NARUC
National Association of Regulatory Utility Commissioners

Regulators' Financial Toolbox: Advanced Transmission and Grid Enhancing Technologies (GETs) - Unlocking Capacity and Optimizing the Grid

The National Association of Regulatory Utility Commissioners (NARUC) Center for Partnerships and Innovation (CPI) Regulators' Financial Toolbox series explores the types of financial tools utility regulators can use to support integration of electricity system technologies that benefit the public interest. This brief was prepared by Jamie Scripps of Hunterston Consulting LLC and is based upon work supported[1] by the Department of Energy under Award Number DE-OE0000925. The speakers' presentations and recordings can be found at www.naruc.org/cpi.

Introduction

The National Association of Regulatory Utility Commissioners (NARUC) Center for Partnerships and Innovation (CPI) Regulators' Financial Toolbox series explores emerging topics affecting utility regulation and provides educational resources to assist state public utility commissions in evaluating financial, technical, and regulatory issues. This brief accompanies NARUC's June 24, 2026, Regulators' Financial Toolbox webinar: *Advanced Transmission and Grid Enhancing Technologies (GETs): Unlocking Capacity and Optimizing the Grid*.

The webinar featured opening remarks and moderation by the Honorable Letha Tawney, Chair of the Oregon Public Utility Commission, with presentations by Hilary Pearson, Vice President of Policy and External Affairs at LineVision; Neil Millar, Vice President of Transmission Planning and Infrastructure Development at the California Independent System Operator (CAISO); and Alice Yake, Vice President of the Grid Modeling Initiative at Breakthrough Energy. Drawing on the webinar discussion, this brief summarizes the key themes, introduces the principal categories of Grid Enhancing Technologies (GETs),

[1] This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

and examines planning, financial, and regulatory considerations relevant to state public utility commissions.

GETs are one category of advanced transmission technologies designed to improve the utilization, flexibility, and performance of the existing electric transmission system. Depending on the application, these technologies may improve system visibility, increase operational flexibility, relieve transmission congestion, enhance transmission planning, and inform more targeted infrastructure investments. Rather than replacing the need for new transmission infrastructure, GETs may complement traditional transmission investments by helping utilities make more effective use of existing transmission assets and by providing additional information to support future planning decisions.

As utilities evaluate a growing range of technology options, commissions are increasingly asked to consider how these technologies fit within existing planning, ratemaking, and regulatory frameworks. Questions regarding system planning, modeling capabilities, implementation, cost recovery, operational integration, and customer value are becoming increasingly important as utilities evaluate the role of GETs within broader transmission investment strategies. As regulators evaluate these technologies, an important challenge is ensuring that they are considered alongside traditional transmission investments using transparent planning processes that recognize both their capabilities and their limitations. Understanding both the capabilities and limitations of these technologies is essential to evaluating where they may provide value and how they should be considered alongside more traditional transmission solutions.

This brief provides an overview of the principal categories of GETs, examines their potential applications and benefits, reviews planning and regulatory considerations associated with their deployment, and summarizes key questions raised during the webinar that may assist commissions as they evaluate these technologies in future proceedings.

What Are Grid Enhancing Technologies?

Grid Enhancing Technologies (GETs) are technologies designed to improve the utilization, flexibility, and performance of the existing electric transmission system.[2] Rather than relying exclusively on the construction of new transmission infrastructure to address reliability needs or accommodate growing demand, GETs provide utilities and system operators with additional tools to optimize the use of existing transmission assets. Depending on the application, these technologies may improve operational awareness, increase transmission capability, reduce congestion, enhance system flexibility, and support more informed transmission planning.[3]

GETs generally refers to three principal categories of technologies:

- **Dynamic Line Ratings (DLR)**, which use real-time operating conditions to determine the safe carrying capacity of transmission lines;[4]

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[2] U.S. Department of Energy, Office of Electricity. 2022. *Grid-Enhancing Technologies Improve Existing Power Lines*. Available at https://www.energy.gov/oe/grid-enhancing-technologies-improve-existing-power-lines.
[3] U.S. Department of Energy, Office of Electricity. 2023. *Grid-Enhancing Technologies: From Research and Development to Reality*. November 13, 2023. Available at https://www.energy.gov/oe/articles/grid-enhancing-technologies-research-and-development-reality-0.
[4] LineVision. *What Is DLR? Understanding Dynamic Line Ratings for Modern Grid Optimization*. November 14, 2025. Available at https://www.linevisioninc.com/news/what-is-dlr-understanding-dynamic-line-ratings-for-modern-grid-optimization.

- **Advanced Power Flow Control**, which influences how electricity flows across the transmission network to improve utilization of existing facilities;[5] and
- **Transmission Topology Optimization**, which uses software to evaluate whether changes to the configuration of the transmission system can improve system performance.[6]

Advanced conductors are also frequently discussed alongside GETs because they improve the capability of existing transmission corridors through reconductoring projects.[7] Collectively, these and related technologies are often referred to as "advanced transmission technologies" because they provide utilities with additional options for improving the performance of existing transmission infrastructure.[8]

While these technologies differ in their design and operation, they share several common characteristics. Most can be deployed more quickly than constructing new transmission lines, many can be implemented within existing transmission rights-of-way, and all are intended to improve the efficiency, flexibility, or utilization of the existing electric system. Importantly, however, they are not intended to replace traditional transmission expansion. Instead, they represent additional tools that utilities may consider alongside conventional transmission investments when evaluating solutions to specific system needs. Like other transmission investments, their value depends on selecting the right technology for the particular operational or planning challenge being addressed.

Applications and Potential Benefits of Grid Enhancing Technologies

GETs are intended to improve the performance and utilization of existing transmission infrastructure. Although individual technologies differ in their design and application, they are generally deployed to address one or more common objectives, including improving the utilization of existing transmission assets, increasing operational flexibility, reducing transmission congestion, enhancing planning, and supporting more efficient capital investment. The applicability and value of any particular technology depend on the characteristics of the electric system and the specific operational or planning challenge being addressed.

Improving Utilization of Existing Transmission Infrastructure

A primary objective of GETs is to improve the utilization of transmission facilities that are already in service. Traditional transmission planning often relies on conservative operating assumptions to ensure reliable system performance under a wide range of conditions. Several GETs provide additional

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[5] London Economics International LLC. *Use of Advanced Transmission Technologies and Innovative Practices in Power Systems: Potential Benefits, Lessons Learned, and Recommendations*. Prepared for WIRES. August 26, 2025. Available at https://wiresgroup.com/wp-content/uploads/2025/08/Use-of-Advanced-Transmission-Technologies-and-Innovative-Practices-in-Power-Systems-LEI-Report.pdf.

[6] Electric Power Research Institute (EPRI). *Transmission Topology Optimization*. EPRI Fact Sheet No. 3002030549. June 2024. https://www.epri.com/research/products/3002030549.

[7] For a more detailed discussion of advanced conductor technologies, including High-Temperature Low-Sag (HTLS) conductors, applications, potential benefits, and deployment considerations, see National Association of Regulatory Utility Commissioners (NARUC), *Technology Brief: Advanced Conductors for a Reliable and Resilient Electric Grid* (2026). https://www.naruc.org/core-sectors/critical-infrastructure-and-cybersecurity/integrated-system-resilience/

[8] U.S. Department of Energy. *Advanced Transmission Technologies*. December 2020. Available at https://www.energy.gov/sites/prod/files/2021/02/f82/Advanced%20Transmission%20Technologies%20Report%20-%20final%20as%20of%2012.3%20-%20FOR%20PUBLIC.pdf.

operational information or control capabilities that allow utilities to better understand or more effectively utilize existing infrastructure while maintaining system reliability.

Improving utilization does not necessarily mean increasing the amount of electricity that can be transmitted under all operating conditions. Depending on the technology and operating conditions, improved utilization may reduce congestion, improve reliability, lower costs, or increase available transmission capacity.[9] Advanced reconductoring provides one example of how utilities may increase transmission capability within existing transmission corridors.[10] In some cases, enhanced operational information may indicate that existing facilities can safely accommodate additional power transfers. In other cases, it may identify conditions under which transmission capability is lower than previously assumed, allowing operators to take appropriate actions to maintain reliability.[11] Both outcomes improve understanding of system performance and may support more informed operational and planning decisions.

Increasing Operational Flexibility

Several GETs are designed to provide utilities and system operators with greater flexibility in managing transmission system operations. Technologies that influence power flows, provide real-time system information, or optimize network configuration may enable operators to respond more effectively to changing system conditions, including variations in weather, electricity demand, and generation output. As electric systems become increasingly dynamic, additional operational flexibility may improve the ability of utilities to maintain reliable service while making more effective use of existing transmission infrastructure.[12]

AES: Improving Grid Utilization with Real-Time Data

AES deployed [42 Dynamic Line Rating (DLR) sensors] across five transmission lines in Indiana and Ohio to evaluate how real-time operating data could improve transmission planning, reliability, and asset utilization. The project demonstrated that DLR can both identify additional transmission capacity under favorable conditions and reveal localized constraints requiring maintenance or targeted investment. On one 345-kV line, DLR produced an average line rating approximately 61% higher than the static rating, illustrating how improved operational information can support more efficient use of existing infrastructure while informing future investment decisions.

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[9] London Economics International LLC. *Use of Advanced Transmission Technologies and Innovative Practices in Power Systems: Potential Benefits, Lessons Learned, and Recommendations*. Prepared for WIRES. August 26, 2025, pp. 8-10.

[10] *See* NARUC, *Technology Brief: Advanced Conductors for a Reliable and Resilient Electric Grid* (2026), discussing the use of advanced conductors to increase transmission capacity through reconductoring while making use of existing structures and rights-of-way. https://www.naruc.org/core-sectors/critical-infrastructure-and-cybersecurity/integrated-system-resilience/

[11] *See* Idaho National Laboratory. *Bulk Power System Flow Control*. INL/RPT-24-78290. April 2024. Available at https://www.osti.gov/servlets/purl/3012148.

[12] *See* U.S. Department of Energy, Integrated Energy Systems Office. *Smart Transmission Tools Modernize America's Power Grid*. November 13, 2025. Available at https://www.energy.gov/cmei/systems/articles/smart-transmission-tools-modernize-americas-power-grid.

Managing Transmission Congestion

Transmission congestion occurs when transmission facilities are unable to accommodate all desired power transfers while maintaining reliable system operation. Congestion can increase system costs, limit access to generation resources, and delay the integration of new generating facilities.[13] Certain GETs may help reduce congestion by increasing the effective utilization of existing transmission facilities or by improving the management of power flows across the network. The extent to which these technologies reduce congestion depends on system configuration, operating conditions, and the specific source of the transmission constraint. As a result, congestion management technologies are generally evaluated as one component of a broader transmission planning strategy rather than as standalone solutions.

Supporting More Efficient Capital Investment

GETs may also support more efficient capital investment by improving the information available to utilities during transmission planning and asset management. In some circumstances, operational data may identify specific portions of a transmission facility that require modification rather than indicating the need for broader system upgrades. More detailed information about actual system performance may therefore help utilities better target future infrastructure investments. At the same time, this more targeted approach does not necessarily diminish the continued need for new transmission infrastructure. Instead, it may improve the sequencing and scope of future investments by helping utilities determine where traditional transmission upgrades are most appropriate and where other technologies may provide cost-effective solutions.

Supporting Customer Value

Ultimately, GETs are evaluated based on the extent to which they improve outcomes for electric customers. Potential customer benefits may include improved reliability, more efficient use of existing infrastructure, better-informed transmission planning, and more cost-effective infrastructure investment. As with any utility investment, however, these potential benefits must be evaluated alongside implementation costs, operational impacts, project risks, and system-specific considerations. For commissions, the evaluation of GETs is therefore not solely a question of technological capability. It is also a question of whether a proposed investment is supported by sound planning, demonstrates measurable customer benefits, and represents a reasonable and cost-effective approach to addressing identified system needs.

Supporting More Informed Planning

Technologies that provide more detailed operational information help utilities better understand how transmission facilities perform under actual operating conditions. This information improves the accuracy of planning studies, identifies localized system constraints, and supports more targeted infrastructure investments.[14] Improved planning information also helps utilities evaluate a broader range

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[13] *See* PJM Interconnection, LLC. *Transmission Congestion Can Increase Costs*. Fact Sheet. January 29, 2025. Available at https://www.pjm.com/-/media/DotCom/about-pjm/newsroom/fact-sheets/congestion-fact-sheet.pdf.

[14] *See* U.S. Department of Energy. *Grid-Enhancing Technologies: A Case Study on Ratepayer Impact*. February 2022. Available at https://www.energy.gov/sites/default/files/2022-04/Grid%20Enhancing%20Technologies%20-20A%20Case%20Study%20on%20Ratepayer%20Impact%20-%20February%202022%20CLEAN%20as%20of%20032322.pdf.

of alternatives when addressing future transmission needs. Rather than viewing transmission expansion and GETs as competing approaches, utilities may consider them together as complementary options when identifying the combination of investments that best advances reliability, operational, and economic objectives.[15] Better operational information also enables planners to refine assumptions used in future planning studies and more accurately identify localized constraints. In some cases, this information may support more targeted infrastructure investments by distinguishing between system-wide needs and localized conditions requiring corrective action. The following section provides a more in-depth discussion of the consideration of GETs in transmission planning.

Transmission Planning and Implementation Considerations

Transmission planning provides the framework for evaluating investments needed to maintain a reliable, resilient, and cost-effective electric system. Traditionally, planning has focused on identifying infrastructure necessary to address reliability concerns, accommodate projected demand, integrate new generation resources, and satisfy public policy objectives. As new technologies become commercially available, planning processes are increasingly evaluating a broader range of potential solutions. Importantly, GETs should be evaluated within this broader planning framework. Rather than considering these technologies independently, utilities compare them alongside conventional transmission upgrades and other feasible alternatives to determine which approach, or combination of approaches, best addresses an identified system need.

Evaluating Alternatives

The planning process typically begins with the identification of one or more transmission needs, such as maintaining reliability, relieving congestion, accommodating projected load growth, or supporting the interconnection of new generating resources.[16] Once that need has been established, planners evaluate potential solutions using engineering, operational, and economic criteria. Because GETs perform different functions, they are not universally applicable to every transmission project; their suitability depends on the nature of the constraint being addressed, the characteristics of the transmission network, implementation timelines, operational requirements, and expected customer benefits. In some cases, the preferred solution combines conventional transmission investments with one or more advanced transmission technologies.

Improving Planning Through Better Information

Several GETs generate operational information that improves transmission planning. More detailed information about system performance helps planners better understand how transmission facilities operate under actual conditions, identify localized constraints, and refine assumptions used in planning studies. Improved information also supports more targeted infrastructure investments. For example, planners may determine that a localized upgrade is sufficient to address a constraint rather

[15] Energy + Environmental Economics (E3). *Probabilistic Planning Methods: A Review of Methods Available to Transmission Planners*. Prepared for the Midcontinent Independent System Operator (MISO). August 2025. Available at https://www.ethree.com/wp-content/uploads/2026/03/Probabilistic-Planning-Methods-A-Review-of-Planning-Methods-Available-to-Transmission-Planners-White-Paper714653.pdf.

[16] *See* Hirst, Eric, and Brendan Kirby. *Transmission Planning and the Need for New Capacity*. In *National Transmission Grid Study*. Lawrence Berkeley National Laboratory, 2002. Available at https://eta-publications.lbl.gov/sites/default/files/trans-planning-new-capacity.pdf.

than undertaking broader system modifications. Conversely, improved operational information may confirm that more extensive infrastructure investments remain necessary.

Planning Models

Evaluating advanced transmission technologies requires analytical tools capable of representing their operational characteristics. As utilities incorporate a broader range of technologies into transmission planning, planning models may also need to evolve to evaluate these technologies consistently and transparently. For some technologies, this may require incorporating additional operational data or evaluating a broader range of operating conditions than has traditionally been considered. The objective is not to establish a separate planning process for advanced transmission technologies, but rather to ensure that they can be evaluated alongside more traditional transmission solutions using transparent and appropriate analytical methods.[17] This approach helps planners compare a broader range of feasible alternatives when identifying efficient and cost-effective solutions to transmission needs.

Incorporating emerging technologies into transmission planning may also require enhanced coordination among transmission planners, system operators, technology developers, and other stakeholders. As grid-enhancing technologies and other advanced transmission solutions become more widely deployed, planning processes may need to incorporate new data, analytical tools, and modeling approaches to accurately represent their operational characteristics and evaluate them consistently alongside conventional transmission investments.[18]

Implementation Considerations

Planning studies represent only the first step in deploying GETs. Successful implementation also depends on engineering design, construction, system integration, operational readiness, and ongoing maintenance. Utilities may need to evaluate issues such as equipment availability, installation requirements, construction scheduling, planned outages, workforce training, and integration with existing operational systems. These implementation considerations can influence both project cost and schedule and should therefore be incorporated into the overall evaluation of project alternatives.

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[17] *See* Federal Energy Regulatory Commission. *Building for the Future Through Electric Regional Transmission Planning and Cost Allocation*, Order No. 1920, 192 FERC ¶ 61,068 (2024), published at 89 Fed. Reg. 49,280 (June 11, 2024). Available at https://www.federalregister.gov/documents/2024/06/11/2024-10872/building-for-the-future-through-electric-regional-transmission-planning-and-cost-allocation.

[18] U.S. DOE, National Transmission Needs Study (2023) at pp. 3-4.

Pilot projects may also play a role in evaluating technologies that have not previously been deployed within a utility's service territory. When appropriately designed, pilot projects can provide operational experience, validate planning assumptions, and identify implementation considerations that inform future deployment decisions. To maximize their value, pilot projects should establish clear objectives, measurable performance metrics, and a process for incorporating lessons learned into future planning activities.[19]

California ISO: Advanced Conductors as a Planning Tool

California ISO routinely evaluates advanced conductors as one of several grid-enhancing technologies (GETs) during its annual transmission planning process. In its 2025–2026 Transmission Plan, the ISO approved 12 reconductoring projects, including three projects using advanced conductors, to increase transmission capacity while making use of existing transmission corridors where feasible. Rather than treating advanced conductors as a universal solution, California ISO evaluates them on a case-by-case basis to determine whether they provide the most cost-effective means of meeting an identified transmission need. In some locations, advanced conductors can increase capacity using existing towers and rights-of-way, potentially avoiding more extensive infrastructure investments where engineering analysis confirms that existing structures can accommodate the upgraded conductors.

For an additional example of advanced conductor deployment, see NARUC's 2026 *Technology Brief: Advanced Conductors for a Reliable and Resilient Electric Grid*, which includes a case study of Montana-Dakota Utilities' use of advanced conductors in a transmission reconductoring project. https://www.naruc.org/core-sectors/critical-infrastructure-and-cybersecurity/integrated-system-resilience/

Financial and Regulatory Considerations

Like any transmission investment, GETs should be evaluated within existing regulatory frameworks governing utility planning, investment, and cost recovery. Although these technologies introduce new operational capabilities and planning considerations, they generally do not require fundamentally different regulatory principles. Instead, they present new applications of familiar questions regarding prudence, customer benefits, cost recovery, and long-term value.

Evaluating Customer Value

Demonstrating customer value requires consideration of both costs and expected outcomes, including reliability, operational performance, transmission utilization, implementation risk, and long-term infrastructure needs. Because transmission owners evaluate technologies based on their specific applications, expected benefits, and costs, the appropriate evaluation framework may vary depending on the technology and the transmission need being addressed.[20] Some technologies may primarily improve operational awareness, while others may increase transmission capability or improve

[19] London Economics International at p. 8.

[20] *See* ibid.

operational flexibility.[21] Utilities should therefore identify the specific system need being addressed and explain how the proposed investment provides value in that context, using transparent analytical methods that allow advanced transmission technologies to be evaluated alongside more traditional transmission solutions.[22]

Cost Recovery

Existing ratemaking frameworks generally provide mechanisms for recovering prudent investments in transmission infrastructure. Depending on the nature of the technology, project costs may include traditional capital investments, software, communications equipment, monitoring systems, engineering services, or ongoing operational support. As with other utility investments, commissions may consider whether proposed costs are reasonable, whether expenditures are appropriately classified, and whether the investment is expected to provide benefits over its anticipated service life.

Planning as an Investment

As utilities evaluate increasingly complex systems and a broader range of technology options, planning activities require additional analytical capabilities, data management, modeling tools, and technical expertise.[23] Historically, many planning activities have been treated as operating expenses rather than capital investments. As planning becomes more data-intensive and technologically sophisticated, utilities and commissions may need to consider whether existing planning resources remain sufficient to support informed investment decisions.[24] This consideration extends beyond software and analytical tools. Effective planning also depends on maintaining a workforce with the technical expertise necessary to evaluate emerging technologies, interpret increasingly complex modeling results, and incorporate new information into long-term investment strategies.

Asset Life and Long-Term Value

As with other utility investments, commissions consider expected service life, depreciation, maintenance requirements, and broader asset management considerations when evaluating long-term customer value. Similar considerations apply to GETs, particularly where hardware, software, or communications systems may evolve more rapidly than traditional transmission assets. Evaluating long-term value therefore requires consideration not only of initial project costs, but also of maintenance requirements, expected service life, long-term performance, inspection needs, and integration into utility asset management practices.[25]

Transparency and Demonstrating Benefits

Because many GETs are intended to improve planning, operations, or asset utilization, demonstrating project benefits may require performance metrics beyond traditional infrastructure

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[21] *See* U.S. Department of Energy. *Advanced Transmission Technologies*. December 2020. Available at https://www.energy.gov/sites/prod/files/2021/02/f82/Advanced%20Transmission%20Technologies%20Report%20-%20final%20as%20of%2012.3%20-%20FOR%20PUBLIC.pdf.

[22] *See* FERC Order No. 1920.

[23] E3 at pp. 3-4.

[24] Ibid at pp. 19-20.

[25] Energy Systems Integration Group (ESIG), *Utility Perspectives on Making Grid-Enhancing Technologies Work: Use Cases, Barriers, and Recommendations for Scalable Deployment* (2025) at p. 26. Available at https://www.esig.energy/wp-content/uploads/2025/07/ESIG-Grid-Enhancing-Technologies-report-2025.pdf.

measures.[26] Depending on the technology and application, utilities may choose to evaluate operational performance, congestion reduction, improved system utilization, planning accuracy, project deferrals, or other measurable outcomes.[27] Establishing performance metrics during project development can improve transparency and provide commissions with information to evaluate whether expected benefits have been achieved. Consistent reporting also informs future planning decisions and supports evaluation of similar projects.[28]

Conclusion

Advanced Transmission Technologies and GETs expand the range of tools available to utilities for addressing transmission planning and operational challenges. By improving operational awareness, increasing system flexibility, enhancing the utilization of existing infrastructure, and supporting more informed planning, these technologies may provide additional options for meeting reliability needs and managing future transmission investments. As with any utility investment, the value of GETs depends on the circumstances in which they are applied. No single technology is appropriate for every transmission need, and these technologies should not be viewed as replacements for conventional transmission infrastructure. Rather, they represent one set of potential solutions that utilities may evaluate alongside traditional transmission upgrades and other feasible alternatives.

For public utility commissions, existing regulatory frameworks continue to provide the foundation for assessing whether proposed advanced transmission and/or GETs investments are prudent, reasonably designed, and expected to provide value over the long term. As transmission systems continue to evolve, utilities are poised to evaluate an increasingly diverse portfolio of technologies to address changing system needs. Understanding the capabilities, limitations, and appropriate applications of GETs will help commissions evaluate future proposals using established regulatory principles while supporting reliable, resilient, and cost-effective electric service.

Ultimately, GETs expand the range of options available to utilities and regulators as they plan for an increasingly complex electric system. They are neither universal solutions nor replacements for traditional transmission expansion. Rather, they represent additional tools that, when evaluated through sound planning processes and applied where they provide the greatest customer value, can improve the efficiency, flexibility, and resilience of the electric transmission system.

[26] *See* U.S. DOE, *Grid-Enhancing Technologies: A Case Study on Ratepayer Impact* (2022).
[27] *See* London Economics International.
[28] ESIG at pp. 26-27.

Appendix A: Summary of Webinar Q&A

The following questions were submitted by webinar participants during the Regulators' Financial Toolbox webinar, *Advanced Transmission and Grid-Enhancing Technologies (GETs): Unlocking Capacity and Optimizing the Grid* hosted by NARUC CPI on June 24, 2026. Responses have been edited for clarity and brevity while preserving the substance of the discussion.

How should utilities think about grid-edge technologies when evaluating the lowest-cost solution?

The panel noted that grid-edge technologies should be considered alongside transmission and distribution investments as part of a comprehensive planning process. The discussion emphasized beginning with a clear understanding of the problem to be solved and then evaluating the full range of available solutions using consistent engineering, operational, and economic criteria. Depending on the circumstances, grid-edge technologies may be appropriate where they improve distribution system utilization or defer infrastructure investments, but no single technology represents the lowest-cost solution in every situation. Effective planning requires evaluating alternatives within the broader context of system needs.

Are conductor coatings considered a Grid Enhancing Technology?

The panel explained that conductor coatings represent one of several technologies that may improve transmission performance under certain circumstances. While not typically identified as one of the principal categories of GETs, conductor coatings may provide operational benefits depending on system conditions and project objectives. Their applicability should be evaluated on a project-specific basis.

Are advanced conductors viable in wildfire-prone regions?

Yes. The discussion highlighted examples from California where advanced conductors have been used to improve conductor clearances while also increasing transmission capability. In some applications, the primary driver for deploying advanced conductors has been wildfire mitigation through improved clearances, with the additional transmission capacity serving as a complementary benefit. As with any transmission investment, installation requirements, engineering considerations, and system characteristics should be evaluated when determining project suitability.

How do regulatory timelines affect deployment of Grid Enhancing Technologies?

The panel acknowledged that regulatory review and utility planning processes can influence deployment timelines. However, the discussion emphasized that many of the challenges associated with GETs are not unique to those technologies. Instead, successful deployment depends on integrating GETs into existing planning processes, evaluating them alongside other feasible alternatives, and clearly demonstrating customer value. Early consideration during transmission planning may improve opportunities for deployment.

How should utilities think about distribution investments in relation to GETs?

Although the webinar focused primarily on transmission, the panel recognized that transmission and distribution planning are closely related. Distribution system investments, including grid-edge technologies, advanced metering, and distribution automation, may complement transmission investments by improving overall system efficiency. Utilities should consider these technologies within a coordinated planning framework rather than evaluating transmission and distribution investments independently.

How should commissions consider the value of “speed to power”?

The panel discussed the importance of implementation timelines as one factor in evaluating transmission solutions. Because some GETs can often be deployed more quickly than constructing new transmission infrastructure, implementation speed may provide value in situations where timely capacity additions are needed. Deployment speed should be considered alongside reliability, cost, operational performance, and long-term customer benefits rather than viewed as a stand-alone objective.

How should commissions evaluate the return on investment for GETs?

The discussion emphasized that evaluating return on investment requires consideration of the specific problem being addressed rather than applying a single financial metric across all technologies. Potential benefits may include improved utilization of existing infrastructure, enhanced operational flexibility, reduced congestion, improved planning, or deferred capital investment. Commissions should evaluate these benefits together with implementation costs, operational impacts, and expected customer value when reviewing proposed investments.

Several additional questions were submitted regarding specific technologies and utility applications. Because of time constraints, not all questions could be addressed during the webinar. Readers are encouraged to consult the webinar recording and presentation materials for additional discussion.