The utilities industry is realigning strategies and operations post COVID-19.
PURPOSE-DRIVEN, RESILIENT & ADAPTABLE

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Abstract

Stakeholders across the board are chalking out strategies to define and accept the post–COVID-19 normal. The utilities industry, although not severely impacted, is also revisiting its processes and operations to adjust to the situation, especially from a safety and security point of view.

There are two distinct segments in which the utilities industry needs to focus:

1. **Reactive response to external stakeholders:** With a sudden drop in demand and sales, considerable reduction in cash flow, a major jolt in supply chain activities, and more stringent guidance from regulators, utilities must create alternate roadmaps and mechanisms to ensure that the top and bottom lines are healthy in tandem with customer satisfaction.

2. **Proactive mandate for internal stakeholders:** With mandatory social distancing, isolation, and fear of the pandemic, plant and field operations require to be redefined with additional safety.

This white paper analyzes both the segments and suggests approaches to respond to these stakeholders.
Renovation in Progress: How will the Utilities Industry Change?

With COVID-19, the utilities industry is slated to witness some short-term and other permanent reverberations down the line. As an immediate reaction, we noticed delays in capital projects, scrapping of planned activities, reduction in IT spends, and more stringency in rate case approvals. Along with that, regulators and governments across the world imposed guidelines favoring the end consumers – from no action to be taken for non-payment to lowering the slab rates for billing. From a long-term perspective, there will be a larger strategic shift for utilities in moving from a regulated to a deregulated regime. What these perspectives bring to the fore is that, now is the time for utilities to assess their existing systems, identify problem areas, and create room for evolution. Propped by the adoption of digital technologies, this restructuring could bring about a revolution in utilities. Before examining the scope of enhancement, let us explore some of the effects caused by the pandemic.
Supply
As a knee-jerk reaction to the pandemic, generation and transmission have to be adjusted to the new normal with a minimum of 5-15% decrease in demand. Production for the baseloads is being reduced as per the following order – nuclear, wind and solar, coal-fired, gas-fired, and hydro – to manage medium to peak loads.

Distribution has eased due to demand reduction, making it easier and faster for firms to integrate small-scale domestic renewables with the low/medium voltage side. This will be possible only if the supply chain of materials is operating smoothly.

In the long-term, the generation, transmission, and distribution of power due to the effects of the pandemic will change, as follows:

- For logistical reasons like reduced transportation facilities and scarcity of human labor (mostly in India), the production and supply of coal will drop under COVID-19 circumstances, and hence, there will be a noticeable shift from coal-fired generation to others.
- A dip of 30% in gas prices between December 2019 and March 2020 will increase plant load factors of gas-powered stations.
- Forecast mechanisms for generation and transmission will require a complete change of algorithms – ‘last year this month’ will be replaced by ‘last three months or last week/month’. Besides, weather and other external conditions are other factors to be considered.
- Unorthodox suppliers like battery reserves, microgrids, and vehicle-to-grid (V2G) will gradually pick up momentum, as consumers start favoring reliability through alternate means.

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Demand

As an immediate reaction to the pandemic, the overall demand for power will witness a sharp drop, with industries and commercial establishments going into a slumber. While domestic demand has increased only marginally by 3-5%, stringent guidelines from most utilities to not pressurize consumers to pay has resulted in a dip in cash flow.

The long-term changes to demand are envisaged as below:

- The load curve will flatten out considerably with lesser peaks and troughs, while consumers adjust to the new normal of working from home, staying in isolation, etc. Meanwhile, demand during weekdays and holidays will be similar.
- Of the increased availability and use of renewable rooftop solar installations or wind turbines, consumers will lean towards homegrown power generation. Simultaneously, localized grids with the right mix (battery storage and renewables) will gain wider adoption. Technologies like blockchain, which are already available, will facilitate the growth of community microgrids.

Operational Changes Envisaged in Utilities

In order to align with the recent market volatility and streamline the sector, utilities need to revisit their operations. Some changes that we envisage in the respective areas of operations are given below:

**Field Operations**

- Utilities will substantially move to contractor-based field support, while employees will only be deployed to support niche areas. Learning and knowledge transfer will be conducted remotely through technologies like augmented and virtual reality, artificial intelligence, and machine learning.

- Field operations will be monitored more stringently and in real-time, with data flow becoming ubiquitous, be it asset, workforce, operator, or third-party related.

- People working as drone operators, metering and communication command center operators, image annotators, and AI-ML and AR-VR developers will be much sought-after by utility firms.

**System Control**

- Control and command centers will be more than just outage and distribution management systems. Support for advanced metering infrastructure (AMI), integration with third-party data sets (like the weather), asset performance management, and geographic information system (GIS) heat maps will have to be considered to ensure a resilient grid.

- The shifts will be of shorter durations and rotational for key workforce safety, where employees will be given access to operate from laptops, mobile phones, and tablets irrespective of location.
Revenue

- With provisional billing conducted due to meters going unread manually, automated meter reading (AMR)/AMI with human-in-the-loop billing support systems will be required by utilities.

- To handle the aftermath of provisional billing – which inadvertently increases billing complaints – self-served automated corrections will be brought in.

- For the drop in revenue collection, incentivization will be introduced along with additional pay channels, by collaborating with other industries and taking advantage of such external resources.

Consumer Touchpoints

- Virtual offices (call centers) and self-service along with omnichannel experiences will be more sought after with extended hours and shifts, to increase support and customer satisfaction.

- A single centralized virtual back office supported by bots can be created. Bots and chat responses will be more effective than call-in services for utilities.

Corporate Operations

- Materials and asset procurement guidelines will be reworked upon. Inevitable condition-based maintenance will be the guiding factor to plan for procurement.

- Secure Borderless Workspaces™ in utilities-specific scenarios and the subsequent organizational change management frameworks will help utility firms transition their workforce to remote working operations.
IT-OT Use case

Without doubt, information technology (IT) and operational technology (OT) will be major game changers for the utilities sector under the present scenario. Though many capital projects in IT are delayed, put on hold, or even scrapped, we see a surge in the requirement of alternative projects in collaboration, remote monitoring, communication system enhancements, and analytics. Some of the trends that are expected to pick up where IT-OT can play a huge role are as follows:

**Smart Meters and Integrated Distribution Management Systems**

For utilities yet to be on the AMI roadmap, the immediate ask will be from consulting to roadmap creation, while maintaining a phased implementation approach, as much as the rate case permits. There will be an added thrust to safeguard existing investments and utilize the same for newer apps. For example, investments done in AMR and outage management systems (OMS) will need to be protected by add-on applications to gain insights from conflated data sets – especially where new funding for major capex is put on hold. Given these developments, smaller but effective value propositions on remote operations and palmtop analytics for decision making will get a significant boost.
**Smart Control Rooms**

Actions like remote readings, disconnections-reconnections, demand response, alert-event handling, communication management, etc. will be controlled through new-age command centers.

**Drone and Smart Machine-Based Inspections**

Unstructured data sets from multiple sources like satellites and drones and structured data sets like asset management, GIS, and workforce management will be required in field monitoring. Automation tools will ingest these data sets and subsequently process them.

**More Robust and High-Volume Communication Networks**

Communication will be key to remote operations, and as a result, there will be a huge demand to develop, modify, improve, and maintain communication infrastructure – machine to machine, machine to human (vice versa), and human to human.

**Security Reinforcement – Physical, Network, Data, and Remote Devices Accessibility**

As remote operations get extended beyond a company’s firewalls, utility firms will need to overhaul their cybersecurity set up. Multi-factor authentication, image recognition, and analytics will be in huge demand. An additional component of technology intervention will be to ensure social distancing in plants through internet of things wearables, safety gears, and masks.
Conclusion

During this period of uncertainty, the only way forward for utilities is to embrace risks and respond in a more agile fashion. TCS’ Business 4.0™ value drivers emphasize on the importance of building a robust digital technology foundation to pursue favorable economic behaviors. While these long-term trends continue to drive utilities towards growth, transformation, and sustainability, we believe that, in the interim, enterprises need to focus on ensuring resilience and adaptability during these difficult times.

About the Author

Anupam Chakraborty

Anupam Chakraborty is an Industry Advisor and a Domain Consultant in the Utilities Business Unit at Tata Consultancy Services. In his capacity as an advisor, he leads the grid modernization and strategic initiatives of machine vision in the Utilities Business Unit. Anupam has nearly 26 years of operational, management, and consultancy experience spanning IT and electricity utility environment, electricity distribution, transmission, generation (including renewables and alternate sources), customer relationship management, commercial and financial functionalities and business enterprise development. He has worked in multiple USAID projects and smart initiatives in his earlier assignments.
Contact

For more information on TCS’ Utilities solutions and services, please visit https://www.tcs.com/energy-resources-utilities

Email: utilities.marketing@tcs.com

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