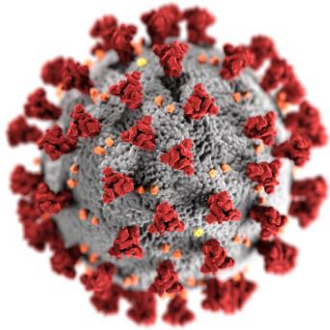


UTILITY 2.0

2020 ISSUE II



CORONAVIRUS AND UTILITY 2.0

While the human and economic toll of the Coronavirus pandemic is unprecedented, it is the time to shape the opportunities coming for utilities and not the time for the utility leadership to bury it's head in sand and mourn loss of revenue.

CORONAVIRUS, A THREAT, OR OPPORTUNITY – WILL UTILITIES GROW OR SINK? DEPENDS ON WHAT UTILITY LEADERS DO TO GRAB OPPORTUNITIES PRESENTED POST COVID-19!

Coronavirus has upended many things in our lives and the short-term outlook is horrible. The human toll is unfathomable. When the leader of the free world feels that 60-70K deaths is a good outcome it shows how we failed miserably and the millions of job losses in the United States (few countries have a documentation system to record job losses) shows upcoming economic catastrophe. The media is also filled with grim reports from all over the world. In this background, talking about a bright future may sound odd, but that is what is coming for the utilities who are proactive to capture opportunities.

The utility sector has done a good job of keeping the lights on, and

credit goes to workers and managers on the front lines. The utility leadership is worried about the loss of revenue both due to the reduction in energy demand (5-10% average) and non-payment of bills by low and medium-income customers. Hence, the natural reaction for utilities is to cut expenses, stop non-essential work, and worry about the latest short-term outlook.

However, there is a silver lining. For example, in the United States, manufacturing investments grew 6.4% in 2019 and it is anticipated that 25% of manufacturing can be brought back due to cost competitiveness before COVID-19. Bold leaders can look at this as a generational opportunity and develop growth plans.

The impact of COVID-19 will be profound in the short-term with uncertainty, stressed supply chains, and lost revenues. But our belief is that in this decade of electrification; utilities could be the biggest beneficiaries of these opportunities if they understand global impacts and prepare themselves.

In both developed and developing markets, these opportunities will come from a rise in local manufacturing and building of local resiliency transformed energy efficiency, flexibility, and a renewed focus on avoiding the next catastrophe driven by climate change.

In this edition, we focus on the key impacts and opportunities for utilities from COVID-19 which can expand the utility footprint significantly.

COVID-19 will create opportunities for the utility sector across the global mega trends, provided utility leadership can take advantage through the bold vision, right strategy, and practical implementation.

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- 3 Key actions for successful utilities
- 4 Our recommendations



IMPACTS OF CORONAVIRUS AND UTILITY OPPORTUNITIES

In our January 2020 publication, we argued that 2020 will be *the decade of electrification* and identified five mega trends which we believed will impact industries around the world. In less than 3 months, we believe our predictions have grown wings and will accelerate the transformation of the utilities as well as of many aspects of our lives. We now believe that the decline of globalization will be the most prominent trend, followed by the social (distancing) trends, which will change how we travel, work, and communicate. On the other hand, climate change will become a more tangible scenario, as the damage caused by the ignored warning signs of a pandemic is becoming apparent. This will prompt changes in business models and technology disruption trends. We have described the impacts of these mega trends on the utility sector with COVID-19 below.

- 1 **Globalization**—Retreat of globalization will result in realignment of the supply chain and a boom in local manufacturing. Cross border trade and human migration between countries will reduce, and urbanization may be paused.
- 2 **Social**—Social trends will accelerate with less person to person interaction/travel, accelerated online transactions, online deliveries, and virtual reality.
- 3 **Business Models**—Business model changes will be deeper and will impact regulated businesses too. This will include all aspects of business, including economic, financial, operational, market, and service aspects responsible for new revenues and growth.
- 4 **Climate Change**—The health impact of COVID-19 will prompt the need for local resiliency, renewal of operating models, and real focus on actions to reverse course of climate change.
- 5 **Technology Disruption**—Cloud based solutions will become mainstream with real use of technology and AI in manufacturing and operations.

Globalization: Around the world, people, governments, and industry leaders realized that we have a Chinese supply chain and not a global supply chain. The idea of diversifying supply chains to other Asian countries also looks flawed and

it has the same risks. Before the COVID-19 outbreak, 25% of the manufacturing could be brought back to the United States cost effectively. Post-COVID-19, the security of supply can prompt this to be over 30-40%. No one knows the exact numbers with certainty, but all can agree that manufacturing is coming back to their shores in some form, and this is a clear opportunity of growth for the utilities. For sake of argument, if 20% new industrial load is gained from reshoring efforts, it will impact the utilities' bottom-line positively. Second, a pandemic like COVID-19 will reduce the rate of urbanization. This means that there will be a need for an expansion of network services by utilities in suburban and rural areas. Overall, COVID-19's impact on globalization will be positive for the utilities if they have strategy to attract industries in their territory.

Social: Social distancing will accelerate e-commerce and online interactions. While this will reduce the need for hotels, convention centers, and big offices, but it will increase the need for warehouses, storage, and bigger residential spaces. For utilities, this social trend will be neutral but will shift a load pattern and more usage. Furthermore, resiliency concerns will prompt development of distributed energy-based microgrids, behind-the-meter generation, and their management.

Business Models: Before COVID-19, new business models were transforming industries. It is estimated that in next 10 years, 10-15 mega companies will emerge. They will develop and scale new business models prompted by the challenges of COVID-19. In the short term, utility business models are under pressure due to the demand destruction and almost certain non-payment by low and medium-income customers. Demand destruction may be short-lived, and many hopes that the demand will come back to its previous level as COVID-19 impacts subside. However, the economic impact and inability of customers to pay for electricity will continue for long term. In this context, business models focused on accelerating industrialization and service models driven by the concept of zero down financing to drive greater operational flexibility will become prominent. More customers will be flexible in allowing their load control if it will reduce or eliminate their bill. This will redefine energy efficiency as we know it.

Climate Change: A positive impact of COVID-19 was the cleaning of air and water in many parts of the world. COVID-19 has brought realization to many that denying the risks of pandemics and climate change can take lives and wipe out businesses in no time. This will prompt the need to make infrastructures resilient and well distributed. This will also prompt the review of operating practices, need for cross training, and use of technology to maintain business continuity

during climate and pandemic events. Further, electrification of transportation and buildings and powering it through local generation will gain momentum.

Technology Disruption: Technology has played a critical role in the time of COVID-19. Technology has proved to be a savior, whether it be use of robots in hospitals to care of patients, or the internet to keep families connected.

In the utility industry, the need for automation in operations, including the use of robots will gain momentum. Remote

KEY ACTIONS FOR SUCCESSFUL UTILITIES

Our analysis points to most of the global mega trends having a net positive for the utility sector. In this context, utility leadership must think outside the box and focus on what is coming. More than ever, it will be true that future belongs to the ones who dare to dream big and different. Here are some of the key action's utilities should consider while preparing for the opportunities presented by COVID-19.

Industrialization: An expected 30-40% of industrial production will shift back to host countries driven by national security needs. Utilities should develop strategies while working with local governments on how to attract industries in their service territories. What incentives outreach can they do on their own and where do they need policy and regulatory action? Furthermore, utilities should proactively review areas where they have infrastructure or can provide facilities for the industries to set up operations. New industries will use more sophisticated automation and robotics and will demand a high quality and reliable supply. Utilities need to demonstrate that they could provide on-demand quality power. Industrialization alone can transform utilities' fortunes in the years to come and they should do everything they can to promote industrialization.

Resiliency: The need for resiliency will explode both by residential, and industrial customers. Utilities need to develop a proactive approach for providing that resiliency by going behind the meter and proactively seeking regulatory changes to meet customer needs. The ability to optimize behind the meter resources for grid is a unique capability of a utility.

Affordability: The ability to pay for electricity will be severely impacted by low and medium-income customers. Utilities need to accept that and design new business models which will not rely on revenue, but flexibility of resources in lieu of ability to pay. Many models of zero down financing strive to monetize value of assets through alternative markets and they will become key for utilities to solve revenue loss challenges.

Electrification: Even before COVID-19, we predicted 2020 to be the decade of electrification. We believe from both new revenue opportunities and the climate concerns' point of view that utilities should double down on electrification. Even though electrification of transportation and buildings will be

operations and the ability to coordinate work remotely will prompt major changes in operations. Utilities will realize that they can improve productivity through staff reduction or by being more flexible with staff by allowing them to work remotely for reducing the costs. In many places, the ability to work from any location can lead to shorter workdays in office and streamlined travel needs for work. The need for reliable and secure communication, in addition to access to remote areas, will provide opportunities for utilities to diversify.

the key focus, utilities need to combine the need for reindustrialization and plan for the supply and delivery of electricity. Together these can contribute a 20-30% increase in demand for electricity in this decade.

Automation: Utilities need to invest heavily in technology, but the key question will be where to invest the limited resources given. One obvious answer is to prioritize. Utilities need to ensure that they have full capability to replicate their operations from multiple places. The old strategy of having a backup control center is insufficient. Furthermore, the use of robotics in maintenance needs to be enhanced. Customer engagement and billing systems are important, but not critical in the post COVID-19 era for medium-term investments.

Distributed Resources: It is in the interest of utilities to make the grid more distributed and capable of operating in islands and yet be able to optimize as one large system. Use of solar, storage, and other distributed technologies will be pronounced by social and climate change concerns. Utilities should examine the role of distributed energy resources in managing emergencies like the Coronavirus pandemic and argue for ownership of DERs.

Operating procedures: As it is amply clear that all the business and operating processes need a review. If we can operate from remote areas and may not have ability to interact in person, we need less handoffs and cross training of the staff so that multiple people can take on the job in case of a pandemic disabling a part of the workforce. Furthermore, utilities will have to rely on electronic information if managers are making decisions remotely. Most utilities do not have the basic network model correct. This makes it impossible to rely on Geographical maps (GIS) and distribution management systems for operational decisions. Utilities need to get their network model right in order to implement remote operations.

OUR RECOMMENDATIONS

We strongly believe that utilities have been presented with significant opportunities in this decade of electrification to revitalize. We recommend following actions:

Short term

- ✓ Review **operating strategy and operational preparedness to keep your staff safe and productive** as paradigm of work shifts.
- ✓ Develop **strategies to shape industrialization in your service territory** working with governments/ regulator and local industry leaders
- ✓ Review your **technology investment plan and strategy, you may require prioritizing** your investments from customer facing technologies to operational technologies
- ✓ Develop **strategies to enroll LMI customers in flexible resource programs** to enhance efficiency and grid flexibility goals

Medium/ Long term

- ✓ Implement strategy to enhance resiliency for customers through **“Resiliency as a Service” models**
- ✓ Implement **strategy to enhance electrification in transportation, buildings, and new industrialization.**
- ✓ **Automate operations using cloud-based services** with ability to enhance accurate and reliable remote operations.
- ✓ **Enhance deployment of Distributed resources** for grid resiliency, climate change impact mitigation



We believe that those utilities taking proactive measures to review and develop strategies to support the oncoming wave of industrialization wave to their shores post COVID-19 will benefit the most. It is a once-in-a-generation opportunity to animate the utility sector with additional industrial and electrification loads.

We believe utilities have an opportunity to grow their load with high quality industrial customers, as well as through electrification of the transportation and buildings in post-COVID world through proactive planning and implementation

UTILITY 2.0 – ABOUT THE AUTHOR



Navneet Trivedi – Co-Founder and Chief Operating Officer, Vrinda

Navneet co-founded Vrinda Inc. leveraging 27 years of international energy and utility sector experience working with 100+ utilities in 7 countries across the value chain of utility industry. Navneet is focused on helping C-level executives in some of the largest utilities in United States and Latin America with their pursuit of clean energy led transformation. Navneet has hands on experience in generation, transmission, markets, distribution, and clean energy transformation. Navneet is an electrical engineer and holds a master’s degree in renewable energy systems from IIT Bombay, India and business certification from Columbia University, New York. navneet.trivedi@vrindainc.com



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Vrinda Inc. is a New York based business and technology firm. Vrinda Inc. creates success for your business through a focus on value creation by providing trusted, actionable advice and practical solutions. We provide business and technology consulting services to the Energy, Utility and Transportation sectors. Vrinda operates in United States and Latin America and brings cutting edge expertise to the utility industry.

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