

THE ENERGY EXCHANGE

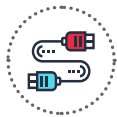
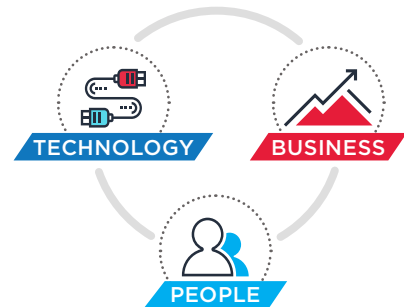
Concise and actionable intelligence for today's most relevant Grid Modernization topics

Significance—Why does this matter?

Communications is a foundational element of the modern grid, that should be considered in terms of a larger enterprise architecture construct. It is a fundamental backbone for utility data management, delivery, and utilization. Connectivity to field assets is a core enabler that unlocks greater situational awareness, fosters the capability for meaningful data correlation, and executes actions which improve performance, minimize disruption, and manage complex environments.

Structure—What do I need to know?

The Energy Exchange Brief framework focuses on three primary areas—technology, business, and people—to comprehensively explore Grid Modernization topics from various grid practitioner perspectives.



TECHNOLOGY CONSIDERATIONS

- **Latency** Speed of communications
- **Bandwidth** The capacity of communications and associated data size
- **Availability** The system uptime expressed in number of NINES (4 NINES = 99.99%)
- **Dependability** Failure rates
- **Scalability/Adaptability** The ability to grow or expand capacity, coverage, technology
- **Coverage Area** How many devices, physical area to span, geographic obstructions
- **Quality of Service (QoS)** Network prioritization of communications
- **Service Level Agreements (SLAs)** Delivery and support arrangements with providers
- **Protocols** System of rules which govern and align communications methods
- **Communications Media** Fiber, broadband/narrowband wireless, cellular (public/private), PLC
- **Topology** Network architecture (Point-to-point, multi-point, mesh)
- **Transport** Data transport techniques between communications devices

“An efficient telecommunications network is the foundation upon which an information society is built.”

—TALAL ABU-GHAZALEH



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BUSINESS CONSIDERATIONS

- **Enterprise Architecture** *End-to-end communications blueprint (enterprise to device level)*
- **Network Ownership** *Utility owned, Commercial/Public network(s), hybrid model*
- **Migration Planning** *Defining legacy, transition, and hybrid implementation approaches*
- **Technology Optimization** *Technology blending for flexibility and future growth*
- **Multi-sourcing** *Determining the optimal blend of solutions diversity and interoperability*
- **Leveraging Infrastructure** *Optimizing infrastructure utilization and investment*



PEOPLE CONSIDERATIONS

Utility-Centric (Internally Facing)

- **Strategic Alignment** *Development of a comprehensive, enterprise-level communications strategy*
- **Governance, Processes, Procedures** *Organizational alignment, process and role clarity, and functional guidelines and procedures, especially to meet internal Service Level Agreements*
- **Staff Development** *Ensuring proper staffing level and training to remain current with emerging trends*

Customer-Centric (Externally Facing)

- **Information Security** *Secure communications protocols to ensure protection of customer data*
- **Home Area Networks** *Alignment of utility communications with in home device proliferation*
- **Communications Services** *Meeting future customer-related communications requests for network or data services (i.e. high-speed fiber internet to the home)*

Steps—What do I do now?

For any strategic roadmapping effort, a few fundamental considerations must be addressed. Namely, the identification of a starting point (current state), a desired destination (end state), and a pathway and purpose for going there (directional vision and strategy). The framework outlined in the Structure section defines considerations along a future pathway, but the first step is to evaluate one's current state. The evaluation tool below enables a utility to initially assess a company's communications maturity level at a cursory level.

<p>1 INITIAL</p>	<p><i>Communications planning efforts exist but are outdated and are done in an ad hoc, reactive, and isolated manner. Communications technologies, network architecture, and grid application and device goals require updating. Current communications planning and capability growth needs to be established.</i></p>
<p>2 BASIC</p>	<p><i>Communications planning efforts are current and repeatable but are applied informally and in an isolated manner. Communications efforts occur for individual communications technologies, network architecture, or grid application and devices. Additional communications planning and capability growth needs to be established and coordinated at an enterprise-level.</i></p>
<p>3 INTERMEDIATE</p>	<p><i>Communications planning efforts are current and repeatable and are rigorously applied by some business units. Communications efforts occur cross-functionally between certain groups which manage communications technologies, network architecture, or grid application and devices but are not comprehensively conducted. Communications planning and capability growth needs to be coordinated at an enterprise-level.</i></p>
<p>4 ADVANCED</p>	<p><i>Communications planning efforts are current and repeatable and are rigorously applied at an enterprise-level. Near-term communications planning efforts are coordinated at an enterprise-level between groups which manage communications technologies, network architecture, or grid application and devices.</i></p>
<p>5 OPTIMIZING</p>	<p><i>Same as Level 4, but planning efforts are optimized to consider long-term, strategic impacts which drive near-term planning efforts.</i></p>