Itron

2016 EDITION

ITRON RESOURCEFULNESS INDEX

A Benchmark for Global Energy and Water Resources Management

2016 ITRON RESOURCEFULNESS INDEX

Benchmarking the Management of Global Energy and Water Resources

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CEO PERSPECTIVE

Utilities Have an Opportunity to Lead

I'm pleased to share with you the 2016 Itron Resourcefulness Index results. As Itron continues to study the industry from the utility executive and consumer perspectives, the goal of conducting this research year-over-year is to create a benchmark for how energy and water are managed and used on a global basis. This study provides insights into where the industry is reliably, efficiently and sustainably managing these resources and where we might have opportunities for improvement. Now in its third year, this report is unique in combining utility and consumer perception data with a country-by-country ranking to give a complete picture of the state of resourcefulness for those countries surveyed.

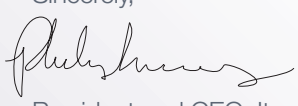
This year's study offers some interesting perspectives. It provides support for what has been a growing awareness that utilities have an opportunity to play a lead role in transforming how energy and water are managed and used globally. Utilities are faced with government mandates for lowering carbon emissions; consumers who want greener alternatives and control over costs with real-time information; and the need to modernize infrastructure to detect and correct lost water and energy. These challenges force utilities to shift how they operate and manage resources. At a time when smart city initiatives and the Internet of Things (IoT) are expanding the possibilities for interconnected systems, utilities can drive our smarter communities while better managing electricity, gas and water.

This year, the research into key markets around the world reveals that utility executives believe the three pillars of resourcefulness – *effectiveness* in providing reliable and consistent water and energy services, *efficiency* in providing energy and water services while minimizing waste, and *sustainability* in minimizing the impact on the environment when providing water and energy services – are equally critical for the future of the industry. Meanwhile, consumers believe utilities have the greatest ability to improve resourcefulness across these three pillars. This indicates there is universal agreement that utility companies can, and should, lead.

In addition, utility executives and consumers remain in agreement that government has an important role to play in improving resourcefulness. Regulatory reform increasingly has the potential to drive efficiency and influence energy mix. Current initiatives of note include legislation passed in California calling for 50 percent renewables and 50 percent increase in building efficiency; New York's Reforming the Energy Vision initiative that promotes more efficient use of energy, deeper penetration of renewable energy resources, wider deployment of distributed energy resources and storage; and Germany's energy transformation program designed to generate at least 35 percent of its electricity from renewable sources by 2020. Regulations such as these are aligning with better management, use and conservation of electricity, gas and water globally.

Truly, what is more foundational to the vitality of our communities than precious energy and water resources? Nothing. That is why we measure resourcefulness. By uncovering how resourceful we are and identifying where we can improve, this industry can take the steps needed to eliminate wasted energy and water as well as empower people to manage their use of these resources and save money. Such awareness is a major step in the important journey toward creating a more resourceful world. Join us.

Sincerely,



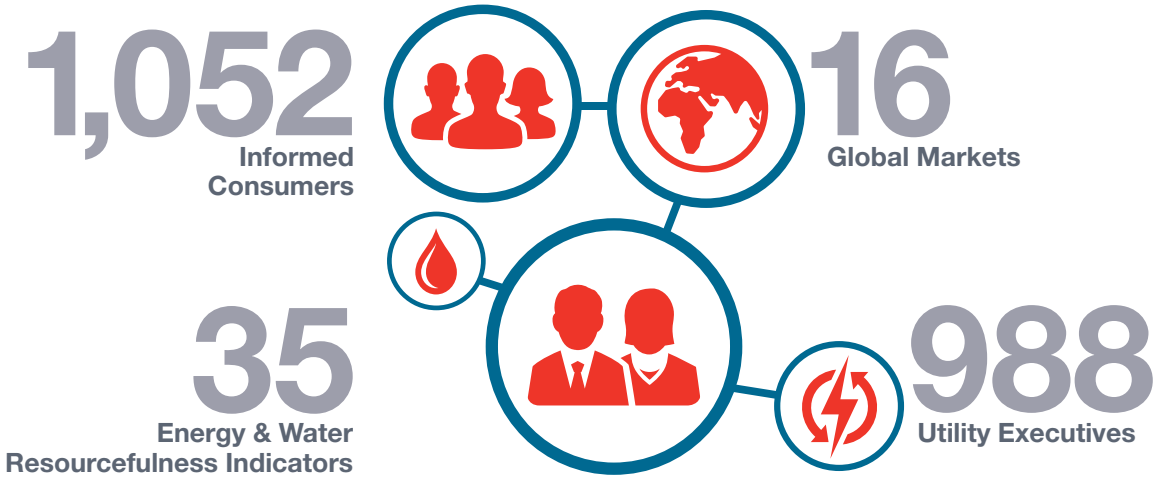
President and CEO, Itron

ABOUT THIS STUDY

This report contains consolidated insights from a global survey of utility executives and informed consumers in 16 key countries around the world. Our largest survey to date, we expanded the survey to include the country of Turkey and, as a whole, reached 13 percent more respondents than last year.

The Energy and Water Resourcefulness Indices continue to help measure country-level resourcefulness by using 35 macro indicators across three core pillars—***effectiveness***, ***efficiency*** and ***sustainability***—and ranking the countries according to their performance for each.

The combination of the aforementioned in-depth survey, paired with rigorous research in the Energy and Water Resourcefulness Indices, provides a unique, comprehensive look at the current state of resourcefulness within the utility industry around the world.



16 Countries Surveyed

Argentina	China	Indonesia	Spain
Australia	France	Japan	Turkey
Brazil	Germany	Mexico	United Kingdom
Canada	India	South Africa	United States

EXECUTIVE SUMMARY

Now in its third year, the Itron Resourcefulness Index is beginning to illustrate trends in technology and consumer engagement within the utility industry, as well as county-level energy and water resourcefulness based on 35 key indicators across three core pillars: ***effectiveness***, ***efficiency*** and ***sustainability***.

Since energy and water form the foundation for every community in the world, measuring how we are managing and using them is critical for a more resourceful and sustainable future.

A ROLE FOR RESOURCEFULNESS

Utilities power today's world. From businesses and homes to government buildings, hospitals and schools, national prosperity depends on access to reliable and safe sources of energy and water. These resources are critical to upholding public safety and health. They drive economies, innovation and development around the globe.

But companies, governments and consumers alike are beginning to view natural resources differently. It is not enough to develop, secure and supply them – there is a public call for conservation and greater resourcefulness as well. The water and energy utilities industry has an opportunity to build upon the significant progress it has already made and lead the way for greater effectiveness and efficiency in resource usage and management.

In the age of the Internet of Things (IoT) and the blossoming promise of smart cities, it is becoming clear that utilities have an opportunity to drive a real shift in how they engage with consumers to enable smarter communities, propel local economic development and better manage energy and water. To examine this opportunity, Itron commissioned a research study that combines the opinion survey results with two indices – the Energy Resourcefulness Index and the Water Resourcefulness Index.

This year's study is a continued exploration of the dynamic between utility industry leaders and consumers – how they view utilities, resourcefulness and the challenges faced by the industry overall. The results offer crucial insights into how the industry is evolving and what consumers are looking for from their water and energy providers now and in the future.

KEY SURVEY TAKEAWAYS

This year's survey generated several interesting insights from utility executives and consumers, including 10 key trends:

TREND #1

Utilities are Deploying Technology That Can Lead the Age of the Internet of Things and Smart Cities

79% **of all utility executives**

said their country needs an integrated energy system that includes renewables

TREND #2

Utilities Are Turning to Technology to Address the Changing Business Landscape

74% **of all utility executives**

viewed the changing business model as an ***"urgent"*** or ***"growing concern"***

TREND #3

Consumers Want Utilities to Do More to Connect the Dots for Them

Only **25%** **of consumers**

felt informed and satisfied with the amount of communication from utilities about changes in the industry

TREND #4

It's Not About Big Data; It's About the Right Data

Less than half, **49%** **of utility executives**

felt that their company is prepared to manage big data today

TREND #5

Cybersecurity Continues to Be a Concern

71% **of consumers**

were increasingly concerned about cybersecurity and physical attacks on utility systems

KEY SURVEY TAKEAWAYS

(continued)

TREND #6

Gas and Electricity Grids Grow Together

79% **of utility executives**

said there needs to be a connected energy system that includes gas, solar and wind renewables

TREND #7

Addressing Wasted Water Is a Priority

71% **of water utility executives**

thought their ability to deliver adequate services will be diminished if inefficiency in the industry persists

TREND #8

Government Has an Increasing Role in Shaping Resourcefulness

53% **of utility executives**

said government regulation delays investment

TREND #9

Next Generation Workers are Needed

71% **of utility executives**

surveyed thought attracting the next generation of utility workers was a growing or urgent problem

TREND #10

Everyone Needs to Take Action to Create a More Resourceful World

41% **of utility executives**

thought that consumers play the biggest role in improving resourcefulness, closely followed by governments and then utilities

THE TOP FIVE COUNTRY RANKINGS

The Itron Resourcefulness Index, serving as a benchmark for country-level management of energy and water, is the first study to measure how each country is able to deliver on the pillars of resourcefulness: effectiveness, efficiency and sustainability. This year, to reflect an assessment of the relationship between resourcefulness, consumer engagement and investment in technology, equal weighting was attributed to the pillars based on the responses of the nearly 1,000 utility executives surveyed. The top five rankings are determined based on the comparison of 16 countries.

THE U.S. LEADS THE ENERGY INDEX

When it comes to energy, the developed countries surveyed performed the highest in the index. The top five performing countries are:

1) **United States**
2) **Germany**
3) **Canada**
4) **Japan**
5) **France**

AUSTRALIA TOPS THE WATER INDEX FOR THE SECOND YEAR IN A ROW

With a third of the world's water lost within the distribution system and unprecedented drought conditions across the globe, no one can afford to waste a drop. The highest ranking countries on the index are all taking steps to better manage this precious resource. After all, water is life. The top five countries are:

1) **Australia**
2) **Japan**
3) **Germany**
4) **France**
5) **United States**

CONCLUSION

This year's report highlights the growing importance of the utility industry's role in leading the transformation of how energy and water are managed and used. The results confirm there is tremendous opportunity for utilities to drive a real shift in how energy and water are used globally. Both utility executives and consumers agree that the industry is in need of transformation and consumers are looking to utilities to continue to innovate.

To answer this call, utilities are adopting new technologies to reduce waste and build a more efficient and connected system that supports the growing availability of renewable sources. This gives customers more options and greater control over how they use water and energy resources and changes their relationship with utilities from a one-way transaction to a two-way conversation. This reality means utilities are more poised than ever to engage with consumers in meaningful ways by taking the lead in promoting awareness and support for the promise these new technologies offer for achieving greater resourcefulness.

GLOBAL SURVEY

Top 10 Industry Trends

The Survey Says…
Utility Executives Agree

79% of all utility executives
said their country needs an integrated energy system that includes renewables

72% of utility executives
across electricity, gas and water in the Middle East and Africa said more innovative technology-based solutions are needed

52% of all water utility executives
agreed that more innovative technology-based solutions are the #1 unmet need of the industry

Deploying and enabling smart meters ranked as the top technology investment priority for gas and electricity utilities across the globe

TREND #1

Utilities are Deploying Technology That Can Lead the Age of the Internet of Things and Smart Cities

Utilities have always been a key pillar of the economy. But as the imperative to be more resourceful grows and communities look for ways to be more efficient through integration, smart cities and other initiatives, utilities have an opportunity to take the lead in envisioning and building modernized grids and networks. These networks will not only ensure the safe, reliable access and delivery of energy and water, but also serve as a foundation for other applications, including streetlight management, electric vehicle charging, smart cross walks, solar energy management and things we haven't even thought of yet. By connecting systems with smart technologies, utilities will be able to react to the changing grid and distribution system conditions in real time.

Energy and water are essential to thriving businesses, communities and economies, which is why utilities will play an integral role in creating smart cities of the future. Utility technology provides the mechanism for two-way communications as well as a source of real-time data for reducing energy and water waste. Furthermore, utility investments in technology will help cities become more effective in delivering services to their citizens.

GLOBAL SURVEY

Top 10 Industry Trends

Key Supporting Survey Findings

74%
of all utility executives

viewed the changing business model as an ***"urgent"*** or ***"growing concern"***

Utilities across all sectors placed an emphasis on **smart meter AMI upgrades, business analytics** and **enterprise software systems** for their technology upgrade wish lists

78%
of all energy utility executives

said utilities require improved technology to integrate renewables

TREND #2

Utilities Are Turning to Technology to Address the Changing Business Landscape

Utilities are working hard to keep up with a shifting industry landscape – including innovation of new technology and the integration of renewables – that is fundamentally changing the way utilities and consumers interact. The industry has made incremental progress going from grid 1.0 to grid 2.0, but with the current pace of change, it is time for the industry to reimagine its use of technology and harness the power of the Internet of Things to efficiently and effectively deliver water and energy.

The utility industry is facing a changing landscape, whether that's disruptive technologies, an aging workforce, emerging market trends or shifting consumer expectations. For example, the proliferation of low-cost solar combined with energy storage is challenging the traditional utility business model. However, utilities are taking steps to address this either through collaboration with state lawmakers and regulators to refine utility cost-recovery models or by investing in technologies to modernize infrastructure to support renewables and distributed generation.

Foundational to a modernized utility is a multi-application network infrastructure that when combined with analytic tools provides a highly flexible and extensible technology platform to help address these changes, create new opportunities, and address a broadening array of industry and societal needs.

Technology itself will not address all of the industry's evolving needs; utilities should consider new and faster ways to deploy technology, including software as a service (SaaS), and cloud and managed services. With managed services, utilities benefit from end-to-end network management and data collection along with flexible field deployment and analytics to quickly lead to energy and water supply efficiency. This offloads the burden of day-to-day data management tasks, freeing utility staff to focus on realizing more benefits and capabilities from their systems.

GLOBAL SURVEY

Top 10 Industry Trends

Here's What Utility Executives Need to Know about Consumer Expectations

Only 25% of consumers

felt satisfied with the amount of communication from utilities about changes in the industry

1 IN 3 consumers

thought the industry is running efficiently – the highest in the three years of this survey

50% of consumers

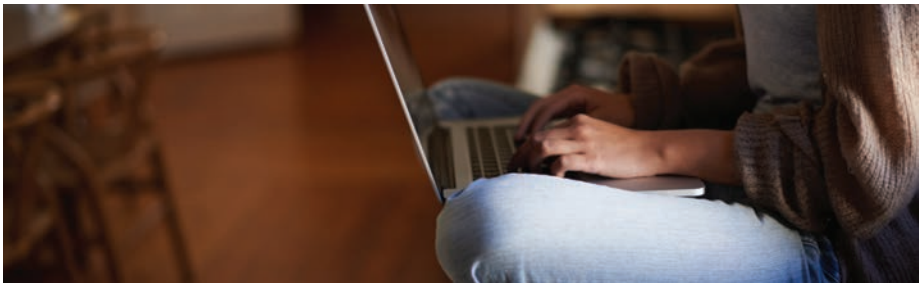
said they want more information on how to better conserve water

80% of all respondents

said the industry needs transformation

TREND #3

Consumers Want Utilities to Do More to Connect the Dots for Them



Utility executives are investing in more programs and tools to engage their customers. In fact, 69 percent of all utility executives said they are successfully engaging with consumers. However, the survey paints a picture of misinformed consumers who aren't hearing the messages from their utilities. Given this, utilities are poised for even more meaningful consumer engagement through access to more data and online tools as well as social media. Consumers want faster and more comprehensive information.

The survey found that there is a significant appetite from consumers for more information and a greater sense of connectedness with their utilities. Three quarters of consumers indicated that they are dissatisfied with the amount of communication they currently receive from utilities.

GLOBAL SURVEY
Top 10 Industry Trends

Show Me the Data

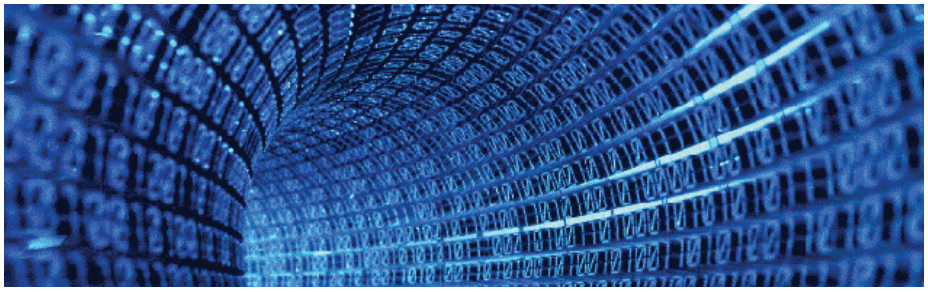
Less than half,
49%
of utility executives
felt that their company is prepared to manage big data today

Consumers' confidence in utilities' preparedness for managing big data remains low **with only 23%** of consumers believing the utility is prepared today and only **39%** believing they will be prepared in five years

30%
of utility executives
noted that they have and use the tools to manage big data; however **36%** noted that they have the tools but currently do not use them to manage big data

TREND #4

It's Not About Big Data; It's About the Right Data



Cisco predicts there will be 50 billion devices connected to the Internet by 2020. According to Navigant Research, there will be 93 million new smart electric meters by 2020 in just Western Europe alone. The point is, as more devices become connected and more intelligence is distributed across the grid, massive amounts of data will be generated.

The next step is having the right data at the right time both in the back office and in real time in the field. Utilities need information that allows them to interpret consumption patterns, quickly identify problems such as theft, and more efficiently forecast and allocate resources. Collecting data in a central data store and running reactive analytical data modeling only gets utilities so far. Utilities should consider what data they need to solve a particular business problem and then apply analytics, rather than searching through the proverbial haystack to find the needle. In addition, having dynamic analytical engines throughout the network that accelerate and improve decision-making and shorten reaction times represents the next wave of transformation the industry must drive toward.

GLOBAL SURVEY

Top 10 Industry Trends

How Confident Are We About Security?

64%
of utility executives

said they are equipped to protect against physical and cyber-attacks

75%
of consumers

said data privacy and security is a concern

71% **of consumers**

were increasingly concerned about cybersecurity and physical attacks on utility systems

TREND #5

Cybersecurity Continues to Be a Concern

Recent security breaches within government agencies and Fortune 500 companies remind us that cybersecurity is not a box to be checked, but rather an ongoing, multi-faceted effort on many fronts to continually improve system security. Today's smart metering systems have cybersecurity features built in at both the device and the network level, including encryption of data, authentication of messages, key management and administrative security features that render the "threat profile" very low relative to other consumer activities, such as online banking, e-commerce and social media.

GLOBAL SURVEY

Top 10 Industry Trends

What Do the Numbers Say the Future Looks Like?

79% of utility executives
said there needs to be an integrated energy system that includes integrated gas, solar and wind renewables

66% of energy utility executives

said electricity and gas grids will grow together

71% of utility executives
said gas renewables will be just as important to generate revenues as solar and wind renewables

TREND #6

Gas and Electricity Grids Grow Together

In the U.S. and some parts of Europe, in particular, utilities have combined gas and electric companies. In these areas, utilities are leading a new trend in which gas and electricity grids grow together. This is important as gas can play a role in storing surplus renewable electricity in the form of hydrogen and methane.

This is driving the need for a digitized gas grid to become a smart gas grid that goes far beyond metering and will encompass a range of sensing technology, such as methane detection sensors and cathodic protection.

With sensing technologies becoming more prolific and open standards-based networks that can be leveraged for electricity gas and water commands and controls in the field being deployed, using one network across an entire city is becoming more of a reality—and gas utility executives agree.

GLOBAL SURVEY
Top 10 Industry Trends

With Water, It's All About Efficiency and Technology

71% **of water utility executives** thought their ability to deliver adequate services will be diminished if inefficiency in the industry persists

52% **of water utility executives** thought more innovative technology solutions are the biggest unmet need of the industry

41% **of utility executives** said leak detection technology is at the top of their wish list

50% **of consumers** said they want and need more tips about water conservation from their utilities

TREND #7

Addressing Wasted Water Is a Priority

Globally, we are facing times of unprecedented drought conditions. Whether in the Southwest, West Coast or the Great Plains of the U.S., where decade-long droughts are far worse than any experienced over the last 1,000 years; or in Europe where in June and July 2015, the continent experienced one of strongest droughts in the last 12 years; or droughts in Bolivia, Guatemala and Cuba that threaten food supplies – it is critical that not a single drop of water is wasted. Yet, according to the International Water Association, 25 to 50 percent of the total water supply in the world (75 percent in emerging markets) is lost due to leaks and aging infrastructure. And, according to the World Economic Forum's global risk assessment, water crisis ranks third on the top 10 global impacts, following weapons of mass destruction. Dramatically reducing water loss is a priority to be addressed by technology, software and services.

GLOBAL SURVEY

Top 10 Industry Trends

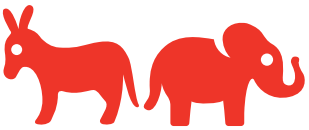
Leading or Supporting Role in Infrastructure Investment, Who's Up?

53% of utility executives

said government regulation delays investment

49% of utility executives

noted the lack of clarity of existing regulation is a barrier to investment



71% of consumers

said that new, or potentially new, government regulations are a concern

TREND #8

Government Has an Increasing Role in Shaping Resourcefulness

Over the last three years, utilities and consumers have been in agreement that current government regulations – and potentially new regulations – can impede the much needed modernization of the world's energy and water grids and systems. However, according to the 2016 Grid Modernization Index, U.S. states, such as California, Illinois, Maryland and others, that have passed clean energy and efficiency mandates, tend to invest more heavily in infrastructure modernization. It is proof in point that functional policies can benefit consumers and utilities.

GLOBAL SURVEY
Top 10 Industry Trends

Recruiting "Generation Z" – What Will it Take?

71% of utility executives surveyed thought attracting the next generation of utility workers was a growing or urgent problem

TREND #9
Next Generation Workers are Needed

Globally, the survey illustrates that over the last two years, utility executives have grown increasingly concerned about the aging workforce. In the U.S. alone, industry trade publications have reported that in the U.S., 62 percent of utility employees are nearing retirement age. Utilities have also cited difficulty attracting graduating engineering students. As utilities continue to face these realities, they'll need to focus more heavily on recruiting the next generation worker.

GLOBAL SURVEY

Top 10 Industry Trends

Who Has the Greatest Ability to Improve Resourcefulness?

41% **of utility executives**

thought that consumers play the biggest role in improving resourcefulness, closely followed by governments and then utilities. This represents a departure from last year's results in which **37%** of utility executives felt governments held the responsibility

Meanwhile

37% **of consumers**

thought utilities play the biggest role, followed by governments and then consumers. Consumer sentiment around responsibility remained the same as last year's results

TREND #10

Everyone Needs to Take Action to Create a More Resourceful World

Resourcefulness continues to be a critical issue for consumers, but remarkably, consumers and their utility industry counterparts disagree over who has the power to enact change. Each group believes the other has the greater ability to improve resourcefulness – and they both may be right in their respective ways. Consumers have the ability to demand changes and improved communications and technologies from their utilities, and similarly, utilities have the ability to improve their programs and processes, embrace innovative technology solutions and continue educating and communicating with consumers about how they can do their part to assist. And, don't forget that both consumers and utility executives believe government also needs to play a role. Regulators have the ability to enact regulation that helps, or hinders, a utility's ability to make changes specific to the resourceful management of energy and water resources.

Who Has the Greatest Ability to Improve Resourcefulness?

	Utility Executives say:		Consumers say:	
	2014	2015	2014	2015
Utilities	28%	26%	36%	37%
Governments	37%	33%	35%	35%
Consumers	35%	41%	29%	28%

RESOURCEFULNESS INDEX

For the purposes of this study, resourcefulness has been defined as the ability to prioritize and deliver on the pillars of effectiveness, efficiency and sustainability. This year, to reflect an assessment of the relationship between resourcefulness, consumer engagement and investment in technology, weights were attributed to the pillars based on the responses of the nearly 1,000 utility executives surveyed.

1) EFFECTIVENESS reflects the ability of a country to provide reliable and consistent water and energy services

2) EFFICIENCY captures the extent to which a country provides water and energy services while minimizing waste

3) SUSTAINABILITY measures the impact on the environment from the country providing water and energy services

The water and energy indices reflect the efforts many countries have made in prioritizing and investing in the importance of resourcefulness across these three pillars.

ENERGY RESOURCEFULNESS: THE TOP FIVE RANKING

The United States Leads the Energy Index

When it comes to energy, the developed countries surveyed performed the highest in the index. The top five countries are:

1) **United States:** The U.S. scored well based on its effectiveness in delivering energy and its overall sustainability. While not the top in all pillars, with its low energy prices, high quality of electricity supply and strong scores in metering, the U.S. is making great strides toward being resourceful.

2) **Germany:** Germany continued to lead the sustainable energy charge in Europe, and its ability to deliver energy reliably with very low energy waste propelled Germany to the number two spot on the list.

3) **Canada:** Canada scored well across all three pillars due to its effective and efficient delivery of affordable energy. It topped all countries in the sustainability pillar due to strong moves away from the use of fossil fuels.

4) **Japan:** Given the dramatic changes in Japan's energy industry following Fukushima in 2011, Japan has been investing in technologies to better manage its limited natural resources and high consumer demand. Quality and reliability were key to Japan's placement in the index.

5) **France:** France performed fairly consistently across all pillars, with its best result in sustainability. This is based on best-in-class results in CO2 from electricity generation and emissions from energy systems.

UNITED STATES SPOTLIGHT

The United States saw a good year in energy efficiency, including many states and cities enacting or continuing energy efficiency plans and actions.

California's Clean Energy and Pollution Reduction Act of 2015 (Senate Bill 350) is one of those actions. The bill aims to double energy efficiency in buildings, reduce petroleum use in vehicles by 50 percent and generate 50 percent of electricity from renewable sources—all by 2030.

New York is another state taking steps to improve energy efficiency with its Reforming the Energy Vision initiative. Under this initiative, New Yorkers plan to cut carbon emissions by 80 percent by 2050, generate 50 percent of electricity from renewable sources and slash energy consumption in buildings by 23 percent.

Another example is the Maryland Public Service Commission, which has immensely increased its targets for energy utility savings. The plan includes saving 2 percent annually on energy utility savings by 2020.

CenterPoint Energy (CNP), an electric and gas utility company, is one of many companies going to lengths in making energy-use reductions. Its meters can be read, connected and disconnected remotely, which has allowed CNP to conserve nearly 900,000 gallons of gasoline, prevent 8,100 metric tons of CO2 emissions and eliminate almost 10 million vehicle trips. As a result, CNP was named the 2014 CLEAR Award Winner by the Smart Grid Consumer Collaborative.

From the local to industrial level, the United States is striving to drastically reduce its energy footprint.

WATER RESOURCEFULNESS: THE TOP FIVE RANKING

Australia Tops the Water Index for the Second Year in a Row

With a third of the world's water lost within the distribution system and unprecedented drought conditions across the globe, no one can afford to waste a drop. The highest ranking countries on the index are all taking steps to better manage this precious resource. After all, water is life. The top five countries are:

1) **Australia:** Most likely out of necessity due to Australia's arid interior, the country scored well in the effectiveness and efficiency pillars with the largest meter market per capita and low proportion of non-revenue water.

2) **Japan:** Similar to the Energy Index, Japan performed very strongly across all measured pillars. The country excelled in water efficiency, ranking second due to very high scores in non-revenue water and metering adoption.

3) **Germany:** Germany's water efficiency ranking came very close to the top, ranking first in metering adoption and second in low non-revenue water.

4) **France:** With fairly equal performance across all three pillars, France scored just slightly lower than the top three and equal performance across the pillars indicates a balanced approach.

5) **United States:** While the U.S. showed strong effectiveness and efficiency scores due to solid metering adoption and low non-revenue water as a percentage of supply, it lagged in investment in environmental public expenditure.

AUSTRALIA SPOTLIGHT

As a drought-stricken country, Australia takes effectiveness, efficiency and sustainability to new lengths in its water management.

For example, in Kalgoorlie, Australia, the 28,000 residents rely on its only fresh water supply to come from the state capital of Perth via a 600-kilometer-long pipeline. The city installed 13,500 meters to manage the city's resources more effectively and provide greater control over water wastage. The city was able to identify leaks quickly, improving efficiency and reducing water loss.

Another example of water resourcefulness in Australia is the government's program for labelling and standards. The Australian government instills many programs to place the best practices down to a local level and into the home, including establishing minimum standards through the Water Efficiency Labelling & Standards (WELS) program. The program gives a wide range of products a star rating based on water efficiency. By meeting these regulations, WELS helps businesses choose efficient products, assisting Australia in conserving its water supply, and saving businesses water and money.

The practice of water conservation has become more and more prevalent and even embedded in Australia due to its millennium drought. As a comparison, California is also in a drought and the average household uses 230 gallons a day, whereas Australian households use 54 gallons per day, according to the Australian Bureau of Statistics.

By installing technologies and instilling habits for water efficiency, the country further pushes the adoption of water-efficient standards at an industry and local level.

ENERGY INDEX

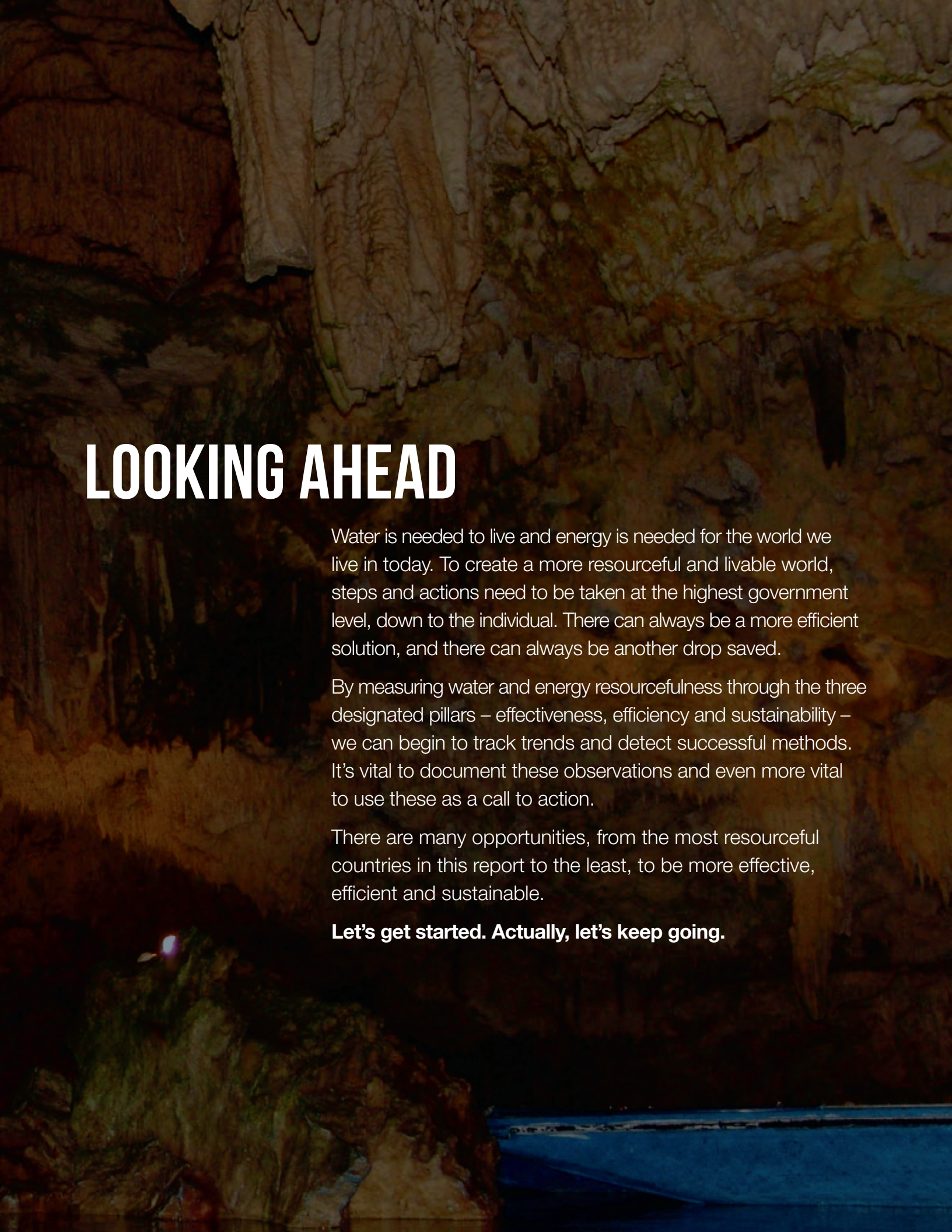
Top performers across the energy index did well in at least one pillar, usually two. The U.S. is in the top three in all three pillars, but never hits the top spot.

	EFFECTIVENESS	EFFICIENCY	SUSTAINABILITY
1	Australia	Germany	Canada
2	United States	United States	Brazil
3	Canada	Japan	United States
4	United Kingdom	Mexico	France
5	Germany	France	Germany
6	Spain	Australia	Japan
7	France	Canada	China
8	Japan	United Kingdom	Spain
9	Turkey	China	United Kingdom
10	China	Spain	Argentina
11	Brazil	South Africa	Australia
12	South Africa	Turkey	Mexico
13	Indonesia	Indonesia	Turkey
14	Mexico	India	Indonesia
15	India	Brazil	South Africa
16	Argentina	Argentina	India

WATER INDEX

There is more variation in performance across the pillars in the water index. Australia, however, ranks in the top three across all pillars.

	EFFECTIVENESS	EFFICIENCY	SUSTAINABILITY
1	Australia	Germany	Brazil
2	Japan	Japan	United Kingdom
3	South Africa	United States	Australia
4	France	Australia	Germany
5	Germany	China	Argentina
6	Argentina	Spain	Canada
7	United States	France	Japan
8	Turkey	Canada	Spain
9	Brazil	South Africa	Indonesia
10	United Kingdom	Brazil	South Africa
11	Mexico	Turkey	Turkey
12	China	United Kingdom	France
13	Canada	Argentina	Mexico
14	Spain	Mexico	United States
15	Indonesia	Indonesia	China
16	India	India	India



LOOKING AHEAD

Water is needed to live and energy is needed for the world we live in today. To create a more resourceful and livable world, steps and actions need to be taken at the highest government level, down to the individual. There can always be a more efficient solution, and there can always be another drop saved.

By measuring water and energy resourcefulness through the three designated pillars – effectiveness, efficiency and sustainability – we can begin to track trends and detect successful methods. It's vital to document these observations and even more vital to use these as a call to action.

There are many opportunities, from the most resourceful countries in this report to the least, to be more effective, efficient and sustainable.

Let's get started. Actually, let's keep going.

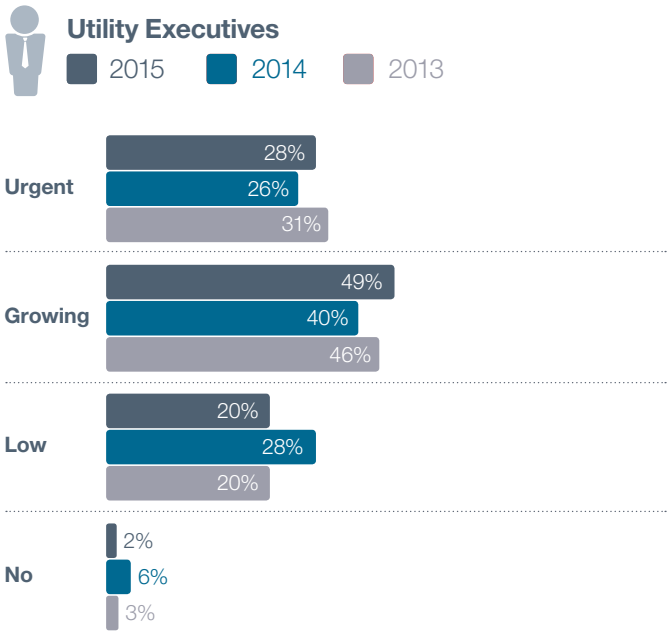
Appendix:

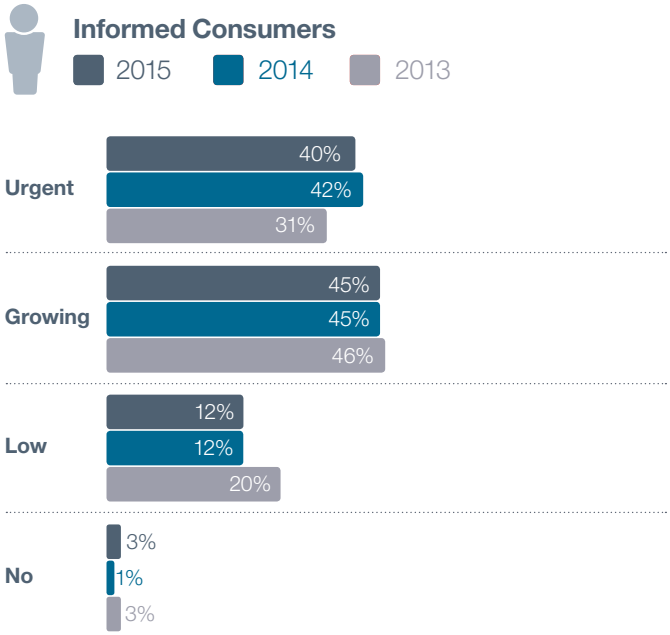
SURVEY RESULTS

SURVEY RESULTS

Revenue Protection / Operational Inefficiencies

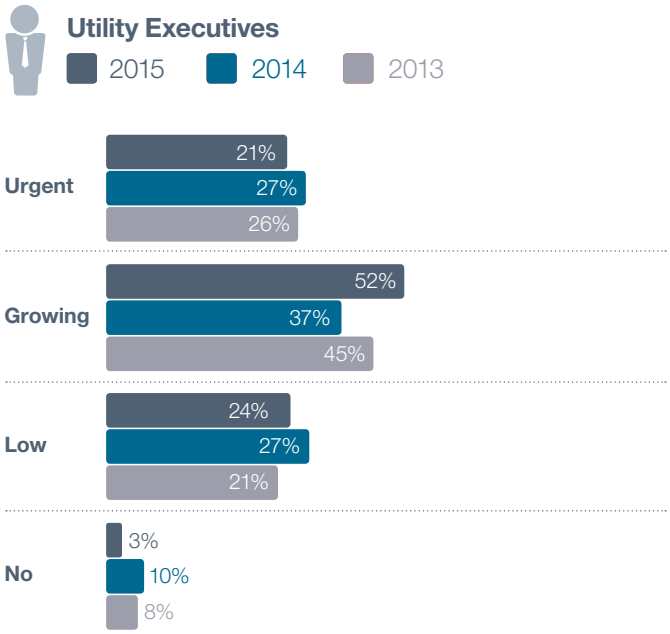
To what degree is lost revenue due to operational inefficiencies a concern of the utility industry?

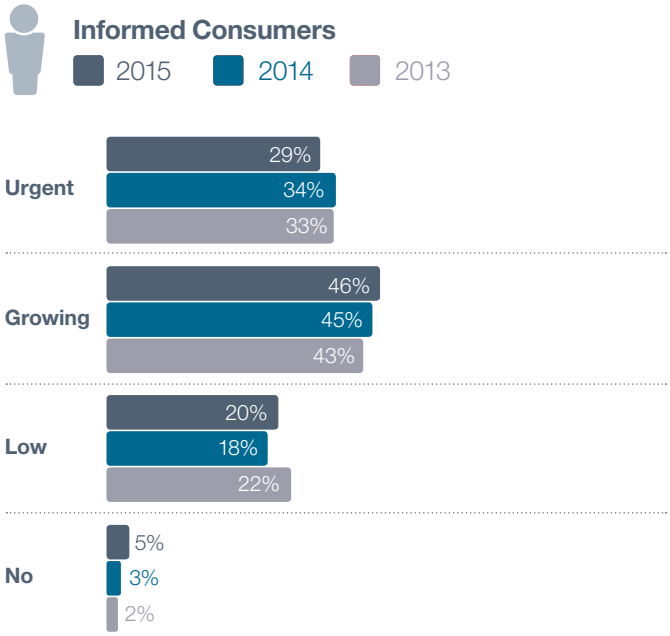




Privacy & Security

To what degree is protecting private data about customers a concern of the utility industry?

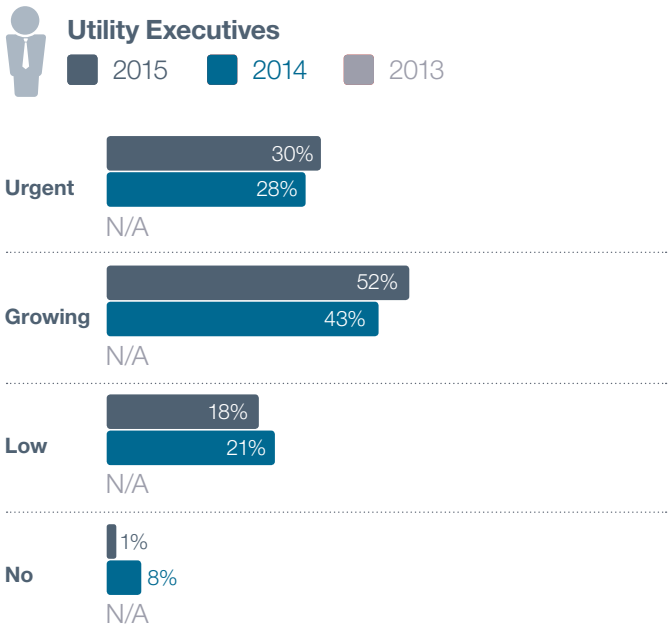


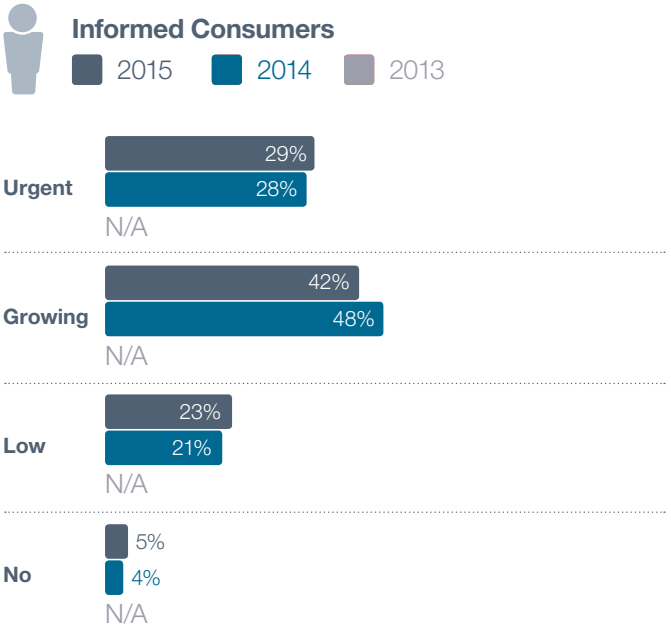


SURVEY RESULTS

Cybersecurity / Physical Attacks

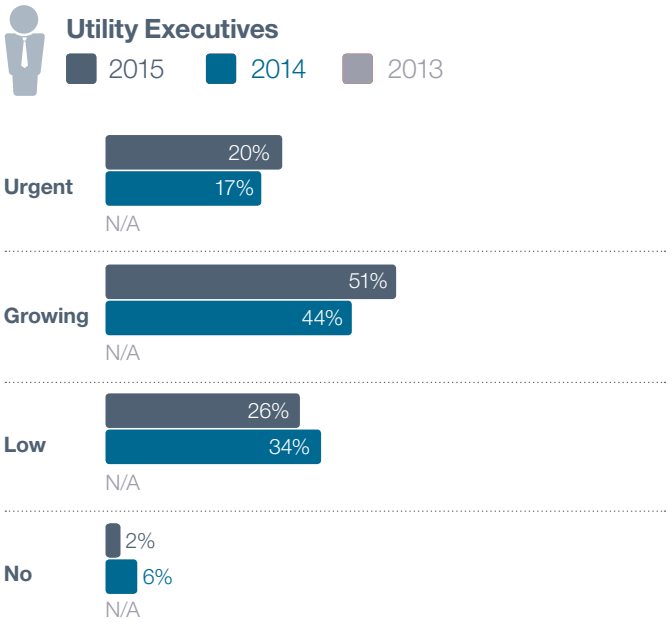
To what degree are physical and cyber-attacks a concern of the utility industry?





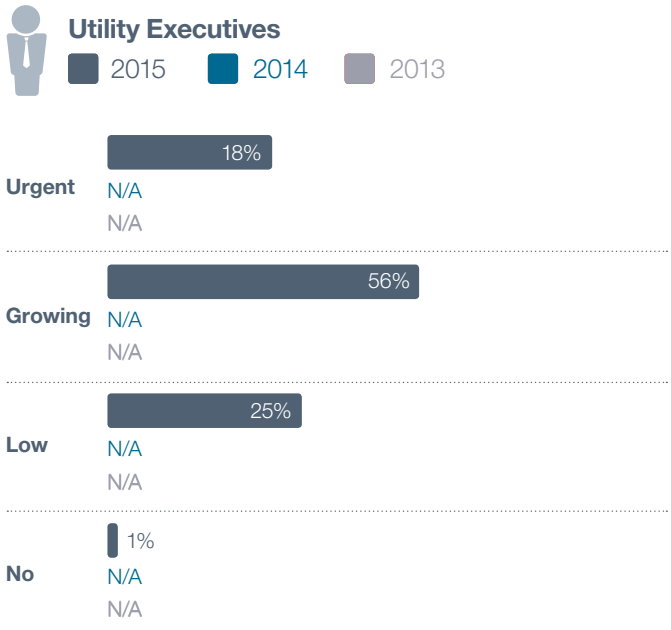
Managing a Changing Workforce

To what degree is managing the changing workforce and knowledge sharing gap a concern of the utility industry?



Changing Business Models

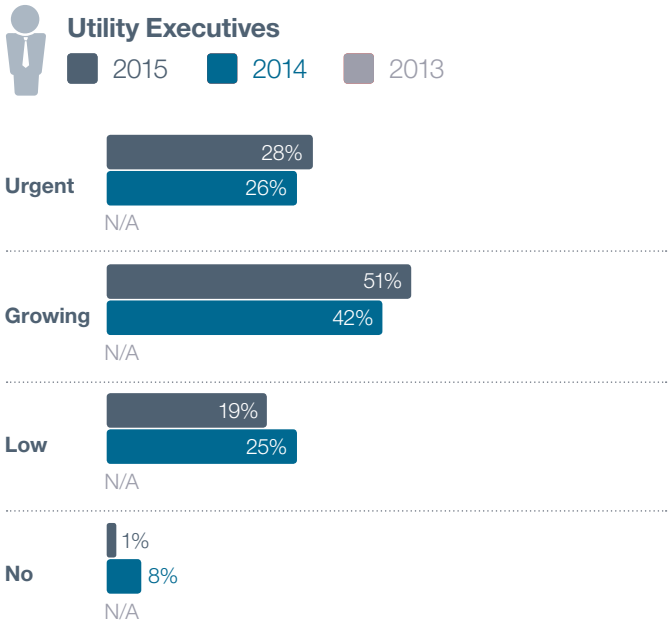
To what degree are changing business models a concern of the utility industry?

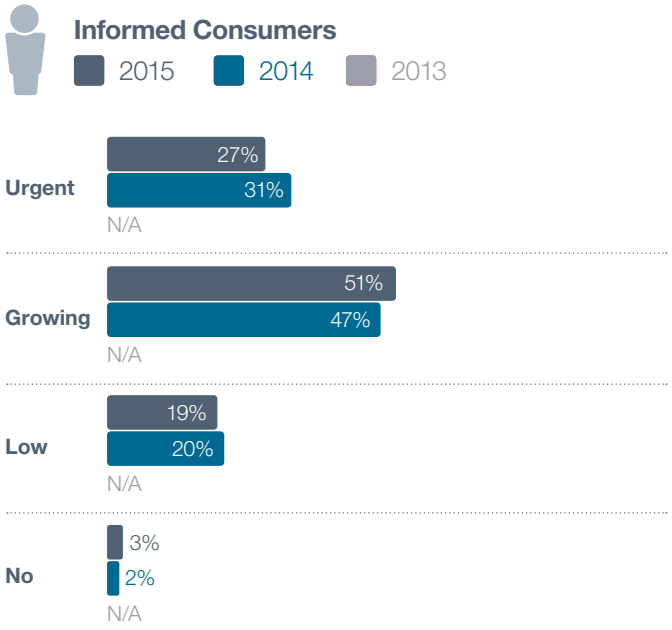


SURVEY RESULTS

Man-Made / Natural Disasters

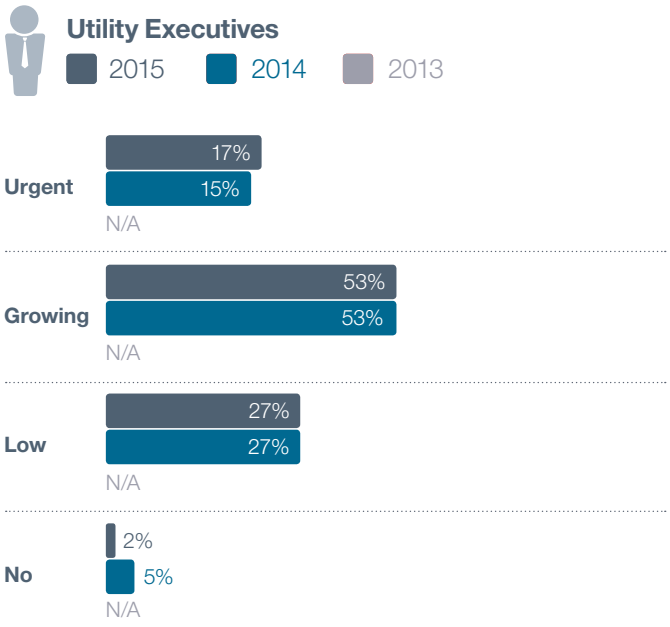
To what degree are man-made or natural disasters a concern of the utility industry?

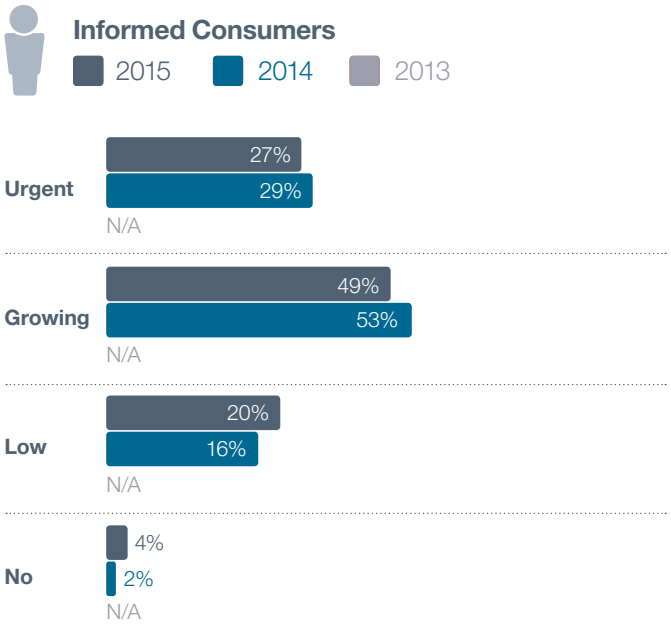




Changing Customer Expectations

To what degree is the inability to manage changing customer expectations a concern of the utility industry?

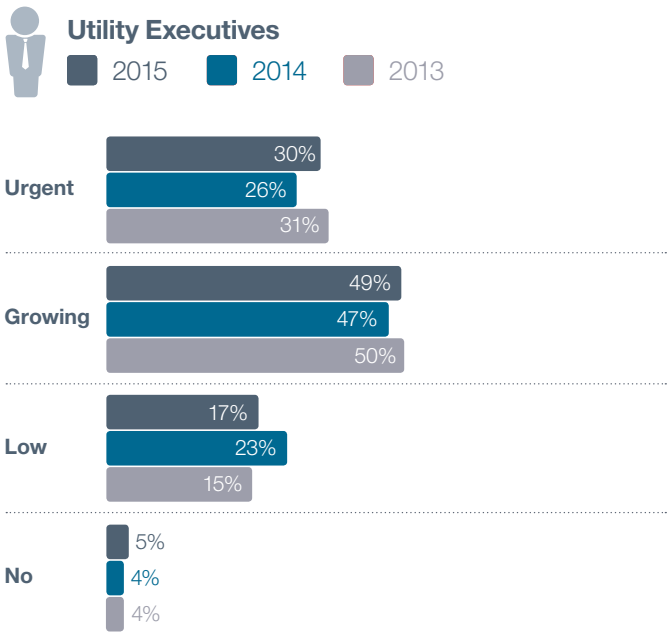


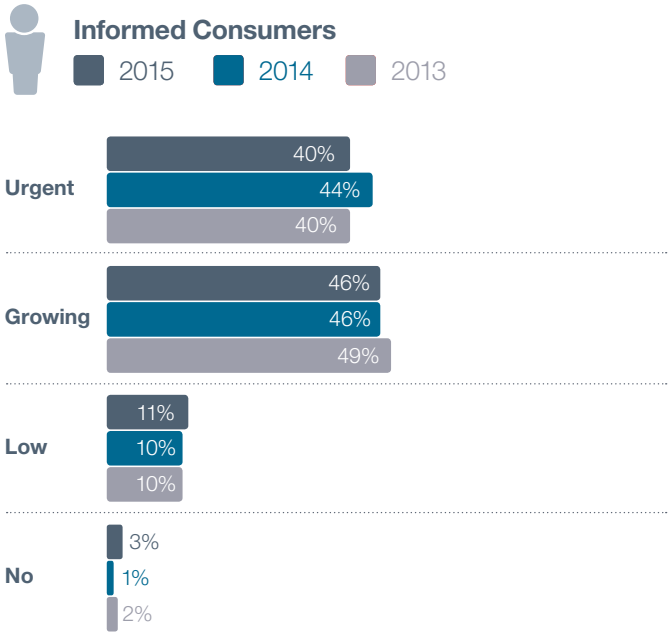


SURVEY RESULTS

Availability of Resources

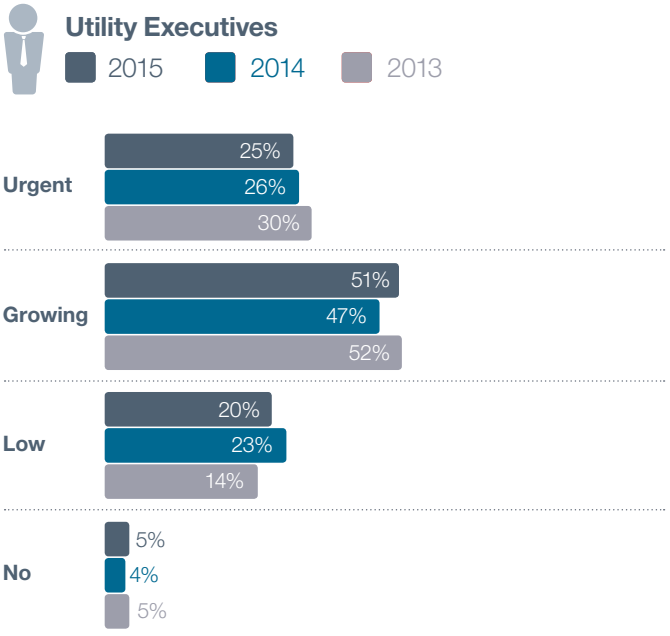
To what degree is accommodating new sources of energy and water a concern of the utility industry?

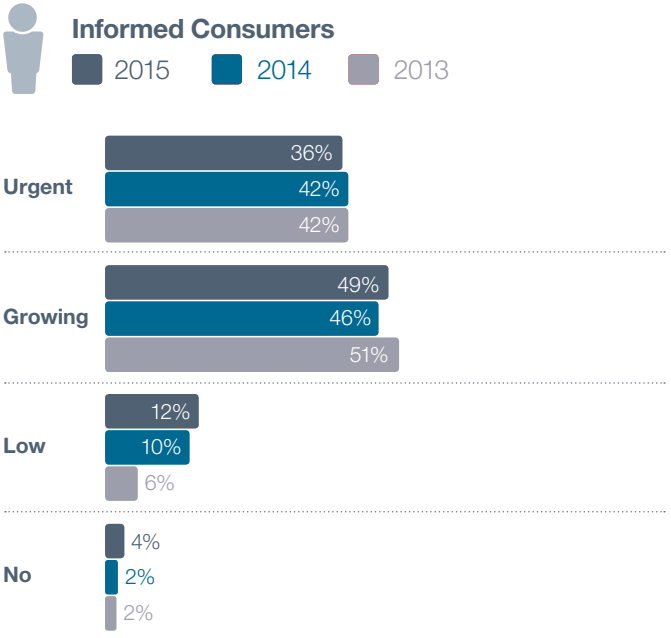




Supply of Resources

To what degree is supplying customers with reliable energy and water a concern of the utility industry?

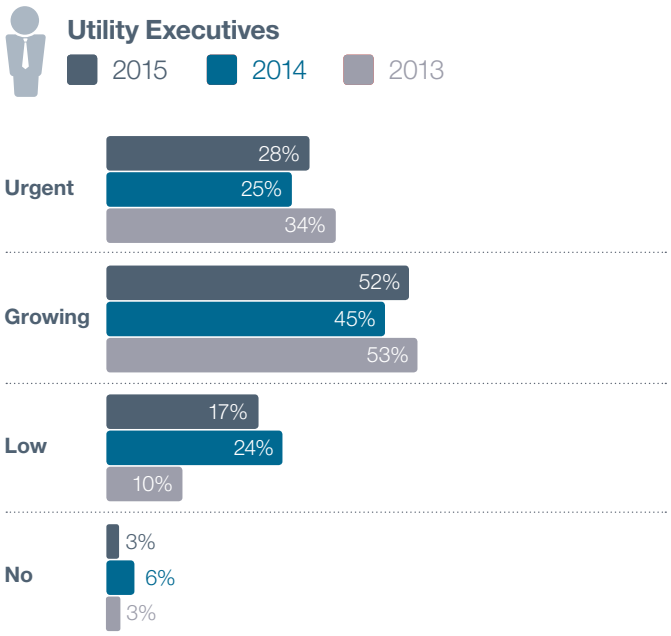


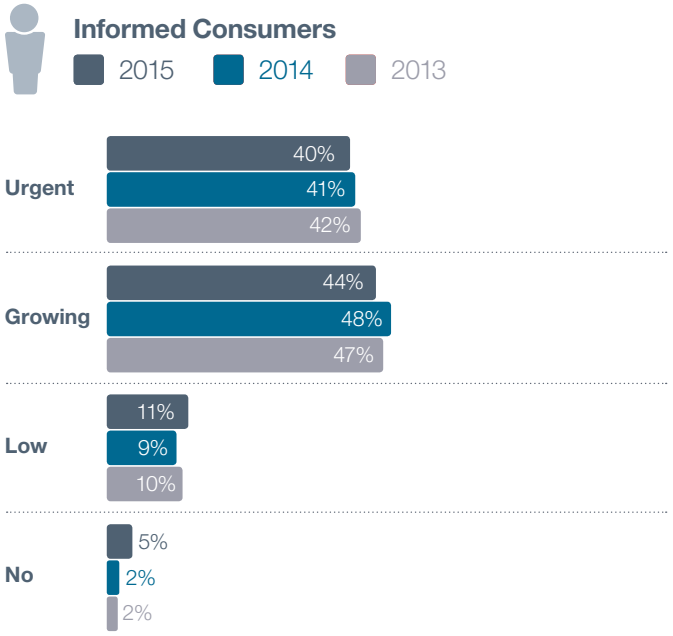


SURVEY RESULTS

Infrastructure Investment

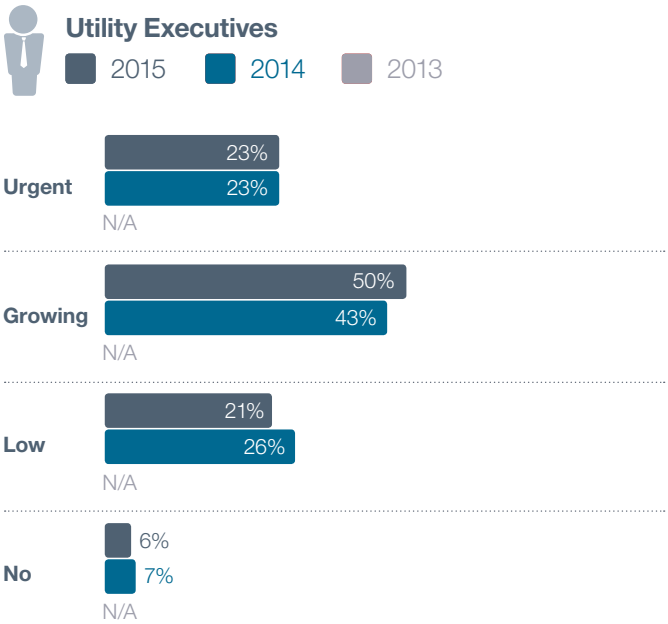
To what degree is the low rate of investment in infrastructure a concern of the utility industry?

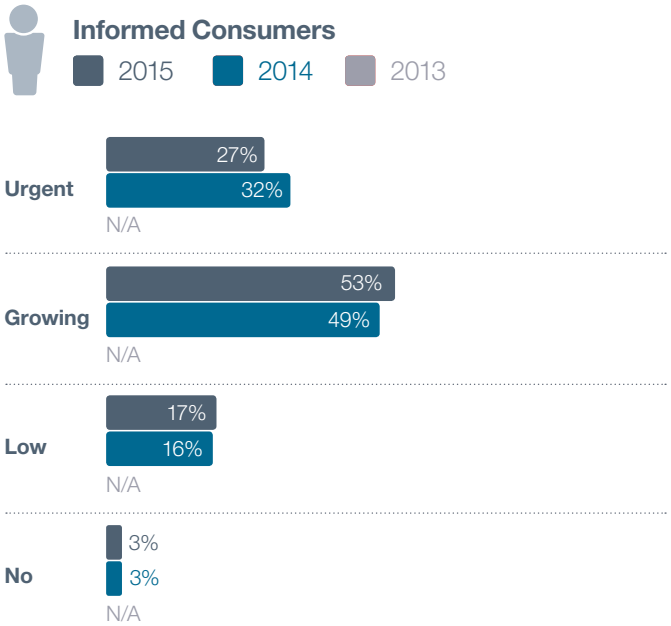




Emerging New Technology

To what degree is the increasing pace of technology innovation (e.g. Internet of Things, smart meters, sensors, data management systems) a concern of the utility industry?

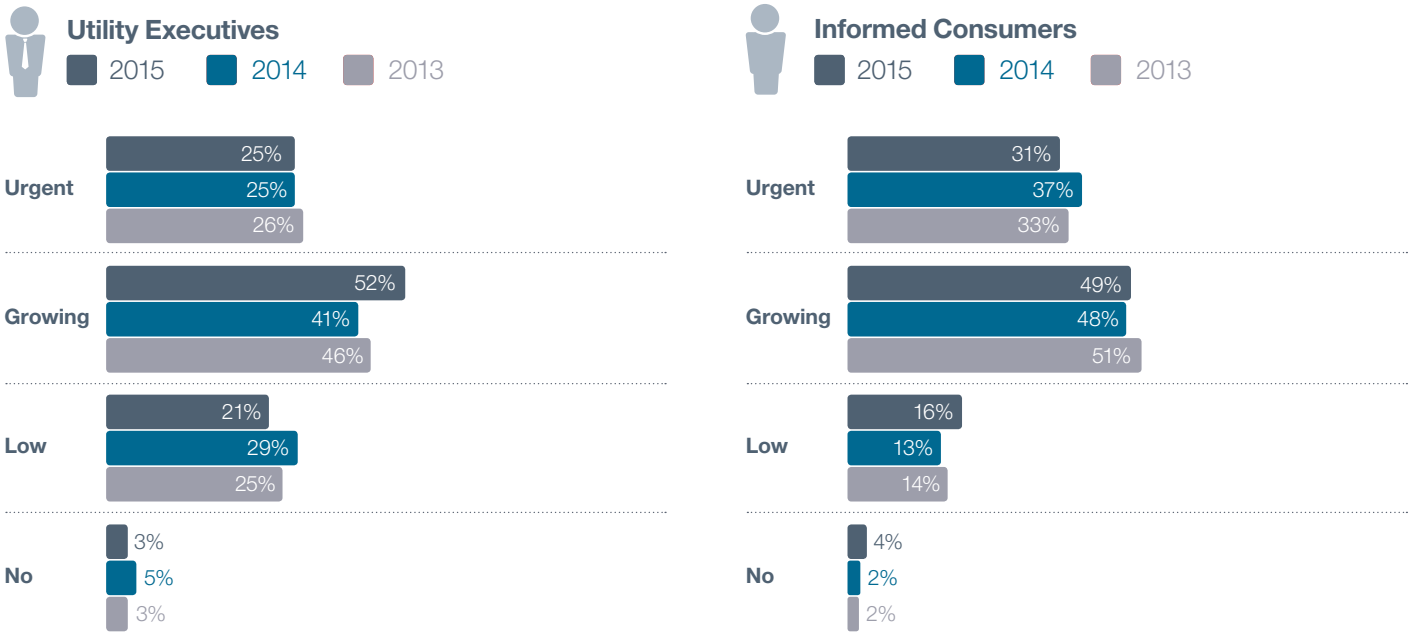




SURVEY RESULTS

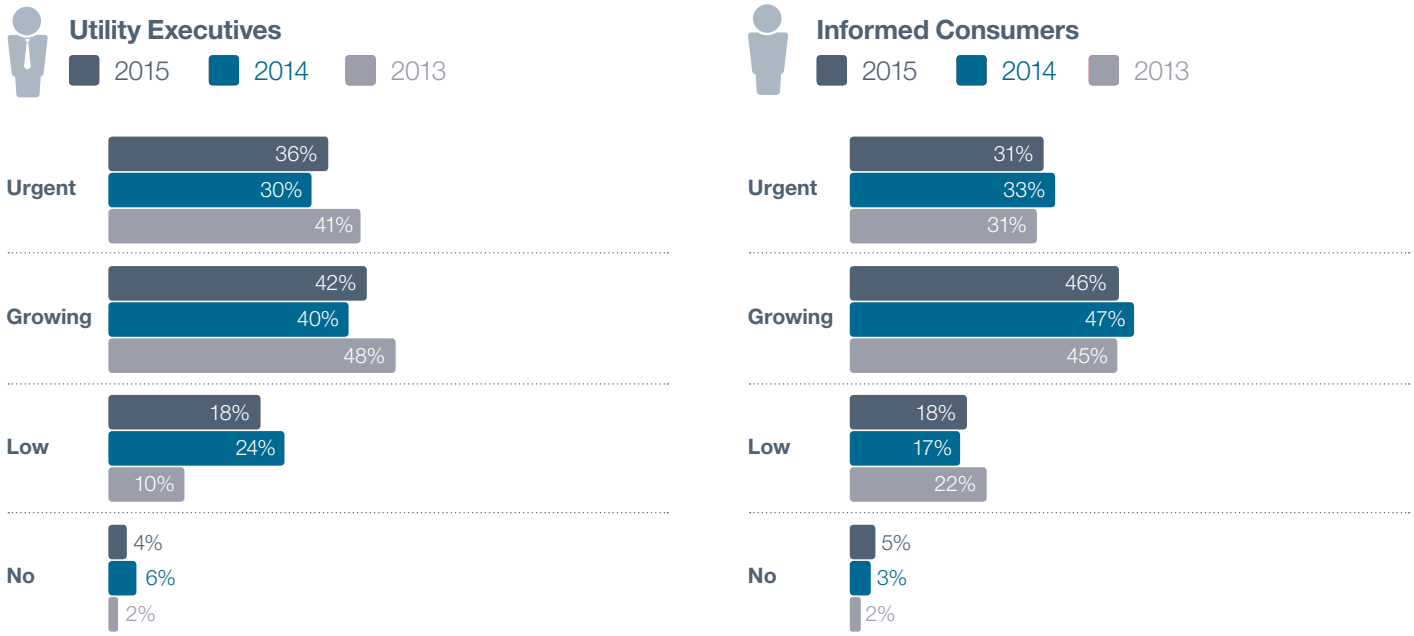
Consumer Education

To what degree is the lack of consumer education about consumption and conservation a concern of the utility industry?



Government Regulation

To what degree are new (or potentially new) government regulations a concern of the utility industry?



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