UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Grid-Enhancing Technologies	Docket No. AD19-19-000

PREPARED STATEMENT OF STEVEN LEOVY
ON BEHALF OF
WPPI ENERGY AND THE
TRANSMISSION ACCESS POLICY STUDY GROUP
FOR THE NOVEMBER 5-6 WORKSHOP

Thank you for the invitation to participate in this workshop on Grid-Enhancing Technologies to discuss Regulatory Approaches to Deployment Challenges.

My name is Steve Leovy, and I am the Transmission Engineer and NERC Standards Coordinator for WPPI Energy ("WPPI"). WPPI is a Wisconsin-based municipal joint action agency providing bulk power and other services to its fifty-one members, each of which operates a distribution utility and sells electricity at retail to the residences, businesses, and industries in and around its municipality. While WPPI is largely a transmission dependent utility ("TDU"), it jointly owns some transmission facilities that were planned and constructed through the CAPX 2020 collaborative planning process,[1] and it has an ownership interest in the American Transmission Company LLC, the stand-alone transmission company serving most of WPPI's members.

WPPI's members are all located on the Midcontinent Independent System Operator ("MISO") transmission system. I and others at WPPI actively engage in MISO stakeholder processes. My comments reflect my experience with RTOs, particularly MISO.

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[1] *CAPX2020*, http://www.capx2020.com/ (last visited Oct. 29, 2019).

In addition to speaking for WPPI, I speak today on behalf of the Transmission Access Policy Study Group ("TAPS"), an association of TDUs in thirty-five states. TAPS has long advocated for non-discriminatory access at reasonable rates to a robust transmission system that supports competitive wholesale markets, so TAPS members can provide affordable and reliable electricity to their customers. TAPS members, including WPPI, have experienced rapidly increasing transmission rates, and support the Commission's efforts to consider whether and how grid-enhancing technologies can be used to get more out of our existing transmission facilities. At the same time, we are very concerned that the incentives urged to encourage use of such technologies could burden consumers with unnecessary and excessive costs for technologies that are claimed to be low-risk and low-cost, and that should be applied, as appropriate, in a transmission owner's ("TO") normal operation of its facilities as part of good utility practice. My statement echoes and builds upon recent TAPS comments.[2]

I will discuss regulatory approaches the Commission should and should not adopt to promote deployment of grid-enhancing technologies. My suggestions can be summarized as follows:

1. The Commission should start with evaluating particular technologies.
2. The Commission should ensure that deployment of grid-enhancing technologies is undertaken with safeguards to prevent them from being used by TOs to discriminate in their own favor. RTOs can play an important role in that regard.

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[2] See, in particular, TAPS August 26, 2019 Reply Comments at 23-30, in the Commission's *Inquiry Regarding the Commission's Electric Transmission Incentive Policy*, Docket No. PL19-3-000 ("Incentive NOI"), eLibrary No. 20190826-5116, and TAPS November 1, 2019 Post-Technical Conference Comments in the *Managing Transmission Line Ratings* proceeding, Docket No. AD19-15-000. See also TAPS June 26, 2019 Initial Comments at 74-80, in the Incentive NOI proceeding, eLibrary No. 20190626-5264 ("TAPS Incentive NOI Initial Comments").

3. Where justified, the Commission can take affirmative steps to promote deployment of new technologies, including:

    - Making clear that it expects TOs to adopt low-cost, low-risk grid-enhancing technologies as part of good utility practice;

    - Requiring RTOs to accommodate application of grid-enhancing technologies, where appropriate, with protections against discriminatory application; and

    - Requiring consideration of grid-enhancing technologies through open and transparent Order 890 and Order 1000 planning processes, so they can compete with other transmission and non-transmission alternatives.

4. Where TOs are already all but ensured full recovery of their cost of service, typically through formula rates, for operating and maintaining their facilities in accordance with good utility practice, the Commission should not jump to add incentives to make low-cost solutions costly to consumers.

    - The Commission should reject split-the-savings incentives;

    - The Commission should not allow greater flexibility to capitalize grid-enhancing technologies; and

    - The Commission should not allow ROE incentives for grid-enhancing technologies beyond those justified under the 2012 Policy Statement.[3]

I. THE COMMISSION SHOULD START BY ASSESSING PARTICULAR TECHNOLOGIES

Not all "advanced" technologies are created equal. This workshop to better understand the potential benefits, costs, and pitfalls of various grid-enhancing technologies is a good place to begin the process of assessing the level of application warranted for particular technologies at this time. While periodic reassessment will be

[3] *Promoting Transmission Investment Through Pricing Reform*, 141 FERC ¶ 61,129 (2012) ("2012 Policy Statement").

needed to keep pace with technological and other changes, we should start by evaluating where we are today.

For example, based on discussion at the *Managing Transmission Line Ratings* technical conference, implementation of ambient-adjusted line ratings ("AARs") using commercial forecasts can produce significant congestion savings. Those savings can be achieved by applying AARs to those facilities where it would reduce congestion in a meaningful way. In RTO regions, where the RTO can identify those facilities meriting AARs and help address the potential for discriminatory application, such strategic deployment should be required by the Commission, subject to avoiding undue risk to transmission facilities.

In contrast, panelists at the *Managing Transmission Line Ratings* technical conference raised substantial questions regarding the magnitude of any incremental benefit of dynamic line rating ("DLR") technology over AARs, as well as the costs, security risks, and complexity of incorporating DLRs into dispatch and grid operations. It may therefore be appropriate for the Commission to limit its actions to the removal of barriers to DLR deployment, provided safeguards are put in place to prevent DLR technology from being installed and operated in a discriminatory manner.

II. THE COMMMISSION SHOULD PUT IN PLACE SAFEGUARDS AGAINST DISCRIMINATORY APPLICATION OF GRID-ENHANCING TECHNOLOGIES

Potomac Economics has expressly recognized TOs' incentive to use facility ratings to discriminate:[4]

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[4] Comments of Potomac Economics 7, Docket No. PL19-3-000 (June 25, 2019), eLibrary No. 20190625-5179 (emphasis in original) ("Potomac Economics Incentive NOI Comments").

> To the extent that the transmission owner owns generation or serves load in a load pocket served by its transmission facilities, the transmission owner may have an incentive to provide *higher* or *lower* ratings depending on how prices in the load pocket affect its net revenues and costs.

New technologies—while beneficially expanding transmission availability—could increase that opportunity for discrimination by widening the range of potential facility ratings, and by giving TOs greater control and discretion to enhance the competitive advantage of their own generation and disadvantage others. Allowing TOs to selectively apply grid-enhancing technologies in a manner that enables them to use their control over transmission to benefit their generation function would fundamentally undermine nondiscriminatory open access.[5]

To fulfill its obligation to prevent undue discrimination, the Commission must ensure that line ratings are established and new technologies are implemented in a nondiscriminatory manner. In RTO regions, this should include consideration of transferring all or part of the facility rating function from TOs to the RTO.[6] At

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[5] *Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, Order No. 888, 75 FERC ¶ 61,080, FERC Stats. & Regs. at 31,682 ("The inherent characteristics of monopolists make it inevitable that they will act in their own self-interest to the detriment of others by refusing transmission and/or providing inferior transmission to competitors in the bulk power markets to favor their own generation, and it is our duty to eradicate unduly discriminatory practices."), *clarified*, 76 FERC ¶ 61,009 (1996), *modified*, Order No. 888-A, 78 FERC ¶ 61,220, *order on reh'g*, Order No. 888-B, 81 FERC ¶ 61,248 (1997), *order on reh'g*, Order No. 888-C, 82 FERC ¶ 61,046 (1998), *aff'd in part and remanded in part sub nom. Transmission Access Policy Study Grp. v. FERC*, 225 F.3d 667 (D.C. Cir. 2000*), aff'd sub nom. New York v. FERC*, 535 U.S. 1 (2002).

[6] The Commission proposed full migration in the Order 2000 NOPR. *Regional Transmission Organizations*, 64 Fed. Reg. 31,390, 31,420-21 (1999) ("Order 2000 NOPR"). While not included in the final rule, Order 2000 "encourage[d] . . . such ratings to be determined, to the extent practical, by mutual consent of the transmission owner and the RTO"; and the Commission stated that it "expect[ed] this responsibility to migrate to the RTO, as facility ratings have at least an indirect effect on the ability of the RTO to perform other RTO minimum functions (e.g., planning and expansion, ATC and TTC)." *Regional Transmission Organizations*, Order No. 2000, 89 FERC ¶ 61,285, FERC Stats. & Regs. at 31,105-06 (1999) ("Order 2000"), *order on reh'g*, Order No. 2000-A, 90 FERC ¶ 61,201 (2000), *appeal dismissed for want of standing sub nom. Pub. Util. Dist. No. 1 v. FERC*, 272 F.3d 607 (D.C. Cir. 2001).

minimum, RTOs should be given an enhanced role in monitoring the appropriateness of line ratings. This should include the use of distinct summer and winter ratings unless it is demonstrated that is unreasonable for specific facilities given conditions in the area.

In addition, RTOs need to take an active role to prevent discriminatory application of grid-enhancing technologies. For example, to support a mandate to deploy AARs where appropriate, RTOs should be directed to: (1) independently evaluate where on the grid AARs would be most beneficial—perhaps as part of the RTO's regional transmission planning process; and (2) engage in a transparent process with relevant TOs, in which TOs would be required either to implement AARs at the RTO-identified locations, or to explain why it is unreasonable to do so. Even without constraining the individual TO's discretion to also implement AARs on lines it chooses itself, this RTO role should limit TO opportunities to apply AARs selectively for competitive advantage.

Similarly, to avoid discriminatory application where the TO has started to implement DLRs for some of its facilities, the RTO should be required to evaluate whether other facilities might benefit from DLRs, and engage in a transparent manner with TOs with respect to deploying DLRs in those RTO-identified locations.

In addition, given their importance to determining the availability of the open access transmission service that is the underpinning of competitive markets, greater transparency of line ratings is essential. The Commission should examine mechanisms to allow this to be accomplished consistent with protecting Critical Energy Infrastructure Information from public disclosure.[7]

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[7] For example, it may be worth exploring the potential for enhancing the data available through the OASIS, and whether business practices developed through the North American Energy Standards Board may facilitate such enhancement.

III. APPROACHES THE COMMISSION SHOULD TAKE TO PROMOTE GRID-ENHANCING TECHNOLOGIES WHERE WARRANTED

First, the Commission should make clear that it expects TOs to adopt beneficial low-cost, low-risk technologies as part of good utility practice. As regulated monopolists, TOs are essentially guaranteed full cost recovery (with a Commission-determined ROE) in return for adequately maintaining and expanding their transmission systems in a prudent, cost-effective matter.[8] TO good utility practice obligations are reinforced by the Commission tariff. No business in a competitive market would survive for long if it refused to implement low-cost, low-risk actions and investments that provide significant benefits to its customers. Claims that the Commission's risks and challenges framework does not provide additional financial incentives for such actions and investments is not a defect of the approach; it is a confirmation that no such incentive is necessary or appropriate.

Thus, where appropriate, the Commission should mandate use of particular technologies as part of prudent management, consistent with good utility practice. As discussed above, such an approach is warranted for application of AARs on facilities where it provides meaningful benefits, with RTO-monitored protections against discriminatory implementation.

Second, the Commission should require RTOs to reduce barriers to application of grid-enhancing technologies by accommodating them, where appropriate, with protections against discriminatory application. For example, to accommodate the

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[8] *See, e.g.*, *New England Power Pool*, 97 FERC ¶ 61,093, at 61,477 (2001) (incentive denied to avoid "unjustly reward[ing] NEP for doing what it is supposed to do, *i.e.*, to adequately maintain its facilities in a prudent, cost-effective manner."), *order on reh'g*, 98 FERC ¶ 61,249 (2002).

recommended mandate for TOs to use AARs where they provide meaningful benefits, RTOs should be required to incorporate AARs into their real-time markets, where ratings based on near-real-time temperature information can help reduce constraints experienced in real-time dispatch. This recommendation does not necessarily apply to day-ahead markets, where other considerations may apply.[9] Further, RTOs should be wary of adjusting ratings upward in FTR markets, where FTRs are typically awarded at inappropriately low prices today,[10] harming ratepayers, and where increased ratings would exacerbate this harm.

Even where—as in the case of DLRs (as described above)—questions about complexity, risks, and cost-effectiveness make mandated adoption inadvisable at this time, the Commission should reduce RTO barriers to adoption of the technology to the extent justified by consumer benefits, while putting in place safeguards and transparency to prevent misuse of the technology for competitive advantage. In particular, RTOs should be required to adapt their systems so that they can integrate DLRs should they be deployed by a TO in the RTO's footprint, with the protections against discriminatory application described above.

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[9] While alignment between the real-time and day-ahead markets is desirable in principle, extending advanced ratings to the day-ahead markets may hurt more than it helps. In MISO, real-time markets typically already suffer from capacity deficits relative to day-ahead markets, requiring imposition of uplift charges to load; increasing day-ahead ratings would tend to exacerbate this problem. (This mechanism was described at the *Managing Transmission Line Ratings* technical conference, Tr. 252:9–253:4 (Markham, New York Independent System Operator, Inc.), eLibrary No. 20191008-4002.)

[10] 2018 State of the Market Report for the MISO Electricity Markets at 54-57 (June 2019), https://www.potomaceconomics.com/wp-content/uploads/2019/06/2018-MISO-SOM_Report_Final2.pdf; Ryan Kurlinski, Manager, Analysis and Mitigation Group, Cal. Indep. Sys. Operator, Presentation at the Harvard Electricity Policy Group Meeting: FTR Auction Design is Fundamentally Flawed (March 22, 2018), http://www.caiso.com/Documents/Presentation-FTRAuction-HarvardElectricityPolicyGroupMeetingMar22-2018.pdf; Quarterly State of the Market Report for PJM Interconnection, L.L.C.: January through September 2015, http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2015/2015q3-som-pjm-sec13.pdf.

Where other advanced technologies are incorporated into the grid, the Commission should strive to ensure that RTO operating rules allow these to be used to maximize value to ratepayers, e.g., storage contributing to capacity adequacy or controllable devices available to economic dispatch, to the extent cost effective and consistent with other requirements.

Third, grid-enhancing technologies should be evaluated through the planning process. If advanced technologies can defer or substitute for the construction of new transmission infrastructure, they should be evaluated in Order 890 and Order 1000 planning processes where their benefits and costs—including the costs of any claimed incentives—can be fully considered through an open and transparent process. Even if such technologies are properly not considered for reliability planning purposes, to the extent grid-enhancing technologies are proposed (or if they are already in use) they should be considered for economic planning purposes where they are expected to reduce congestion and deliver savings.[11]

These Commission-approved planning processes already require the consideration of transmission and non-transmission alternatives, allowing for competition to produce innovation. To the extent they do not already do so, such processes can be expanded to require consideration of grid-enhancing technologies.

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[11] *See, e.g.*, Tr. 98:14-20 (Murphy, PJM Interconnection, L.L.C.), eLibrary No. 20191008-4001 ("We would not want to assess that the system is going to be reliable on a dynamic rating above the static in a future looking planning case. However, our market efficiency process seems like a logical fit for a dynamic line rating project to be submitted, and in that we would do a similar PROMOD analysis and look at what the market benefit is of that particular project that was proposed.").

IV. WHAT THE COMMISSION SHOULD *NOT* DO TO PROMOTE DEPLOYMENT OF GRID-ENHANCING TECHNOLOGIES

A. The Commission should not apply split-the-savings incentives to encourage low-cost/low-risk technologies

The Commission should reject proposals for split-the-savings incentives that would perversely transform technological solutions claimed to be highly beneficial, low-risk, and low-cost, into expensive ones for consumers. Such incentives would funnel compensation to TOs potentially many times greater than actual cost—an outcome fundamentally inconsistent with the requirement to tailor incentives that are "in fact needed, and [are] no more than is needed, for the purpose."[12] The elements of "good utility practice" under the open access transmission tariff evolve as technology develops; and if the adoption of new line rating technologies is as beneficial and low-cost/low-risk as their proponents contend, it should be mandated without need of additional incentives. If the benefit of these technologies is less assured, the Commission should be wary of using incentives to place its thumb on the scale, favoring them over competing technologies and transmission and other non-transmission alternatives.

In addition, the various split-the-savings incentives proposed in the Incentive NOI proceeding[13] are performance-based rates,[14] but fail to meet the Commission's basic requirements for such rates. The Commission has previously recognized that

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[12] *City of Detroit v. FPC*, 230 F.2d 810, 817 (D.C. Cir. 1955). *Accord Farmers Union Cent. Exch., Inc. v. FERC*, 734 F.2d 1486, 1503 (D.C. Cir. 1984). *See also Promoting Transmission Investment Through Pricing Reform*, Order No. 679-A, 117 FERC ¶ 61,345, PP 25, 27 (incentives are awarded only where they "materially affect" decisions and are "tailored to address the demonstrable risks and challenges") (2006), *clarified*, 119 FERC ¶ 61,062 (2007).

[13] *See*, *e.g.*, Initial Comments of WATT Coalition 5-9, Docket No. PL19-3-000 (June 26, 2019), eLibrary No. 20190626-5212 ("WATT Incentive NOI Comments"); Potomac Economics Incentive NOI Comments at 8-11.

[14] *See*, *e.g.*, Comments of Advanced Energy Economy 11, Docket No. PL19-3-000 (June 26, 2019), eLibrary No. 20190626-5318.

performance-based rates must be measured against some generally applicable benchmark; and found that "the current state of the industry structure—a multitude of transmission-owning entities, many that do not directly control their transmission assets and operate in diverse geographical regions with very different customer densities, system ages and configurations—makes the determination of generally applicable performance benchmarks unworkable."[15] It also concluded that performance-based rates should be symmetrical—i.e., opportunities for reward should be offset by a symmetric downside risk for TOs who fail to meet the applicable benchmark.[16]

Those advocating split-the-savings incentives ignore this guidance. They identify no generally applicable performance benchmark. Nor have they explained what has changed to make the determination of a generally applicable benchmark workable, warranting a departure from the Commission's earlier finding. In fact, the discussion at the *Managing Transmission Line Ratings* technical conference indicated significant and growing adoption of AARs or DLRs without incentives.

They also recommend one-way ratchets—i.e., performance-based rewards without symmetrical penalties, as if all TOs are above-average. Against the backdrop of full cost-of-service recovery (with a Commission-determined ROE), granting split-the-savings incentives for what TOs are already being paid to do—adequately maintaining and expanding their transmission systems in a prudent, cost-effective matter—simply asks the Commission to endorse and formalize the payment of monopoly rents to TOs.

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[15] *Promoting Transmission Investment Through Pricing Reform*, Order No. 679, 116 FERC ¶ 61,057, P 271 (2006), *on reh'g*, Order No. 679-A, 117 FERC ¶ 61,345 (2006), *clarified*, 119 FERC ¶ 61,062 (2007).

[16] *Incentive Ratemaking for Interstate Natural Gas Pipelines, Oil Pipelines, and Electric Utilities*, 61 FERC ¶ 61,168, at 61,606-07 (1992), discussed in TAPS Incentive NOI Initial Comments at 28.

The dangers of heading down this path are illustrated by the specific split-savings incentives proposed by certain commenters. Because they fail to set an appropriate "best-practices" standard of TO action and investment to use as the applicable performance benchmark, their proposals financially reward late-adopters and create an incentive for TOs to hold the system hostage by delaying implementation of appropriate solutions or, even worse, exacerbating problems. Under the WATT Coalition's ("WATT") and Potomac Economics' technology incentives proposals, for example, TO compensation is higher if congestion from existing transmission infrastructure is worse.[17] It is therefore advantageous to the facility owner to maintain transmission line ratings as low as possible until incentives are granted. These circumstances raise the stakes for RTOs and market monitors, who may have little experience evaluating possible manipulation of ratings.

WATT proposes providing a guaranteed share of *estimated* production-cost savings to implementing facility owners, exposing transmission customers to significant risk if the estimates prove overly optimistic; no downward adjustment in the incentive is proposed in such instances. In WPPI's experience, future congestion is difficult to predict. The WATT proposal leaves transmission customers bearing the cost of the technology, the cost of congestion (which may not in fact be reduced to the extent estimated (if at all)), and the extra cost of the incentive based on the estimated production cost savings. That is not just and reasonable.

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[17] WATT Incentive NOI Comments at 5-6; Potomac Economics Incentive NOI Comments at 9 (since the incentive is based on the "shadow price," which represents the production cost savings from relieving a binding constraint by one MW, multiplied by the MW difference between the Dynamic Rating and static rating, the more significant the constraint, the larger the incentive received by the TO for implementing Dynamic Rating).

And, under Potomac Economics' shadow-price-based DLR incentive proposal, TO compensation is maximized by increasing ratings only to a level where high shadow prices persist. As the rating increases and the corresponding shadow price falls, the incremental TO compensation under this framework will eventually turn negative, even as benefits to transmission customers continue to increase. Thus, the incentives are not aligned with transmission customer interests and give TOs a financial interest in maintaining or creating congestion. This is a giant step in the wrong direction; and it is especially pernicious if the activity being awarded the incentive is an operation practice that will continue to receive above-cost payments so long as infrastructure to eliminate the congestion is not constructed.

B. The Commission should not allow greater flexibility for capitalizing grid-enhancing technologies

The Commission's Uniform System of Accounts has well-established rules for determining what costs must be expensed and what costs must be capitalized, as well as clear rules regarding creation of regulatory assets. To the extent grid-enhancing technologies (or components of those technologies) qualify as expenses, the Commission should require TOs to expense them, rather than allow TOs to capitalize them to earn additional return as an incentive. There is no reason to upend existing practice, especially for utilities with formula rates that guarantee their O&M expenses will be recovered.

Including technology-related O&M expenses in rate base will not necessarily encourage their deployment. Assuming that a utility's authorized rate of return is equal to its cost of capital, it should be indifferent to recovering the cost of grid management

technology as an O&M expense or through a regulatory asset.[18] Although the utility would nominally earn more money through the return on a regulatory asset, the utility would also incur the carrying costs of money that would have otherwise been recovered within the operating year. Those extra returns should be equal to the extra costs.

Including O&M expenses in rate base violates the basic accounting principle of matching revenues to expenses and the equivalent regulatory principle of matching costs and benefits, thereby creating intergenerational inequity for certain O&M expenses. And doing so would involve difficult line-drawing questions: Which technologies? How would the Commission distinguish established technologies that are used as good utility practice from new technologies that would not be used without an incentive?

C. The Commission should not grant ROE incentives except where justified by the risks and challenges

The 2012 Policy Statement rightly subjects technology incentives to the risks and challenges framework, while recognizing such projects may merit an incentive ROE because the risks and challenges may not be either accounted for in the applicant's base ROE or addressed by risk-reducing incentives.[19] That approach should be continued.[20]

However, the Commission should be skeptical of the use of benefits-based incentives to spur such investment. Distinguishing between advanced technologies potentially meriting an incentive versus improvements that should be made in the ordinary course will be challenging. Novel technologies will become the norm if they

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[18] If the utility's allowed rate of return is higher than its cost of capital, the utility would be induced to inefficiently increase capital assets. *See* Harvey Averch & Leland L. Johnson, *Behavior of the Firm under Regulatory Constraint*, 52 Am. Econ. Rev. 1052 (1962).

[19] 2012 Policy Statement PP 21, 23.

[20] *See* TAPS Incentive NOI Initial Comments at 74-78.

deliver; and keeping up with good utility practice as it evolves is the TO's baseline obligation—not a justification for increased ROEs. The rapid pace of technological change means that any criteria will be subject to continuous change, making non-discriminatory application challenging.

Once a potentially deserving technology is identified, measuring the benefits (relative to costs) on an ever-evolving grid will be difficult and highly contentious. To the extent the technology is claimed to defer or avoid transmission upgrades, quantification of benefits should be limited to those determined through an Order 1000 and Order 890 compliant planning process that applies a Commission-approved quantification methodology. In short, benefits-based ROE incentives for grid-enhancing technologies would be extremely difficult to administer and likely result in incentives far greater than what is needed for the purpose, contrary to the Federal Power Act. [21]

Again, I appreciate the opportunity to participate in this workshop and look forward to the discussion of these important issues.

October 31, 2019

[21] *See id.* at 14-60 (as to risks and challenges, benefits-based, and characteristics-based ROE incentives).