Arthur D Little

Energize Telecoms

Benefits and risks for telcos considering opportunities in energy management

Content

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Introduction

It has been 135 years since Edison built the first centralized power plant in lower Manhattan and gave birth to the energy utility as we knew it through the 20th century. But that business model and the value chain it belongs in are showing their age.

As energy markets transform and technologies develop, the world of the traditional power utility is rapidly changing:

- Markets have liberalized, separating customers from networks and producers, and customer centricity is a growing trend.

- Power generation is decentralizing and becoming less controllable as we switch to renewables to chase CO_2 reduction targets, and users are becoming mini-producers while disruptive technologies such as home batteries combine with ever-cheaper solar photovoltaics; networks need to adapt to bidirectional flows and greater information needs for system stability.

- Smart meter deployment of various types (some driven by regulation and on a massive scale) aims to reduce or shift the timing of energy consumption to act on energy-efficiency targets and assist the grid.

- Advanced appliances are more capable of supporting grid balancing and load shifting, without relying on consumer in-flight response.

- More data and customer information are becoming available, but need to be managed and exploited in the energy arena for dynamic segmentation, marketing, pricing, demand forecasting and load shifting.

- Digital natives have arrived in the customer base, with higher expectations to control their homes remotely and interact with their utilities.

For several decades the prospect of energy utility and telco convergence has loomed, but with limited results. All of the above change factors, however, demonstrate a transformational shift in the energy sector and open new opportunities for telecom and technology operators.

Global players have already been stepping up to the challenge. Google, Samsung, Apple, Microsoft and others have signaled their strong intent for grabbing a piece of the energy pie, with notable energy investments via acquisitions (e.g. Google and Nest, and Samsung's SmartThings) or partnering (Trilliant, the Silicon Valley smart grid vendor, and RWE npower in the UK).

For telecom operators, energy diversification has been on the table for some time now, as it is close to the homes they serve. A few have already done their own reality checks, ranging from Magyar Telekom's white-label energy reselling to Vodafone's smart metering solution and cooperation with British Gas.

In 2015, the race has been heating up as success stories have multiplied. With Verizon unveiling an energy-as-a-service platform for utilities, SK Telecom introducing a global energy cluster in cooperation with the state utility, Orange Poland launching an electricity resale offer, AT&T licensing its Digital Life smart home management platform to Telefonica, and Romanian cable operator RCS & RDS entering into energy production, we see that telecom operators are proactively exploring the energy opportunity via a variety of business models.

Still, the question remains: which routes should telcos take today to make entry into the energy sector financially worthwhile?
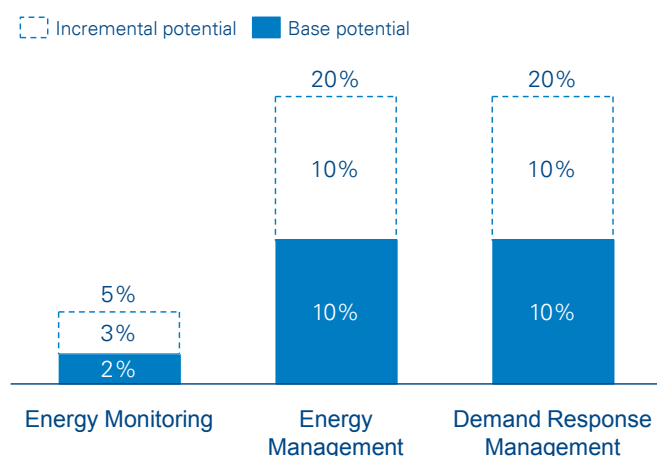
This paper addresses: 1. the rationale for entry into energy for operators today; 2. the business models that can be considered; and 3. the importance of partnering in the developing energy ecosystem.

1. Enter fast or end up last

One example of a recent growth segment in the energy sector with clear telco relevance is energy reselling and management. Reducing energy consumption and, with it, CO_2 emissions, has been high profile in most developed markets in recent times. In the EU, it has been supported by the 2020 EU energy goals[1] and yet-more-stringent 2030 climate and energy framework. As one tool that can help energy users decrease consumption, energy management in various forms has come to the fore.

At the household level, consumers have become more open to utilizing information to help them cut their energy usage and, with that, their costs.   Although there is variance relative to the original level of consumption, the average savings achieved are in the range of 5–20% (Figure 1). This varies with the tool and strength of the trigger: monitors show consumption in real time and little more, whereas demand response management may turn down energy supply to the household at specific times or reward the customer with dynamic pricing to encourage a shift of consumption to later.

Figure 1: Energy Management Savings Potential

Source: GSMA, EC, Navigant Research, Companies, UK Ofgem Mori, Arthur D. Little analysis

In addition, remote management of energy via, e.g., a smartphone app is often cited as enhancing the customer experience through remote scheduling options, auto-learning based on historical temperature preferences, geolocalizing through smartphone GPS and adjusting the temperature accordingly, controlling the temperature in a number of rooms separately, and others.

In the industrial and commercial energy sector, energy services are being used to generate significant cost savings, as well as help with requirements to meet emissions limits. This can be through a range of offerings: consumption monitoring, control and data management services, full facilities management, or bundles and aggregated product packages, which could include both energy and non-energy elements.

Players from adjacent industries have naturally shown interest. For example, Google has thrown down the gauntlet with an initially unsuccessful project of its own (Google PowerMeter, 2009–2011), followed by the acquisition of Nest Labs for USD 3.2 billion in 2014, which was its second-largest acquisition after Motorola Mobility for USD 12.5 billion. Industry groups, device manufacturers, IT equipment players, system integrators and assistance specialists have also been explicit in their intent to grab their fair share of the market.

Utilities are also active in this space and trying to enrich their value proposition to their natural customer base.

In addition, an increasing number of telecom players across the globe have made inroads into the energy management space in various forms.

In our view, such moves make business sense because of the consumer, business and regulatory drive towards higher efficiency/cost savings, as well as the underlying market and technology developments in the energy sector.

Telecom players are well positioned and have the capacity to capture value. They need to evaluate the potential options for entry into energy based on financial or strategic targets (churn reduction, new revenue streams, sweating existing assets, etc.) and local market and regulatory conditions.
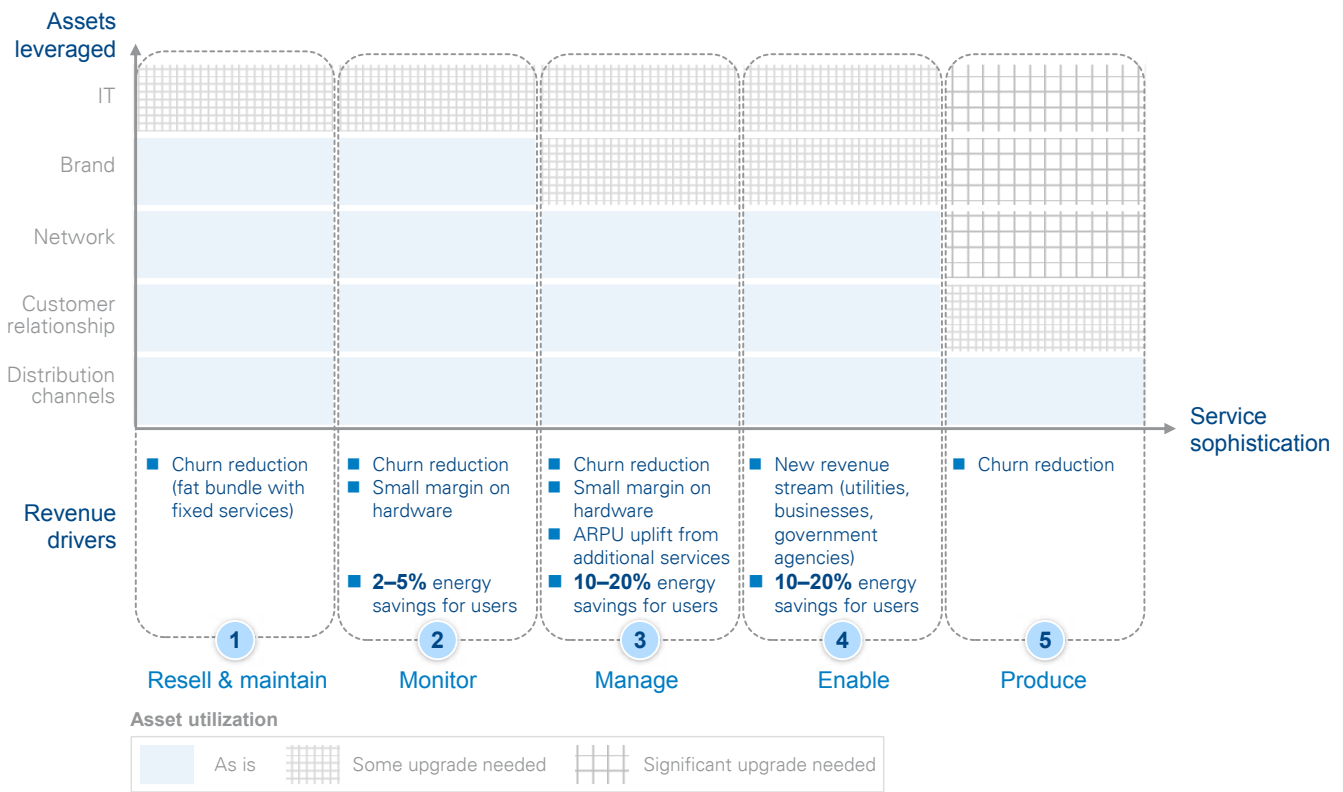
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1 20% (27%) energy efficiency increase, 20% (40%) decrease in CO_2 emissions, 20% (27%) share of renewable energy on 1990 levels by 2020 (2030)

2. Possible business models for telcos

Arthur D. Little has identified several business models for telecom operators in their energy entry, serving different objectives and characterized by:

- Increasing sophistication of the value proposition

- Different P&L impact

- Greater distance from core telco capabilities, lower telco asset utilization and asset upgrade needed

Figure 2: Business Models for Telecoms when Entering Energy

Assets leveraged						Service sophistication
IT						
Brand						
Network						
Customer relationship						
Distribution channels						

Revenue drivers	■ Churn reduction (fat bundle with fixed services)	■ Churn reduction ■ Small margin on hardware ■ **2–5%** energy savings for users	■ Churn reduction ■ Small margin on hardware ■ ARPU uplift from additional services ■ **10–20%** energy savings for users	■ New revenue stream (utilities, businesses, government agencies) ■ **10–20%** energy savings for users	■ Churn reduction
	①	②	③	④	⑤
	Resell & maintain	Monitor	Manage	Enable	Produce

Asset utilization

☐ As is	▦ Some upgrade needed	▦ Significant upgrade needed

Source: Arthur D. Little analysis

1. Resell and maintain

Energy entry via reselling differs in its:

- Depth: depending on the number of activities telcos take on board

- Width: depending on the number of services offered (electricity, gas, dual fuel, heat, boiler maintenance, etc.)

In the simplest model, white-label reselling plays to telcos' marketing channels' strengths and sales horsepower and requires energy partnerships for commodity sourcing and delivery. On the other hand, an entry via a more sophisticated virtual utility model would involve more resources such as field installations, dedicated customer care and billing.

The financial rationale for this move lies in adding new revenue sources (up to ~10% of total revenues) and reducing churn on core fixed services for households. Bundles mix the two increasingly commoditized goods – communication and energy – and create opportunities for defending the telco customer base with a far-from-negligible impact of up to ~10% absolute

p.p. churn reduction. This should be evaluated in conjunction with the potential energy margin and risk; the simplest approach may be very low margin as the energy player requires a high share of income, but churn reduction overall may be a sufficient incentive for telcos.

Case Example	Country
Magyar Telekom **T** ··	(Hungary flag)

2. Monitor

Another playing field for telecom operators is providing services to monitor energy consumption. Here telcos can position themselves as the key gateway for helping households adapt their behaviors and thus achieve energy savings of ~5%[2]. Fixed-service providers can utilize set top boxes, already in households, as gateways for monitoring energy consumption. This positioning is already popular with industry challengers: Google, as well as international hardware providers (e.g., Schneider Electric), are taking notable steps in this area by developing smart energy meters. In equipping households with smart meters and monitoring devices, telcos can play on the relationships they have built with them via fixed services and their distribution footprints. The core challenge in this business model is spelling out telcos' incremental value-add to consumers via, e.g., simplifying customer experience and leveraging the visibility they have on customer behaviors "beyond the home". In addition, the basic provisioning of smart meters and monitoring devices to households is not a particularly attractive area as a stand-alone model for telecoms due to the low margins and few differentiation options compared to hardware manufacturers.

The financial rationale for this model includes the bundle churn reduction effect and possibly a small margin on the hardware resell. This could also be replaced by upgrading existing set top box's as energy management gateways. Opex and Capex are limited.

Case Example	Country
🟡 TURKCELL	(Turkey flag)

3. Manage

Heating forms by far the largest share of home energy consumption, and as households become increasingly equipped with connected and "learning" devices, the focus shifts from

monitoring to adapting energy consumption. This model has two "flavors":

- Smart consumption management
- Demand response management

Smart consumption management

Smart consumption management allows the end consumer to benefit from 10–20% in energy savings. Smart hardware is fundamental and differentiation can be achieved with incremental functionalities. For example, Netatmo's smart thermostats offer auto-learning, scheduling options and auto-adjustment options. Honeywell Evohome devices rely on the ability to control the temperature in four rooms separately. Tado's thermostats rely on geolocalizing through smartphone GPSs and adjusting the temperature accordingly. Telecom operators can bring incremental value to consumers as the majority of set-top boxes already in households can be upgraded to energy management gateways – no new hardware is needed.

The financial rationale for this model relies on a retention effect, but also depends on telcos' ability to sell the service at a monthly fee.

Case Example	Country
COMCAST **Honeywell**	(USA flag)

Demand response management

Another development in the energy segment revolves around a dynamic state of managing consumption – demand response (DR). DR is used to adjust energy consumption in real time in order to reduce consumption peaks, and allows for consumer savings of approximately 10%.

Load aggregators, such as Comverge and EnerNOC in the US, have already been positioning themselves as the intermediary for DR between utilities and end consumers via proprietary platforms. Voltalis in France has partnered with RTE, the national transmission system operator, with a revenue model based on consumption load shifted.

Case Example	Country
nest. "Rush Hour" and "Seasonal Savings" program"	(USA flag)

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2 European Commission, 2014. "Benchmarking smart metering deployment in the EU-27 with a focus on electricity"

4. Enable

Higher efficiency in energy management is related to the development of smart energy platforms and applications. Driven by their own technological evolution and increasing connectivity of devices, telecom operators have already been under pressure to develop key assets and capabilities, e.g.:

- Machine to Machine (M2M) connectivity platform
- Big data analytics (including the much-sought-after real-time analytics)
- Cloud-based applications and storage

Building upon the foundation layer of the M2M connectivity platform, telecom operators can position themselves as enablers for utilities by developing energy-specific applications. Some of the forward-looking operators have already built smart energy-as-a-service platforms (e.g. Verizon) and ecosystem partnerships (SK Telecom).

Some of the service examples offered are around the provisioning of power consumption information through IPTV/LTE networks in real time, developing real-time electric power facility-monitoring solutions, reading smart meters remotely, turning meters into "power-quality" sensors to understand the quality of the electricity being delivered, analytics on electricity outages, and others.

An "enabler" business model is also possible as a joint venture between telcos and utilities, with weaknesses in core telecom skills strengths (billing, CRM, customer data analytics).

The financial rationale for telecom operators here is based on sweating existing assets (if already developed) and enabling new revenue streams from serving the utilities, business and government verticals.

Case Example	Country
SK telecom	🇰🇷

5. Produce

A far-fledged and high-risk entry into energy production for telcos can be realized in two manners:

- Full-scale energy production targeted at external consumers
- Energy production to resolve own consumption issues

The risk associated with this business model is highest, as telcos need to enter the energy-trading business or build-up/acquire a broad energy production asset to be sustainable (and hedge the risk of energy price fluctuations). Even though we see first entries, e.g., the Romanian cable operator RCS & RDS, we believe the risk and stretch for telcos is too high and thus do not recommend this model.

The second energy production option – for own needs – revolves mainly around providing alternative energy sources to mobile towers in off-grid and bad-grid areas. This model has seen some application in developing regions (South America, Africa) – e.g., Telefonica Chili employs renewable energy sources to power base stations in remote areas. The financial rationale for this is driven by a global increase in the number of off-grid and bad-grid towers (+16% CAGR 2014–2020[3]).

Case Example	Country
rds rcs communications	🇷🇴

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3 GSMA, Dec 2014. "Green Power for Mobile"

3. It takes two to tango

The energy management industry is heating up, and the competition in providing new value-added services through superior technology-based products is increasing.

In any case, since the ecosystem is still immature, no dominant position exists as of today.

To succeed in energy services, telecom operators need to partner and interact with many players:

Figure 3: Telecom operators partnerships in the energy management ecosystem

We have seen some partnerships between telecoms and consumer-focused hardware vendors of smart meters and monitoring devices. Telcos are a powerful distribution and recommendation channel for hardware providers. As pure hardware resale offers limited differentiation for telcos, they seek to bundle the smart meters/monitoring devices with additional services and convert the opportunity into a subscription-based revenue model.

Telecom operators have also been partnering with application providers to enrich their propositions. For example, Deutsche Telekom opened up its QIVICON platform for developers and third parties.

In order to monetize their investments, smart energy platform owners have been partnering with telecom operators. We see cooperation not only between ICT players and telcos, but also among telecom operators themselves. For instance, in 2015, AT&T licensed its Digital Life platform to Telefonica for its consumer base.

In order to create synergies and enhance functionalities, platform owners have also formed partnerships among themselves. Such a partnership offers exposure to the partner's customer base. In 2015, Telecom Italia and Officinæ Verdi integrated their energy-efficiency platforms. The solution, targeted at business customers, claims a combined impact of up to 15% energy savings.

Partnerships between market utilities and telcos for smart grids have been relatively widespread compared to the other partnership models. SK Telecom and Korea's state-run utility took this one step further and created a "Bitgaram Energy Valley" district, an energy cluster for local and global companies aimed at the set-up of smart energy systems and joint efforts in R&D activities.

It is in regulators' interest to stimulate increasing energy efficiency, given regional and national targets. The European Commission has supported the already-finalized BeyWatch (Building an Energy Watcher) project led by Telefónica. The research had the objective of developing and demonstrating new technological solutions that pave the way towards a sustainable energy system.

Source: Arthur D. Little analysis

Conclusion

Market liberalization, technology and new digital behaviors open new opportunities for multiple players in energy management.

Telecom operators, among others, could seize this opportunity in various formats, from reselling to new technology-driven value propositions. Several prominent telcos, such as AT&T, Deutsche Telekom and Orange, have already launched such activities.

Arthur D. Little has identified several models to enter this new space, which have the potential to yield tangible benefits, such as:

- Up to 10 p.p. churn reduction on core services, driven by energy and telco bundles

- Additional revenues, reaching up to ~10% of total revenue

- Enrichment of the overall smart home value proposition

- Operationally lean set-up, based on sweating existing platforms and capabilities

On the other hand, telcos should also consider the many challenges of the energy business, among which are regulation and risks associated with some of the models.

In any case, as the market is still nascent, and as multiple players from various angles are considering this new opportunity, it will be of critical importance for telcos to select the right partners in the ecosystem to succeed in their new energy activities.

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Arthur D. Little

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