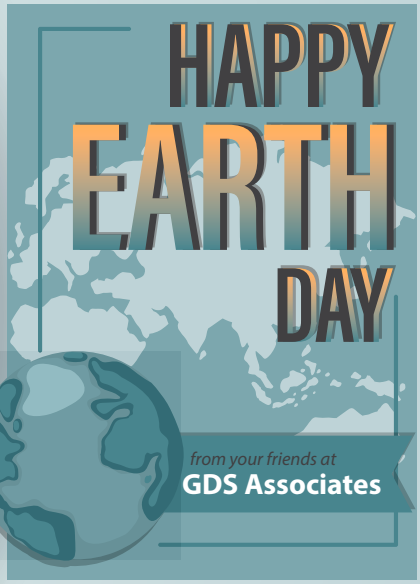
a Publication of GDS Associates, Inc.

# TRANSACTIONS


## Developing On Call Energy & Capacity Security

2023 Q1/Q2




## INTRODUCTION

***Supply chain reliability is the focus today across the board in all business sectors, including the power sector.*** This is especially true for electric utilities that have the obligation to serve. According to Berkley Labs, the reliability of the U.S. electric power system is critical to the nation's economic vitality and the well-being of society. ***Today, that reliability is being challenged, as the infrastructure ages and as incidences of severe weather and other threats to the system increase.*** The ongoing retirement of fossil fuel generating capacity and the push for more electrification adds to this challenge and further drives the need for reliable dispatchable generation.

***Reliability and resiliency are paramount in the power industry and equate to supply security.*** With the increasing penetration of renewables and the intermittency of their generation, the consequential risks of an uncertain energy and lower credited capacity (than nameplate) are borne by the electric utilities. To help ameliorate this risk, reliable and readily available generation supply is needed. Although battery energy storage systems have a role in helping manage this risk, their operating duration is limited.

To secure supply deliverability, a 24/7 firm call option is required. This round the clock on call energy and credited nameplate capacity can be met with proven state of the art, clean and highly efficient natural gas fired generation. When coupled with black start capability, air cooling technology, and appropriate geographic siting, its resiliency is bolstered. Like renewables, this secure supply option can be acquired through owner developed projects or through virtual ownership of a dedicated resource via a life of project offtake agreement. Either structure can be

## LOOK FOR US

*Upcoming Conferences*

**APRIL 25-27**
***IEEE Rural Electric Power Conference***
Cleveland, OH

**MAY 8-10**
***PLMA Conference***
Memphis, TN

**MAY 15-17**
***NWPPA Annual Meeting***
Anchorage, AK

**MAY 24-26**
***MEPAV Annual Conference***
Virginia Beach, VA

## UPCOMING WEBINARS

**Hi-Line Engineering** is excited to once again offer ***12 webinars throughout 2023*** all geared toward keeping you up-to-date on industry issues and standards!

**MAY 9**
*Overview of Double Circuit Design*

**JUNE 13**
*Mitigation of Animal Caused Outages*

***Note*** *All webinars are recorded & available for viewing post-presentation*

accomplished on a sole basis or on a joint basis, meaning joint owners or joint offtakers. Joint arrangements can be easily structured and provide all parties benefits including economies of scale.

However, not all electric utility organizations are sufficiently resourced to develop their own power project or to accomplish the same through captive project offtake agreements. That being said, there are industry proven power project development and asset management processes that can be utilized by these organizations to effectively develop, own, and manage generation resources or to do the same via a power purchase agreement.

**PROJECT DEVELOPMENT PHASES**

***This article is the first of a three-part series that walks through these processes and provides frameworks that can be adapted and implemented to match each organization's power project needs and managerial resource situation.*** This first article will walk through the phases of project development and required implementation functions. The next two articles will detail the requirements of both sole and joint project structures for either ownership or dedicated power purchase offtake agreements.

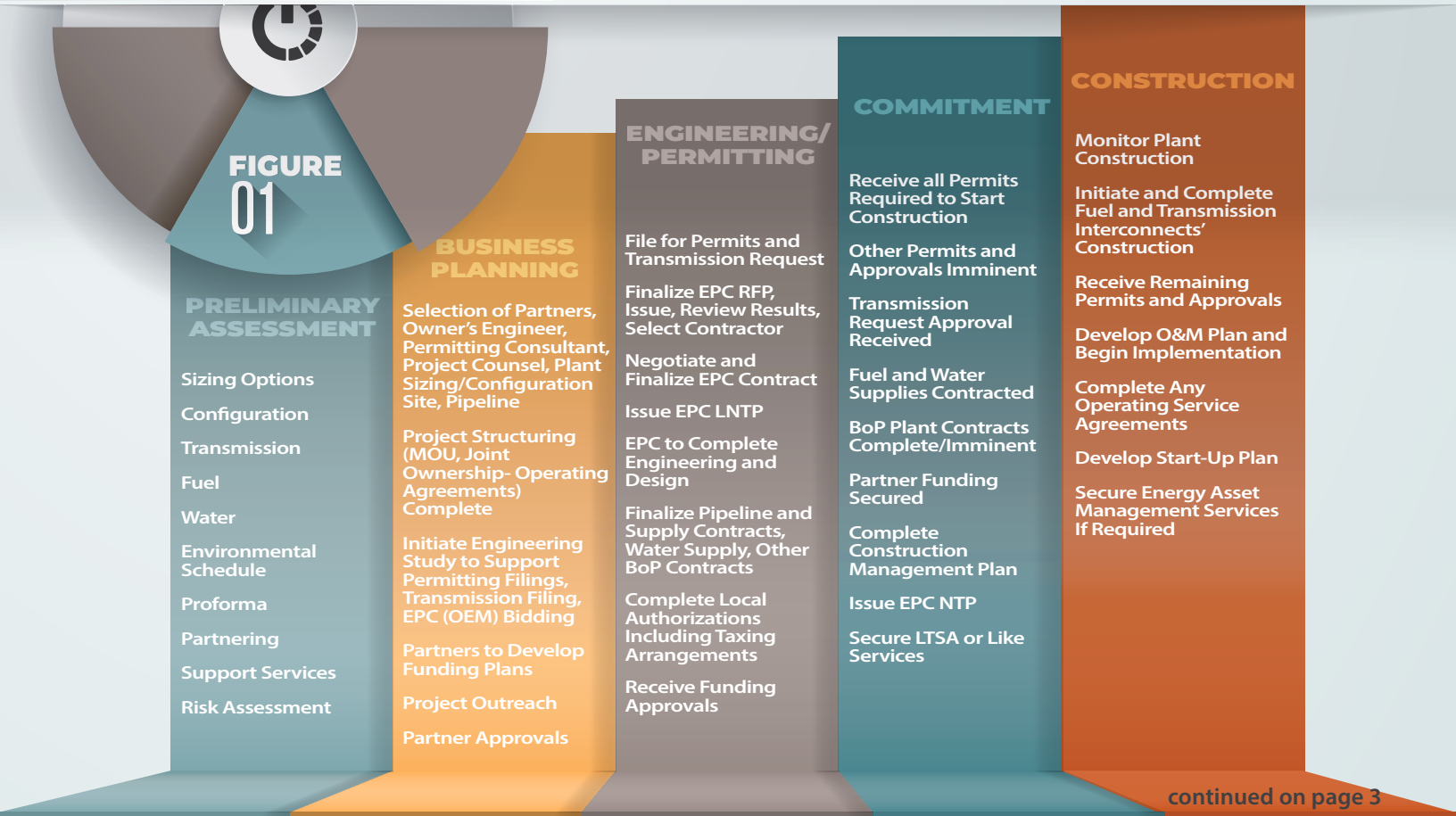
***Power project development*** can be segmented into a handful of progress and commitment phases (***Figure 1***). These phases can be classified as follows:

1. PRELIMINARY ASSESSMENT
2. BUSINESS PLANNING
3. ENGINEERING & PERMITTING
4. COMMITMENT
5. CONSTRUCTION

Of utmost importance in any project development is the effective management of the level of dollar commitment required to keep a project on schedule. The preferred approach for project developers is to align spending commitments with the decision milestones and timing of ultimately issuing a notice to proceed (NTP) for the project's full construction release and equipment commitments. A risk management approach to limit an owner's financial exposure should be implemented so that the project developer can effectively manage material issues as they occur (and they will) during the project's development.

This risk can be managed by issuing engineering, procurement, and construction (EPC) contract limited notices to proceed, or LNTPs. The most effective LNTPs are clearly and specifically defined in scope and dollars, thereby restricting the owner's exposure to a known dollar limit during each incremental LNTP.

**Figure 1.** *Power Project Development Phases*

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Structuring these LNTPs effectively occurs by negotiating with the EPC counterparty during the EPC contract or developer agreement process and can serve as active risk management tools. The milestones should be set such that the construction and equipment delivery schedules are kept on track without issuing a full release under a notice to proceed, and thereby, limiting the utility's exposure. This same concept / approach can also be accomplished under an offtake agreement.

Once the project's first phase – **PRELIMINARY ASSESSMENT** – has been successfully completed, meaning that the project is feasible, the next phase – **BUSINESS PLANNING** – requires the selection and addition of the talent resources that are needed to support the project owner (or offtaker) in the development of the project. It is critical for these acquired resources to meld the development activities so that the project can be appropriately commercialized to meet its goals. Focusing on the term "development" when securing the talent resource – for example, a "development engineer" – will ensure the right fit and will appropriately match the skill set with the need. Owner directives during the implementation of project contracts must not conflict with the project's division of responsibilities. This is necessary to prevent shifting of liability from the EPC contractor / developer to the owner / offtaker.

## PROJECT DEVELOPMENT/ IMPLEMENTATION FUNCTIONS

***Power project development*** includes a range of implementation functions that must be planned, staffed, and executed successfully to meet the cost, schedule, and performance requirements of the designated power project. These functions require a range of technical and commercial talents that must be in place to support the execution of each function during the development of the project and in different degrees during the project's eventual operation.

Depending on the utility's organizational resources, these talents can exist inhouse, can be acquired through external resources, or a mix of the two. These functions include a project development lead, engineering, construction, project administration, environmental, fuel and energy management, transmission, operations and maintenance, compliance, funding, analysis, legal, and outreach (***Figure 2***).

The project's development strategy will determine the organizational approach that will be required to implement the project. The resulting approach will generally include the same types of technical and commercial talent, but the level of engagement of these resources will differ. In the next two articles, **Parts 2 and 3**, there will be further discussion of the various functional requirements in addition to detailing the next step requirements for both sole or joint project structures for either ownership or dedicated offtake agreements. ■

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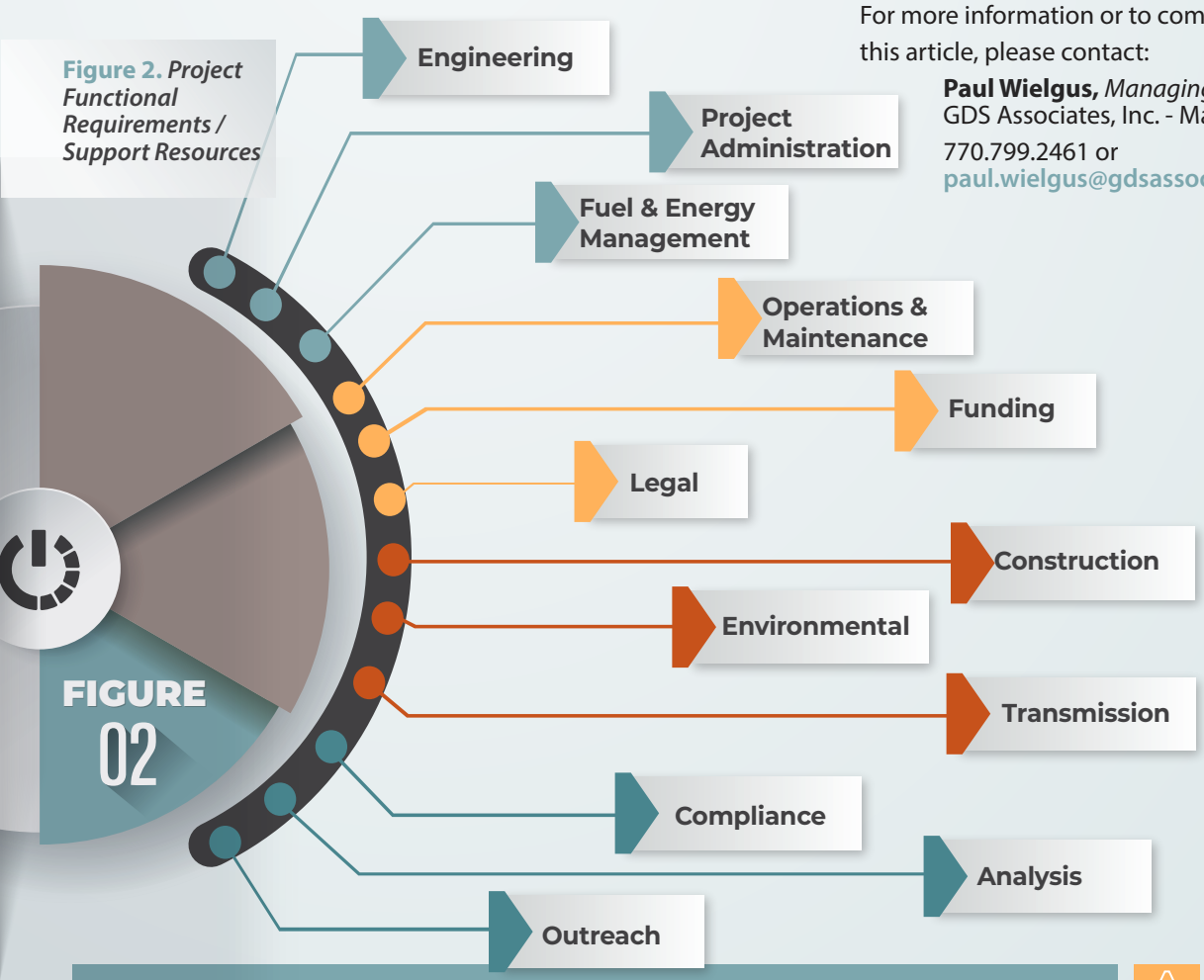


**Figure 2.** *Project Functional Requirements / Support Resources*

# Troubled Waters for Utility Rates

***Let's start with a thought experiment.*** Pick a submarine movie. Take your time, I'll wait. Got it? Now, go ahead and picture an iconic or memorable scene from that movie. Several great sub movies from the 90s pop into mind for this Gen Xer – Crimson Tide, The Hunt for Red October, and U-571 are examples. Perhaps you went with Run Silent, Run Deep or Das Boot? Now, what are some of the iconic scenes from the movie you selected? Whatever you chose, there are few submarine movie cliches more vivid than when the sub invariably must approach crush depth to avoid detection or depth charges. Music fades, the crew goes silent, the camera focuses on the sweat dripping down their brows, and then you begin to hear the creaks of the hull as pressure builds. It's a creepy sound and an effective way to build tension. Will she hold or will the crew meet their watery demise in an unpleasant implosion?

One of my favorite submarine movies does the cliché great service. In Down Periscope, Lieutenant Commander Dodge takes an old submarine exactly down to the depth where a single rivet pops from the hull, ricochets around the joint and even breaks a light bulb before coming to rest. If you haven't seen this cinematic masterpiece, you can be forgiven. It's a slapstick comedy with the likes of Kelsey Grammer, Rob Schneider, William H. Macy, and Rip Torn anchoring the creative spin on the submarine genre. I don't recall seeing it nominated for an Academy Award, but it has its moments nonetheless.

Likewise, ***utilities right now are having to navigate troubled waters.*** Outside pressure from various sources are threatening to breach the financial hull. To stretch the metaphor to the point that a rivet blows, utilities are having to make difficult decisions that may determine whether they stay afloat or sink to the bottom of the abyss. Leaving the submarines behind, let's discuss a few of the pressures that have been mounting and play a major role in how utilities are thinking about costs, financial planning, and rates. Then, we'll explore some ways that utilities are trying to navigate through such difficult times.

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## COST PRESSURES

We just cannot seem to get away from the ocean, which is not necessarily a bad thing, but we all remember the images of lines of cargo ships sitting out in the ocean just a couple of years ago. That was but part and parcel of the overall supply chain trouble that has plagued the nation recently and electric utilities are not exempt. Investment in transmission and distribution infrastructure was necessary in much of the US prior to 2021. With the President signing the Investment in Infrastructure and Jobs Act in 2021, additional opportunity to invest in the grid is being realized increasing demand of components already in short supply. The result is not only significant cost increases in many components of the grid, but lead time increases as well. For instance, *a study by Deloitte found a 100%-400% increase in lead time for transformers, a 60%-300% increase in lead time for cables and wires, and a 400%-600% increase for precast electric manhole covers*[1].

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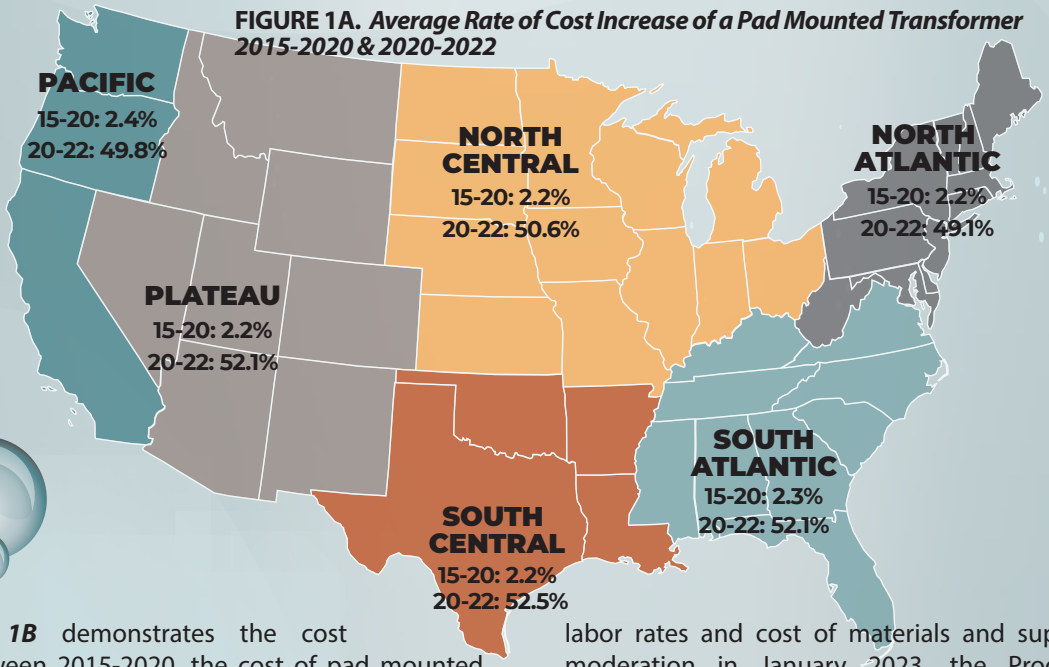
**FIGURE 1A.** ***Average Rate of Cost Increase of a Pad Mounted Transformer 2015-2020 & 2020-2022***




***Figures 1A*** and ***1B*** demonstrates the cost phenomenon. Between 2015-2020, the cost of pad mounted transformers increased at a rate of 2% per year. In the past two years, the cost has increased by an average rate of 51% per year! Less stark, but not insignificant are the cost increases of other major components of the grid.

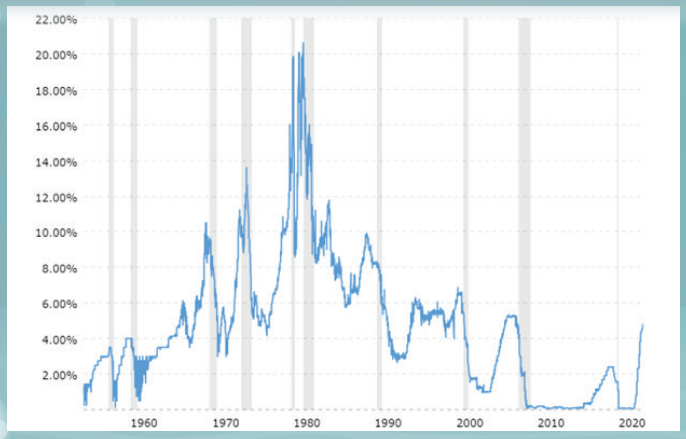
These capital costs increases will impact utility cash needs, depreciation costs in the coming years, and debt service costs. Additionally, interest expenses will be impacted by rising interest rates as the Fed has begun raising rates to try to impede the growth in inflation. In March of 2020, the Fed cut rates 150 basis points in two actions, driving the Federal Funds Rate down to a range of zero to 0.25%. Two years later, in March 2022, a series of rate increases began, with multiple increases in the range of 25 to 75 basis points such that the Federal Funds Rate stood at 4.75% to 5.00% by March 2, 2023, approaching levels not seen since before the 2008 recession. The cost of debt is increasing on top of increasing cost of capital equipment, which will have an impact on utility finances for years to come.

Other operating costs will likely be impacted by general economic conditions, including labor rates and cost of materials and supplies. Even with a moderation in January 2023, the Producer Price Index year-over-year change is at a level higher than the ten years prior to the COVID pandemic.

**FIGURE 1B.** ***Average Annual Cost Increases of Other Distribution Grid Components, U.S. Average***

| Grid Component | Average Cost Increase 2015-2020 (% per Year) | Average Cost Increase 2020-2022 (% per Year) |
|---|---|---|
| Transmission Towers & Fixtures | 2% | 13% |
| Underground Conduit | 3% | 8% |
| Underground Conductor | 5% | 14% |
| Overhead Transformers | 6% | 11% |
| Meters | 2% | 7% |
| Services | 2% | 9% |

**FIGURE 2.** ***Historical Federal Funds Rate***




## HOW ARE UTILITIES RESPONDING?

The idea of "set it and forget it" for five to ten years on electric rates is gone, at least for now. Utilities are having to take a hard look at budgets, look for ways to hedge against energy market price volatility, and take a harder look at their financial objectives. We have in recent years seen increases in retail electric rates as simply cutting costs is not sufficient to maintain grid reliability and maintain financial stability. The average retail price of electricity rose by 14.3% in 2022 nationwide, according to the Consumer Price Index. GDS has seen an increase in rate studies throughout the country, reflecting both pent up demand from delaying rate action during COVID and a need for rate adjustments in light of the cost pressures described earlier. Here are a few ways utilities are trying to respond to the cost pressures they are seeing right now.

***Taking a Fresh Look at Capital Plans.*** If you are three years into a 5-year plan, you might want to brush it off and go ahead and think about an update. Updating costs at the very least is prudent. Likewise, trying to balance the need for construction with delivering safe and reliable power is tougher to do when inflation and increasing interest rates are compounding the impact of building on utility budgets.

**FIGURE 3.** ***US Retail Price of Electricity***


***Hedging Strategies.*** Hedging strategies can help stabilize power costs when markets are volatile.

***Reserve Fund.*** Utilities that established reserve funds or rate stabilization plans are not immune from the cost pressures being faced today. However, they may have built reserves that allow them to draw upon that cash and request lower rate increases than a utility operating on thin cash levels.

***Grant Opportunities.*** There may be opportunities for utilities to benefit from government investment in the grid and infrastructure, such as the ability to directly benefit from tax credits associated with solar projects and investment in electric vehicle charging infrastructure.

***Multi-Year Rate Plans.*** Many utilities are taking a 3-5 year look at rate plans and trying to levelize rate increases. A good financial forecast can help you understand scenarios and how various rate plans might impact achievement of key financial metrics such as cash levels, debt service coverage, times interest earned ratio, ability to pay capital credits, and others.

***More Frequent Cost of Service and Rate Studies.*** At least for now, some utilities that may have had a longer cycle between rate studies are realizing that more frequent studies are required to ensure achieving financial objectives. ■

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*References*

[1] *"Electric power supply chains: Achieving security, sustainability, and resilience". Deloitte Insights, September 2022.*

**TransActions** is a publication of **GDS Associates, Inc.** a multi-service consulting and engineering firm formed in 1986.