix was diversified and required to include renewable energy. Governor Davis in 2002 signed SB 1078, establishing the Renewable

⁴⁵ CPUC, ENERGY DIVISION, CALIFORNIA ELECTRIC AND GAS UTILITY COST REPORT, PUBLIC UTILITIES CODE SEC. 913 ANNUAL REPORT TO THE GOVERNOR AND THE LEGISLATURE, April 2017, at 20.

⁴⁶ *Id.*

Portfolio Standard (RPS) that “required the utilities to procure 20% of their electricity demand from renewable resources by 2010.”⁴⁷

California law requires consideration of environmental effects of energy resources, and has an extensive energy siting and environmental review process. California’s energy resources are subject first to a test of energy need and California’s work to reduce energy demand has led to evaluation of whether proposals for refurbishment of existing natural-gas generation is merited in light of energy need and the available resource mix.⁴⁸

FERC should not incentivize unneeded, uneconomical, and environmentally inappropriate energy resources to be built or maintained to attract the undefined payments FERC’s NOPR contemplates. Doing so would interfere with state jurisdiction over safety, reliability, just and reasonable rates, and the environment, and undercut state coordination with ISOs such as CAISO.

The California legislature and Governors since 2002 charged the CPUC with responsibility to increase the renewable energy portfolio for energy resources. In 2006, AB 32 signed by Governor Schwarzenegger, adopted GHG reduction targets, some of which were assigned to the energy and transportation sectors.⁴⁹ Under state law adopted in 2007, “California electric utilities or any other LSE shall not enter into a baseload generation contract with a facility that exceeds the greenhouse gas (GHG) emissions of a combined-cycle natural gas

⁴⁷ *Id.*

⁴⁸ *See e.g.* CPUC Decision 17-09-034, Decision In Phase 2 On Results Of Southern California Edison Company Local Capacity Requirements Request For Offers For Moorpark Sub-Area Pursuant To Decision 13-02-015, September 28, 2017 (rejecting “the 54 megawatts (MW), 10-year gas-fired generation, 30-year refurbishment Ellwood contract and 0.5 MW, energy storage contract (linked to the Ellwood contract) to give the Commission an opportunity to explore a more complete portfolio of resources to meet any identified need in the Santa Barbara/Goleta area.”); CAISO, Moorpark Sub-Area Local Capacity Alternative Study, California Energy Commission 15-AFC-01, 3, Aug. 16, 2017 (“This Moorpark Sub-Area Local Capacity Alternative Study indicates that the applicable reliability criteria can be met with a combination of base incremental distributed resources and some combination of energy storage or dynamic reactive support.”)

⁴⁹ AB 32, CHAPTER 488, Adding Division 25.5 (commencing with Section 38500) to the Health and Safety Code (2006).

baseload generation plant. See Cal. Public Utilities Code § 8341(d)(1). A coal-fired power plant would fail this standard because coal emits almost double the greenhouse gas emissions than a natural gas-fired power plant.”⁵⁰

In 2009 California adopted a Climate Change Adaptation Strategy that initiated California Energy Commission consideration of “the effects of sea-level rise, temperature increases, precipitation changes, and extreme events when siting and relicensing energy facilities.”⁵¹ “The CEC evaluates the risk of potential energy facility flooding from an environmental perspective while the CPUC reviews this risk from an electric reliability perspective.”⁵² “The California Energy Commission must also review the project under its CEQA-equivalent process regarding potential sea level rise and environmental justice matters, as well as all other matters under its jurisdiction.”⁵³

In 2011 SB 2 raised the State of California’s target for procuring renewable energy to 33% by 2020, raising the goal from the 20% renewable energy target set in 2002 in SB 1078. In 2015 SB 350 again raised the RPS obligation to 50% by 2030. SB 350 amended California

⁵⁰ CPUC, Comments, Grid Resiliency, *supra* note 5, at 16.

⁵¹ Lesley K. McAllister, *Adaptive Mitigation in the Electric Power Sector*, 2011 B.Y.U. L. REV. 2115, 2148–49 (2011) (citing Cal. Natural Res. Agency, 2009 California Climate Adaptation Strategy 122 (2009) (“Potential reductions on precipitation levels could significantly reduce hydropower production which currently accounts for up to 20 percent of the state's electricity supply.”))

⁵² CPUC D. Decision 16-05-050, Application 14-11-016, Application of S. California Edison Co. (U338e) for Approval of the Results of Its 2013 Local Capacity Requirements Request for Offers for the Moorpark Sub-Area (May 26, 2016), WL 3167375, at *7.

⁵³ CPUC D. Decision 16-05-050, Application 14-11-016, Application of S. California Edison Co. (U338e) for Approval of the Results of Its 2013 Local Capacity Requirements Request for Offers for the Moorpark Sub-Area (May 26, 2016), WL 3167375, at *1, (“The reliability of the grid is one aspect of the Commission's broader analysis and responsibility to ensure safety under Pub. Util. Code § 451 consistent with Section 454.5.”) *Id.* at *7 (“determining that “based on the evidence presented in the proceeding, we do not find that the risk based on flooding, sea rise, or tsunami has been shown to compromise reliability and thus do not find that SCE would violate Section 451 through contracting with the NRG Puente Project. In the same way, Executive Order B-30-15 is satisfied). The CPUC emphasized that its determination about the prospect of sea level rise to create electric reliability risk “in no way prejudices the CEC's separate review of the project. All further environmental review of flooding related issues will be conducted under the CEC's CEQA review process.” *Id.*

Public Utilities § 701.1 to declare that environmental goals, resource diversification, promoting widespread transportation electrification were co-equal goals used to minimize reliable energy costs to society.⁵⁴ SB 350 legislation directed the CPUC’s calculation of the “cost-effectiveness of energy resources, including conservation and load management options,” to take account for any costs and benefits to the environment, including air quality,” along with other ratepayer protection objectives.⁵⁵

Governor Brown directed all state agencies to “take climate change into account in planning and decision making” through his Executive Order B-30-15 issued on April 29, 2015 in order to “help the state make more informed decisions and avoid high costs in the future.” The state was trying to avoid high future energy costs, as well as climate change costs such as sea level rise that can increase flooding and other hazards. In September 2016, Governor Brown signed SB 32 codifying a reductions target for statewide GHG emissions of 40 percent below 1990 emission levels by 2030.

SB 338, Signed by Governor Brown on September 30, 2017, requires CPUC and governing boards of local publicly owned electric utilities to consider, as a part of the integrated resource plan process, the role of distributed energy resources and other specified energy- and efficiency-related tools, in helping to ensure that each load-serving entity or local publicly owned electric utility, as applicable, meets energy needs and reliability needs while reducing the need for new electricity generation and new transmission in achieving the state’s energy goals at the least cost to ratepayers.⁵⁶

⁵⁴ California Public Utilities § 701.1, Stats.2015, c. 547 (S.B.350), § 30, eff. Jan. 1, 2016.)

⁵⁵ *Id.*

⁵⁶ Senate Bill 338 (Skinner, Chapter 389, Statutes of 2017), amending Sections 454.52 and 9621 of the Public Utilities Code, relating to energy. Approved by Governor Brown, September 30, 2017.

FERC’s Grid Reliability NOPR is deficient in failing to recognize state law rules in California and other states that require reliability, environmental, public safety, and other considerations in energy resource planning and selection. FERC has no authority over in-state generation and its *Grid Resiliency NOPR* fails to respect FERC’s jurisdictional boundaries. *Hughes v. Talen Energy Marketing*, ____ U.S. ____; 136 S. Ct. 1288, 1292, 194 L. Ed. 2d 414, 420 (2016): “The States’ reserved authority includes control over in-state ‘facilities used for the generation of electric energy. § 824(b)(1)’ . . . ‘Need for new power facilities, their economic feasibility, and rates and services are areas that have been characteristically governed by the States.’”

VI. Negating the Negawatts; FERC NOPR Excludes the Virtual Power Plant that Lowers Costs, Increases Reliability, and Avoids Blackouts, Failing to Consider Alternatives to Promote Reliability at Just and Reasonable Rates

FERC’s Grid Resiliency NOPR fails to mention or consider the role of demand response in promoting reliability and just and reasonable rates, an omission which underscores the NOPR’s failures to meet the standards of the FPA to consider alternatives to achieve just and reasonable rates. Demand response is an important and increasing part of California’s energy portfolio. Internet-enabled demand response, auto-DR, has been crucial to meeting California’s energy needs since FERC improved demand response participation in FERC wholesale markets in 2011 through FERC Order 745. “FERC based its jurisdiction over demand response resources on Section 205 of the FPA, which provides FERC with authority to regulate any “rule, regulation, practice, or contract affecting [a wholesale] rate.””⁵⁷ FERC adopted Order No. 745 in recognition of the competition and just and reasonable rate benefits of “removing barriers to demand response participation” in wholesale markets. *Demand Response Compensation in*

⁵⁷ Amy L. Stein, *Regulating Reliability*, 54 HOUS. L. REV. 1191, 1203–04 (2017).

Organized Wholesale Energy Markets, 134 FERC ¶ 61,187 at P 59 (2011). FERC’s proposal to pay more to resources with 90-days of fuel on hand than it pays for demand response, DERs, hydro, gas-fired or other energy resources is both unsupported by any analysis and arbitrary and capricious rulemaking, violating both the FPA and the APA.

In 2016 the Supreme Court upheld FERC's authority to adopt a tariff allowing demand response to participate in wholesale energy markets, reversing the D.C. Circuit. *F.E.R.C. v. Electric Power Supply Ass'n* found FERC’s Order within its wholesale energy market regulation jurisdiction, not an undue interference with state regulation of retail energy services and facilities.⁵⁸ The Court emphasized FERC’s authority under the FPA to ensure electric reliability and that electricity in wholesale markets be provided at “just and reasonable,” both of which FERC Order 747 advanced by allowing demand response to participate in wholesale energy markets.⁵⁹

The Supreme Court’s opinion discussed the benefits of demand response to just and reasonable rates and electric reliability:

Consider what would happen if wholesale market operators could induce consumers to refrain from using (and so LSEs [Load Serving Entities including IOUs and municipal utilities] from buying) electricity during peak periods. Whenever doing that costs less than adding more power, an operator could bring electricity supply and demand into balance at a lower price. And simultaneously, the operator could ease pressure on the grid, thus protecting against system failures. That is the idea behind the practice at issue here: Wholesale demand response, as it is called, pays consumers for commitments to curtail their use of power, so as to curb wholesale rates and prevent grid breakdowns.⁶⁰

Bids to yield demand response are submitted by demand response aggregators. FERC Order 745 allows wholesale market operators to “treat those offers just like bids from generators

⁵⁸ *F.E.R.C. v. Electric Power Supply Ass'n* 136 S.Ct. 760, 766 [193 L.Ed.2d 661] (2016), as revised (Jan. 28, 2016).

⁵⁹ *Id.*

⁶⁰ *Id.*

to increase supply. The operators, that is, rank order all the bids—both to produce and to refrain from consuming electricity—from least to most expensive, and then accept the lowest bids until supply and demand come into equipoise.”⁶¹ The Court recognized that demand response contributed to lower energy prices and “would decrease the risk of blackouts and other service problems.”⁶²

The Supreme Court upheld the demand response tariff as within FERC’s FPA jurisdiction as “market operators’ payments for demand response commitments—directly affect wholesale rates, and not a regulation of retail sales governed by states.”⁶³ The Court emphasized that “the contrary view would conflict with the Act’s core purposes by preventing all use of a tool that no one (not even EPSA) disputes will curb prices and enhance reliability in the wholesale electricity market.”⁶⁴

The *Grid Resiliency NOPR* violates the FPA in failing to consider the advantages and disadvantages of FERC’s grid reliability proposal, and failing to recognize or consider alternatives including existing resources such as demand response to foster reliability. *Michigan v. EPA*, ___ U.S. ___, 135 S. Ct. 2699, 2707 (2015) (“Consideration of cost reflects the understanding that reasonable regulation ordinarily requires paying attention to the advantages *and* the disadvantages of agency decisions.”). The U.S. Supreme Court’s 2016 finding that demand response supports reliability and just and reasonable rates is not acknowledged in the Grid Reliability NOPR. Neither does the NOPR analyze the market distorting effects discussed or analyzed from the NOPR to pay more for resources with 90-days fuel on hand.

⁶¹ *Id.*

⁶² *Id.*

⁶³ *Id.*

⁶⁴ *Id.*

The NOPR proposes a tariff offering unspecified additional payments for resource “an electric generation resource physically located within a Commission-approved independent system operator or regional transmission Organization” that is “able to provide essential energy and ancillary reliability services, including but not limited to voltage support, frequency services, operating reserves, and reactive power,” that “(C) Has a 90-day fuel supply on site enabling it to operate during an emergency, extreme weather conditions, or a natural or man-made disaster.”⁶⁵ The NOPR fails to analyze the advantages or disadvantages of resources with 90-day fuel supply on site as compared to other resources to “maintain reliability,” the cited goal of the proposal.⁶⁶

The failure of the NOPR to consider whether other resources provide reliability (or to define reliability) and at what costs unduly discriminates in wholesale ratemaking by favoring coal and nuclear power plants over other resources without analyzing whether other resources could provide “similar or superior system services or attributes at a lower cost. *See, e.g., Elec. Consumers Res. Council v. FERC*, 747 F.2d 1511, 1515 (D.C. Cir. 1984) (rates must “be non-discriminatory and non-preferential[,] as well as just and reasonable”).”⁶⁷ Under the FPA market rules that “unnecessarily restrict[] competition” by excluding certain resources are “unjust, unreasonable, and unduly discriminatory or preferential.” *Indianapolis Power & Light Co.*, 158 FERC ¶ 61,107 at P 69 (2017); 16 U.S.C. §§ 824d(a) (“All rates and charges made, demanded, or received by any public utility for or in connection with the transmission or sale of electric energy subject to the jurisdiction of the Commission, and all rules and regulations affecting or pertaining to such rates or charges shall be just and reasonable, and any such rate or charge that is not just and reasonable is hereby declared to be unlawful.”)

⁶⁵ FERC, *Grid Resiliency Pricing Rule, NOPR*, *supra* note 2, at 46948.

⁶⁶ *Id.*

⁶⁷ *Attorneys General of 10 States, Connecticut, Rhodes, Island and New Hampshire Comments*, *supra* note 11, at 7.

These omissions also constitute arbitrary and capricious rulemaking under the APA, as well as a undue discrimination under the FPA for failure to make any reasoned analysis or comparison to alternatives or to examine the proposal’s impact on just and reasonable rates. *Elec. Power Supply Ass’n*, 136 S. Ct. 784; see also *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (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))).

VII. FERC’s Grid Resiliency NOPR Fails to Consider the Physical Issues Which Led to the Outage of the San Onofre Nuclear Power Plant, or the Role of Demand Response, DERs, System Upgrades, and Coordination to Prevent Blackouts, and Protect Public Safety, Reliability, and the Environment

FERC’s Grid Reliability NOPR cites the retirement of several coal-fired and nuclear plants as the basis for its concerns that grid resiliency is threatened by such allegedly “premature retirements of power plants that can 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.”⁶⁸ FERC fails to analyze whether the types of plants it proposes to pay more would, in fact, “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”⁶⁹ or provide superior reliability benefits to other resources.

California’s experience with the abrupt closure of SONGs demonstrates that outages can occur at nuclear power stations, despite having 90-days fuel on hand. The San Onofre Nuclear Generating Station (SONGs) closed in January 2012 following a leak at that nuclear power plant

⁶⁸ *FERC, Grid Resiliency Pricing Rule, NOPR, supra* note 2, at 46941-42.

⁶⁹ *Id.* at 46941.

due to steam generator tube deterioration.⁷⁰ The U.S. Energy Information Administration (USEIA) reported that “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.”⁷¹ SCE decided in mid-2013 to close the plant in light of the tremendous amount the utility was spending to keep the plant in a state of readiness to reopen upon regulatory approval.⁷²

California’s experience in handling a blackout on September 8, 2011 that left 2.7 million customers without power increased the state’s sense of urgency about the need to coordinate resources to respond to the loss of San Onofre. The September 8, 2011 blackout began in Arizona with the loss of a 500 KV transmission line, and led to cascading outages and system-wide power loss for the Imperial Irrigation & Agricultural District (IIAD), SDG&E, and parts of the electric grid in northern Mexico.⁷³ The problems that began in Arizona led electric load to lean on the Imperial Irrigation District, SDG&E, and Northern Mexico until the breaker in front of SONGS cut the junction and stopped the cascade. Ten years after the California Energy Crisis, the sudden September 8, 2011 blackout left California’s second largest city, San Diego, in the dark for almost twenty-four hours. Rural areas east of San Diego to the Arizona and beyond the Mexican border were plunged into darkness for almost 48 hours.

⁷⁰ See CPUC Decision 14-11-040, Decision Approving Settlement Agreement As Amended And Restated By Settling Parties, (OII 12-10-013) November 20, 2014, at 1-2.

⁷¹ 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> (“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.”)

⁷² See CPUC Decision 14-11-040, at 1-2; SCE, Southern California Edison Announces Plans to Retire San Onofre Nuclear Generating Station, June 7, 2013, <http://www.songscommunity.com/news2013/news060713.asp>.

⁷³ FERC, Arizona-Southern California Outages, Sept. 8, 2011, Causes and Recommendations, <https://www.ferc.gov/legal/staff-reports/04-27-2012-ferc-nerc-report.pdf>.

The Southern California blackout occurred during my first year as a CPUC Commissioner, and served as a powerful reminder to communities and regulators of the risks and consequences of blackout. I met people in San Diego who took family members to the hospital on the night of the blackout as they needed medical treatment when breathing machines and other medical devices would not work during the power outage. Hospitals running on diesel generators, releasing black carbon into the atmosphere, provided refuge for those who needed power for medical issues. “Schools and businesses closed, some flights and public transportation were disrupted, water and sewage pumping stations lost power, and beaches were closed due to sewage spills.”⁷⁴ NERC ultimately settled with IAD and they agreed to join CAISO as the lack of visibility into IAD’s system was found to have contributed to IAD load leaning on SDG&E and the blackout. Communications, including the Internet, enable visibility and coordination that is key to preventing blackouts.

With the 2011 system-wide blackout that left 2.7 million Californians in the dark due to what started as a transmission issue fresh in mind, community leadership to provide demand response was key to forestalling blackouts after the loss of SONGs in 2012. The CPUC ordered SCE and SDG&E to partner with community-based organizations (CBOs) in 2012-2014, using trusted local messengers to communicate to Southern California’s diverse communities to save power and their cities.⁷⁵ Both SDG&E and SCE reported their demand response efforts were successful in reaching customers and educating them about the importance of reducing energy usage, especially when a Flex Alert was issued notifying the public about the need for energy

⁷⁴ *Id.*

⁷⁵ CPUC Decision 13-04-017, Decision Approving Demand Response Program Revisions For 2013 Through 2014, at 17, April 18, 2013 (approving ratepayer funds to continued community partnerships commenced in “2012 when SDG&E worked with 36 community-based organizations to provide education to an additional 250,000 hard-to-reach customers.” 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.”)

reduction.⁷⁶ Many of those CBOs used the Internet to organize events and convey information to diverse communities about the importance of conserving energy in light of San Onofre’s outage. The CPUC also ordered system upgrades including transmission upgraded completed in 2013 and ordered SCE to convert to a synchronous condenser to facilitate the flow of electricity in the Los Angeles and Orange County basins.⁷⁷

Internet-enabled thermostats and other demand response resources have seen more widespread adoption since March 2011 when FERC adopted Order 745 allowing demand response resources to participate in FERC-jurisdictional wholesale energy markets run by ISOs.⁷² The CPUC adopted a Decision in April 2012 (D.) 12-04-045 to promote Demand Response as an IOU resource. SCE engaged in several studies of demand response (DR) including those using Smart Grid capabilities and the Internet. SCU studies “networked pool pump controllers that can initiate DR events using either SCE’s Advanced Metering Infrastructure (AMI) network and SmartConnect meters or the customer’s Internet connection to curtail or shift electric loads caused by pool pumps.”⁷⁸

The mid-2013 shut down of the San Onofre Nuclear Generation Station which provided approximately 20% of Southern California’s electricity in 2011 heightened the need to manage

⁷⁶ *Id.* at 24-25, April 18, 2013 (“SCE explains that, in 2012, SCE created a marketing and outreach campaign consisting of Flex Alert posters and Summer Readiness brochures in various languages and distributed them to approximately 200 community and faith based organizations. 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.”)

⁷⁷ Commissioner Catherine J.K. Sandoval, *Safe, Reliable Service at Just and Reasonable Rates: Priorities, Challenges, and Opportunities*, Remarks at Stanford Law School, April 25, 2013, at 9, www.cpuc.ca.gov/uploadedFiles/CPUC...Us/.../Stanford_2013_Presentation.pdf.

⁷⁸ SCE, *Emerging Markets & Technology Demand Response Projects Semi-Annual Report: Q1–Q2 2015*, Sept. 2015, at 6.

energy resource differently.⁷⁹ The CPUC ordered SCE and SDG&E to increase efforts to enroll customers in demand response programs for the 2012 and 2013 summer seasons following San Onofre's closure to help balance limited electric supply with load.

The CPUC also issued an all-source request for offers (RFO) to solicit and approved a variety of distributed energy resources including batteries to increase supply resources and grid flexibility. As those alternative resources were bid and developed, San Onofre's closure increased reliance on natural-gas fired power plants while regulators, energy developers, and communities worked to develop other means to meet energy needs through renewables including batteries and demand reduction.

As the CPUC noted, "In emergency situations where quick action was imperative – such as the aftermath of a major leak at the Aliso Canyon natural gas storage facility and the unplanned closure of San Onofre Nuclear Generation Station – California was able to rely on its diverse resource mix to meet demand despite the loss of large legacy infrastructure. The CAISO market quickly incorporated those resources, further demonstrating that a variety of supply-side and demand-side approaches can (and do) contribute to a reliable, resilient electric system."⁸⁰ FERC's failure to consider outages at nuclear or coal-fired plants, and the contributions of other resources to reliability, just and reasonable rates, public safety, and the achievement of environmental goals under state law reflects the arbitrary and capricious decision-making of the Grid Reliability NOPR. These resources have been important to California's energy resiliency and reliability, including during the Polar Vortex when natural gas sellers sought higher prices in eastern markets and left California low on fuel resources.

⁷⁹ CPUC Decision 16-11-022, Decision On Large Investor-Owned Utilities' California Alternate Rates For Energy (Care) And Energy Savings Assistance (ESA) Program Applications, November 10, 2016 [hereinafter *CARE/ESA Nov. 2016 Decision*].

⁸⁰ CPUC, Comments, Grid Reliability, *supra* note 5, at 39.

VIII. The Polar Vortex: Data Fuel Secure: Demand Response, Renewables, and Internet-Enabled Platforms Save the Sunny California Polar Vortex Day, 2014

The Polar Vortex of Feb 6, 2014 when natural gas prices surged nationally due to freezing temperatures on the East Coast highlights the role of Internet-enabled energy services to energy reliability, public safety, cost, and environmental protection. California secured its energy resources during the polar vortex through Internet-enabled demand response, a distributed energy resource mix including renewables and wind which saved the late afternoon, interruptible programs whose enrollment the Internet facilitated, great coordination, and communication with regulators, market participants, the public and others. As natural gas supplies rushed back east on February 6, 2014 during the Polar Vortex, CAISO issued a Stage 1 emergency alert and called on demand response resources which “provided approximately 800 MW during the evening ramp and peak of the electric demand, which effectively reduced the system load by that amount, relieving pressure on supply. This use of demand response is just one example of how effective nonbaseload resources can be at meeting the types of contingencies highlighted in the proposed rulemaking.”⁸¹ FERC’s Grid Resiliency NOPR is deficient in ignoring this diverse resource mix to promote reliability during the very event, the Polar Vortex, it cites to justify its proposal without recognizing the unavailability of many coal-fired and nuclear resources during that cold-weather event.

As the Polar Vortex blew cold winds and snow that increased energy demand back east, gas sellers rushed supplies eastward to take advantage of high gas prices. The shift of gas supply was so sudden and dramatic that day it left sunny California with insufficient natural gas supply to fuel its natural-gas fired electric power plants. In the early morning hours after the day

⁸¹ *Id.* at 35.

dawned in California, “SoCalGas informed the ISO that storage levels were near all-time lows in part because higher gas prices outside of California led to higher storage withdrawals.”⁸²

In the days leading up to the polar vortex peak on February 6, 2014 and on that day, “CAISO coordinated closely with California’s natural gas operators to ensure sufficient gas was available to operate electric power plants.”⁸³ CAISO contacted gas pipeline operators in the early morning “to reconfirm that they could support the electric schedules for February 6, 2014” and reported that “[a]gain, the ISO received an affirmative response.”⁸⁴ “[B]efore 7 a.m., 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.”⁸⁵ “Soon thereafter, SoCalGas directed that all generating units located in the southern portion of its system not increase their current natural gas usage rates.”⁸⁶

“On February 6, 2014, natural gas prices increased three-fold from approximately \$7/MMBtu the previous day to over \$20/MMBtu at some of the western trading hubs,” a price increase likely triggered by cold weather.⁸⁷ CAISO later reported that economic dispatch and pricing rules (some of which the FERC waived on CAISO request during the Polar Vortex), provided an insufficient market signal to attract gas supply to California.⁸⁸

⁸² *Id.*

⁸³ Catherine J.K. Sandoval, Commissioner, California Public Utilities Commission, Notice of Ex Parte Communication: Protecting and Promoting the Open Internet, GN Docket No. 14-28; Framework for Broadband Internet Services, GN Docket No. 10-127, received by the FCC October 13, 2014, [hereinafter *Commissioner Sandoval ex parte letter*], <https://ecfsapi.fcc.gov/file/60000972786.pdf>; 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*].

⁸⁴ CAISO, Gas Events and Market Results of Feb. 6, 2014, Technical Bulletin (May 2014), at 14, https://www.caiso.com/.../TechnicalBulletinGasEvents_MarketResults_Feb6_2014.pdf. [hereinafter *CAISO, Gas Events and Market Results of Feb. 6, 2014*].

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.* at 5.

⁸⁸ *Id.* at 21 (“ Among the lessons learned from the February 6 cold weather events was that gas prices used for the calculation of generating unit MLC and STCUC may not reflect the current gas price in the event of a sudden gas

Then-existing CPUC rules largely allowed gas sellers to not fulfill contracts to California buyers such as electric power plant operators. The CPUC modified its rules in 2015 and 2016 to better coordinate gas supply and demand and prevent shortages due to price signals in other markets that can threaten California energy reliability.⁸⁹ CAISO's Grid Reliability NOPR Comments highlighted that California Balancing Authorities addressed challenges posed by Aliso Canyon and SONGS through their diverse resource mix, coordination between regulators, CAISO, and Balancing Authorities, and "with improved coordination with natural gas pipeline systems, market design enhancements, increased storage, revised balancing rules, and the addition of synchronous condensers."⁹⁰

The CPUC's adjustment of the gas balancing rules to ensure reliability highlight that rules matter, just as they did during the California Energy Crisis period. FERC's Grid Resiliency NOPR offers no justification for applying its undefined proposal across the country to markets with different needs and characteristics. Doing so would subject ISO markets to rules ill-suited to differing state and regional needs, risking not only market distortions that will likely raise prices, but undercutting reliability and public safety through ill-suited rules.

To mitigate the natural gas shortfall during the Polar Vortex "ISO also issued exceptional dispatches to generators to ensure they did not increase their gas usage rate, consistent with SoCalGas' directive. These exceptional dispatches included decreasing output from some

price spike. This is because the ISO uses gas market indices that are based on gas trades the day prior to the ISO's day-ahead market. As a result, the ISO's market committed resources in the day-ahead market that reflected the lower gas prices traded the previous day. This created concerns because the situation resulted in an inefficient dispatch that did not accurately reflect generation production costs. To address this issue, the ISO requested, and the Commission granted, temporary waivers of its tariff to allow the ISO to incorporate a more recent gas price forecast into its day-ahead market solution as well as settlement practices under certain conditions, including the option for registered-cost resources to switch to proxy cost option when gas price spikes occur.")

⁸⁹ CPUC Decision 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; CPUC Resolution G-3511, December 7, 2015; CPUC D.16-06-039, Decision Granting The Joint Petition For Modification Of Decision 16-06-039, December 1, 2016.

⁹⁰ CAISO, Grid Reliability Comments, *supra* note 34, at 7.

resources taking service from SoCalGas.”⁹¹ “ISO real-time operators then dispatched other generating units and intertie resources to make up for the loss of electric supply.”⁹²

Demand response calls to immediately reduce energy consumption were coupled with efforts to procure and reconfigure 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.”⁹³ “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. The grid warning terminated at 22hrs.”⁹⁴

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....ISO calls for demand response manually and outside the market through procedure 4420 and then utilities call for demand response programs with consumers that have contracts for demand response.”⁹⁵

Demand response provided load reduction equivalent to almost three fossil-fueled peaker plants running at full capacity, or one to two large baseload fossil-fueled generation plants. “All demand response combined provided approximately 800 MW during the evening ramp and peak of the electric demand, which effectively reduced the system load by that amount, relieving pressure on the supply” CAISO reported about California’s energy resources on February 6, 2014 as the Polar Vortex drew natural gas back east.⁹⁶ CAISO noted that “interruptible load

⁹¹ CAISO, *Gas Events and Market Results of Feb. 6, 2014*, *supra* note 84, at 14.

⁹² *Id.* at 14-15.

⁹³ *Commissioner Sandoval 2015 Open Internet Ex Parte Comments supra* note 83, at 36.

⁹⁴ CAISO, *Gas Events and Market Results of Feb. 6, 2014*, *supra* note 84, at 16.

⁹⁵ *Id.* at 16.

⁹⁶ *Id.*

programs are outside the market and, therefore, cannot set the market prices, opposite to have demand response being dispatched through the market to manage the load through DR bids and awards.”⁹⁷ “The WECC [Western Electric Coordinating Council] Reliability Coordinator also issued Energy Emergency Alerts to initiate its own efforts to help mitigate the system conditions.”⁹⁸ This enhanced California’s demand response efforts by reducing load in other regions interconnected to CAISO, freeing up resources to be exported to California.

Renewables helped save the day in California during the polar vortex. “In the late afternoon, wind generation output increased as evening peak electric demand occurred,” further reducing the need for additional gas-fired generation to meet this demand and relieved pressure on the overall supply side.”⁹⁹

CAISO reported that three main factors kept real-time prices in CAISO’s market that day below \$200 and forestalled blackouts: “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 inerties to position the system for the evening peak.”¹⁰⁰ “All these factors combined 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 that resulted in such prices.”¹⁰¹ Likewise in PJM demand response and resource other than coal and nuclear were critical to reliability during

⁹⁷ *Id.*

⁹⁸ *Id.*

⁹⁹ *Id.* at 16, figure 14, Solar and Wind Production on Feb. 6, 2017).

¹⁰⁰ *Id.* at 18.

¹⁰¹ *Id.*

the Polar Vortex. Energy efficiency, demand response, and renewables played a key role in maintaining system reliability in PJM during the Polar Vortex.¹⁰²

ISO communication with market participants, the public, WECC, generators, utilities, market regulators, and others was supported by, and in some cases dependent on the open Internet. “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!””¹⁰³ The use of the Internet for CAISO bidding, communications, and to call on resources highlights the importance of a neutral and open Internet to energy reliability.

Internet-enabled communication, great coordination among and work by many dedicated people, the fruits of previous labor, and the commitment of regulators, market participants, and the public kept the power on in California. The open Internet enabled communication about: demand response; interruptible load programs whose enrollment was previously facilitated by the Internet; communications with generators including renewable generators; those in markets intertied to CAISO; coordinators; regulators, utilities; market participants; the media; and the public. Internet-enabled bidding in the CAISO market was critical as many people worked together to keep California’s power on when the polar vortex hit the east coast.

¹⁰² *Attorneys General of 10 States, Connecticut, Rhodes, Island and New Hampshire Comments*, supra note 11, at 19-34 (citing *See, e.g., Susan Tierney et al., Electric System Reliability and the EPA’s Clean Power Plan: The Case of PJM*, Analysis Group, at 12-13 (Mar. 2015), available at http://www.analysisgroup.com/uploadedfiles/content/insights/publishing/electric_system_reliability_and_epas_clean_power_plan_case_of_pjm.pdf (PJM utilized demand response and wind generation to meet demand, despite substantial loss of coal, nuclear, and natural gas capacity); Greg Hresko et al., *Wind Energy Saves Consumers Money During the Polar Vortex*, American Wind Energy Association, at 1 (Jan. 2015), available at <http://awea.files.cmsplus.com/AWEA%20Cold%20Snap%20Report%20Final%20-%20January%202015.pdf> (“[W]ind energy provided large quantities of critical electricity supply when it was needed most, keeping the lights on and reducing the impact of these price spikes”).

¹⁰³ *Commissioner Sandoval 2015 Open Internet Ex Parte Comments*, supra note 83, at 36.

The Grid Resiliency NOPR fails both the FPA and the APA in omitting consideration of the diverse strategies used around the country to protect grid reliability during the Polar Vortex and other times of stress on the energy system. The NOPR proposes full, but undefined cost recovery for energy resource that were unavailable in some markets due to freezing conditions during the Polar Vortex, undercutting its purported rationale for paying more to ensure grid reliability. It ignores the role of demand response, renewables, DERs, energy planning by states in coordination with ISOs, state procurement, and coordination to promote reliability. These deficiencies indicate the Grid Resiliency NOPR is not supported by factual analysis, and that the facts contradict its claims. Such a proposal reflects arbitrary and capricious decision-making under the APA, and violates the FPA’s requirements to consider alternatives including existing resources. *Michigan v. EPA*, ___ U.S. ___, 135 S. Ct. 2699, 2707 (2015) (“Consideration of cost reflects the understanding that reasonable regulation ordinarily requires paying attention to the advantages *and* the disadvantages of agency decisions.”).

IX. Smart Grid Investments and Smart Inverters Harness Grid Resiliency and Reliability Benefits

The NOPR fails to consider the role of Smart Grid investments in promoting grid reliability, or to analyze why it claims that resources with 90-days fuel on hand contribute more to reliability than Smart Grid and Internet-enabled resources. The Energy Independence and Security Act of 2007 (EISA) signed by President George W. Bush spurred federal “Smart Grid” policies.¹⁰⁴ EISA enacted U.S. policy to “support the modernization of the Nation's

¹⁰⁴ Public Law No. 110-140, 121 Stat. 1492 (2007) (The Energy Independence and Security Act of 2007 (EISA)).

electricity transmission and distribution system to maintain a reliable and secure electricity infrastructure that can meet future demand growth...”¹⁰⁵

EISA directed FERC to initiate a rulemaking proceeding to adopt smart grid functionality and interoperability standards and protocols.¹⁰⁶ FERC “proposed to consider smart grid devices and equipment—including those used in a smart grid pilot program or demonstration project—to be “used and useful” for purposes of cost recovery if the applicant makes certain showings.”¹⁰⁷ FERC’s allowance of utility rate recovery for used and useful smart grid devices and systems spurred investment in more than traditional utility steel in the ground assets such as utility substations, poles, and wires. The Smart Grid initiative deployed and embedded communications to transform the grid into a system better able to detect and respond to conditions. It enabled new methods for grid visibility and resource dispatch.

The National Institute of Standards and Technology (NIST) defined the Smart Grid as the “two-way flow of electricity and information to create an automated, widely distributed energy delivery network.”¹⁰⁸ The Smart Grid can “intelligently detect problems and automatically route power around localized outages, making the energy system more resilient to natural disasters and terrorist attacks. It will keep bills low and minimize greenhouse gas emissions.”¹⁰⁹

Smart Grid and Internet-enabled resources enhance grid operator and IOU ability to respond to local conditions and increase grid flexibility. CAISO informed the CPUC in that as

¹⁰⁵ FERC, Smart Grid Policy, 127 FERC ¶ 61139, 61592 (May 19, 2009) (citing EISA, 121 Stat. 1492, Section 1301).

¹⁰⁶ *Id.*, at 61359.

¹⁰⁷ *Id.* at 61592.

¹⁰⁸ FCC, Connecting America, The National Broadband Plan, at 249 (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>).

¹⁰⁹ *Id.* at 249.

the grid operator, it “must know the location and specific characteristics of local resources to properly assess the effectiveness of those resources to resolve the contingencies identified in its planning studies.”¹¹⁰ “For example, if a contingency is due to a voltage concern, only resources in close proximity to the voltage problem can effectively resolve the problem. Resources located in other parts of a local capacity area less effective than those located close to the problem.”¹¹¹ Demand resources, like other local capacity resources, “must be integrated into the market and full network model for the CAISO to properly assess the impact and effectiveness of such resources in real-time, particularly in the local capacity areas where the resources located within the local area are essential to maintaining reliability.”¹¹² CAISO stressed that “[d]ispatching resources outside market processes and security constrained unit commitment and economic dispatch processes is sub-optimal because, at minimum, it can lead to non-market and nonoptimized dispatches that are ineffective and lead to re-dispatching the system to regain system balance, or worse, harm reliability through unmanaged and unaccounted for resource movements.”¹¹³

Internet-enabled communications are critical to dispatching local assets to respond to local conditions. Triggering imports from other areas is not as effective and has consequences for resource needs elsewhere. CAISO’s analysis highlights the local, the hyperlocal, even premise geographic market in which energy grid resources operate including those which are Internet-enabled. FERC’s Grid Resiliency NOPR does not consider the role of such flexible and local resources in proposing to prefer plants with 90-days fuel on hand. The ability to send a

¹¹⁰ CPUC Rulemaking 14-10-010, Response To Administrative Law Judge’s February 17, 2016 Ruling By The California Independent System Operator Corporation, at 10, March 25, 2016.

¹¹¹ *Id.*

¹¹² *Id.*

¹¹³ *Id.*

signal to a resource such as a DER connected to a Smart Inverter on a block that has a voltage issue enables that DER to provide support through the Smart Inverter to address the local issue. Smart Inverters can provide valuable location-specific support, flexibility, and reliability benefits that imports from a distant plant cannot provide.

The CPUC adopted a requirement for Smart Inverters in 2014 in D.14-12-035 to increase grid visibility and control for DERS. Smart Inverters are used to convert direct current (DC) from the generating resource to the voltage and frequency of the alternating current (AC) distribution system. Generally, in California, about 90% of small scale renewable generation is connected to the distribution grid through inverters.¹¹⁴ Phase I Smart Inverter functions include:

1. Anti-Islanding Protection: Revise Electric Tariff Rule 21, Section H.1.a.(2) to reflect proposed new voltage ride through settings;
2. Low and High Voltage Ride-Through: Revise Electric Tariff Rule 21, Section H.1.a.(2) and Table H.1 to reflect proposed new default voltage ride-through requirements;
3. Low and High Frequency Ride-Through: Revise Electric Tariff Rule 21, Section H.1.a.(2) and R21 Table H.2 to reflect proposed new frequency ridethrough settings;
4. Dynamic Volt-Var Operation: Revise Electric Tariff Rule 21, Sections H.2.a, H.2.b, H.2.i and R21 table H.1 to reflect proposed new dynamic volt/var operations requirements;
5. Ramp Rates: Add new Electric Tariff Rule 21 subsection within Electric Tariff Rule 21, Section H to include proposed new ramp rate requirements;
6. Fixed Power Factor: Revise Electric Tariff Rule 21, Section H.2.i to reflect the proposed new fixed power factor requirements; and
7. Soft Start Reconnection: Revise Electric Tariff Rule 21, Section H.1.a.(2) to reflect proposed new reconnection by soft-start method.

¹¹⁴ CPUC Decision 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, at 3, June 23, 2016 [hereinafter *CPUC Interconnection Decision*].

Now mandatory for new solar and wind systems installed in California after September 8, 2017, Smart Inverters already provide voltage ride-through, frequency ride-through, and ramp rate management.¹¹⁵

CPUC Decision 16-06-052 adopted a requirement to file tariffs to implement advanced functionalities for “smart inverters”¹¹⁶ through an Alternate Proposed Decision I authored.¹¹⁷ As advanced features are added in 2018, Smart Inverters will help integrate renewables and provide grid benefits.¹¹⁸ Smart Inverters communications features, slated to be added to in 2018, will enable DERs to provide reactive as well as real power, voltage support to respond to changes in voltage, and the ability to remotely disconnect to enable these distributed energy resources to respond to grid needs.¹¹⁹

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. Embedding communications networks throughout the energy network enhances deployment and reliability, creating flexibility even on the hottest or coldest days. Smart inverters and Internet-enabled demand response and resources offer new means of handling weather and other stresses on the grid. This option offers an alternative to Energy Secretary’s

¹¹⁵ CPUC, Comments, Grid Reliability, *supra* note 5, at 33-34 (“Resilience is also enhanced through the utilization of smart inverter capabilities. Some of these capabilities are already required of new interconnections in California, and voltage ride-through, frequency ride-through, and ramp rate management. Additional smart inverter capabilities will further assist resilience and are expected over the next few years. All these functions allow distributed energy resources to adjust to and help alleviate unanticipated grid fluctuations.”)

¹¹⁶ CPUC Interconnection Decision 16-06-052, *supra* note 114, Finding of Fact 21, Attach. D, Filing Schedule (requiring CPUC Interconnection Rule 21 revisions to incorporate the technical requirements for Phase 2 smart inverter communications and Phase 3 advanced inverter functions as recommended by the Smart Inverter Working Group).

¹¹⁷ *Id.*

¹¹⁸ CPUC, Smart Inverter Working Group, <http://www.cpuc.ca.gov/General.aspx?id=4154> (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.)

¹¹⁹ CPUC Interconnection Decision 16-06-052, *supra* note 114, at Attachment E, 5-6.

proposal that FERC consider a rulemaking to provide incentives for “fuel secure” resources such as coal and nuclear with stock on hand.

The importance of flexible resources is highlighted by California’s experience with fast load ramping, up and down, due to availability of solar and other renewables, and its unavailability during the evening peak. “CAISO experienced a 12,960MW 3-hour net-load ramp in December 2016, followed in 2017 by a 9,187MW net-load low coupled with a 12,500 MW 5-hour-net-load ramp on April 23, 2017¹²⁰– these steep net-load ramps, which are projected to be typical of low load, high solar days,¹²¹ create operational challenges that cannot be mitigated by inflexible baseload resources. Additionally, on April 21, 2017, CAISO experienced an instantaneous solar peak of 9,868MW.”¹²²

Curtailement of renewables has increased significantly every year since 2014, “reaching over 80GWh total in April 2017.”¹²³ PG&E notes in its comments that “This is a system reliability need that cannot be met with inflexible baseload resources. In fact, these resources exacerbate the problem at the expense of renewable generation which is at the core California’s state climate policy goals. Lower net loads correlated with overgeneration conditions and steeper net-load ramps are also projected to become more severe and have been occurring at an accelerated rate in past few years on the CAISO system. These conditions are not isolated and generally happen in the same market days. Retention of inflexible baseload capacity is therefore not the answer to CAISO’s reliability concerns, and in fact, can be detrimental to CAISO system

¹²⁰ P&GE Grid Reliability Comments, FERC, Docket No. RM18-1-000, Oct. 23, 2017, at 3 (citing See CAISO, *Briefing on Supply Conditions* (April 19, 2017) , available at <https://www.caiso.com/Documents/BriefingonSupplyConditions-Presentation-April2017.pdf>.
3 *Id.* at 3 (citing See CAISO, *What the Duck Curve Tells Us About Managing a Green Grid* (2016), available at https://www.caiso.com/Documents/FlexibleResourcesHelpRenewables_FastFacts.pdf.

¹²¹ *Id.*

¹²² *Id.* at 4.

¹²³ *Id.* (Citing See CAISO, *Renewable Curtailment*, available at <https://www.caiso.com/Documents/HistoricalCurtailment.pdf>).

reliability going forward, exacerbating overgeneration conditions and reducing system flexibility.”¹²⁴

PG&E observed that “Stockpiling large quantities of fuel while neglecting investments in transmission and distribution infrastructure will not in itself make the grid more resilient to climate change or other risks. The principle of just and reasonable ratemaking requires that FERC appropriately weigh alternatives to fuel supply subsidies that might achieve a greater impact on resilience, in order to ensure electric customers are not burdened with excessive costs.”¹²⁵

The CPUC has encouraged flexibility of grid resources through both demand side and supply-side strategies. In November 2016 the CPUC unanimously adopted Energy Matinee Pricing Pilots, to evaluate the “effect of tariffs designed to allow for the shift of energy use by commercial, industrial, and agricultural users to midday when abundant renewable and low-water-using energy are produced at high (and growing) quantities. We accomplish this shift by directly signaling to consumers with an Energy Matinee Pricing Tariff the times when low-water-using energy is more abundant, and demand is currently low.”¹²⁶ “An Energy Matinee Pricing Tariff addresses the water-energy nexus by better aligning abundant midday energy supply with commercial, industrial, and agricultural electric demand.”¹²⁷

After the CPUC ordered the large IOUs PG&E, SCE, and SDG&E to propose Energy Matinee Pricing Pilots in 2015, the CPUC adopted Matinee Energy Pricing Pilots in the Water/Energy Nexus Proceeding for which I served as Assigned Commissioner.¹²⁸ That

¹²⁴ *Id.* at 4.

¹²⁵ *Id.* at 5.

¹²⁶ CPUC Decision 16-11-021, Decision Approving Pilots For Matinee Pricing (RM 13-12-011, Water/Energy Nexus) November 10, 2016, at 5.

¹²⁷ *Id.*, at 2.

¹²⁸ *Id.* at 5.

decision deferred to PG&E’s General Rate Case consideration of the tariff PG&E proposed after the pilots were ordered to incorporate the concept of Energy Matinee Pricing into its GRC and rate design.¹²⁹ SCE in September 2016 proposed in its Rate Design Window (RDW) application a Real Time Pricing (RTP) rate design available to all nonresidential customers on an opt-in basis that “incorporates discounted rates during the matinee period. In addition, SCE’s RDW proposals include new standard time-of-use (TOU) periods for nonresidential customers, which also incorporate a super-off-peak period that includes the late morning and early afternoon spring matinee period.”¹³⁰

The consideration of Matinee Pricing tariffs in PG&E’s General Rate Case and SCE’s RDW allows for institutionalization of the Matinee Pricing concept in rate design and wider adoption. SDG&E is proceeding with the Matinee Pricing pilot the CPUC approved in 2016. The applications of the utilities to institutionalize Matinee Energy Pricing in their GRCs and Rate Design highlight the need for a range of tools to align energy demand with resources. Matinee Pricing attracts demand to times when energy is abundant, aligning resource supply and demand to optimize costs, resource use, and reduce the need for GHG-burning peaker power plant operation. California’s adoption and institutionalization of Matinee Energy Pricing highlights the options available to states and wholesale markets aside from baseload energy resources. FERC’s proposal to compensate certain types of 90-day fuel on hand resource for “reliability” ignores the need for flexible resources and opportunities to achieve reliability by balancing supply and demand through tools including pricing structures and tariffs.

¹²⁹ *Id.* at 21 (“We applaud PG&E for recognizing the matinee tariff concept and for proposing it in their GRC Phase II.”)

¹³⁰ CPUC Decision 17-06-007, Decision Granting Southern California Edison Company’s Petition For Modification Of Decision 16-11-021, at 3, June 15, 2017.

X. Demand Response, and DERS Maintain Reliability Despite 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 energy demand helped prevent energy shortages in the Los Angeles area, home to twenty-six million people, while the natural gas storage field at Aliso Canyon was closed from October 2015 to mid-2017 after a methane leak. After an underground natural gas storage well leaked, a methane plume spewed into the atmosphere for months while SoCalGas, the storage field operator, worked to stop the leak. The CPUC ordered SoCalGas to halt use of the storage field for natural gas supply after withdrawing some natural gas to reduce pressure and slow the methane leak.¹³¹ The inability to draw natural gas from Aliso Canyon to serve gas-fueled power plants in the Los Angeles area led to concerns about electricity shortages in 2016 through summer 2017 due to the lack of local natural gas availability.

My November 2016 remarks to the NARUC Electricity Committee informed attendees that the CPUC’s work to embed demand response, connect with CBOs, solicit and approve contracts with DERs, and upgrade transmission helped California “better withstand Aliso Canyon when the number one source of natural gas was no longer available.”¹³² With many of these DER resources operating by late 2015, technical upgrades, and a push to enroll and make people aware about demand response programs such as the air conditioning cycling program that sends signals to air conditioning condensers to reduce use, this planning and investment helped Southern California withstand the loss of its largest gas storage field, Aliso Canyon, for more than one year and ten months from November 2017 to August 2017.

¹³¹ CPUC, Aliso Canyon Well Failure, <http://www.cpuc.ca.gov/aliso/> (last visited Nov. 2, 2017).

¹³² Robert Mullin, *Sandoval: Nuke Shutdown, Auto-DR Aided Aliso Canyon Response*, November 2016, Sandoval-<https://www.google.com/amp/s/www,rtoinsider.com/auto-dr-aliso-canyon-34586/amp>.

When the CPUC ordered the Aliso Canyon gas storage closed in November 2015, the CPUC, CEC, CAISO recognized that inability to deliver natural gas to power plants in a timely fashion could affect winter energy use when natural gas is used for heating and cooking, as well as for electricity generation. In the summer air conditioning dominates demand for power from a variety of sources including natural gas-fired power plants.

In early 2016, the CPUC's Energy Division and CAISO identified as a consequence of the unavailability of Aliso Canyon as a natural gas storage field "the potential for electric outages in Los Angeles, Orange, and parts of Ventura Counties due to a shortage of natural gas to fuel electric power plants during the winter months."¹³³ Low natural gas supplies in the Los Angeles basin could trigger the need to divert gas from the neighboring area SDG&E serves to prevent a low-pressure gas event in Los Angeles.¹³⁴ Both low-pressure and high-pressure events can cause natural gas explosions, emphasizing the public safety imperative of natural gas supply, delivery, and system operation. In the aftermath of San Onofre's closure and the Aliso Canyon leak, the CPUC, CAISO, and CEC worked together to protect public safety and prevent reliability issues including cascading outages that could include Los Angeles, Orange, and San Diego Counties.

To address potential natural gas shortfalls in 2016, the CPUC adopted measures to increase energy efficiency and demand response throughout its energy portfolio. California's energy resource mix is diverse, a characteristic which helped the state weather the outage of both San Onofre and the extended closure of Aliso Canyon. In California, "Natural gas resources account for approximately 61.1 percent of the resource mix, hydro accounts for 14.2 percent, and solar accounts for 13.7 percent, wind, geothermal, and biofuel units make up 6.1 percent, nuclear

¹³³ CARE ESA CPUC Decision 2016, *supra* note 79, at 106.

¹³⁴ *Id.* at 106.

generation is 4.3 percent, and oil generation provides 0.4 percent.”¹³⁵ As CAISO highlights in its Comments, “[i]n addition, a robust transmission system, energy efficiency mandates, access to imports from neighboring BAAs, increasing storage levels, a proliferation of distribution-side resources, demand response, and the Flex Alert program play an important role in providing system flexibility and resilience.”¹³⁶

To reduce energy demand in light of the Aliso Canyon outage, the drought, and as part of California’s commitment to reduce energy hardships and improve the environment, the CPUC deployed its Energy Savings Assistance Program (ESAP or ESA) which aims to reduce energy burdens on low-income households. ESAP complements California’s energy bill assistance for low-income households provided through California Alternative Rates for Energy (CARE) which provides up to a 33% discount on electricity and natural gas bills for IOU energy customers.¹³⁷ ESA seeks to reduce low-income household energy bills, provide energy security against heating and freezing, and to help energy ratepayers and the system overall by reducing energy demand. More than 4.49 million low-income California households received bill assistance through CARE in 2014.¹³⁸ Between 2002 and 2016 more than 3.5 million low-income California households received ESA weatherization treatments.¹³⁹ Participation is anticipated to

¹³⁵ CAISO, Comments, Grid Reliability, *supra* note 34, at 7 (citing CAISO 2017 Summer Loads & Resource Assessment at 10, 44 (May 11, 2017), available at: <https://www.caiso.com/Documents/2017SummerAssessment.pdf>. “Other percentage mixes have been published. These numbers are based on a resource’s net qualifying capacity, which describes the amount of capacity that can be counted from each resource to meet resource adequacy requirements and takes into account availability and deliverability.”)

¹³⁶ *Id.* at 7, n. 8 (“The Flex Alert program is a voluntary energy conservation program that alerts and advises consumers about how and when to conserve energy. It is an important tool for the CAISO during periods of high demand or other stressed conditions to maintain system reliability.”)

¹³⁷ CPUC, CARE/FERA Programs, <http://www.cpuc.ca.gov/General.aspx?id=976> (“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.”)

¹³⁸ CPUC, Energy Division, Summary of Energy Low-Income Programs for the Emerging Trends Committee, Aug. 9, 2017, at 2.

¹³⁹ *Id.*

increase following the CPUC's November 2016 Decision which eliminated and adjusted many rules the CPUC found inhibited participation and effective energy treatment.¹⁴⁰

California law CA PU Code 2790 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-effectiveness of the services and the policy of reducing the hardships facing low-income households.”¹⁴¹ ESA executes this directive by supporting free weatherization measures which may include “building conservation measures, energy management technology, energy-efficient appliances, and energy education programs determined by the commission to be feasible.” as authorized in 2015 by AB 793, In determining which measures to approve the CPUC must consider “both the cost-effectiveness of the measures as a whole and the policy of reducing energy-related hardships facing low-income households.”¹⁴² 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.”¹⁴³ This statutory definition of energy management technology would include products and services such as interconnected 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.

In April 2016 the CPUC adopted an Interim Decision in the ESA proceeding to direct SCE and SoCalGas to accelerate the deployment of energy savings and demand response

¹⁴⁰ *CARE ESA CPUC Decision 2016, supra* note 79, at 6 (“we revise several administrative rules to enable broader ESA deployment to reduce hardship on low-income Californians in a cost-effective manner.” The Decision “eliminate[s] the Three Measure Minimum Rule (3MM), the Go-Back Rule, which removes the —freeze on re-treating households since 2002, and remove measure caps that would limit the number measures deployed at a location.”)

¹⁴¹ CA PU 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.)

¹⁴² Assembly Bill 793 (Quirk), Chapter 589, Amending CA PU Code 2790, 717 (2015).

¹⁴³ *Id.*

measures through ESA.¹⁴⁴ To make this feasible, the CPUC suspended several rules that it concluded deterred prudent spending to save energy for both the ESA-program recipient and for system energy needs.¹⁴⁵ These included caps on energy efficiency measures, such as rules that restricted replacement of light bulbs to three bulbs, and the three-measure minimum rules that required an ESA-household to be eligible for 3 measures before they could receive energy efficiency treatment.

To “save energy and reduce bills and hardships, while protecting the health, safety, and comfort of ESA-eligible households,” the CPUC in April 2016 directed SoCalGas to “focus the [High-Efficiency] HE furnace and other gas savings measures first on the areas affected by the Aliso Canyon State of Emergency, as the geographical areas may be adjusted by the Commission’s Energy Division and CAISO.”¹⁴⁶

The need for demand response and energy efficiency to balance energy demand and supply while Aliso Canyon was closed and natural gas supplies in the Los Angeles basin were constrained led to demand response reduction calls during a summer heatwave in 2016. CAISO declared Flex Alerts on June 20, July 27, and July 28 in response to “reliability concerns related to high temperatures and high demand” following the unavailability of the Aliso Canyon natural gas storage field normally used to support electric generation.¹⁴⁷ During these flex alert days, SCE obtained over 300 megawatts of demand response reduction through the AC cycling program, an amount equivalent to a peaker plant.¹⁴⁸ Negawatt demand response saved costs as a 300 MW gas-fired peaker plants cost approximately \$1.25 billion and takes over a decade to site, approve, and build, and emits GHGs when running. Demand response requires no siting or environmental review, emits no GHGs or carbons, uses neither fuel nor water, and is enabled by

¹⁴⁴ CPUC Decision 16-04-040, Decision Adopting Measures In Response To The Aliso Canyon Natural Gas Leak Emergency, April 21, 2016.

¹⁴⁵ *Id.* at 2.

¹⁴⁶ *CARE ESA CPUC Decision 2016, supra* note 79, at 106.

¹⁴⁷ *CAISO, 2016, Annual Report on Market Issues and Performance (citing flex alerts in 2016, see: http://www.caiso.com/Documents/CaliforniaISODeclaresFlexAlertforSouthernCaliforniaforMonday_6-20-2016.pdf (June 20) and <http://www.caiso.com/Documents/CaliforniaISOExtendsStatewideFlexAlertThroughThursday.pdf> (July 27-28)).*

¹⁴⁸ Mullin, *supra* note 132.

the Internet for program enrollment and for notice to reduce demand. During the hot summer days in Los Angeles in Summer 2016, negawatts helped stave off blackouts, kept the system in balance, saved money and GHGs, and protected public safety.

Based on the record gathered in the ESA proceeding the CPUC in November 2016 adopted the Alternate Proposed Decision I authored, CPUC Decision 16-11-022, to invest an annual budget of \$1.8 billion for 2016-2020 (\$4.36 billion for the four year program cycle) for both CARE and ESAP.¹⁴⁹ 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.¹⁵⁰

To maximize program cost effectiveness and reduce energy hardships, the CPUC sought to extend the energy benefits associated with ratepayer spending on weatherization measures by using technology to enable customer and systemic benefits. “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,”¹⁵¹ the CPUC ESA 2016 Decision concluded. 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.”¹⁵²

The CPUC characterized its ESA investments in Internet-enabled demand response and customer and third-party facing Internet access as an opportunity to reduce energy demand

¹⁴⁹ CPUC Decision 16-11-022, *CARE ESA CPUC Decision 2016*, *supra* note 79, at 13 (adopting Alternate Proposed Decision of Commissioner Catherine J.K. Sandoval).

¹⁵⁰ *CARE ESA CPUC Decision 2016*, *supra* note 79, at 38.

¹⁵¹ *Id.* at 7.

¹⁵² *Id.* at 53.

“during peak energy use periods and in times of system constraints, such as Flex Alert days.”¹⁵³

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.”¹⁵⁴

To encourage contributions to system energy needs and reduce energy hardships for ESA-eligible customers, the CPUC required the large IOUs educate ESA-eligible customers about demand response or alternative tariffs that might reduce energy bills regardless of whether they receive the ESA Program measures.¹⁵⁵ The CPUC concluded that “[l]everaging the investments in the ESA program to facilitate participation in demand response programs will extend the energy related benefits of this program.”¹⁵⁶

The CARE/ESA Decision unleashed a virtual power plant composed of low-income households who become enrolled in DR and receive Internet-enabled thermostats. This decision enables low-income households to enroll in demand response programs, transforming their DR program enrollment into a grid-balancing asset. Such demand response, verifiable by meter and consumption data, can reduce the need to invest in additional generation capacity. It enhances grid flexibility and adaptability including the prospect of localized energy management to address local energy issues and demand in a manner that benefits all ratepayers and achieves environmental goals.

“CPUC analysis shows that, when faced with a heat wave from August 31, 2017 to September 2, 2017 that precipitated CAISO annual peak load (as well as an all-time peak at one investor owned utility), the electric system performed without the need for contingency

¹⁵³ *Id.* at 54.

¹⁵⁴ *Id.* at 106.

¹⁵⁵ *Id.* at 54.

¹⁵⁶ *Id.*

procedures. This occurred despite an ongoing major constraint in natural gas storage capacity at Aliso Canyon, from which withdrawals were nevertheless necessary during the heat wave. Local distribution contingencies that occurred during the heatwave, however, were met with utility demand response programs. These programs provided roughly 355 MW of emergency capacity between 4:00 PM and 9:00 PM on September 1.”¹⁵⁷ “In 2018, California will rely on 1,649 MW of demand response that is fully integrated into the CAISO markets, of which half is designed to respond to system emergencies.”¹⁵⁸

CPUC 2016 ESAP Decision 16-11-022 leverages billions in prior investments in the Smart Grid that brought energy information to consumers through Internet access that enables consumer program enrollment and access to their energy data. PG&E’s 2016 Sustainability Report highlights its work to leverage Smart Meter technology. PG&E observed that “A foundational component of a more intelligent electric grid is the network of nearly 10 million electric and gas SmartMeter™ devices installed across our service area. The electric meters provide near real-time energy usage data to utilities and customers through digital communications. They also enable PG&E to better detect areas affected by outages, resulting in faster and more accurate service restoration.”¹⁵⁹ PG&E reported that it “continues to integrate a wide range of advanced communications and control technologies throughout our electric grid to help enhance the resiliency of the system and restore power outages more quickly.”¹⁶⁰

To leverage other state and federal investments in technology to enable energy savings and environmental benefits, the CARE/ESA decision ordered IOUs to coordinate with CPUC-

¹⁵⁷ CPUC, Comments, Grid Reliability, *supra* note 5, at 36-37.

¹⁵⁸ *Id.* at 43.

¹⁵⁹ PG&E, Together, Building a Better California, Corporate Responsibility and Sustainability Report, 2016, at 37, http://www.pgecorp.com/corp_responsibility/reports/2016/index.jsp.

¹⁶⁰ *Id.*

funded LifeLine providers.¹⁶¹ California's state Lifeline program harnesses both state and federal funds to offer discounted (usually free) phone service, as well as text and data to low-income Californians. California's LifeLine program was adopted when Ronald Reagan was California's governor. From its inception in 1984 until the CPUC's 2014 Lifeline Decision for which I was the Assigned Commissioner shifted Lifeline program rules, Lifeline supported landline telephone service and its enrollment had declined for seven years prior to the CPUC's 2014 LifeLine reform decision.¹⁶² The CPUC modified the LifeLine program in 2014 to allow mobile telephone services including text and data to offer services to low-income Lifeline customers.¹⁶³

By the end of 2016, LifeLine enrollment had risen to serve over 3 million Californians, most through wireless, exceeding the number of landline customers LifeLine served in 2006.¹⁶⁴ The CPUC and California Legislative Analyst Office anticipate LifeLine to serve 3.8 million Californians by the end of fiscal year 2016-2017.¹⁶⁵ Approximately 4.2 million California households are eligible for the program, a number commensurate with the low-income households enrolled in CARE to receive energy bill assistance.¹⁶⁶

The CARE/ESA Decision used the CPUC's jurisdiction over both energy and telecommunications utilities and public purpose programs in each field to unlock resources that enable new ways to save energy, reduce bills, and achieve energy goals, while also increasing the utility of the Lifeline Telephone service. The CPUC ordered the electric and gas IOUs to more

¹⁶¹ *CARE ESA CPUC Decision 2016*, *supra* note 79.

¹⁶² Legislative Analyst Office, State of California, CPUC 2016-2017 Budget, California Public Utilities Commission, California LifeLine Program, <http://www.lao.ca.gov/Publications/Report/3373>.

¹⁶³ CPUC Decision 14-01-036, Decision Adopting Revisions To Modernize And Expand The California Lifeline Program, January 16, 2014.

¹⁶⁴ LAO, *supra* note 162.

¹⁶⁵ *Id.*

¹⁶⁶ CPUC, Energy Division, Summary of Energy Low-Income Programs for the Emerging Trends Committee, *supra* note 138, at 2.

closely coordinate with the Lifeline program as their customers largely overlap.¹⁶⁷ This includes working with Lifeline providers to design CARE/ESA enrollment and information for mobile access, joint marketing efforts, and data sharing efforts to coordinate leads about eligible customers.¹⁶⁸ The same California households eligible for Lifeline are usually eligible for CARE and ESA as federal Lifeline is limited to households at 150% of the poverty level, whereas CARE/ESA enrollment is open to California households whose incomes measure 200% of the federal poverty. Coordinating California's investment in both Lifeline and CARE/ESA makes financial sense, helps low-income Californians, and assists in achieving California's goals to reduce energy hardships while achieving environmental benefits.

Through CPUC Decision 16-11-022 in the CARE/ESA proceeding, the Smart Grid reaches to the Smart Phone. For low-income customers who receive state and federal support for their phone service and state energy bill support, directing energy savings assistance dollars to provide them with information and web-enabled tools including connected devices creates an Internet-enabled energy safety net and improves the energy ecosystem.

FERC's Grid Resiliency NOPR fails to take into account state energy efficiency, demand response, or low-income programs designed to help meet electric needs and promote reliability. The CPUC's experience in leveraging CARE/ESA with LifeLine should be considered as alternatives to FERC's proposal in light of the substantial investment of public purpose funds California is making through each of these programs. These programs depend on the Open Internet to transmit data to customers that will empower their enrollment in programs such as Demand Response and allow them and contractors to access energy data. FERC must consider these alternatives to its Grid Resiliency proposal to comply with the FPA and the APA.

¹⁶⁷ *CARE ESA CPUC Decision 2016, supra* note 79.

¹⁶⁸ *Id.*

XI. FERC's Grid Reliability NOPR Fails to Justify the Commission's Reversal of Policies to Promote Energy Reliability, Competition, and Just and Reasonable Rates through Demand-Response and Market-Based Bidding, Indicating Arbitrary and Capricious Decision-Making under the APA and in Violation of the FPA

As FERC considers proposals to address electric reliability, the role of Internet-enabled facilities and services to inject flexibility, resilience, and reliability into the system must be considered. Proposals to pay physical facilities with 90-days fuel on hand bonus payments for reliability distort the market and ignore the reliability and flexibility benefits of demand response and distributed energy resources which can be deployed quickly on a localized basis.

Paying more to facilities with 90-days physical fuel on hand without a demonstration that such facilities offer more reliability benefits than other resources such as demand response which do not depend on fuel but can help balance the system in short order (upon 20-minutes response time in the CAISO market)¹⁶⁹ distorts the market and undercuts the reliability and cost benefits of demand response. Paying more for plants with 90-days physical fuel on hand runs contrary to the theory and practice of economic dispatch the Supreme Court cited in *F.E.R.C. v. Electric Power Supply Ass'n.* in recognizing the cost and reliability benefits of demand response.¹⁷⁰

FERC's reliability NOPR reverses more than sixteen years of FERC policy to ensure that wholesale energy is offered at just and reasonable rates. After extensive proceedings concerning the "California Energy Crisis" period of 2000-2001 which saw skyrocketing prices and blackouts due in part to flawed market design and market manipulation, FERC issued an order on June 19, 2001 implementing price caps to address unjust and unreasonable rates in the wholesale energy

¹⁶⁹ CPUC Rulemaking 14-10-010, CAISO Response To Administrative Law Judge's February 17, 2016 Ruling By The California Independent System Operator Corporation, at 3, n. 2, March 25, 2016 ("to satisfy this planning requirement, fast-responding supply resources must be able to receive and fully deploy to their local RA capacity amount within 20 minutes. If a demand response provider needs 5 minutes of preparation time after receiving a CAISO dispatch instruction, then that demand response provider's resources must be able to respond and fully deploy in 15 minutes to satisfy the 20 minute response time. In other words, a demand response provider's preparation time is part of the 20 minutes.").

¹⁷⁰ 136 S.Ct. 760, 766 [193 L.Ed.2d 661], as revised (Jan. 28, 2016).

market.¹⁷¹ That order reaffirmed that “as a result of the seriously flawed electric market structure and rules for wholesale sales of electric energy in California, unjust and unreasonable rates were charged, and could continue to be charged during certain times and under certain conditions, unless certain targeted remedies were implemented.”¹⁷² FER found that during the California Energy Crisis, “certain sellers used manipulation strategies...violated the relevant ISO and PX Tariffs.”¹⁷³ The Order “imposed price caps on all spot market sales from June 20, 2001 through September 30, 2002, and imposed a “must-offer” obligation on generators to prevent them from withholding supply.”¹⁷⁴ The California Parties to the litigation reported that the June 19 Order “put an end to the rolling blackouts, catastrophically high prices, and near-continuous power emergencies.”¹⁷⁵

FERC Order 745 authorizing the participation of demand response in the wholesale market to increase reliability at just and reasonable rates. In 2016 FERC approved CAISO’s application to include “distribution-connected or distributed energy resources in CAISO’s energy and ancillary services markets”¹⁷⁶ as consistent with electric reliability and just and reasonable rates. FERC cannot adopt its proposed tariff to pay more to assets with 90-days fuel on hand without explaining why it is reversing course from previous decisions to treat demand response and DER aggregators like other resources and allow the wholesale market to establish the rate.

¹⁷¹ San Diego Gas & Elec. Co., Complainant (June 19, 2001) 95 FERC ¶ 61418, 62557 (“Since determining that the market structure and rules for wholesale sales of electric energy in California had caused, and continued to have the potential to cause, unjust and unreasonable rates for short-term energy during certain times and under certain conditions, the Commission has ordered changes to the market structure and rules to assure that future rates would be just and reasonable.”)

¹⁷² *Id.* (citing San Diego Gas & Electric Co., et al. 93 FERC ¶ 61,294 (2000)(“December 15 Order”).

¹⁷³ State of California, Ex Rel. Bill Lockyer, Attorney Gen. of the State of California, 160 FERC ¶ 63010 (July 28, 2017).

¹⁷⁴ *Id.*

¹⁷⁵ Public Utilities Com’n of State of Cal. v. F.E.R.C. 462 F.3d 1027, 1043 (9th Cir. 2006).

¹⁷⁶ FERC, 155 FERC ¶ 61,229, Docket No. ER-16-1085-000, Order Accepting Proposed Tariff Revisions Subject To Condition, June 2, 2016.

The APA requires more reasoned analysis and explanation when an agency is changing course from previous rules and policies. The D.C. Circuit explained in 2016 that “when reversing existing policy:

[T]he Supreme Court has held that “the [Administrative Procedure Act] requires an agency to provide more substantial justification when its new policy rests upon factual findings that contradict those which underlay its prior policy; or when its prior policy has engendered serious reliance interests that must be taken into account.” . . . “It is not that further justification is demanded by the mere fact of policy change[,] but that a reasoned explanation is needed for disregarding facts and circumstances that underlay or were engendered by the prior policy.” . . . “Put another way, ‘it would be arbitrary and capricious to ignore such matters.’”

U.S. Telecom Ass’n v. FCC, 825 F.3d 674, 708-09 (D.C. Cir. 2016) (citing *Elec. Power Supply Ass’n*, 136 S. Ct. at 784), *reh’g denied*, 855 F.3d 381 (D.C. Cir. 2017), *petitions for cert. filed* (U.S. Sept. 27, 2017) (No. 17-498 et al.). “The APA’s requirement of reasoned decision-making ordinarily demands that an agency acknowledge and explain the reasons for a changed interpretation.”¹⁷⁷ *See also* 5 U.S.C. § 706; *La. Pub. Serv. Comm’n v. FERC*, 184 F.3d 892, 894, 897 (D.C. Cir. 1999) (“arbitrary and capricious” for Commission to “without an explanation . . . depart[] from its own precedent” (citing *Motor Vehicle Mfrs. Ass’n*, 463 U.S. at 57)); *Mich. Pub. Power Agency v. FERC*, 405 F.3d 8, 16 (D.C. Cir. 2005) (remanding for further explanation where Commission failed to adequately explain new policy).¹⁷⁸

FERC’s NOPR provides no reasoned analysis which examines why FERC should shift from economic dispatch or promotion of competitive market alternatives, or why it should favor the resources it would pay more over existing resources that promote reliability including demand response or other generators. “An agency may not, for example, depart from a prior

¹⁷⁷ *USTA v. FCC*, 825 F.3d 674, 706–07 (D.C. Cir. 2016) (citing *Verizon*, 740 F.3d at 636).

¹⁷⁸ *Attorneys General of 10 States, Connecticut, Rhodes, Island and New Hampshire Comments*, *supra* note 11 at 19-20.

policy *sub silentio* or simply disregard rules that are still on the books.”¹⁷⁹ The courts hold administrative agencies such as the FCC to exacting standards when reversing policies.¹⁸⁰

FERC’s NOPR also fails to recognize or analyze the consequences of these actions for the hundreds of millions of American households and millions of American businesses who rely on FERC’s wholesale market to provide just and reasonable rate for electricity. FERC should withdraw its Grid Resiliency NOPR in light of its deficiencies under the FPA that indicate it promotes neither just and reasonable rates nor reliability. It also fails the APA’s requirements of sufficient notice, analysis and justification for reversal of course, and reasoned decision-making.

XII. Conclusion

For all the foregoing reasons, the FERC should reject the DOE’s proposed rule and withdraw its Grid Resiliency NOPR.

Please accept this Reply Comment filed on November 8, 2017 in California due to Internet access problems that delayed submission.

Respectfully submitted,

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¹⁷⁹ *USTA v. FCC*, 825 F.3d 674, 706–07 (citing *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515, (2009)).

¹⁸⁰ *FERC v. Electric Power Supply Ass’n*, ___ U.S. ___, 136 S.Ct. 760, 784 (2016) (“When reversing existing policy, the Supreme Court has held that the APA requires an agency to provide more substantial justification when its new policy rests upon factual findings that contradict those which underlay its prior policy.”); *Fox Television Stations, Inc. v. F.C.C.* 280 F.3d 1027, 1047 (D.C. Cir. 2002) (holding that the Commission’s decision to retain the National Television Station Ownership rule was “arbitrary and capricious” and contrary to law” because the Commission failed to explain its departure from its previously expressed views.”), *opinion modified on reh’g* (D.C. Cir. 2002) 293 F.3d 537.