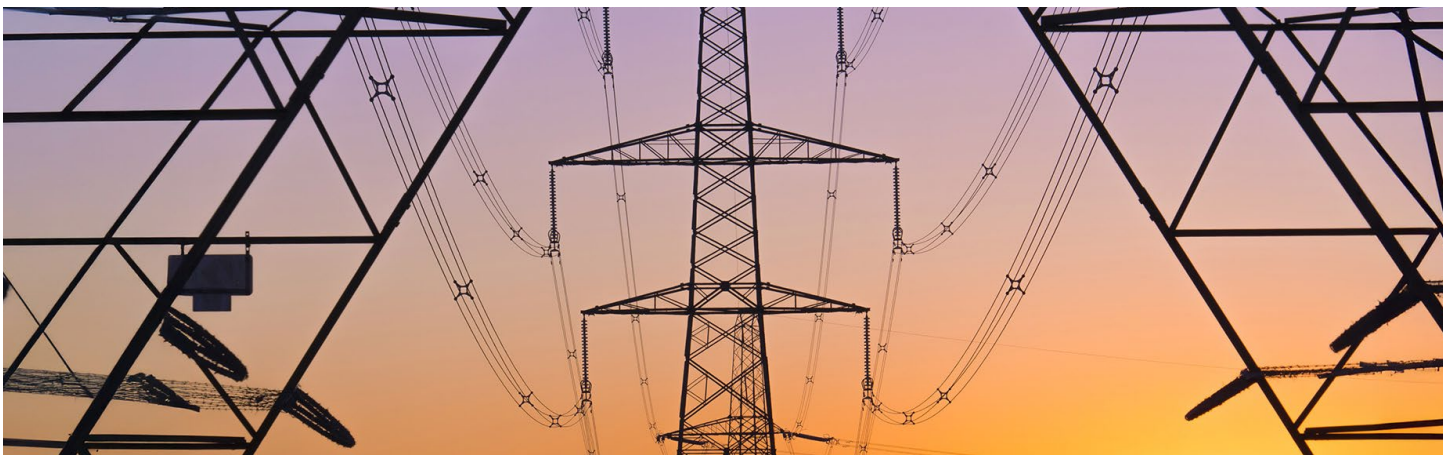


WHITE PAPER

Organizational Alignment: The Key to Successful Grid Modernization

By Nathan Brown and Kevin Huff

As the world continues to move toward a sustainable future, the collective backbone of our energy systems — power grids — must adapt to meet new challenges. From the rise of renewable energy to the growing demand for smarter and more reliable infrastructure, grid modernization is no longer a choice — it's a necessity. Advanced technologies, innovative strategies and bold investments are reshaping the grid, unlocking a more resilient, efficient and sustainable energy future.



Among specific drivers forcing power utilities to modernize the generation and distribution of electricity:

- Reliability and resiliency challenges.
- Integration of renewable energy.
- Expectations of efficiency and cost savings.
- Consumer empowerment.
- Support for electrification.
- Pursuit of climate resilience.

Modernization of the power grid is mostly a digital transformation, meaning that the integration of new and existing technology becomes the center of how the grid is engineered and operated. It is the technology-enabled grid that makes it possible to respond

to such drivers of change. However, the value of technology is maximized by integrating people, functional processes and organizations.

The following are examples where utilities are starting to transform to respond to the drivers to modernize:

- **Advanced technology.** The modern grid utilizes integration of digital sensors, controllers and head-end systems in its operational processes, whereas the traditional power grid relies heavily on electromechanical equipment to control the flow of electricity locally. This technology allows for the operations capabilities required to manage a more dynamic grid, including interconnected renewable resources, energy efficiencies and the electrification of transportation.

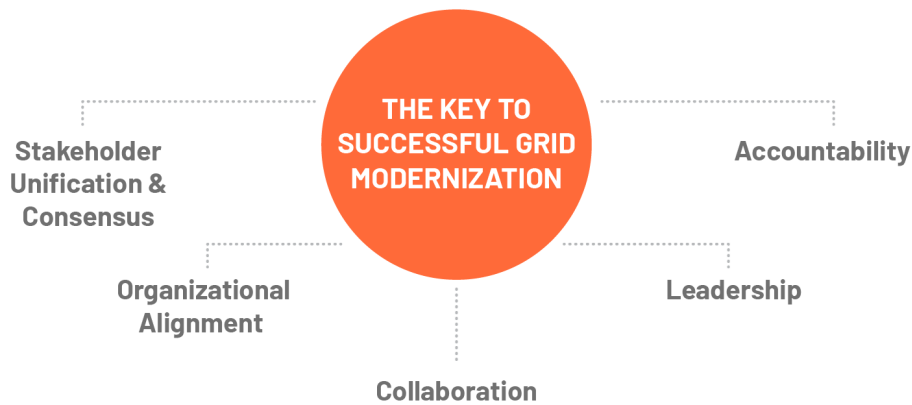


Figure 1: There are many factors that contribute to successful grid modernization.

- **Integrated planning.** Disjointed grid planning across generation, transmission and distribution has been acceptable in the past — and grid operations were able to keep pace with unexpected cross-topologies problems as needed due to the relatively single purpose and less integrated nature of the grid. The modernization of a utility’s grid planning functions is foundational in preparing the grid to adapt to increasing dynamics. Implementation of sophisticated planning and analysis tools, along with establishment of robust data sources, are now a focus for grid planning organizations to address the complexities of integrated planning.
- **Operational impacts caused by renewable generation.** Growth of renewable energy resources on the grid has driven a growing conflict around roles and responsibilities across traditionally siloed organizations. In the past, the generation function was solely within the domain of the generation organization; the transmission and generation operations (TGO) organization was solely responsible for the operations of generation on the grid. Now, with an increasing amount of renewable generation resources connected to both the transmission and distribution systems, the number of generation-related stakeholder organizations that can impact grid stability has also increased.

The question remains for most utilities: What organization operates which generation resources? For example, there is a spectrum of distribution system operating models to consider, with one end of the spectrum being highly centralized and the other being highly distributed. Utilities must work across stakeholder organizations to clearly define an operating model that suits their requirements and see that roles and demarcations are clearly defined and executed by formal procedures and/or automation. Operating models are expected to be different across the utility industry, but generation, transmission and distribution operational organizations can no longer work in isolation from each other.

Utility Change is Challenging

Just like in other industries before them, power utility companies are being challenged to transform themselves into technology-focused companies and, in most cases, this is not in their DNA. There are significant barriers that utilities face when trying to implement these changes, which can slow and even defer indefinitely transformational progress.

These challenges require utilities to be innovative, adaptable and persistent:

- **Aging infrastructure.** Many utilities operate with outdated infrastructure that requires substantial investment to upgrade. Modernizing these systems is both time-consuming and costly.
- **Regulatory hurdles.** Utilities must navigate a complex web of local, state and federal regulations. These regulations can be conflicting and change frequently, making it difficult to implement new technologies or processes.
- **Financial constraints.** Upgrading infrastructure and adopting new technologies require significant financial resources. Utilities often face the challenge of budget constraints and must find ways to finance these projects.
- **Technological integration.** Integrating new technologies into existing systems can be complex. Maintaining compatibility and reliability, while maintaining service quality, is a significant challenge. Furthermore, the industry has minimized dependence on technology due to the risks associated with its use. This has constrained progress in utilizing and managing technology and has left utilities ill-prepared for a technological transformation.
- **Environmental and sustainability goals.** Balancing the need for increased power generation with sustainability goals adds another layer of complexity. Utilities must invest in renewable energy sources and modernize their grids to reduce carbon emissions.

- **Customer expectations.** Customers expect reliable, affordable and increasingly sustainable energy. Meeting these expectations while managing the costs and logistics of transitioning to new systems is a delicate balance.
- **Internal culture.** Utilities have been generally successful at delivering power to the communities served for decades, doing so while minimizing interdependencies across business functions. This approach has led the industry to a status quo where business functions are being managed mostly independently. This proven approach is now being put to the test by the fact that solutions to new demands require a significant increase in complex unions across utility functions and organizations.

Balancing Established Priorities With New Ones

As with any transformation, utility leaders are adapting with change. Conversely, it is imperative that utility leaders remain conservative in their approach to change due to the nature of managing such a fundamental and essential community service. Utility leaders have been trained for their entire careers to minimize risk and question any changes that may introduce risk.

The power utility industry is finding itself in a challenging position. It is expected to answer the call for transformation that undoubtedly introduces risk to critical infrastructure, while reinforcing proven conservative approaches to minimize risk. Navigating this challenge can be more effective and streamlined when there is a clear direction defined and a corresponding organizational alignment. The key to successfully modernizing the grid is having a formal approach to establish and sustain this alignment over the duration.

When organizations are not aligned, significant challenges arise:

- **Customer dissatisfaction.** When internal alignment is lacking, it is often reflected in the customer experience. Customers may receive inconsistent service or products, resulting in dissatisfaction and potential loss of business.
- **Lack of clear vision and goals.** Employees may be unsure of the organization's direction or their role in achieving its goals. This might lead to confusion, missteps, distractions and rework.
- **Poor communication.** Information may not flow effectively between departments or levels of the organization. This can result in misunderstandings, duplicated efforts and missed opportunities.
- **Siloed departments.** Different departments may operate independently without collaborating or sharing information. This may cause inefficiencies and a lack of cohesion in achieving organizational objectives.
- **Inconsistent decision-making.** Decisions may be made without considering the overall strategy or without input from

all relevant interested parties. This can lead to conflicting priorities and wasted resources.

- **Inefficient processes.** Misalignment can lead to redundant or inefficient processes that waste time and resources. This can hinder the organization's ability to respond quickly to market changes.
- **Low employee morale.** When employees feel disconnected from the organization's goals or undervalued, morale can suffer. This can result in higher turnover rates and lower productivity.
- **Resistance to change.** An organization that is not aligned may struggle to adapt to new challenges or opportunities. Employees may resist changes because they do not understand the reasons behind them or how they fit into the bigger picture.

The utility industry continues to experience many of these problems and, if such problems continue, will struggle to meet evolving demands of key interested parties. Customer operations, system planning, grid operations and engineering functions, specifically, will need to formally engage and align with each other to overcome new challenges and successfully modernize the power grid.

A Solution to Consider

To better support grid modernization, utility companies should establish working models and governance structures that allow for federated planning and support across diverse groups. A federated governance structure brings together key interested parties to jointly plan and prioritize across multiple disciplines and provide guiderails and standards for specific disciplines to utilize during their transformative journey.

A governance model should provide a structured framework designed to enable collaboration, alignment and decision-making across multiple organizations at different levels. Across the organizations, different groups perform different roles. For example, an executive group can be used to establish strategic direction and goals, while a stakeholder group might have governance over one set of initiatives, a large program or even a specific project. These groups set directions, resolve conflict, establish priorities and evaluate risk.

A multidisciplinary governance group can have different objectives, depending on need, but some key areas they provide value in can be seen in Figure 1.

Establishing governance is meant to develop and govern a strategic plan and associated road maps and encourage healthy collaboration across key interested parties. This happens at multiple levels and fosters open communication and transparency across all relevant groups. When executed effectively, it can provide significant value to grid modernization and interdependent initiatives (see Figure 2).

FUNCTION	GOALS	SUPPORTING ACTIVITIES
Break down siloes	Reduce inefficiencies and duplicative efforts	<ul style="list-style-type: none"> • Implement cross-functional committees • Establish and promote transparency • Use integrated planning frameworks
Support strategic alignment	Establish priorities and reduce waste	<ul style="list-style-type: none"> • Establish centralized governance board • Align projects and deliver against clear key performance indicators (KPIs) • Regular review and adjustment of strategies • Establish and support organizational roles, responsibilities, demarcation and touchpoints
Enhance communications	Reduce delays and cross-department friction	<ul style="list-style-type: none"> • Implement formal communications channels • Establish processes, tools and frameworks for real-time collaboration
Establish standards	Reduce inefficiencies and enhance quality	<ul style="list-style-type: none"> • Develop and enforce cross functional standards • Create a standard review and update mechanism • Incorporate training programs
Manage risk	Minimize risk	<ul style="list-style-type: none"> • Set up risk governance and review processes • Create uniform risk analysis processes
Allocate resources	Evenly distribute resource based on priority	<ul style="list-style-type: none"> • Organize budgeting and resource planning oversight • Implement a prioritization framework • Maintain clear metrics to monitor performance
Enable innovation	Foster creativity and innovation	<ul style="list-style-type: none"> • Create innovation councils • Prioritize and fund innovation
Enable innovation	Foster creativity and innovation	<ul style="list-style-type: none"> • Create innovation councils • Prioritize and fund innovation • Establish feedback mechanism and publish innovation results
Improve customer experience	Drive consistency and enhance customer satisfaction	<ul style="list-style-type: none"> • Define and enforce service standards • Create customer feedback loops
Maintain compliance	Meet regulatory requirements and reduce penalties	<ul style="list-style-type: none"> • Enforce compliance framework • Review policies and regulatory changes
Support scalability	Manage growth efficiently	<ul style="list-style-type: none"> • Implement governance structures for capabilities such as program management and compliance • Define processes for adoption

Figure 2: Objectives for multidisciplinary governance group.

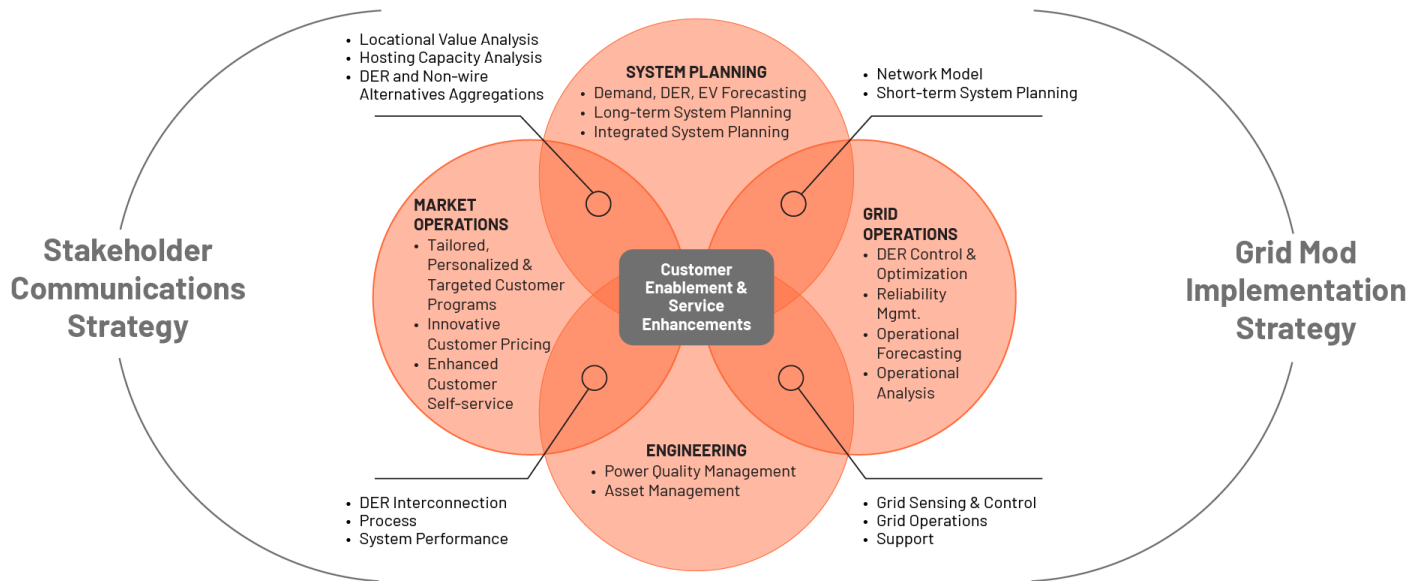


Figure 3: An example of an operating model for grid mod implementation.

A Journey Worth Taking

Implementing governance capability for a utility grid modernization effort requires a structured approach that aligns strategy, processes, people and tools. The journey to get there requires multiple levels of leadership commitment of support and resources. Many utility organizations do not have a long history of driving decision-making and prioritization through governance, so those muscles can take some time to strengthen. It should be expected that establishing such a significant and long-lasting governance structure will be iterative and include lessons learned and continuous improvement.

Define Purpose and Objectives

The journey starts by defining the purpose and objectives of the governance group. This includes identifying focus areas, team structure, goals and general guidance regarding what is expected and why it is important.

During this stage, the focus should be on:

- Educating teams about why governance is important and conducting joint leadership meetings stressing the importance of supporting governance.
- Working across leadership teams to get support and commitment on resources.
- Creating a charter (see Figure 3) for the governance group by:
 - Establishing clear goals and objectives.
 - Defining focus areas.
 - Establishing what corporate strategies will drive a governance team.

- Determining any regulatory alignment and drivers.
- Establishing expectations for planning objectives and deliverables.

Identify Key Interested Parties

Establish a working group of executive leaders, functional leaders and stakeholders to begin collaboration and align resources. Resources need to be assigned to governance groups and those groups will need to have time to play their role. This group will also need to identify key roles within the governance group, including the assignment of a leader or chair who will sponsor the group.

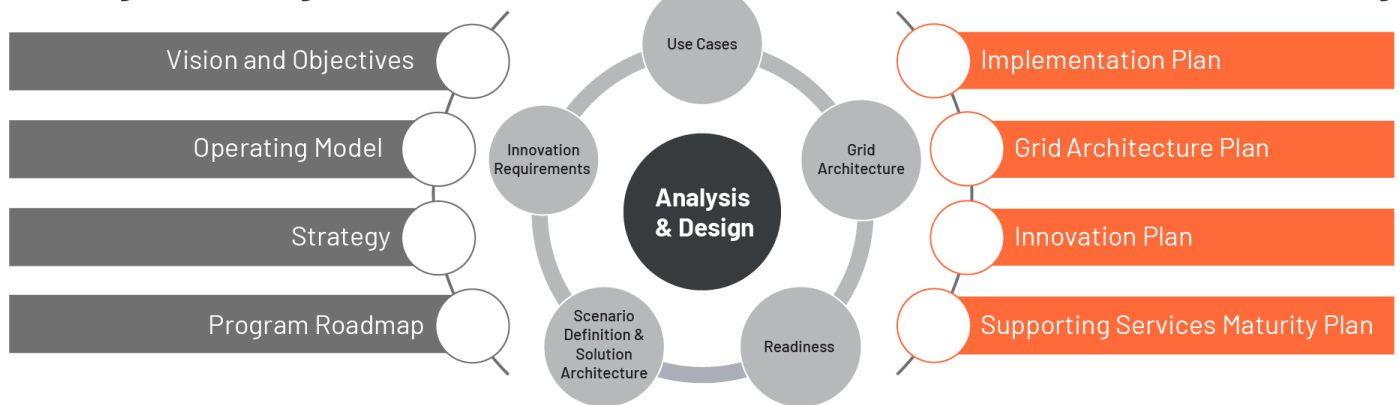
During this stage:

- Governance team participants need to be identified.
- A governance leader or chair must be assigned to create agendas and drive meetings.
- Team members may need to have some responsibilities adjusted to allow time to support governance.

Establish Structure and Define Roles

The official structure of the governance group should then be defined, along with supporting roles. There should be standard voting members of a governance group but there could also be participants or subject matter advisers that are consulted based on need. Defining this structure is helpful and the creation of a responsible, accountable, consulted and informed (RACI) matrix will help define those roles and how they interact. A governance structure could be tiered such that there is a strategic board and operational committees that report to the governance board.

Strategic Planning



Tactical Planning

Figure 4: An implementation plan is supported by a variety of drivers, both on the strategic planning and tactical planning side.

During this stage the following should be identified:

- Tiering structure, if needed, and what roles the subcommittees would play.
- Workflows defined for communication across groups.
- A RACI and organizational chart defined for the governance group.

Align on Policies, Procedures and Tool Sets

The governance groups will need to align the policies and procedures to be followed, such as approval processes, budget reviews, standards updates and approval processes or general decision-making. The workflows, acceptable quorum and rejection processes will need to be defined and established within the governance groups. Standard tool sets will need to be adopted, which could include collaboration platforms, project management tools or dashboards. At this point it is key to align ways of working so that the governance group is ready to execute on its job.

During this stage the following activities should occur:

- Create processes for decision-making, approvals and updates or changes to standards.
- Establish acceptable metrics for quorum and proxy voting.
- Incorporate tool sets for collaboration, reporting and managing work.

Set Key Performance Indicators (KPIs)

Governance groups need to be able to measure success, which includes setting defined and measurable performance indicators. These could be items like project return on investment (ROI), customer satisfaction or speed of delivery. Once established, these need to be tracked and published in a transparent manner. Key interested parties, governance committee members and

subcommittee members should all understand how the governance process is performing and where issues may be developing.

The following items should be established:

- Set of standard KPIs.
- Any KPIs specific to grid modernization.
- How the KPIs will be measured and reported on.
- Published KPI reports.

Embrace Governance Culture

At this point, the structure has been created and governance established; now it needs to be communicated, embraced and supported. This includes communicating successes, what the group is working on and challenges across stakeholders, so everyone sees progress and knows when issues arise. Facilitating meetings on a regular cadence with clear agendas is necessary to keep members engaged and allow for preparation before meetings. Some governance members may be new to the concept and require training to achieve optimal value; creating a culture of collaboration and transparency is a must. The overall goal is collaboration across the organization to plan, prioritize and deliver in a cross-functional manner.

Activities to focus on:

- Set a regular cadence and clear agendas for meetings.
- Establish regular reports and updates for key interested parties.
- Publish dashboards to communicate success or issues.
- Reinforce with training where needed.
- Promote accountability and transparency.
- Encourage collaboration across the organization.

Continuous Improvement

The last step in the process is to establish periodic reviews of performance and mechanisms for feedback to be used in improvement initiatives. Challenges must be addressed to resolve and improve for the future.

Areas of focus include:

- Establish periodic reviews of processes.
- Encourage and review feedback.
- Review lessons learned and establish improvement plans.

Outcome

Successfully delivering a governance program drives several positive business outcomes. Achieving this within a grid modernization program can drive substantial enhancements due to the proliferation of silos within most utility company organizations today. The main purpose of governance is to drive collaboration across the organization in support of strategic and tactical planning, standards-setting and project delivery. Failure to successfully govern a grid modernization program tends to lead to cost overruns, delayed project delivery, mistrust between organizations and a lack of satisfaction with customers.

A successful grid modernization governance program is designed to drive the integration of decision-making across complex areas. Transmission, generation, distribution, information technology/operational technology (IT/OT), cybersecurity and telecommunication organizations all have a major stake in successful delivery.

Strategic Alignment and Organizational Efficiency

Governance supports clear strategic direction by aligning departmental objectives with corporate vision and regulatory requirements. Within grid modernization this means working across organizations to meet the corporate objectives supporting ratepaying customers. It also supports the reduction of silos and faster decision-making by opening channels for communication for execution, budgeting and resource allocation. It establishes clear decision-making processes and transparency to allow faster execution when priorities clash or critical decisions must be made to allow progress.

Improved Operational Performance

Governance supports the optimization of resource utilization by identifying and reducing waste and redundant efforts across organizations. It is critical to enhance service reliability and resiliency, including managing disaster response. Within the modern grid, issues like severe weather and cyberattacks can disrupt services to customers. Governance structures can be used to support crisis management by supporting collaboration during issue mitigation and recovery.

Supports Compliance and Risk Management

In the world of electric utilities, standards must be met from agencies including the Federal Energy Regulatory Commission (FERC), North American Electric Reliability Corporation (NERC) and Occupational Safety and Health Administration (OSHA). As new initiatives and projects are rolled out, multiple groups need to align on deployment and support to meet these regulations. Governance provides a mechanism to set standards aligned to the regulations and review plans or solutions to evaluate alignment. Many governance groups provide subcommittees, specializing in areas such as cybersecurity, that can evaluate solutions or questions with a set of trained individuals. These individuals can then provide recommendations and risk analyses to the strategic governance board supporting risk mitigation strategies.

Efficient Use of Ratepayer Funds

Governance supports the efficient use of ratepayer funds by helping to evaluate projects and operational expenditures across groups. When there are redundant initiatives or projects taking place within a utility company, governance can open the communication channels and let groups understand current initiatives to see where they can leverage work already completed or underway by other teams. When many redundant tools are used for operational support, governance can open the doors to identify operational redundancies and look for ways to leverage existing investments. Overall, this collaboration should lead to higher returns for capital projects and lower operating costs.

Increase Trust and Enhance Customer Satisfaction

One of the primary benefits of a governance program is to increase communication and collaboration across organizations. One of the biggest impediments to trust is a simple lack of communication; many times, simply commissioning a governance group and encouraging collaboration increases trust among stakeholders. Enhanced communication and coordination across organizations leads to faster resolutions supporting customer satisfaction. Many of the most customer-centric enhancements in the modern grid involve items like renewables, customer portals and demand response, all requiring substantial work across multiple organizations to be successful.

Scalability and Future Readiness

As the demand for electricity continues to grow along with the demand for a reliable and resilient electric grid, the need to be future-ready and scalable becomes more important. Many grid modernization initiatives require a substantial number of devices to be deployed to field systems supporting consistent communications to headend software solutions. Without governance and coordinated planning, it is quite common for devices to be deployed and overwhelm the ability to move data and support the enabling network. Governance allows time for teams to plan and potentially leverage new solutions that are better suited to future needs and growth.

Implementing governance for critical initiatives such as grid modernization or system resilience will help foster communication and break down silos, which are needed for successful deployments. They will also result in more efficient use of funds by reducing waste and redundancy and aligning resources where and when they are needed. Lacking this structure, large initiatives may achieve some progress but then be impeded by lack of communication, standards or planning.

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