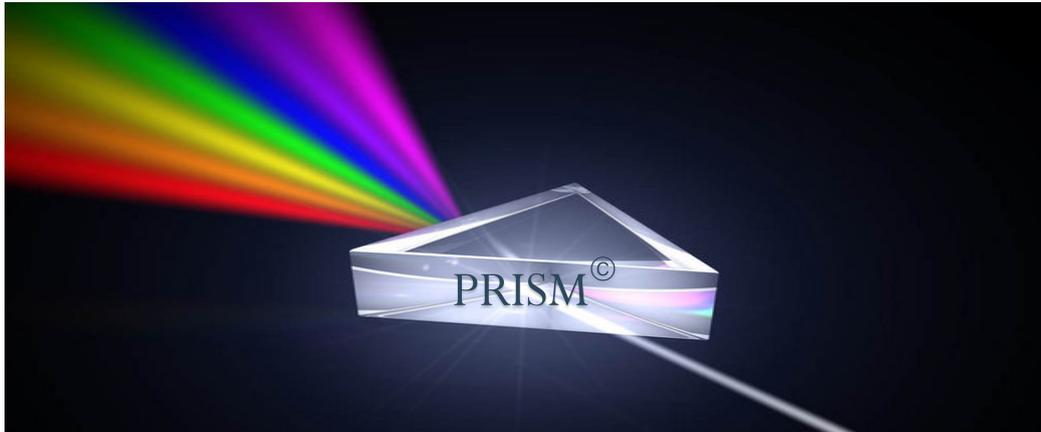


UTILITY 2.0

2016, ISSUE



Belief in climate change alone will not lead to growth of clean energy technologies, but successful business model transformation will determine who survives in changing atmospheric and geopolitical climate!

CLIMATE CHANGE **DENIERS** AND **BELIEVERS** CAN AGREE! INNOVATIVE BUSINESS MODELS WILL SUCCEED IN FREE MARKETS

After the recently concluded 2016 presidential elections in the United States, many advocates of clean energy and climate change felt an apocalyptic jolt! But, there is a real opportunity for believers in infrastructure improvement and clean technology to work together as both are looking for the same outcome to make infrastructure resilient, secure and reliable again!

Those who built their business models on subsidies and free handouts may not succeed. However, those who are concerned about climate change, need to trust in the free markets and prove that their technologies and solutions can stand on the two feet without crutches of subsidies and incentives. Companies

will be better served standing up for level playing field, by implementing innovative business models and new revenue streams.

Utilities were not necessarily rejoicing the potential shift in government policies, they understand the grave challenges to their bottom lines with changing consumer preferences.

It is naïve to think that utilities believe that old days of central coal stations and gas Peaker's are back. They know that infrastructure of the past is hard to rebuild and justify. Business cases to build outdated infrastructure may put their shareholders at risk of stranded assets.

Over the past two plus years, we have repeatedly argued that the future of utilities

will be defined by innovative business models. Many major utilities across the US are investing substantial resources in building new reliable and resilient infrastructure using microgrids, storage, distributed generation and automation of the distribution operations. They are doing this not because they necessarily believe in climate change, but because they want most optimal solutions to improve performance and returns to stakeholders. This edition describes our business model implementation approach "PRISM[®]" which will help utilities and technology providers, unlock value from this new infrastructure in the free markets.

PRISM[®] our business model approach to enable **Product & services** that have **Regulatory fit** with an **Implementation strategy** and focused **Sales and marketing plan** to generate **Money and value** for utilities, technology providers and consumers

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- 2 Key challenges for utilities and technology providers considering emerging geopolitics
- 3 PRISM[®] proven business model implementation approach
- 4 Our recommendations on how to approach business model implementation





KEY CHALLENGES FOR UTILITIES AND TECHNOLOGY PROVIDERS

Utilities across the world are constantly facing challenges in maintaining safe, reliable, affordable and quality power supply. These challenges are attributed to:

- Rapid growth in emerging markets and aging infrastructure in developed markets
- Increased penetration of intermittent resource, especially solar and wind
- Increasing cost of construction, operation and maintenance
- Declining flow of electrons leading to lower system utilization and stranded costs
- Uncertainty in government policies, incentives
- Technology disruption leading to free fall in costs
- Emerging geopolitical tensions and possible trade barriers

While utilities are still working to address legacy challenges, increased severe weather events are laying bare claims that distribution infrastructure is foundational for 24x7 energy delivery. Utilities don't provide resiliency solutions when needed most (storm, fire and severe weather events) as utility system was not designed to provide resiliency. Further promise of reliability & quality sounds like free redemption coupon with blackout dates when you need it most!

Utilities claim deep operations experience, customer relations and technology providers the power of data and innovation. But, both fail to communicate what value they can deliver to each other and to their consumers and shareholders.

PRISM® BUSINESS MODEL INNOVATION APPROACH

Our business model innovation approach, **PRISM**®, helps address this gap and enable value delivery. We believe that by adopting systematic approach, both utilities and technology providers can agree and monetize the value of resources in a free market by optimizing infrastructure utilization and determining the right price for each service and technology. This would reduce the burden on ratepayers and unlock returns for investors. Figure 1, depicts 5 step **PRISM**® methodology which includes

Product & Services: In the first step, products and services need to be defined. This is a foundational step as the selection of products and associated services becomes the basis of value streams which are later monetized.

Several business model solutions are being developed but key is if these models are realistic about how they will make money? Some examples included in Figure 2 and we have divided them in five categories:

- **Financial Services:** deal with data analytics around customer bills, on-bill repayment, tariff and non-tariff based financing. Each service involves complexity around implementation and value creation.
- **Marketing Services:** include utility co-branding, lead generation and utility sales and marketing support, each with multiple revenue earnings opportunities for utilities and providers.
- **Infrastructure Services:** include procurement of services by distribution operators, facilitation to help distributed resources monetize value in the wholesale markets, utility ownership and monetization, and interconnection services. Infrastructure services challenge the conventional wisdom of building substations and lines when compared to cheaper and local solutions, which can also improve resiliency.

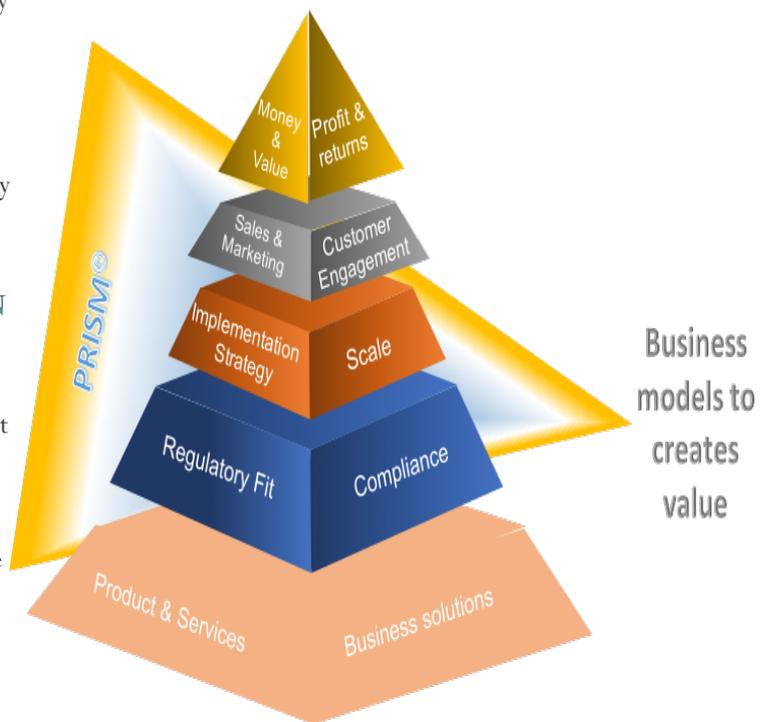


Figure 1: **PRISM**® Business model innovation approach

- **Operations and Maintenance Services:** This includes repair and maintenance, monitoring and control, aggregation and optimization services. These services provide opportunities for more field jobs and retraining.
- **Premium Energy Solutions:** include resiliency as a service, premium power quality and reliability, green power and EV charging services. These services are real game changers for the utilities and provide a path for long term viability.

Regulatory Fit: The important second step is to understand if the product or service can work in the current regulatory construct, or have certain aspects which enhance the regulatory framework by promoting competition, protecting customers and ensuring a healthy utility sector. Often products and services fail to take off because they don't have regulatory fit.

Implementation Strategy: The implementation strategy for new technologies especially needs to include risk management and value delivery. Many utilities are rightly frustrated by technologies which don't deliver all colors of electricity (<http://www.energycentral.com/c/iu/utility-20-color-electricity-approach-implement-equitable-value-ders>), and providers that still want full compensation. Developers should be willing to put skin in the game and utilities should be allowed/willing to think out of the box. The days of vendor-buyer relationships to implement technologies are over. Utilities will no longer be able to easily rate base nor technology providers may be allowed to dump unproven technologies on utility rate payers.

Sales and marketing: In a rate of return environment, customer service is a factor of regulatory oversight that requires improving metrics on customer performance. But when it comes to engaging customers so that they can buy a product or service, one needs to know sales and marketing skills. There are multiple ways utilities and third parties can monetize sales and marketing as a service which is required in the future paradigm to engage with new energy prosumers.

Money and Value: The last key step in business model implementation is to make money or create value for stakeholders. This involves the ability to create financial and economic models and ensure that realistic value streams are identified. Proper sensitivity analysis and understanding of probability of realizing value stream is critical. In our experience, we have seen clients assume ambitious probabilities of capturing value streams without building the necessary institutional capabilities. Utilities and third party providers need to carefully assess business, operations, technology and market capabilities and ensure that they have strategy to acquire them. Our recommendation here is to focus on acquiring capabilities instead of building them in-house until one is sure of the business model and realistic value stream realization.

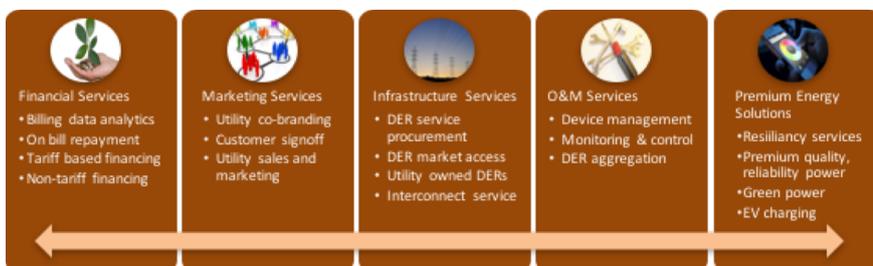
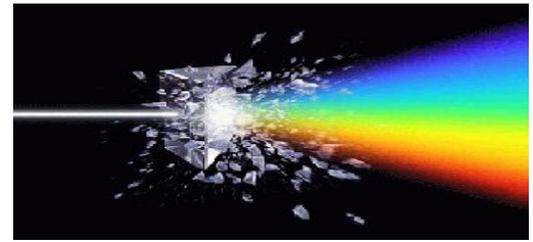


Figure 2 Innovative business model options



Brooklyn Queens Demand Management Program – an example of business model innovation and challenges

On December 12, 2014, the New York State Public Service Commission (PSC) issued an order in Case 14-E-0302 approving Consolidated Edison Company of New York Inc.'s (Con Edison) Brooklyn/Queens Demand Management (BQDM) Program to address overload of sub-transmission feeders – serving Brownsville 1 and 2 substations – with a combination of traditional utility-side solutions and non-traditional customer- and utility-side solutions.

The BQDM Program involves approximately 52 MW of non-traditional utility- and customer-side solutions. Combined with approximately 17 MW of traditional utility infrastructure investment, the program would defer the need for a new area substation – as forecast by Con Edison to address increased customer electric demand in Brooklyn and Queens – from 2017 to 2019.

Con Edison estimates the BQDM program to cost \$200M: \$150M for 41 MW of customer-side solutions and \$50M for 11 MW of utility-side solutions. The Targeted Demand Response Management (TDSM) budget will provide \$25M while the remainder will be recovered by customers through a surcharge. The BQDM program's updated Benefit Cost Analysis (BCA) – submitted on December 10 – shows a project Net Present Value benefit of approximately \$40M.

Status: 20% of the budget utilized in 2 years. In third quarter of 2016, ConEd obtained 22 MW of DER solutions through an auction for dynamic load management resources in target area. Program is on target after initial delays.

Our recommendations on how to approach business model implementation

We recommend that irrespective of views on climate change, everyone needs to pull up their socks and demonstrate business models which deliver like for like value.

- Technology providers should proactively propose business models based on demonstrable values and denounce models like net metering which are not sustainable or defensible.
- Utilities should not assume they will be able to stay solvent perpetually with existing business models, they need to explore new service-based business models.
- Retaining customers is most important, utilities should be open to selling more than electricity! And regulators open to allow them when benefits are higher for customers.
- A systematic approach to creating innovative business models is foundational. Our recommended business model approach, **PRISM**®, helps utilities, policy makers and technology providers to think holistically about practical ways to realize value.
- Many business models are being proposed, however understanding the sensitivities and probabilities of capturing value streams are the most important success factors.
- Utilities have significant untapped value including data, system knowledge, customer relationship and trust, they should not feel shy about monetizing them for customers.
- Knowledge of institutional capabilities is required to implement business models and their honest assessment is the key. Knowing what we don't have is a pretty good start!
- Evolve past vendor/supplier relations to partnership models which enhance value for customers as well as shareholders.



We believe the answer to aging infrastructure and climate change threat is not rate payer funded system upgrades, but innovative business model-led transformation based on free market and value-based solutions

PRISM® provides an innovative business model framework which ensures value is identified, quantified, and monetized in a market based approach and not by subsidies, incentives and government policies.

UTILITY 2.0 – ABOUT AUTHOR



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

Navneet co-founded Vrinda Inc. leveraging more than 2 decades of international Energy and Utility sector experience of working with 100+ utilities in 7 countries (North America, Latin America and Asia) across the value chain of utility industry. Navneet leads regulators, policy makers, utilities, technology providers on business model led transformation of the utility industry. Navneet's area of interest and experience ranges from Utility Strategy and Operations, policy & regulation, renewable integration, Smart Grid and utility analytics.

Prior to current initiative, Navneet was in the North America leadership of the Global Smart Grid Practice of Accenture and PricewaterhouseCoopers, utility management consulting services for 15 years. Navneet holds a master's degree in renewable energy from Indian Institute of technology, Bombay, a bachelor's degree in electrical engineering and business certification from Columbia University, New York.



About Vrinda Inc.

Vrinda Inc. is a New York based strategy, operations and technology advisory firm. Vrinda creates success in your business through focus on value creation by providing trusted, actionable advice and practical solutions. We provide services to our clients in Energy, Utility Transportation and Technology sectors.