



# INDEPENDENT TRANSMISSION CONSTRUCTION MONITOR

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GridStrategies 

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## EXECUTIVE SUMMARY

A recent Grid Strategies-Brattle Group *Interconnection Reform Report* identified significant challenges in the construction phase of interconnection projects, which have not yet been adequately addressed by FERC Orders 2023 and 1920. The report proposed two key recommendations aimed at resolving these issues: increasing transparency around the construction phase and implementing measures to address supply chain bottlenecks. These reforms are critical for expediting the interconnection process and improving overall project outcomes.

Unfortunately, even after the interconnection study process is completed, generation projects cannot rely on the planned construction schedule and budget for the transmission upgrades necessary to enable interconnection and deliverability. The power cannot flow and the customer cannot rely on its delivery until the transmission owner's work is completed.

Available data – and data are very scarce – suggests that transmission owners' budget priorities and construction management practices may play a substantial role in these construction phase delays. With perhaps half of all projects with interconnection agreements being significantly stalled or facing substantial cost overruns during the construction phase, this is a serious and widespread issue.

To further address these challenges, in addition to the two recommendations in the *Interconnection Reform Report*, we recommend that FERC direct each transmission owner to select and fund a construction monitor. The construction monitor's role would be to ensure compliance with timelines, budgets, and projects specifications, providing transparent and unbiased evaluation throughout the construction phase. To implement the construction monitor, FERC should:

- Revise its pro forma Open Access Transmission Tariff to require the selection and funding of construction monitors by transmission owners.
- Direct each transmission owner to file a proposal for a construction monitor, including procedures for stakeholder engagement, monitor independence, budget, and scope of review.
- Authorize transmission owners to coordinate and potentially establish regional construction monitors for consistency and the rapid adoption of lessons learned.

A construction monitor could have the following benefits.

1. Improved construction schedules and reduced costs for transmission upgrades and associated generation projects.
2. Faster integration of new generation, enhancing reliability.
3. A better understanding of factors affecting performance across different transmission owners and technologies, including scheduling efficiency, construction timelines and cost impacts to project finance and offtake.
4. Improved coordination across regions, leading to increased efficiencies and economies of scale.

## 1. BACKGROUND

Expanding the capacity of the nation's transmission system is a high priority for FERC, the U.S. Department of Energy, and many private organizations. Yet the backlog in construction of transmission system upgrades shows little sign of abatement.

One of the most urgent reasons to resolve the construction backlog is an increasing demand for new power generation, driven by the growth of data center demand, onshoring of manufacturing, and the transition to renewable energy. A significant bottleneck in the interconnection process (connecting new generation sources to the grid) is the construction stage, which occurs after an interconnection agreement is signed.

According to a survey of developers of new generation, nearly half of project delays occur during the construction phase, at an estimated cost of around \$200 per kW. Factors contributing to these delays include supply chain bottlenecks, lack of prioritization/project management by transmission owners, and voluntary delays by interconnection customers who may lack contracts with power customers, necessary permits, or face construction delays of their own. These delays and cost overruns slow down the deployment of critical new generation capacity and pass higher costs to consumers.

A decade ago, the timeliness of the construction phase was less of an issue, as self-motivated project developers worked with utilities that had a vested interest in getting capital deployed to the transmission system. Today, however, the same logjam that impacts the interconnection queue similarly impacts the construction queue. The sheer number of generation projects is straining transmission owners' ability to manage resources and resolve scheduling conflicts. Compounding this problem is the growing number of load interconnections and other necessary transmission system upgrades, which add further stress to transmission owners' capacity and increase pressure on supply chains for critical interconnection equipment.

While FERC has taken steps to expedite the interconnection queue and improve regional transmission planning in Order No. 2023 and Order No. 1920, respectively, neither order addressed delays in the construction phase.

A recent report by Grid Strategies and The Brattle Group laid out recommendations for further improving the interconnection process.<sup>1</sup> The report focused on three significant goals: increasing cost certainty and transparency, improving speed and schedule certainty, and ensuring nondiscrimination. Three of the *Interconnection Reform Report's* recommended reforms addressed those goals in the context of the interconnection study process.

The fourth reform in the *Interconnection Reform Report* addresses the transmission construction backlog. The report found convincing evidence that supply chain constraints affecting key equipment for transmission upgrades are a key driver in the longer construction timelines, but that other causes for the consistent increase in construction timelines are less well understood.

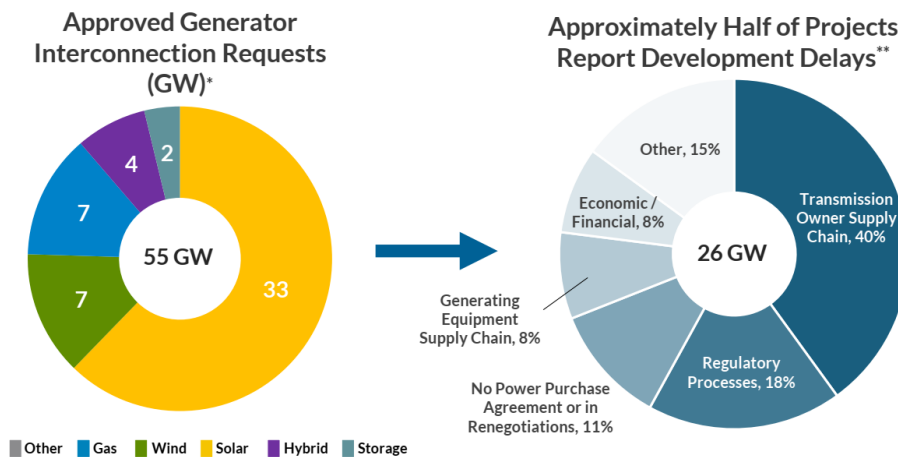
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<sup>1</sup> Grid Strategies and The Brattle Group, [Unlocking America's Energy: How to Efficiently Connect New Generation to the Grid](#) (August 2024). Hereafter "*Interconnection Reform Report*."

## Key findings on the construction phase of the interconnection process

Today, no one can definitively provide a complete view of the underlying causes of longer construction timelines. Several utilities and regional transmission organizations have pointed to external concerns, such as material delays, permitting, and delays by the interconnection customers. For example, MISO recently reported that construction delays constrained 2023 capacity additions to 5.6 GW (nameplate).<sup>2</sup> While MISO’s reporting (Figure 1) illustrates material delays and permitting as major causes in delays, it does not clearly indicate that interconnection customers are major causes of construction delays.

**Figure 1: MISO Reporting of Construction Delays<sup>3</sup>**



**50 GW of resources approved through MISO's interconnection processes are in or awaiting construction with approximately 50% already signaling a delay**

\*Queue data as of September 4, 2024  
 \*\* Reasons for delay based on responses from a subset of delayed projects

6 | Board of Directors, September 19, 2024



Similarly, while utilities in California have pointed to interconnection customers as holding up construction, looking closely at utility data on transmission project construction delays shows that the most frequent cause of delay during the construction phase has been the utility’s own corporate capital constraints. Most often, prioritization of safety projects (e.g., wildfire risk mitigation) is what delays the construction of transmission upgrades to allow the interconnection of new generators and ensure reliability delivery of power to customers.<sup>4</sup>

One observation, supported by analysis of data from CAISO, SPP, ISO-NE, and PJM, is that performance varies by transmission owner. Increases in construction costs, time-to-construct, schedule delays, and other metrics (imperfectly measured with available data) all vary significantly among transmission owners within these regions.<sup>5</sup> In PJM, for example, Dominion Energy had the strongest performance –

<sup>2</sup> MISO Board of Directors, *Strategy Update: Reliability Imperative* (June 27, 2024), p. 7. <https://www.misoenergy.org/events/2024/board-of-directors-open-session-bod--june-27-2024/>.

<sup>3</sup> MISO Board of Directors, *Strategy Update: Reliability Imperative* (September 19, 2024), p. 6. <https://www.misoenergy.org/events/2024/board-of-directors-open-session-bod--september-19-2024/>.

<sup>4</sup> *Interconnection Reform Report*, pp 76-77.

<sup>5</sup> *Interconnection Reform Report*, p. 125.

from 2019 to 2022, Dominion placed in service roughly half of the projects and capacity in PJM, despite only holding about one-fifth of PJM's generation interconnection queue. Exelon, which had the fourth-largest share of the PJM queue, placed only 3 projects in service, representing 103 MW.<sup>6</sup>

What is not at all clear from the data is whether there are good reasons for variation in performance across transmission owners, or whether certain transmission owners need to adopt different practices. For example, some transmission owners rely on a larger number of approved engineering firms to perform substation and transmission line engineering work than others. Where a limited number of firms are approved, that could lead to higher costs or schedule constraints.<sup>7</sup> But an independent evaluation that links these observations to important outcomes is not possible with publicly available data.

## Recommended reforms to address problems in the construction phase

Accordingly, the *Interconnection Reform Report* offered two recommended reforms.

*First, FERC should require transmission owners to file a transmission project construction report and require FERC-jurisdictional transmission owners to establish a stakeholder process for the review of that report.*<sup>8</sup>

*Second, the report recommends that the utility industry and government partner to place advance orders for large power transformers to reduce supply chain bottlenecks.*<sup>9</sup>

Full implementation of a FERC-mandated transmission project construction report could occur within just a few years, increasing transparency and assist transmission owners in identifying causes and solutions to the construction backlog. This reform could be coordinated with a construction monitor (see page 9).

The proposed collaborative procurement program for transmission upgrade equipment would also take several years to implement, ultimately addressing supply chain constraints through increased domestic manufacturing. Construction monitors could help identify opportunities for proactive procurement and define the role of such a program (see page 7).

As discussed below, even if the two recommended reforms in the *Interconnection Reform Report* are implemented, there remains an opportunity for more targeted, immediate action to improve construction practices on a transmission owner-by-owner basis. Accordingly, this whitepaper proposes the requirement of an independent construction monitor on an ongoing basis to provide an ongoing, proactive source of transparency and solutions to the transmission project construction backlog.

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<sup>6</sup> *Interconnection Reform Report*, p. 123.

<sup>7</sup> *Interconnection Reform Report*, p. 123.

<sup>8</sup> Reform 4A: Improve reporting on the transmission project construction process. *Interconnection Reform Report*, pp 80-85.

<sup>9</sup> Reform 4B: Industry and government collaboration to reduce supply chain bottlenecks. *Interconnection Reform Report*, pp 86-93. It should be noted that the *Interconnection Reform Report* focuses on actions that can be taken by utilities and regulators. Other parties' also have opportunities to resolve challenges in the supply chain, such as addressing workforce limitations through training programs. See for example: National Infrastructure Advisory Council, [Addressing the Critical Shortage of Power Transformers to Ensure Reliability of the US Grid](#) (June 2024).

## 2. REQUIRE A CONSTRUCTION MONITOR

To address questions regarding the effectiveness of construction project management or practices by transmission owners, we recommend the appointment of an independent transmission construction monitor for each transmission owner. To achieve consistency, the preferred approach is for FERC to revise its *pro forma* Open Access Transmission Tariff to require transmission owners to select and fund construction monitors. However, it may be that FERC requires construction monitors on a case-by-case basis, or that construction monitors are directed by state regulators or on a voluntary basis by transmission owners or RTOs themselves.

As discussed in the *Interconnection Reform Report*, there is a scarcity of information regarding the status and reasons for changes in schedule or cost of network upgrades needed for generation interconnection projects. The report recommends that FERC establish standardized, comprehensive transmission construction project reporting by all transmission owners.<sup>10</sup> The recommended reporting requirement could (and should) empower its users to identify the causes of transmission project delays and cost overruns. If transmission owners take the initiative to rely on such information, they could reduce the time and cost of building the necessary transmission upgrades. If they do not take the initiative, the same data could help FERC determine whether a rulemaking is needed to address systemic problems across many transmission owners.

While standardized reporting data should help identify problems, it may not point to solutions. This is the key argument for creating independent transmission construction monitors. Standardized reporting may be insufficient to address the diversity of circumstances, quantity and scale of projects, and other relevant differences among the transmission owners. To effectively engage with issues at the institutional or corporate level, FERC should direct each transmission owner to file a proposal for a construction monitor. The proposal should identify the monitor, describe procedures for ensuring stakeholder engagement and monitor independence, and propose the monitor's budget (funded through transmission rates) and scope of review.

### Scope of independent transmission construction monitor responsibilities

FERC should direct construction monitors to evaluate and assess the causes of extended transmission construction timelines and any cost increases presented by a transmission owner. It should also direct the construction monitors to evaluate the effectiveness of solutions to these issues that could be more rapidly adopted across the industry through either future regulatory action or adoption of best practices.

The level of detail in the scope should be left to the transmission owners. Those with larger or more complex portfolios should propose a more expansive scope of review than would be appropriate for systems with fewer or simpler projects in the existing construction queue. The minimum scope for each monitor should be to gather and assess information on cost/schedule management, technology solutions, and other issues, with a strong focus on information that goes beyond the specific metrics and accountability required in FERC Order No. 2023 or Order No. 1920. Among the other issues that a

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<sup>10</sup> Reform 4A: Improve reporting on the transmission project construction process, *Interconnection Reform Report*, pp.80-85.

construction monitor might consider would be the impacts of delays and reevaluations of long-term regional transmission facilities on customers with executed interconnection agreements.<sup>11</sup>

## Similarities and differences with other independent monitor roles

As with independent market monitors used in the regions and the independent interconnection studies monitor recommended in the *Interconnection Reform Report*,<sup>12</sup> construction monitoring is an area where expertise, independence, and access to confidential information is needed. In the same vein as these other contexts, FERC auditing staff could serve in this role. However, FERC's resources are limited, and that option may not be realistic. In contrast to a market monitor and a transmission studies monitor; the expertise of a construction monitor would be on issues of equipment procurement and construction. Market monitors generally do not have the expertise for either engineering studies or for construction and procurement issues, and vice versa.

## Coordination among transmission owners through existing institutions

While FERC should assign the responsibility for construction monitors at the transmission owner level, FERC should authorize transmission owners to act in coordination. Transmission owners should be encouraged to rely on construction monitors that would provide consistency and rapid adoption of lessons learned from monitoring activities. Such regional monitors could be established under the oversight of RTOs or ISOs (regionally or for subregions), or under the many different types of regional organizations that coordinate the activities of transmission owners, such as the Carolinas Transmission Planning Collaborative, the Georgia Transmission Corporation, the Florida Reliability Coordinating Council, the Pacific Northwest Utilities Conference Committee, and WestConnect.

## Voluntary or case-by-case alternative to general mandate

FERC can assert regulatory authority to require such an independent monitor, but the effectiveness of each monitor will depend on whether its findings and recommendations are influential with executive leadership of transmission owners, or with regulators – state or federal.<sup>13</sup> While we recommend mandating independent monitors for all transmission owners, FERC could also choose to provide a process by which transmission owners voluntarily propose to implement a construction monitor. Such a process would provide an opportunity for parties to question the effectiveness of a transmission owner's

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<sup>11</sup> FERC Order No. 1920, paras. 1048-1061. For example, a customer may have submitted an ERIS interconnection request with the expectation of filing a request for NRIS once the regional facility is constructed. A delay or cancellation that could not be reasonably anticipated could result in substantial withdrawal penalties for a generator at an advanced stage in the interconnection study process. Understanding these impacts could improve the consideration of generator interconnection benefits in the long-term regional transmission study.

<sup>12</sup> Reform 3: Establish independent interconnection study monitors, *Interconnection Reform Report*, pp. 67-74.

<sup>13</sup> The recommended independent monitor is intended to inform and help to identify deficiencies with the transmission planning, rate review, and cost allocation processes, which FERC has to be "practices that affect the rates for the transmission of electric energy in interstate commerce." Such information may also happen to inform matters reserved to the states by FPA section 201, and our recommendation would not infringe on the authority of any state regulator to decide whether or not, in the course of its regulatory duties, to consider this information or even encourage the submission of particular information that it would find helpful. The opportunity for information developed by FERC-required independent monitors to influence matters of state jurisdiction does not exceed FERC's jurisdiction. FERC Order No. 1920, paras 264-265.



construction practices. Such a case-by-case process has the advantage of not requiring a rulemaking that necessarily affects all transmission owners.

Nonetheless, this approach is less than ideal because it is unnecessary given the evidence that construction timelines are excessive across the vast majority of transmission owners. Furthermore, any undue burden from our recommendation can be mitigated by providing guidance to transmission owners regarding flexibility in the budget for and scope of the construction monitor's duties.

## Opportunities created by a construction monitor

The mission of a construction monitor should be to improve construction schedules and reduce the cost of transmission upgrades and generation that is supported by those upgrades. Reducing construction timelines will benefit ratepayers by bringing new generation online more quickly, increasing reliability, and reducing pressure to incur high costs to keep units in service that are currently scheduled for retirement. Some of the means by which those benefits could be achieved are described below.

### *Identify opportunities for proactive procurement*

A construction monitor could identify opportunities for proactive procurement of essential transmission upgrade equipment that transmission owners have not taken the initiative to implement. As discussed in the *Interconnection Reform Report*, there are long delivery lead times for certain essential equipment (e.g., high voltage breakers and grid step-up transformers). As noted by Cypress Creek, procurement ahead of project financial closings that facilitate project construction could avoid these supply chain bottlenecks.<sup>14</sup>

A standard practice implemented by large interconnection customers is to proactively procure plant and interconnection facility equipment in bulk, then allocate that equipment to projects in its portfolio as development schedules firm up. These advance procurement practices manage project execution risk by leveraging standardization and economies of scale.

Where transmission owners fail to similarly manage risk by practicing advance procurement, this can result in greater schedule and cost uncertainty. These uncertainties represent costly risks that are transferred to the interconnection customer, whose investment decisions are ill-informed with consequential increases in overall costs that can be passed along to power consumers through electricity prices.

### *Encourage coordination of network upgrade work with planned maintenance outages*

Some transmission owners appear to lack an effective process to coordinate outages between network upgrades and planned maintenance activities. Some transmission owners practice a “first-in, first-built” process for scheduling network upgrade construction. Systemic adherence to a “construction queue” could result in missed opportunities to bring projects online during scheduled planned maintenance with only a modest effort to accelerate project completion to align schedules.

For example, CAISO's outage coordination process principles do not include a best practice to coordinate maintenance and capital work for reliability purposes with interconnection or deliverability-

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<sup>14</sup> Matthew Crosby (Cypress Creek Renewables), *Answers to Commission Staff Questions* (September 11, 2024), FERC Docket No AD24-9-000, p. 2, 7-8. Hereafter, “*Cypress Creek Comments*.”

related projects.<sup>15</sup> Similarly, ISO-NE’s annual outage coordination report does not discuss the efficiency of outages related to generator interconnections, but rather mainly focuses on ensuring that transmission facility outages are scheduled during off-peak periods.<sup>16</sup>

These missed opportunities may be symptoms of siloed processes, where network upgrades are planned in isolation from maintenance or new construction programs. Other considerations that may delay scheduled network upgrade work could include disruption to certain customer loads, sustaining operational reserve margins during planned maintenance for large generators, or impacts to congestion in major load centers. Or there may be constraints related to limited resources and capital, with activities sorted and scheduled to reflect legacy policies rather than today’s priorities. A construction monitor could review these internal prioritization processes and illuminate opportunities to expand the list of available slots for new generator interconnection.

## Identify factors driving construction delays at each transmission owner

To reduce construction timelines across the country, a deeper understanding of factors affecting performance at specific transmission owners is necessary. As discussed in the *Interconnection Reform Report*,<sup>17</sup> SPP data demonstrate that certain transmission owners demonstrate much longer times to construct and often have much larger delays relative to the original construction schedule. In PJM, the data indicates variability across different technologies, with battery storage projects being placed in service roughly one year faster than the average generator, and with wind projects taking the longest time to deployment. Overall, a better understanding of factors affecting performance across different transmission owners and technologies, including scheduling efficiency, could improve the cost impacts of construction timelines on project finance.<sup>18</sup>

As described in the *Interconnection Reform Report*, existing information about construction phase performance by transmission owners is inadequate – and further, what data are available apply inconsistent definitions and reporting practices, making benchmarking even more difficult. Because a solution to this problem cannot be easily achieved by dozens of independent companies and organizations, the *Interconnection Reform Report* recommends that FERC require comprehensive and uniform nationwide reporting on the transmission project construction process.<sup>19</sup> Standardized reporting would provide a baseline against which each independent transmission construction monitor can present its findings in context.

The recommended standardized data record and associated stakeholder process would be more effective with an independent transmission construction monitor in at least two ways. First, the construction monitor could verify that the transmission owner’s reporting practices provide an accurate description of activities. For example, the construction monitor could verify a sample of reported causes of schedule changes to ensure consistency. Second, the information and analysis of the reporting data

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<sup>15</sup> CAISO, *Outage Coordination Process* (January 18, 2024), p. 5.

<sup>16</sup> ISO-NE, *ISO New England Transmission Equipment Outage Coordination 2023* (March 11, 2024).

<sup>17</sup> *Interconnection Reform Report*, p.117.

<sup>18</sup> *Interconnection Reform Report*, Appendix 3

<sup>19</sup> Reform 4A: Improve reporting on the transmission project construction phase, *Interconnection Reform Report*, pp. 80.

by the construction monitor would provide FERC with information that would help it prioritize issues for investigation, policy review, or even enforcement.

For example, currently generation interconnection customers currently have little recourse when cost overruns or schedule delays occur, even if available information suggests potential imprudent project management. Monitoring cost overruns and schedule delays is the first step towards creating opportunities for interconnection customers to have meaningful recourse where justified. Construction monitors' findings could also establish benchmarks for FERC to require reasonable limits to interconnection customers' exposure to cost increases and schedule delays.

## Compare performance to other transmission owners

Merely having the data alone may not be enough to improve construction timelines. If a small subset of transmission owners is responsible for the vast majority of transmission upgrade projects with construction delays, then solutions should be crafted for those transmission owners – perhaps drawing from successful practices used by transmission owners with more efficient processes.

Construction monitor reports that compare and contrast delays among transmission owners might create a “shaming” effect that motivates the leadership of poor performing transmission owners to adopt improved practices. As discussed in the previous section, while FERC should assign the responsibility for construction monitors at the transmission owner level, a single construction monitor could be jointly selected by multiple transmission owners, perhaps even at the RTO level. This could strike a better balance of access (due to the direct responsibility for reporting on each individual transmission owner) with independence to publish adverse performance findings.

The construction monitor's role should be to bring forward solutions where they can be found. Schedule performance may be affected by factors such as the transmission owner's willingness to adopt alternative technologies for network upgrades, co-location of resources at a single shared point of interconnection, or other advanced practices. Understanding whether transmission owners' practices need updating or whether the transmission owner's resources are inadequate or poorly managed is key to improving performance in the construction phase.

The other side of the coin is the importance of identifying red herrings that might appear when comparing data on transmission owner performance. Differences between transmission owners could be due to proficiency at managing network upgrades – or perhaps the seemingly poor-performing systems happen to have older facilities that require unusually complex or extensive upgrades. Similarly, it may be that battery storage projects can be placed in service more quickly than other new generators because they face less challenging permitting or face less extensive network upgrade requirements than more remotely located solar or wind generation projects. In cases such as these, having a proficient construction monitor in place to examine these hypotheses could identify not just poor performance, but also highlight other challenges that are causing delays that should be accounted for in system planning.

### 3. EXPERIENCE WITH CONSTRUCTION PHASE OVERSIGHT

Our research found limited evidence regarding the performance of independent construction monitors. One consideration in recommending that FERC should require transmission owners to select a transmission construction monitor is that, while some monitors have influenced cost recovery decisions, those monitors do not appear to have not driven significant improvements. However, our research located only a small sample of state-mandated construction monitors, with findings limited to large generator construction projects that involved relatively unique technologies. We did not find clear evidence regarding historical performance of construction monitors for transmission construction programs.

The power industry faces an unprecedented combination of a high-volume construction queue, an oversubscribed supply chain, and a surge in large load interconnection requests. The lack of evidence regarding construction monitors for transmission programs should not deter FERC from adopting this reform. To address the lack of experience, FERC should require that the implementation process include periodic reviews to assess the effectiveness and efficiency of the construction monitors. FERC should establish a streamlined process for updating guidance to transmission owners, including the option of allowing the transmission owners to petition the suspension of the use of monitors where evidence indicates that they no longer provide significant value to FERC or to users of the transmission system or to expand the monitors' role where additional value opportunities become apparent.

#### Build on precedents from prior construction monitors

There is some precedent for the use of construction monitors, where they have been mandated by state regulators who wish to obtain more impartial information about the status of a project. Creditors are also known to appoint construction monitors, but there is very little public information about the use and effectiveness of creditors' monitors.<sup>20</sup>

The difficulty of locating precedents for independent construction monitors could have several explanations. Construction monitors could just be used infrequently, but it could be that reporting on construction monitors is not often highlighted by regulators or included in readily available reports. Three regulators that have required construction monitors are:

- **Wisconsin Public Service Commission:** The Wisconsin PSC has required use of independent environmental or agricultural monitors to assist regulators with compliance; when supporting environmental compliance, the construction monitor has “stop work” authority. The Wisconsin PSC has required such monitors for at least seven major transmission line projects where the “length of the proposed routes and the corresponding broad range, large number, and high quality of natural resources and agricultural lands ... would be impacted as a result ... of the project.”<sup>21</sup>

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<sup>20</sup> *Cypress Creek Comments*, p. 6

<sup>21</sup> Public Service Commission of Wisconsin, *Final Decision* (September 26, 2019), Docket 5-CE-146, p. 60-61; and Public Service Commission of Wisconsin and Wisconsin Department of Natural Resources, *Cardinal-Hickory Creek Transmission Line: Final Environmental Impact Statement* (May 2019), Docket 5-CE-146, p. 555.

- **Georgia Public Service Commission:** A construction monitor was required as an outcome of the settlement agreement in Georgia Power’s need certification application proceeding for Plant Vogtle nuclear units 3 and 4.<sup>22</sup>
- **Mississippi Public Service Commission:** The Commission required a construction monitor as a condition of its approval of the Plant Kemper integrated gasification combined cycle (IGCC) need certification application.<sup>23</sup>

The Georgia and Mississippi independent construction monitor’s reports appear to have been effective in supporting the regulatory process, but do not appear to have impacted the cost or schedule of the plants’ construction. Both generation plants were substantially delayed and over budget.

In the case of Plant Vogtle, the construction monitor’s reports provided the factual basis for the Commission Staff to argue in favor of a substantial disallowance of costs. The Commission’s staff was responsible for oversight of the construction monitor and thus well-informed regarding the issues that contributed to cost overruns and schedule delays. An extensive record of the cost and schedule problems that affected Plant Vogtle were submitted along with the settlement agreement.<sup>24</sup> The settlement agreement was approved by the Georgia Public Service Commission.<sup>25</sup>

Similarly, the Mississippi Public Service Commission and its staff employed monitors that kept it apprised of cost overruns and construction delays at Plant Kemper. The Commission Staff’s construction monitor provided extensive testimony, including a cost estimate for the portion of the plant that was placed in service as a natural gas combined cycle unit, its operational capabilities, and forecast maintenance capital.<sup>26</sup> Following that testimony, a settlement was negotiated and approved by the Commission.<sup>27</sup>

We found no evaluation or evidence of the impact of the Wisconsin transmission construction monitors.<sup>28</sup> In the cases of Plant Kemper and Plant Vogtle, both outcomes demonstrate that the utility responsible for construction failed to manage cost and schedule, despite the continuous presence and reporting of the construction monitor teams.

## FERC oversight of transmission construction upgrade projects

Relatively few cases of construction delay or cost disputes have come before FERC, but the Luna Valley Solar complaint provides some insights into the potential role of a construction monitor. Luna Valley Solar’s main complaint was that PG&E required full payment of a \$27 million cost responsibility for network upgrades several years before the utility had completed engineering, secured necessary permits, and initiated procurement amidst a delayed construction schedule.

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<sup>22</sup> Georgia Public Service Commission, *Certification Order* (March 17, 2009), Docket 27800.

<sup>23</sup> Public Service Commission of the State of Mississippi, *Order* (May 26, 2010), Docket 2009-UA-14, pp. 20-22.

<sup>24</sup> Steven D. Roetger and William R. Jacobs, Jr., PhD., *Direct Testimony on Behalf of the Georgia Public Service Commission Public Interest Advocacy Staff* (October 27, 2023), Docket 29849.

<sup>25</sup> Georgia Public Service Commission, *Order Adopting Stipulation* (January 31, 2024), Docket 29849.

<sup>26</sup> Critical Technologies Consulting, *Testimony on Behalf of Mississippi Public Utilities Staff* (October 23, 2017), MPSC Docket 2017-AD-112.

<sup>27</sup> Mississippi Public Service Commission, *Order Approving Second Amended and Restated Stipulation* (February 6, 2018), MPSC Docket 2017-AD-112.

<sup>28</sup> After some outreach and interviews of involved experts, we did not find any evaluation of the effectiveness of the Wisconsin independent construction monitors.

Luna Valley Solar had planned for commercial operation in December 2023 but according to PG&E’s current database, the associated network upgrades are expected to enter service between 2026 and 2028 (the project dependencies are unclear in publicly available data). In late 2020, PG&E notified Luna Valley Solar that the project would be delayed by at least two years yet in Q1 2021 accelerated the payment schedule to require payment of the full \$27 million by June 2022, when Luna Valley claimed that at most one of five upgrades would have permits required to begin construction. PG&E justified its payment deadline to FERC, in part, because it “must begin purchasing long-lead time materials.” FERC denied the complaint, primarily on the grounds that CAISO’s tariff permitted PG&E to require the full payment well in advance of construction.<sup>29</sup>

While an independent monitor would probably not have affected the outcome of Luna Valley Solar’s FERC complaint, it could have gathered impartial evidence regarding PG&E’s practice of requiring full payment well in advance of actually starting construction on network upgrades. PG&E reports that the network upgrades associated with Luna Valley Solar are delayed due to land rights, materials, and prioritization.<sup>30</sup> If an independent monitor had access to PG&E’s network upgrade project status for Luna Valley Solar and other projects with early cost assignments, it could verify whether PG&E’s payment requests are reasonably aligned with expenditure schedules. If PG&E’s practices were found to be unreasonable, a mitigating revision to the CAISO tariff could be supported by that evidence.

## Use of a single entity to perform multiple independent monitor roles

A lesson from Wisconsin’s experience is that if FERC (and perhaps state authorities) establishes multiple independent monitors for transmission owners and operators, it is possible that these roles could all be executed by a single team or even a single firm. Initially, Wisconsin’s regulator required both an independent environmental monitor and an independent agriculture monitor. After some experience with the process, those distinct roles were retained, but transmission owners were permitted to have both roles handled by a single entity.

Entities responsible for selecting independent monitors – such as independent market monitors and the independent interconnection studies monitor recommended in the Interconnection Reform Report<sup>31</sup> – should have the flexibility to select a single entity to perform all these roles. FERC should approve proposals to consolidate roles under a single entity if the proposal can demonstrate greater effectiveness or efficiency. The selected entity must also possess the expertise necessary to perform its required job functions.

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<sup>29</sup> Federal Energy Regulatory Commission, *Order Denying Complaint* (November 18, 2021), Docket EL-21-70-000.

<sup>30</sup> Pacific Gas & Electricity, *Transmission Project Report* (May 2024).

<sup>31</sup> Reform 3: Establish independent interconnection study monitors, *Interconnection Reform Report*, pp. 67-74.