

Discussion

As electricity transitions to a consumer product and the grid increasingly decentralizes, various companies in and around the electricity value chain are contemplating how to uncover their strategy and path to riches. So the question we want to discuss is:

1. How do we disrupt today's electricity utility?

2. As more/all utilities adopt a "value-added services" approach, where will they find their competitive differentiation?

Discussion structure

› First 15 min: explore the issue

- › What consumer priorities drive the *premiumization* of electricity?
- › What specific unmet or underserved needs does distributed generation pose?
- › Who is in a position to deliver to these trends and needs?

› Next 15 min: identify approaches to a solution

- › What kind of strategies can different companies follow to participate in this evolving market and differentiate themselves from the competition?
- › What business models are most likely to ensure sustainable revenues?
- › How should companies factor policy and regulations into their choices?

› Finally: generalize, identify key takeaways

- › Given these possible future scenarios, what innovations should utilities or aspiring utilities focus on in the next 5 to 10 years?

Discussion takeaways:

The “premiumization” of electricity

- A main priority of a customer is to always have uninterrupted power supply.
 - In Europe, there is less of a history of power outages than in places like the United States due to power line undergrounding. However, disruption at the transmission and distribution level is not the only risk, and Ukraine’s recent cyber attack proves other threats to power reliability are imminent.
 - In an outage of power, if you don’t have energy storage, having solar panels is useless; a residential generation system requires additional power electronics and storage in order to operate without the grid. However, energy storage is prohibitively expensive, which prevents meaningful adoption.
- For customers who rarely experience supply issues (like in Europe), having cheap electricity is the main concern (reliability is not front-of-mind). Therefore, the shift of customers towards distributed generation is primarily driven by economics.
- Having solar panels can be a fun experience: being able to measure and track the energy you consume is exciting. Thus, there are social/personal factors in addition to economic ones that can drive adoption.
- While this is all occurring, there has been far less innovation in the gas sector for gas heating; however, heating makes up a significant share of a household’s energy bill.

Discussion takeaways:

Threat to power incumbents & the grid of the future

- Grid operators are in a challenging position:
 - As more and more customers generate their own power, grid operators earn fewer revenues from their per-kWh fees; those revenues must then be recovered in their fixed fees, which upsets customers that watch their monthly bills rise.
 - Grid operators are concerned that this could push even more customers off-grid trapping them in a type of vicious circle.
- There are differing views on whether and when we'll see customers move off-grid.
 - The costs of energy storage, which is required for a customer generating power from intermittent renewables to disconnect from the grid, are far too high to be economical today, and a typical residential battery (e.g. Tesla Powerwall) is insufficient for overnight power. Such a system would require a backup generator (e.g. diesel) and would be very costly.
 - However, electric vehicles provide an additional source of energy storage that will become commonplace in the future, and connecting these assets to the grid could greatly reduce the effective costs of storage, making off-grid more feasible.
 - Additionally, off-grid microgrids may allow for new approaches, e.g. lower voltage operation and DC power, but beware that costs are high.
- Remaining grid-connected, but deploying distributed generation, storage, and load control in an intelligent way is another possible future.
 - This may include using virtual power plants to aggregate distributed generators, storage, and loads to provide services to the grid like peak demand management.

Discussion takeaways:

Partnerships between power incumbents and startups

- Utilities and grid operators are looking for ways to increase customer engagement and improve their product in order to do so
- These incumbents are looking for partnerships with startups that can come up with solutions regarding generation, distribution and demand response.
 - Utilities and grid operators benefit from the nimbleness, technology, and customer-centricity of these startups.
 - Large companies are able to invest in infrastructure for 20-30 years, but startups cannot do this, so partnership with large companies gives the startup access to capital that it wouldn't otherwise have.
- Although power incumbents see the need for such partnerships, they do not feel like they have determined the best way to identify the appropriate partners and structure such relationships
 - Regulations and policies can play a dramatic role in such choices. The market attributes – and the “best match” solution – vary significantly from region to region, and any partner and strategy identification will need to be national or regional.
 - However, changes in such regulations and policies are expected to occur at a more rapid pace than in previous years, pushed by innovation occurring in the leading markets.
 - Power incumbents will need to anticipate this dynamic and take a proactive role to avoid the fate of the telecom incumbents vis-à-vis WhatsApp and Skype vs. SMS