

Innovation — Investment Nexus

Part I

Accelerating the Future

By Southern Company CEO Tom Fanning,
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he utility sector is engaging in a multi-year market and technology-driven evolution intended to fundamentally reshape its future role and positioning. This shift enables companies to actively participate in emerging markets as they develop, requiring utility executives to establish targeted strategies on where and how to intelligently play in these markets. This evolution will extend for several years as uncertainty exists over its ultimate direction.

With the future marketplace rapidly developing, a range of asset and services growth opportunities becomes available to utilities with a challenge to determine which make sense to prioritize for pursuit. Part of that decision making depends on the internal innovation capabilities utilities possess to take advantage of these opportunities.

Innovation prowess is fundamental to enabling companies to engage and prosper in this future market environment and can be the bridge to shorten the distance between today and tomorrow. To successfully position companies for their potential futures, innovation momentum needs to be sustained and investment levels and deployment aligned with market opportunities and strategies.

The utilities sector faces an ongoing challenge to provide adequate investment to enable critical innovation to enhance future positioning. Both internal and external constraints exist to the level of investment available for innovation – regulatory, strategic, financial, and operational. These constraints are not easily overcome, even from policy clarity leveraging third parties like the Electric Power Research Institute (EPRI) and government laboratories.

Innovation Gains

Innovation is not just a North American utilities phenomenon. Over the last five years, innovation has received increasing global emphasis among utilities. Executives have redirected Board of Director and enterprise attention to rethinking how to prepare for market and technology evolution and what actions are taken to embed a culture of innovation.

When innovation became the new big thing for utilities in 2014 - 2015, it cemented itself squarely in the headlines of industry publications, trade association meeting agendas, and countless social media blogs. Companies utilized a range of visible vehicles to engage the employee base and galvanize internal resources to think differently about disruptive technologies, competitive markets, and positioning strategies.

Companies instituted both event-oriented models, such as innovation challenges, technology exhibitions, and vendor and customer forums, as well as internal approaches to innovation support, such as physical resource separation, targeted financial stipends, and directed seed-capital. All were designed to rapidly jumpstart internal innovation efforts and take advantage of the opportunity for a new business focus, and perhaps novel business models.

Predictably, employee enthusiasm was high, and the message was well-received throughout the organization, particularly among millennials. These individuals chose to work for utilities because of their interest in energy, and their view that utilities may be among

EIP's investments are creating the tools necessary for the industry to implement a cleaner, safer, more affordable, customer-centric future.

the industries most affected by disruptive technology, thus a place where dramatic changes would occur.

As a result, an emphasis on internal innovation became visible across multiple fronts. Information and insights were requested by executives, teams formed, programs initiated, analyses conducted, successes celebrated, and Chief Executive Officers viewed through a new

lens – their commitment to changing the face of their companies.

From an external perspective, public perception of the innovation emphases of utilities remains difficult to assess. To begin with, visible operating changes are often opaque, qualitative benefits to customers are hard to demonstrate, quantitative returns to shareholders are small in scale, and cultural changes take years to notice. This lack of perspective partly occurs as utilities don't regularly trumpet innovation success to external audiences.

To be sure, innovation is a qualified success to date – market focus has sharpened, strategies are better informed, executives are more comfortable with change, and the marketplace is slowly becoming aware of how utilities are equipping themselves to be more capable competitors.

The initial internal skirmishes over priorities for change have produced positive results, but the long-term market innovation battle is only beginning. As companies continue to build market and operational success, they need to broadly increase appreciation for the commitment to change and business mindset

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shift that remains. Importantly, companies need to recognize that today's innovative actions are closely linked to sustained investment commitment.

Shifting Purpose

Utilities' industry innovation initially prioritized preparing for an uncertain future, but one expected to be radically different than experienced in the sector's prior history. Executives knew that legacy strategies were rapidly becoming dated and it was time to invent a new future.

“Defining what utilities could do to advance competitiveness or adopt technologies that change the business is even more valuable.”

– Tom Fanning



Companies determined that the market scans they were conducting signaled a surge in technological advancement, coupled with a shift in customer sentiment. Executives were beginning to see the dynamic of both technology push (solution readiness) and customer pull (market acceptance). The alignment of these two market drivers combined to redefine industry attitudes about possible futures and accelerate change in expectations of the sector.

If future markets were to be dramatically different than decades of traditional experience, utilities would have to reposition themselves internally and externally. Companies initially set out to address internal challenges with their employee base since change would most immediately impact this group and current priorities were subject to redirection.

Significant effort was expended, painting a view of what the future could look like and defining market and timing horizons for employees. These actions stressed a fundamental shift away from historically predictable and measured change – from managed evolution to inspired revolution. Frequent messaging was utilized to explain the nature, pace, and breadth of change, and educate employees about how their roles could look different in the future.

Companies also sought visible means to illustrate what the future could look like and further engage employees in open dialogue or encourage direct participation in enterprise-level events

that could bring the future market into better view. These methods were purposely intended to help employees visualize the future and collaborate on actions that could advantage the company.

Over time, the priorities of companies shifted beyond the nature of future change to the impacts change could have on the company and its market position. Internal alignment and engagement are crucial – but defining what utilities could do to advance their competitiveness or adopt technologies that change the business is even more valuable.

An externally oriented view incorporates near and long-term implications to attaining future outcomes. For example, pent-up customer needs are time sensitive and opportunities to fulfill them are perishable, and responsive market action requires immediacy to avoid lost revenues or customer loyalty.

Alternatively, the time frame for satisfying market needs or regulatory policies may have a longer window to resolution. For example, shifting away from or eliminating carbon intensive fuels takes time. To be successful over the longer-term still requires near-term action to reflect the graduated nature of technology substitution.

The evolution of technologies related to power supply, particularly for renewables, is causing utilities to revise their plans and accelerate deployment. While many utilities are focused on achieving net-zero emissions by 2050, cost and performance improvements have fast-tracked attainability of these impacts and incited some companies to consider how available technologies and actions could advance this outcome to as early as 2030.

Transitioning to a zero or low-carbon future requires continued advancement in technologies and developing new and more cost-effective energy conversion, delivery, and use technologies.

Innovative technologies are the catalysts for more significant environmental management and aggressive supply mix reconfiguration. Longer-term aspirations may turn out to be achievable more rapidly, cheaply, and effectively than presumed.

This occurrence is directly related to aligning innovation priorities to technology capabilities. For example, the reimagined grid requires tools that allow for the integration of clean energy and battery storage to provide benefit to both the system and customer clean energy demands.

Technology adoption impacts are not limited to renewables and supply. Much innovation takes place in the software arena and is designed to enhance asset or equipment performance levels or visibility. This software also enables different ways for utilities and customers to interact and expand data visibility and value. Software enables solutions that can be integrated into

an overall multi-solution platform, such as demand flexibility.

When software and solutions are imagined or designed around a customer-centric platform, innovation is achieving an even broader purpose – creating value for customers consistent with what they have come to expect from other commercial or industrial providers they engage with that offer integrated solutions.

Innovation's purpose has evolved like the technology it embraces and is in line with original intent, such as centering the customer relationship on value delivered. Technology is a tool for enabling customer value to be delivered and is not the end game. Thinking about the full purpose of technology adoption and what it can enable takes innovation from a narrow value source proposition (preserve an asset) to a comprehensive value platform (add value to the asset).

R&D Investment

Meaningful innovation doesn't simply happen from enthusiasm – it requires continuous investment to realize desired outcomes. In addition, this investment needs to be at levels that support multi-year efforts to accomplish intended impacts to market positioning or operational deployment. Consequently, utilities need to actively seek to bolster their market readiness and position through targeted capital commitment.

For context, the Strategy& 2018 Global Innovation 1000 Report, shows that the largest publicly owned entities spent just under eight hundred billion dollars on R&D and innovation in 2018 across all sectors. In particular, the computing and electronics, healthcare, automotive, and software and internet sectors lead the way in dollar investment within this group. For the top twenty R&D and innovation spenders, average spending equates to more than seven percent of their total revenues, with healthcare topping out at eighteen percent.

The top twenty spenders accounted for approximately two hundred and fifteen billion dollars or twenty-five percent of Global 1000 R&D and innovation investment. Amazon leads this group with total spend of twenty-three billion dollars (12.7 percent of revenue) with Alphabet second at sixteen billion (14.6

percent of revenue) – both companies representing the software and internet category.

See Figure 1.

Total R&D and innovation spend in 2018 increased by more than eleven percent over the prior year and has steadily grown each year since 2010. Most industries have followed this trajectory, except for Chemicals and Energy, which includes utilities, and Aerospace and Defense, which have declined or are flat, respectively, since 2015.

See Figure 2.

These top innovative companies recognize the need for sustained R&D and innovation spend and the value it provides to their businesses. As competitive businesses illustrate, a virtuous cycle – invest, create, market, reinvest – is fundamental to growth and relevance.

The relative portion of revenues each sector directs toward R&D and innovation illustrates how important sustained spend is to market success. This spend is concentrated in several

Fig. 1 GLOBAL 1000 TOP 20 R&D SPENDERS

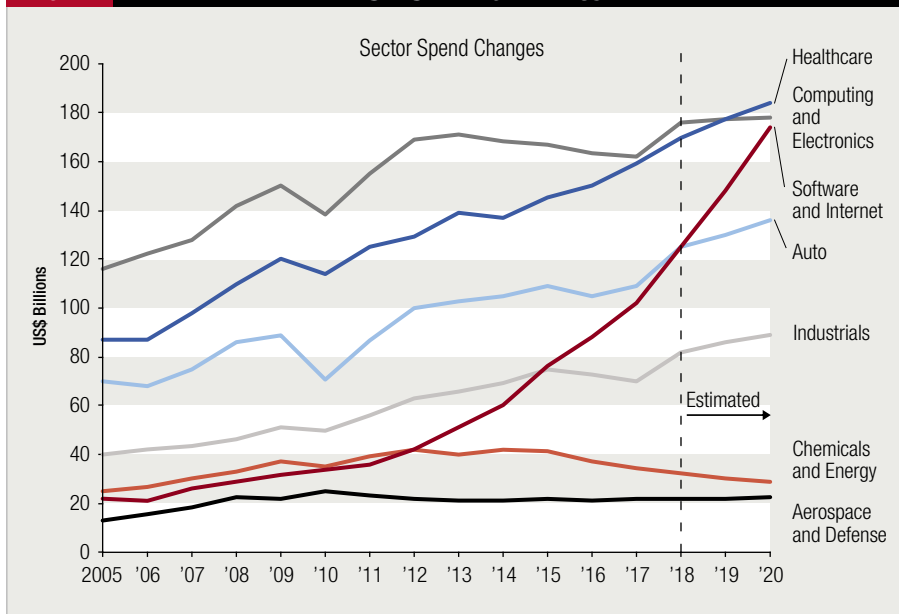
Individual Ranking and Scale					
Rank			R&D Spending		
2018	2017	Company	2018 (US\$ Billion)	% of Revenue	Change from 2017
1	1	Amazon	\$22.6	12.7%	40.6%
2	2	Alphabet	\$16.2	14.6%	16.3%
3	5	Volkswagen	\$15.8	5.7%	14.1%
4	4	Samsung	\$15.3	6.8%	6.8%
5	3	Intel	\$13.1	20.9%	2.8%
6	6	Microsoft	\$12.3	13.7%	-5.7%
7	9	Apple	\$11.6	5.1%	15.3%
8	7	Roche Holding	\$10.8	18.9%	-8.7%
9	12	Johnson & Johnson	\$10.6	13.8%	16.0%
10	8	Merck	\$10.2	25.4%	0.8%
11	11	Toyota	\$10.0	3.9%	2.6%
12	10	Novartis	\$8.5	17.0%	-11.1%
13	15	Ford	\$8.0	5.1%	9.6%
14	20	Facebook	\$7.8	19.1%	31.0%
15	14	Pfizer	\$7.7	14.6%	-2.7%
16	13	General Motors	\$7.3	5.0%	-9.9%
17	16	Daimler	\$7.1	3.6%	-9.2%
18	19	Honda	\$7.1	5.4%	8.7%
19	24	Sanofi	\$6.6	15.1%	5.8%
20	23	Siemens	\$6.1	6.2%	4.9%
Top 20 Total			\$214.5	11.6%	7.3%

Companies in RED have been among the top 20 R&D spenders every year since 2005.

Note: Sums may not equal totals due to rounding

Source: Capital IQ data, Thomson Reuters Eikon data, Strategy& analysis

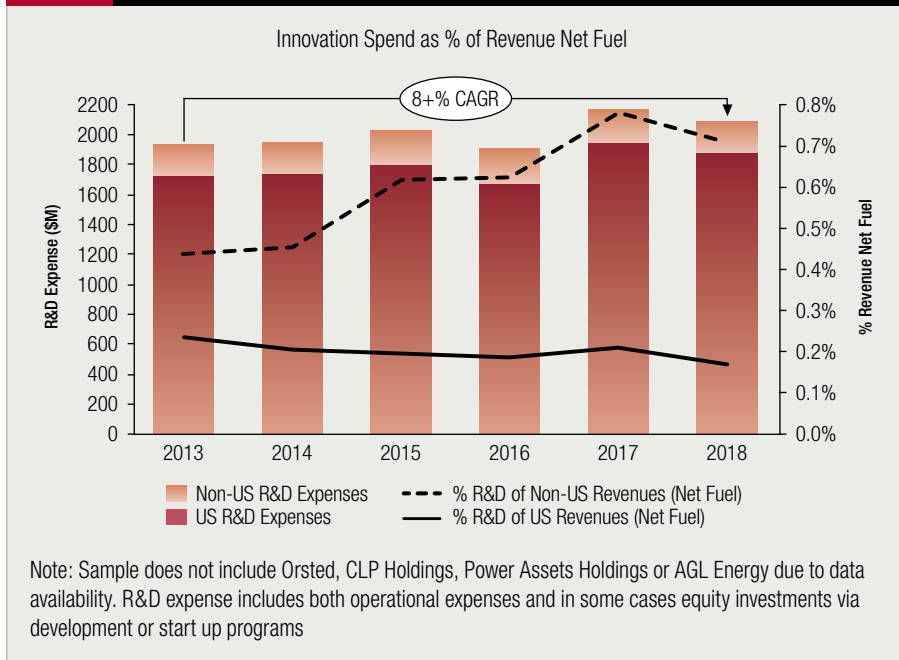
FIG. 2 R&D SPENDING BY INDUSTRY



relative R&D and innovation spend is stark and particularly troublesome for utilities as the breadth and capabilities of their future competitors – and their own competitive needs – expand.

Power utilities sector capital investment has exceeded a hundred billion dollars since 2015 and is expected by the Edison Electric Institute (EEI) to exceed this level through 2021. This is an impressive commitment and is driven by spend for grid modernization, renewables, and transmission, despite demand destruction and carbon constraints. But little of this investment is attributable to R&D, which is largely expensed or equity-based.

FIG. 3 GT40 RELATIVE INNOVATION SPEND



Utility R&D typically is comprised of multiple uses: day-to-day innovation center spend; spend commitments to EPRI; scouting center opening; venture capital funding; and equity investment in emerging companies. Unfortunately, the utilities sector invests well below the level of the smallest global sectors identified above.

For the Global Top 40 utilities (GT40) – where approximately half are U.S.-based – relevant financial data is available from sources like Thomson Reuters, Bloomberg, and CapIQ, showing these utilities spend little of revenue net fuel on R&D and innovation.

This spend level ranges from 2.1 percent at Fortum in Finland to

negligible amounts for most utilities. On average, the GT40 utilities annually spend less than 0.6 percent of revenues (net fuel) (information only available for thirty-six companies). This is partly due to legacy positioning, current strategies and business mix.

See Figure 3.

The low level of annual investment reflects regulatory constraints on recovery of these expenditures from customers, particularly in the United States, and the discomfort of Boards of Directors and executives to committing significant spend below-the-line and fully at-risk.

Some GT40 companies have been aggressive in equity

investment in emerging companies, particularly European utilities. Utilities are typically measured in their market actions, taking relatively small positions to manage their exposure.

However, some full acquisition deals – like Southern Company’s four hundred dollar plus million purchase of PowerSecure and Enel’s approximate three hundred million dollar buy of EnerNOC – signal targeted aggressiveness where value is identified.

“Companies need to recognize that today’s innovative actions are closely linked to sustained investment commitment.”

– Kevin Fitzgerald



As a supplement or alternative to individual company investment in emerging businesses, several power sector-oriented venture capital funds have arisen to offer the ability to utilities to syndicate the risk of capital commitment in an unfamiliar space with uncertain payback. Funds like Energy Impact Partners (EIP) in the U.S. and SET Ventures in Europe offer club vehicles that involve multiple utilities and other strategic companies’ diverse technology sources for investment.

EIP has more than 1.4 billion dollars in assets under management and a portfolio comprising more than thirty new energy solutions companies. EIP’s investments are creating the tools necessary for the industry to implement a cleaner, safer, more affordable, customer-centric future.

This kind of venture capital fund enables companies to stretch their investment pool, while limiting the level of capital risk to a single entity. A fund like this also allows members to pool their knowledge and resources to optimize value obtained from participation and serves as an investment multiplier for the members.

Constraints to utility annual investment levels and ongoing sustainment need to be considered. Despite the breadth of options, the availability of vehicles, and the relevance of technologies to the business, companies remain reticent to aggressively pursue

additional spend. Hurdles exist to even maintaining current levels.

Regulatory constraints can legitimately limit how companies approach where they place their available capital and at what levels. Similarly, regulators need to be willing to try new solutions to age-old problems. Where limitations are formal and rigid, these constraints need to be directly addressed in terms of expanding regulatory perspective on emerging technology benefits and impacts. Attention also needs to be directed to providing regulators comfort regarding management discipline over investment levels and program execution.

R&D and innovation investment is one element of an expansive capital budget and competes with destinations that are immediately revenue producing in the short-term. Understanding the time to value for R&D and innovation versus conventional segment spend is advantaged by dispassionate analysis of the business, financial, and customer trade-offs of deploying discretionary capital.

Ultimately, business cases can demonstrate the highest and best use of capital in a future market environment. Whether traditional

investment deployment or targeted non-traditional equity placement, utilities need to sharpen their abilities to direct scarce capital to strategic versus operational uses.

“Pent-up customer needs are time sensitive and opportunities to fulfill them are perishable.”

– Tom Flaherty



The second portion of this two-part article will focus on how utilities will approach ensuring sufficient investment – internal and external – can be sourced and available to continue and advance the innovation agenda of the utilities sector. Inevitably, the industry needs to balance trade-offs about investment destination, priorities, and alternative uses of capital. Utilities also need to define and articulate clear innovation priorities for the future and shape the unique strategies to deliver a differentiated and customer-focused future. [PDF](#)

Innovation — Investment Nexus

Part 2

Strategic Actions for Success

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utilities are amidst a technological revolution reshaping how the industry will look and thrive in the future. The industry knows it is betting its future on how it successfully positions itself to meet the changes anticipated to energy sources, financial markets, customer behaviors, and regulatory policies.

In last month's article on innovation and investment, we described the role utilities are playing in dedicating sustained capital investment to innovation that advances energy security and future market development. This innovation is directed at both solving operational challenges and creating commercial opportunities.

Success to date is laudable, but the industry needs to elevate its innovation game, particularly as competitors advance their own commercial positioning. Renewed emphasis on employee engagement, culture adaptation, solutions development, and go-to-market model design is necessary.

Key to innovation success is the ability to align strategic, market, and capital priorities, and craft a roadmap to guide operationalization and commercialization. To ensure innovation's potential is realized, creative spend (capital, expense, and equity) expansion and commitment needs to enable sufficient cash flow to be available to a full range of technologies, capabilities, and solutions that fulfill operational needs and facilitate commercial success.

Fortunately, a range of attractive innovation-based capital destinations exist for the industry and its partners to consider. The trick will be defining the right growth strategies that underlie these investments and establishing commercial positions that are both compelling and durable.

Investment Pipeline

Even as utilities wrestle with ensuring capital availability to support future market positioning, questions remain about where it can be strategically directed to optimize business benefits. A wide range of options exist, but not all support compelling future market positioning or value contribution. Worse, inadequate awareness of the range of opportunities can self-limit potential investment.

Utilities seek new paths that enable them to expand access to solutions providers, gain technology knowledge, resolve carbon emission levels, create customer-centric platforms, bring solutions to customers, enhance overall market readiness, and build overall growth platforms. All are pragmatic goals and directed at converting capital investment into value contribution.

Determining whether and where to invest presupposes a range of opportunities exist consistent with strategic priorities, such as plentiful options with varying degrees of value-related risk.

Fortunately, the landscape of opportunities is not limited to narrow solutions or over-the-horizon market readiness. These options complement, not displace, what companies can accomplish to ensure solutions developments are attractive to customers.

In today's environment, utilities invest for both defensive and offensive purposes. The choices they make reflect their view of what markets and customers require, as well as where they can make choices that advance future positioning and commerciality.

The traditional predominance of investment has emphasized current system enhancement and general network performance, such as overall modernization. This focus centered on making the current grid and network more resilient and stable, but not substantially more advanced or digital.

More recent innovation investment has emphasized network intelligence through data-driven device adoption, such as sensor,

Key to innovation success is the ability to align strategic, market, and capital priorities, and craft a roadmap to guide operationalization and commercialization.

new network users, as well as to incumbent providers.

Over-reliance on third parties for market insights, such as venture capital funds, original equipment manufacturers (OEMs) and solutions providers, subordinates internal capabilities to those at unrelated entities. Consequently, select utilities focus on building internal capabilities for R&D (and innovation) not solely dependent on external sources. This internal capability is directed at applied (commercial) versus basic (curiosity) R&D as utilities are not the natural source for pure research.

Many GT40 utilities are actively creating distinct R&D capability – either in partnership or internally. The internal focus of this R&D is usually complementary to that obtained externally and is targeted at specific technologies or areas. Some GT40 utilities have elected to stand-up multiple R&D and innovation centers to further drive home commitment to advancing the technology capabilities of the enterprise.

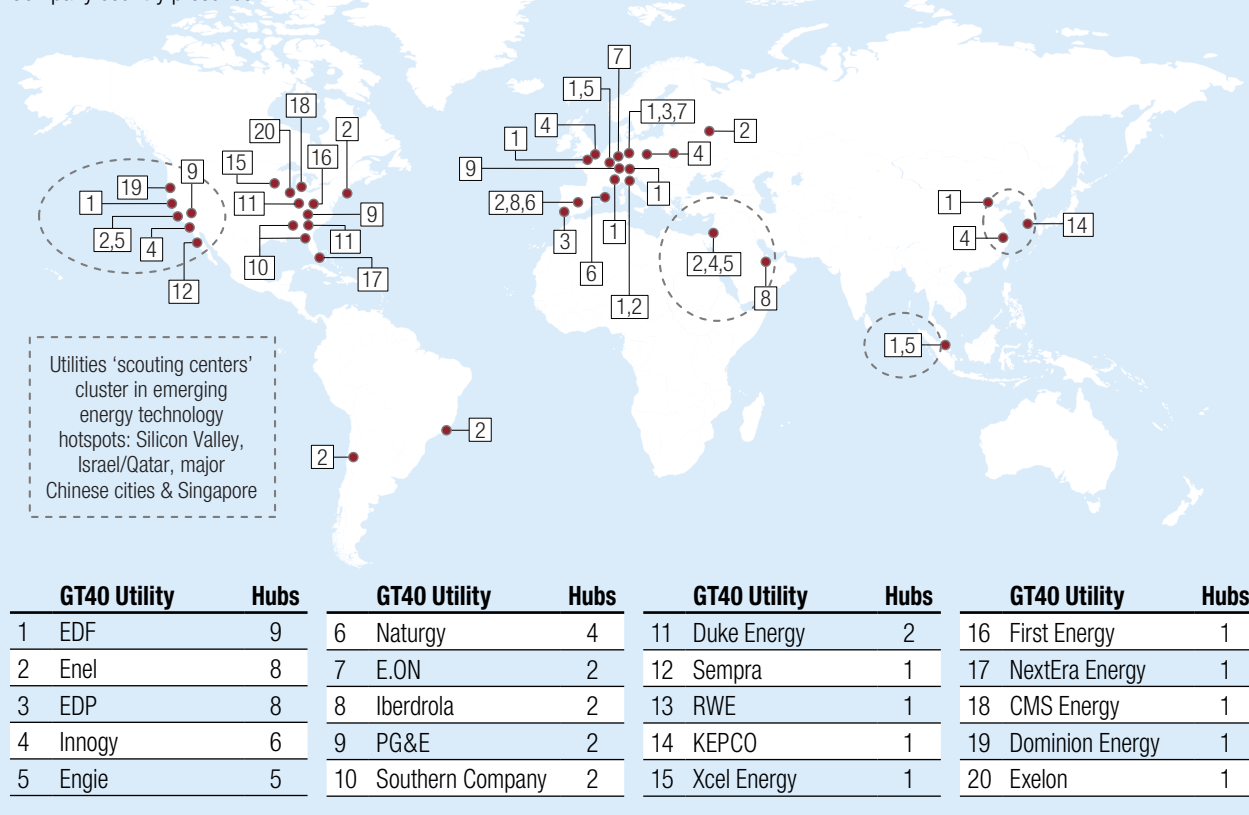
For example, Électricité de France (EDF) operates a two thousand-plus person R&D center with a complement of eight

monitor and controller deployment, and system optimization through new technologies, such as batteries, microgrids, and electric vehicle charging infrastructure, to make the integrated system itself more valuable. These innovation investments unlock value to legacy and

Fig. 1
GT40 INNOVATION LOCATIONS

Source: Company reports, company websites, Statista's analysis

Company country presence



additional regional innovation hubs and labs. Energias de Portugal (including a Shanghai complex) and Enel maintain eight innovation centers and labs while Innogy and ENGIE support six and five hubs and labs, respectively.

See Figure 1.

Most U.S. GT40 utilities maintain a single R&D and innovation center, except Southern Company, which supports two, with its Carbon Capture and Sequestration center, partially supported by the Department of Energy, and its Energy Innovation Center. However, other GT40 utilities are more informal about their activities and more reliant on external parties and maintain no formal and discrete R&D or innovation centers.

While utilities may be conservative investors in emerging start-ups and R&D in general, the venture capital community is an active funding source to complement companies across all types of new power technologies. These funds thrive on being technology pacesetters and adept investors in first-to-market and/or winning solution start-ups. However, their investment track record provides insight into how variable capital commitment can be.

Venture capital funds invested over ten billion dollars in selected power sector technologies since 2015, with annual swings in amount and priority. In recent years, the trend in investment emphasis has shifted from renewables to batteries to software with the level of capital commitment trending down as certain

technologies mature, emerging technologies begin to attract interest or investor breathing room is needed.

See Figure 2.

GT40 companies have been companion investors with these funds and relatively active acquirors or investors in new energy solutions companies. These utilities view these start-up entities as fundamental learning laboratories, for early go-to-market presence, and portfolio development.

The U.S. utilities sector has been engaged in equity investment in power-related businesses since 2013 - 2015 when Edison International assembled a portfolio of technology-based businesses. Although it has now unwound most of this portfolio, other GT40 entities, particularly in Europe, are avid investors in start-up and technology entities. In addition, venture capital funds have been actively participating and generated roughly six hundred deals over the last five years.

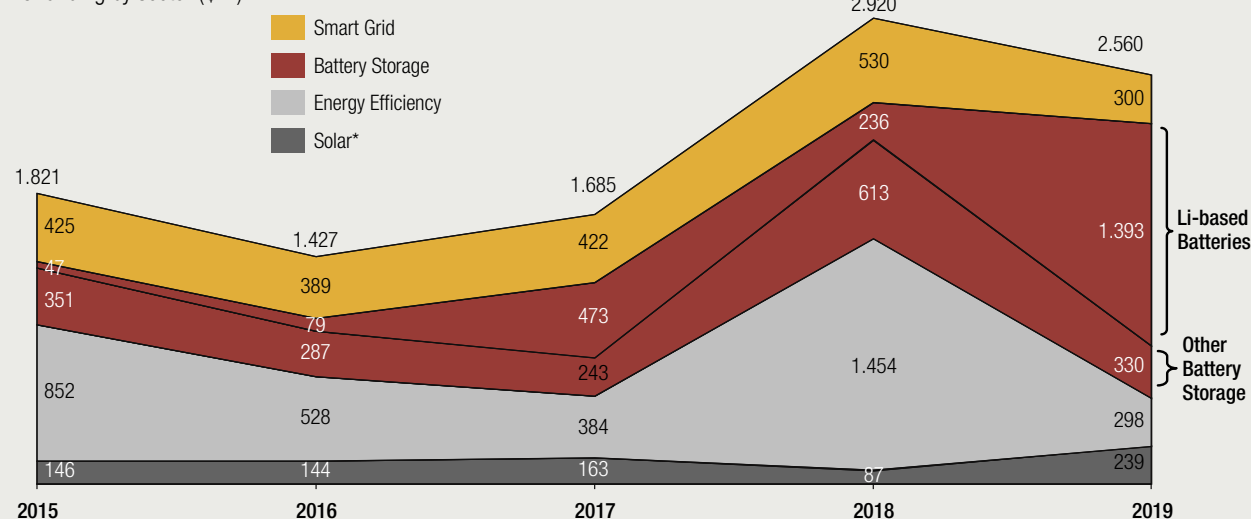
See Figure 3.

To ensure that utilities are aware of existing technology providers and available market opportunities, companies are expanding their market presence and access to these start-ups. A number of companies are establishing global scouting centers to ensure they maintain visibility to emerging technology providers, technology, R&D, and innovation centers and the venture capital network.

These scouting centers exist in innovation hot beds like

FIG. 2
VENTURE CAPITAL INVESTMENT

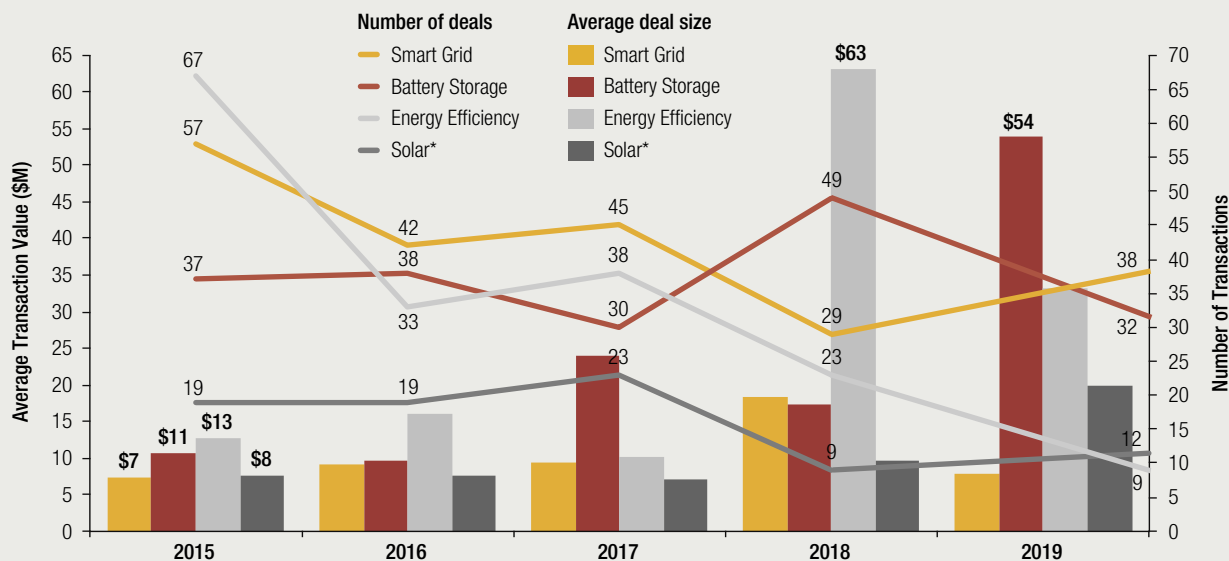
VC funding by sector (\$M)



*Funding of innovative technology in solar, including the thin film and balance of system & software segments (excludes project development and financing)

FIG. 3
VENTURE CAPITAL DEALS

VC funding transaction volume and size by sector



*Funding of innovative technology in solar, including the thin film and balance of system & software segments (excludes project development and financing)

Palo Alto, Boston, Seattle, Toronto, London, Berlin, Tel Aviv, Singapore, and Moscow, among other cities. GT40 companies set up these monitoring outposts to provide access to local technology and funding communities, as well as early perspective on technology trends, commercial deployment timing, and potential investment opportunities. They function as early awareness tripwires, to provide directional technology signals.

Some venture capital funds, like Energy Impact Partners

(EIP), provide a virtual alternative to establishing physical scouting centers. Through its investment fund portfolio, EIP offers its utility partners the ability to directly connect with multiple emerging technology solutions start-ups – in the U.S. and globally – and extend the reach for available market awareness and knowledge. EIP's role and investment thesis helps accelerate its partner's transition to a cleaner decarbonized energy future.

The combination of internal R&D and innovation capabilities,

venture capital funds, OEM partners, and scouting center presence collectively expand the opportunity set available for investment. These sources ensure that the opportunity pipeline for investment remains robust, with potential to find niche startups (as opposed to unicorns) to accelerate GT40 commercial and operational outcomes and market success.

With options for investment and sources of collaboration available, utilities are actively developing force multipliers to position them for faster market participation and readiness. The integration of these enablers can aid utilities in ensuring market access, providing offering proof-points and accelerating commercial readiness.

“In today’s environment, utilities invest for both defensive and offensive purposes.”

– Tom Fanning



Balancing Trade-offs

However, utilities choose to reinforce or advance their innovation models, they need to reconcile one area of frequent divergence: realities of the business and ambitions for innovation are not always in synch. This creates conflicts in priorities or ambiguity in direction when congruence is paramount to keeping the organization centered on a path to future market positioning.

Executives want their businesses to be fully prepared to address the scope and pace of change. This objective causes company leadership to balance the need for aggressive action to meet an accelerating timeline of change with the need to ensure the right actions are being taken as expeditiously as possible. But executives must recognize that opportunities are perishable, and competitors are more nimble and agile in commercial innovation.

Many arguments are made for thinking big about the shape of future market and technological environments in the near- and longer-terms. These points of view emphasize the value of bold and decisive innovation and strategic actions to enhance the ability to take advantage of emerging opportunities.

But a counterargument exists that moving too rapidly could sub-optimize intended benefits from innovative actions. Under this view, moderation and steadiness of actions are virtues given the lack of clarity about future market and technology direction.

This dichotomy causes executives to thoughtfully balance trade-offs inherent in pursuing enterprise-wide or targeted innovation initiatives. Choosing the right path requires considering how available options advance market readiness within the real constraints of the day to day business and financial priorities for the enterprise.

Trade-offs in strategic direction, priorities, pace, and impact are among those utility executives regularly assess in setting their innovation agendas. But, balancing these trade-offs means aligning innovation expectations and desired outcomes, which can have a distinct gap between them.

The challenge in harmonizing trade-offs between expectations and outcomes is finding the right balance between the desirable and the doable. This suggests that lofty aspirations may need to be tempered so measurable achievement can be attained.

Balancing capital investment levels and deployment destinations among available options is table stakes in realizing innovation success. The considerations between segment or project, operationalization or commercialization, performance or value, or near-term or long-term, justify how investment dollars are distributed.

This balancing effort becomes particularly acute when traditional business capital needs

are increasing in parallel with unconventional new business opportunities. Generally, capital allocation reflects a firm, rather than flexible, pool of investment. Displacement of one capital destination by redistribution to another can create strategic winners and losers, and carries risks related to value contribution levels and timing realization.

Clear Agenda

Utilities have generally been able to articulate a purpose for emphasizing innovation and to align strategies under this banner. A North Star is generally visible to guide companies toward their futures, even if the path is not always clearly marked. But that North Star is consistently directed at inventing the future of the company and forging a durable enterprise that can stand the test of time.

Optionality provides strategic flexibility to utilities and avoids placing the wrong bets on policy, strategy, technology, or regulatory choices. At its core, innovation seeks to understand possible futures and capitalize on available market opportunities. While future direction will always be uncertain, even with the best insight, it is important to preserve the option to capitalize quickly, adroitly shift direction, or keep the powder dry, depending on market alacrity.

Future direction is not just selecting among a set of what appear to be binary choices. A broad range of potential options exist. Utilities need to be adept at identifying these options and positioning themselves to select the best choices based on what is known and what can be reasonably expected to occur. However, whichever path appears the most desirable, utilities need to maintain a degree of strategic flexibility that enables them to quickly pivot to reflect market shifts.

“ Venture capital funds have been actively participating and generated roughly six hundred deals over the last five years. ”

– Kevin Fitzgerald



Given the high degree of uncertainty about technology development and functionality, customer adoption behavior and regulatory policy parameters, utilities have to make informed choices that allow them to build no regrets foundations, while still preserving the ability to course correct without loss of investment, market momentum or future flexibility.

Utilities are encouraged to think big, even when decisions do not rise to the same level of scale. The system network is becoming far more complex, such as more devices, data, and platform integration. But technology adoption also requires that the concept of miniaturization be recognized. Systems are the construct of many small elements, more powerful than their predecessors, and more vital to performance.

This desire for flexibility creates a dichotomy in choice for utilities. Select what appears to be the optimal path or choose the path that creates and builds market advantage under the widest set of conditions and circumstances. While this choice can appear to suggest narrow and conservative options over expansive and aggressive ones, they are not mutually exclusive. Both decision models reflect trade-offs and can work together when the right elements are integrated into innovation decision making.

Utilities regularly deal with this dilemma when thinking about technology investment and deployment. The desire for certainty

of outcomes is natural, but unlikely to be realistic. Consequently, management innovation choices are likely to be characterized as smaller versus larger bets, near-term versus longer-term results, predictable versus high-risk outcomes, and commercial versus academic contribution.

The desire to be revolutionary sounds inviting and the best way to create distinctive value, but it carries risks that may be unacceptable at any point in time. It is likely better to be the thoughtful innovator known for results than the incessant ideator unable to link ideas to commercial outcomes.

Inevitably, aligning future outcomes with developed expectations leads back to defining the culture required to support continuous ideation and innovation. Cultural adaptation – from episodic actions to pervasive collaboration – is the foundation for dramatic or radical change. Concurrent with this cultural shift is the need to rethink how the business and its employees design an open thinking environment that values contribution from all sources.

To reinforce a desired culture, companies are realizing that the path to innovation success follows the signals that executives have previously conveyed to the broad employee base. The more attention directed at educating employees on innovation's need, purpose and intent, the better the outcomes produced from direct action.

“ A range of attractive innovation-based capital destinations exist for the industry and its partners to consider. ”

– Tom Flaherty



Executives need to continue to reinforce the notion that some innovation failures are unavoidable in an organization that is willing to invest in unfamiliar futures and take risks their vision may be incomplete, or even wrong. Companies need to become comfortable with the notion that not all ideas succeed, and a tolerance for limited failure, while not natural, is necessary

(Cont. on page 71)

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(Cont. from p. 53)

and unavoidable. The key is to make failures infrequent, fast, and inexpensive.

Operational and commercial innovation success is inextricably linked to aggressively finding, rigorously evaluating, thoughtfully deploying, and strategically integrating technologies, offerings, and ideas into the business. But desired outcomes cannot be achieved without real commitment to innovation supported by sufficient investment to fund external and internal initiatives and market positioning.

Succeeding with innovation requires executives to harness internal capabilities that can invent a different future than exists or believed to be attainable. It necessitates a willingness to undergo creative destruction of the business as it stands, and reinvention, as it can be conceived, through a lens of breakthrough thinking.

Blueprint: Seven Action Items

Utilities have built positive momentum within their companies. The challenge is to further advance it. External momentum is still embryonic, but momentum can be gained here through seven key and significant strategic actions:

Redefine the art of the possible: Current innovation highlights incremental business enhancement – rethink innovation’s long-term purpose and value and pursue bold actions and differentiating impacts.

Elevate investment: Investment levels are a natural constraint to achieving innovation aspirations – stretch available capital through external sources and rigorous internal decision analytics.

Expand critical market presence: Idea symbiosis occurs in location clusters within established innovation communities

– mobilize and integrate internal resources at the sources of breakthrough thinking.

Extend the partner network: The significance of market and operational challenges well exceeds utility capacity to address alone – increase relationships that accelerate market readiness and de-risk technology.

EIP’s role and investment thesis helps accelerate its partner’s transition to a cleaner decarbonized energy future.


Embed commerciality in the business: The purpose of innovation is to advance the business strategically and operationally – create a commercialization mindset that emphasizes converting ideas into economic value.

Align incentives and expectations: Divergence between traditional utility standards and competitive industries is normal today – adopt employee incentives that drive desired behavior and reduce risks.

Engage the regulatory community: Innovation success depends on how regulators see the value of innovation investment – craft collaboratively agreed regulatory permissions to invest.

These strategic actions can position utilities to enhance their innovation models and outcomes.

They can also enable companies to directly address the continuing challenge to the industry to create a sustainable innovation model that weathers typical business variability and accelerates operational and commercial success of these efforts.

Getting the formula right for elevated and directed future investment is fundamental to realizing innovation aspirations laid out by senior leadership. 

PRICE OF ELECTRICITY NOT KEEPING UP WITH PRICES OVERALL

The average price that American consumers paid for electricity this March was just two-tenths of a percent above what they paid in March of the prior year, 2019. While the price they paid for all goods and services on average, as measured by the federal government’s Consumer Price Index, was a full percent and a half above what they paid in the prior year.

That’s because the prices of other commonly purchased goods and services have been rising more rapidly than a percent and a half. In particular, the average price of medical care services was up a whole five and a half percent this March year-over-year. The price of “shelter” – excepting residential electricity, natural gas, and oil – was up three percent.

And the price of food away from home was up three percent as well. Who knows what will happen to the latter category when the April numbers are reported by the U.S. Bureau of Labor Statistics with so many restaurants closed in compliance with social distancing policies.