

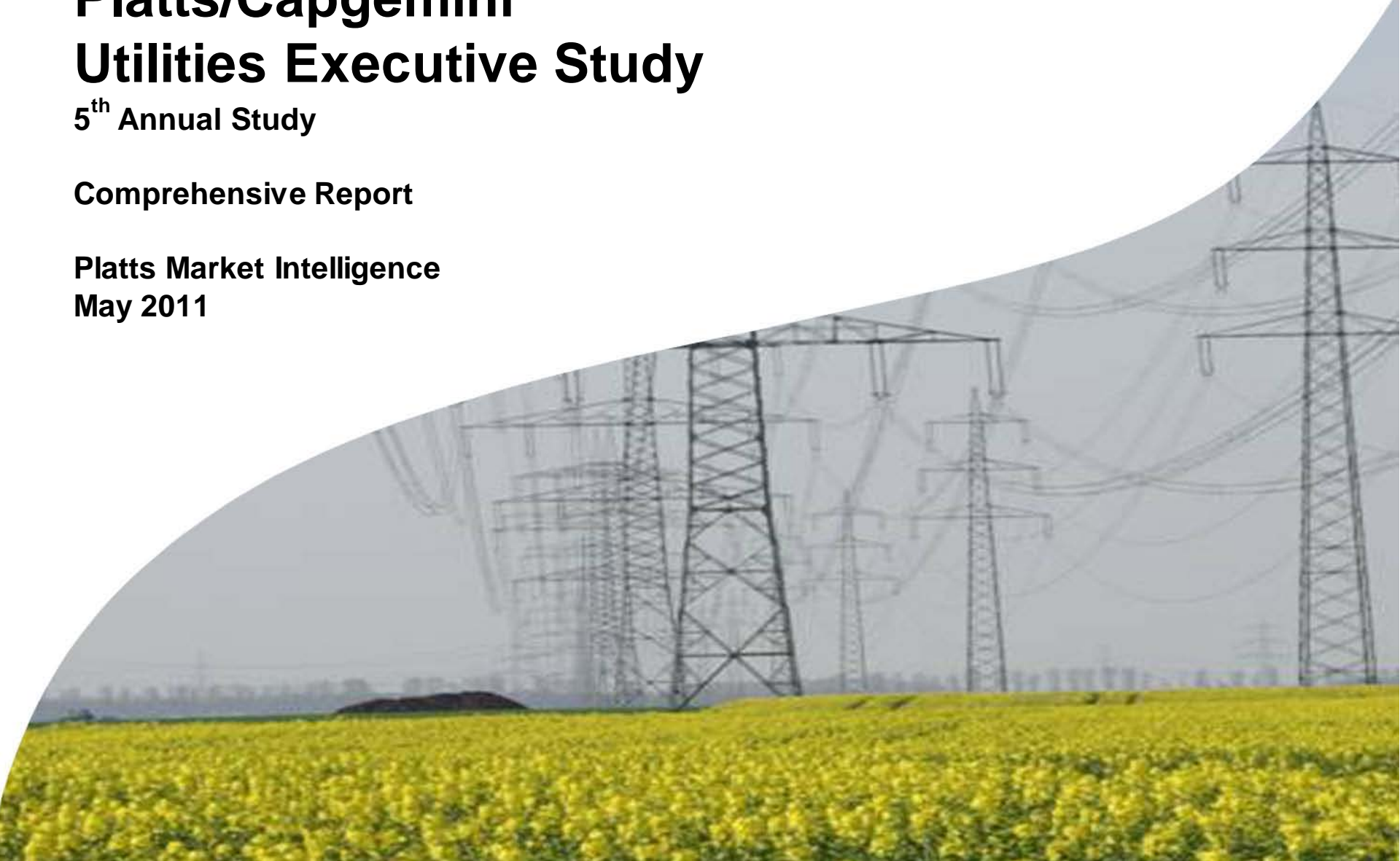


# **Platts/Capgemini Utilities Executive Study**

**5<sup>th</sup> Annual Study**

**Comprehensive Report**

**Platts Market Intelligence  
May 2011**



# Presentation Outline

Study Background

Key Findings

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Current Industry Issues

Future Industry Trends

Strategic Planning

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# Study Background

The Platts/Capgemini Utilities Executive Study provides an overview of the electric and natural gas industry from executives throughout North America. The study was conducted in two phases. Phase I, conducted from October to November 2010, was qualitative and consisted of in-depth telephone interviews with 24 utility executives throughout the United States and Canada. Phase II, conducted from March 2011 through April 2011, is quantitative and consists of 96 completed surveys with utility executives in the same geographic area. This report details results of both phases of the research study.

Phase I of the research was designed to identify the issues, while Phase II statistically quantifies and prioritizes those findings.

Study objectives for both phases were to (1) identify and prioritize current industry trends, (2) assess opinions about the future of the energy industry and (3) measure the steps utility companies are taking to prepare for the future.

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# Key Findings

- Environmental regulation leads the list of the five most critical issues weighing on the minds of North America's electric and gas utility leaders. Next on their list are infrastructure, non-environmental regulation, workforce and pricing/rate issues.
- Over the next 5 to 10 years, utility executives plan to increase their focus on environmental regulation, pricing/rates, end users, consumer technologies such as electric vehicles and energy-efficient appliances, and infrastructure.
- 80 percent of the respondents believe the industry should create business models that support decoupling, but only a small proportion strongly agree the industry will move in this direction (12 percent).
- Nearly three-fourths (72 percent) of the executives report they are currently involved or have been involved in rolling out smart meters to their customers, and 26 percent of those report that a significant number (between 21 and 60 percent) of their customers have smart meters installed.
- Asked to rank their most important strategic planning issues, the respondents' rated (in order) operation and maintenance (O&M) cost-reduction, new pricing policies and leveraging smart grid technology most highly.

# Key Findings

- The industry leaders anticipate their companies will increase the use of wind, solar, and natural gas in their overall fuel mix within the next 5 to 10 years. Over the same period, the majority of executives at utilities with coal generation expect to decrease their use of coal as a fuel source.
- More than half (60 percent) of the surveyed executives strongly agree that utilities need to embrace the concept of proactively engaging with their customers, i.e. move away from viewing them as merely rate-payers.
- They also strongly agree (55 percent) that utilities will have to focus more on system- and cyber-security and that utilities need to be more media-savvy and more involved in public relations (46 percent). One concern for utility executives is how best to communicate and educate end users about the costs of green energy.

# Notable Quotes

*It's a difficult challenge to educate the customer and yet not be seen as opposing [being environmentally friendly]. We are happy to do it if our customers can afford it. But what we see with the environmental costs with the transition coming, with renewable energy coming, we see a capital need that drives rate increases that we just think customers are not going to be able to handle. That is our underlying concern: How do we communicate that cost to customers? That's the challenge without being seen as anti-environmental.*

*Where are we going to end up with climate? Is CO<sub>2</sub> really going to be the issue? Renewables? ... Is distributed generation going to take place? There are a lot of unknowns and which way do you go down?*

*A cleaner source of energy .... who is going to pay for those investments and how do the shareholders get protected?*

*We are hitting that next stair step [of infrastructure build]... the financial market is not there to support it, first of all because of the economy, and secondly because of the reluctance in the regulatory arena to get the kind of rate structure and rate relief we really need for that kind of capital. I think one of the industry's, and even from the whole country's perspective, a big question that is going to have to be answered is: Who is going to finance this stuff? Where is the money going to come from?*

# Notable Quotes

*You're still going to have problems with regard to transmission and that's also going to put pressure on rates. Transmission constraints are real. And construction is really problematic. The same way with gas pipeline transmission. I think you will see most of the build-outs will be through existing right of ways. ... It's going to be really difficult. It's going to be fought tooth and nail and litigated to a large extent.*

*It's getting to a point where to be compliant you almost can't do anything. The regulations are just coming out in volumes and the level of detail on them is quite extensive. ... The regulations and everything on transmission and the compliance requirements are just increasing in logarithmic form. I'm having to add staff just to keep up with the regulation and compliance that they pump out, and I'm wondering how much security is that really providing.*

*The company has to deal with the replenishment of qualified professionals, individuals to come in, particularly at the technical level to back fill. We've got this big bubble of the boomer that are at or near retirement age. So there is a scramble to get some business continuity. ... I think it's going to be a point at which we really may face some severe constraints in the availability of a competent workforce.*

*We have the technology today to do real-time energy pricing. The #1 problem we have today in the country is that we don't treat energy, gas or electricity, like a typical product because we don't send real-time price signals. ... We have the technology today to send price signals. But the regulatory issues would have to change, the tariffs would have to change.*



# Notable Quotes

*I think that there is not a focus on reliability and I think there needs to be a focus on reliability.... I think there [also] needs to be a greater focus on the security of our electric grid. ... Physical security, protecting the reliability of the grid in that regard is probably something that needs more attention. It's a sad world to say that but it probably does need some additional focus in the future.*

*Full implementation of an AMI system [depends on] extensive testing of consumer acceptance of dynamic pricing, which control technologies customers find useful and accept, testing grid storage devices. Other "smart grid" issues will be considered/implemented at a future date when these foundation aspects are tested and working.*

*I know it [consumers using smart meter information] will change because we know so little about how customers will interact with new technology. What the change is I can't predict.*

*The government will have to mandate it. ... It's very hard to make an economic case for it right now up front. The payback is long term and you really have to force some level of standardization, common protocols across the systems to make it happen and get people comfortable with it.*

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# Methodology

Executives had to be part of the senior management team at their company in order to participate in the survey. The companies were required to be electricity and/or natural gas utilities located in the United States or Canada.

Utility executives received a letter, as well as an email, inviting them to participate in the study. Potential respondents received up to two letters in the mail.

Lists for the study were obtained from (1) *Platts UDI Directory of Electric Power Producers and Distributors*, (2) lists from Capgemini and (3) lists from Platts conferences.

## Phase I

- Consisted of 24 qualitative interviews conducted between October 2010 and November 2010.
- Interviews averaged 45 minutes in length.

## Phase II

Consisted of a quantitative online survey with 96 completed responses.

The survey was deployed from March 1, 2011 to April 28, 2011.

- Most survey questions were asked on a 10-point scale, where 10 was the highest response and 1 was the lowest. All response categories were rotated randomly to avoid order bias.
- When reporting results we have shown both the “Top 2 Box” score, which represents the percentage answering a 9 or 10, and the average (or mean) score across the entire 1- to 10-point range.
- “Don’t know” and “No answer” responses are excluded from calculations of percentage and mean scores unless noted.

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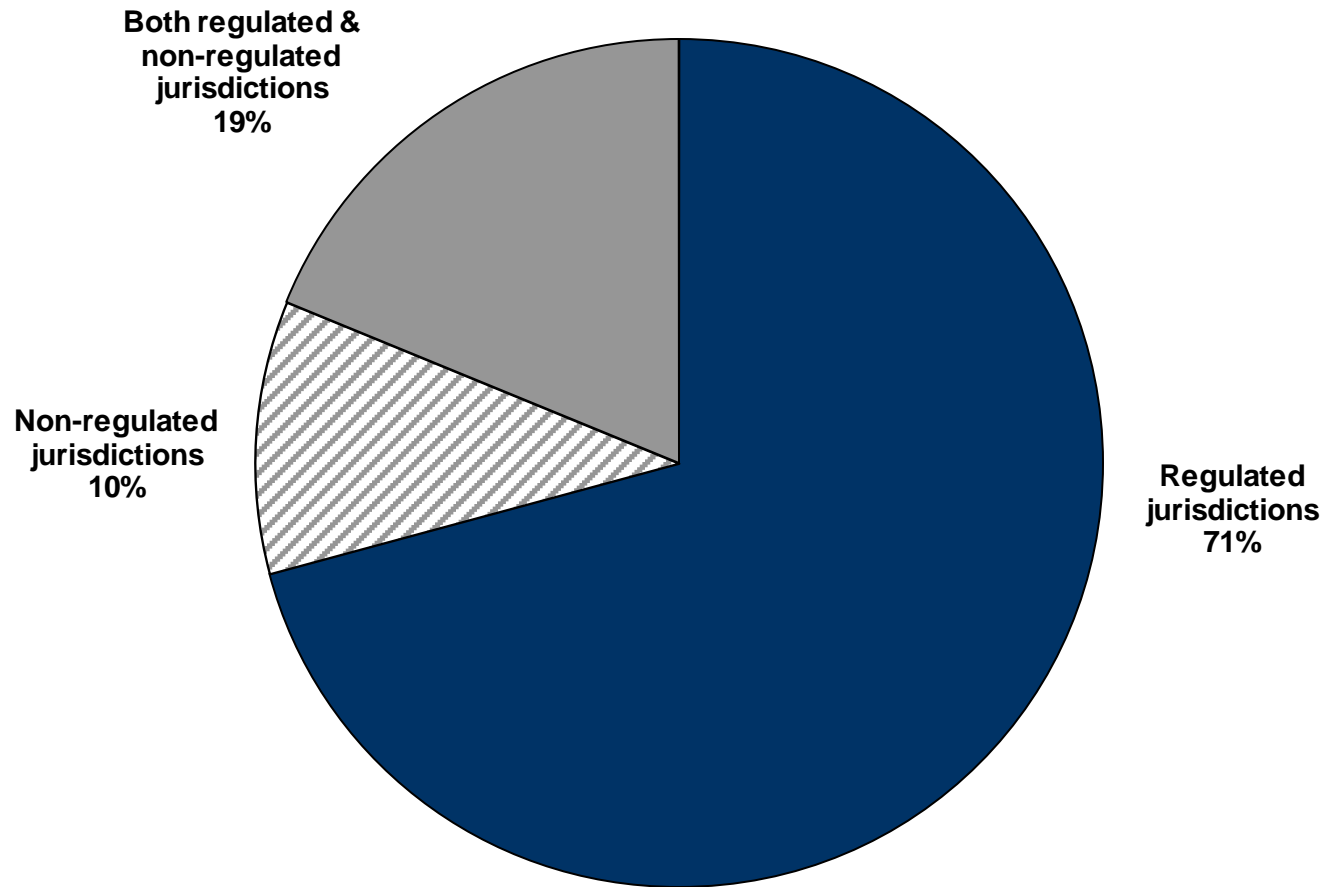
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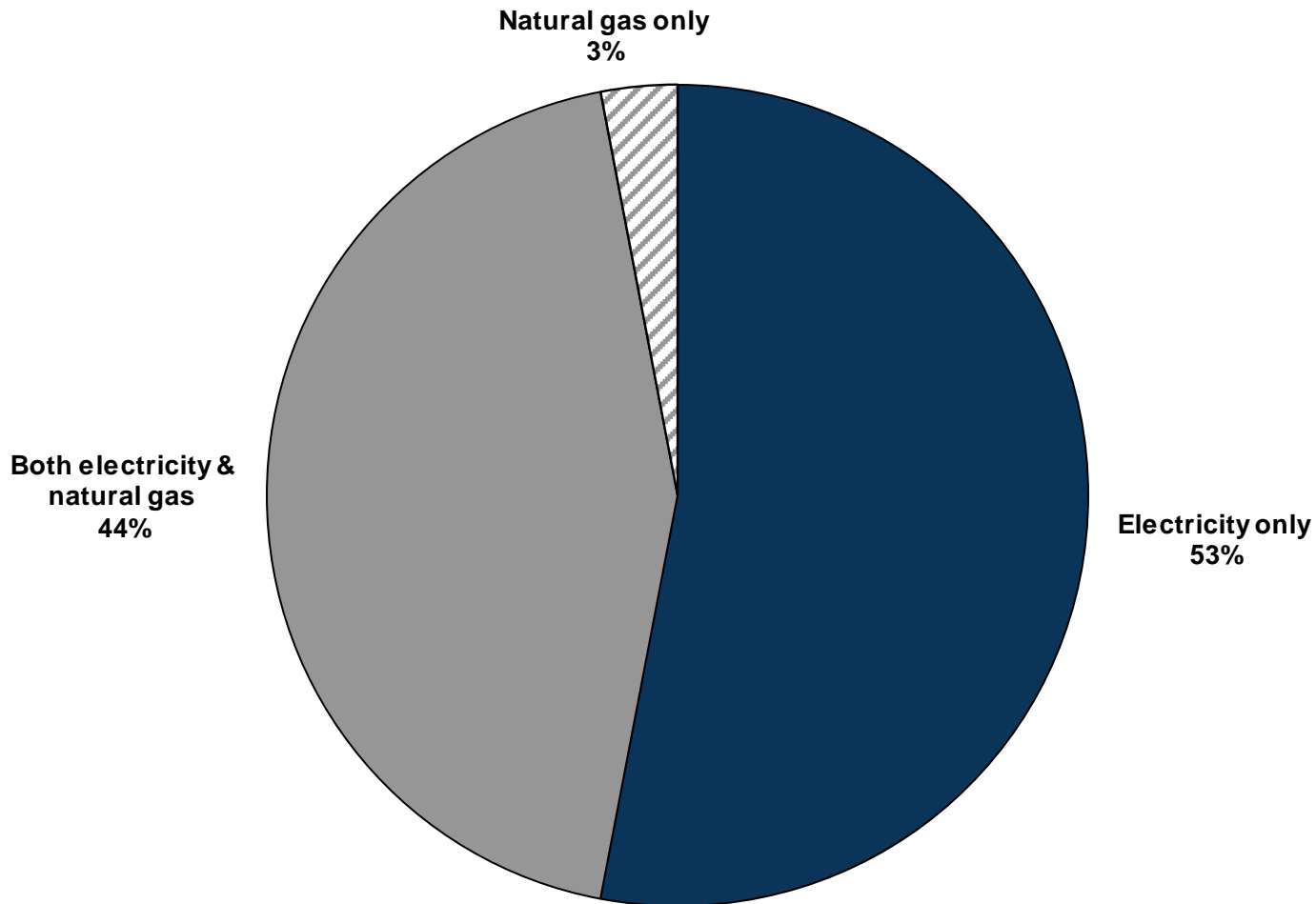
Appendix

# Jurisdiction of Organization



Base: Total sample (n=96)  
Question A1: Does your organization operate primarily in...

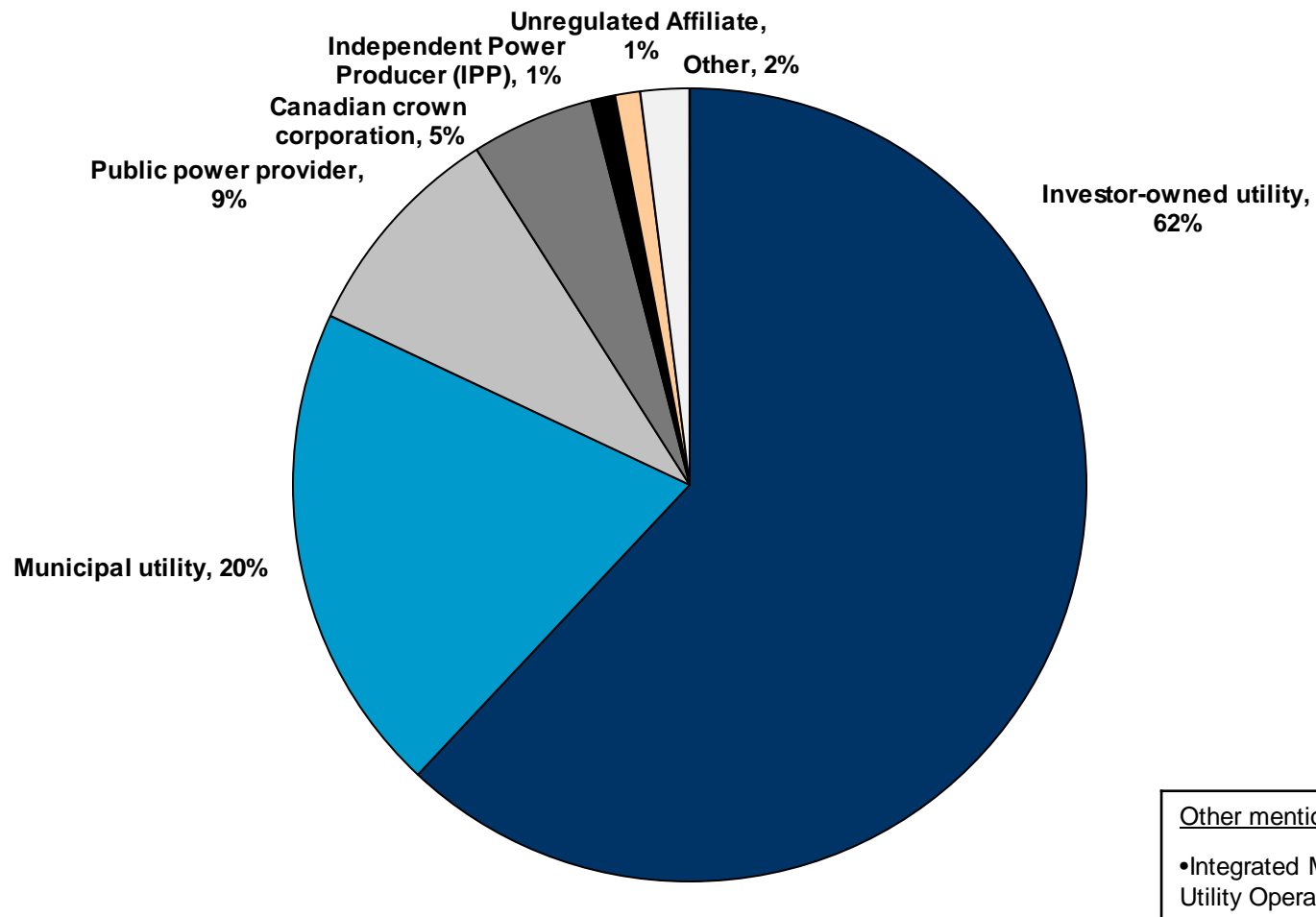
# Type of Energy Provided



Base: Total sample (n=96)

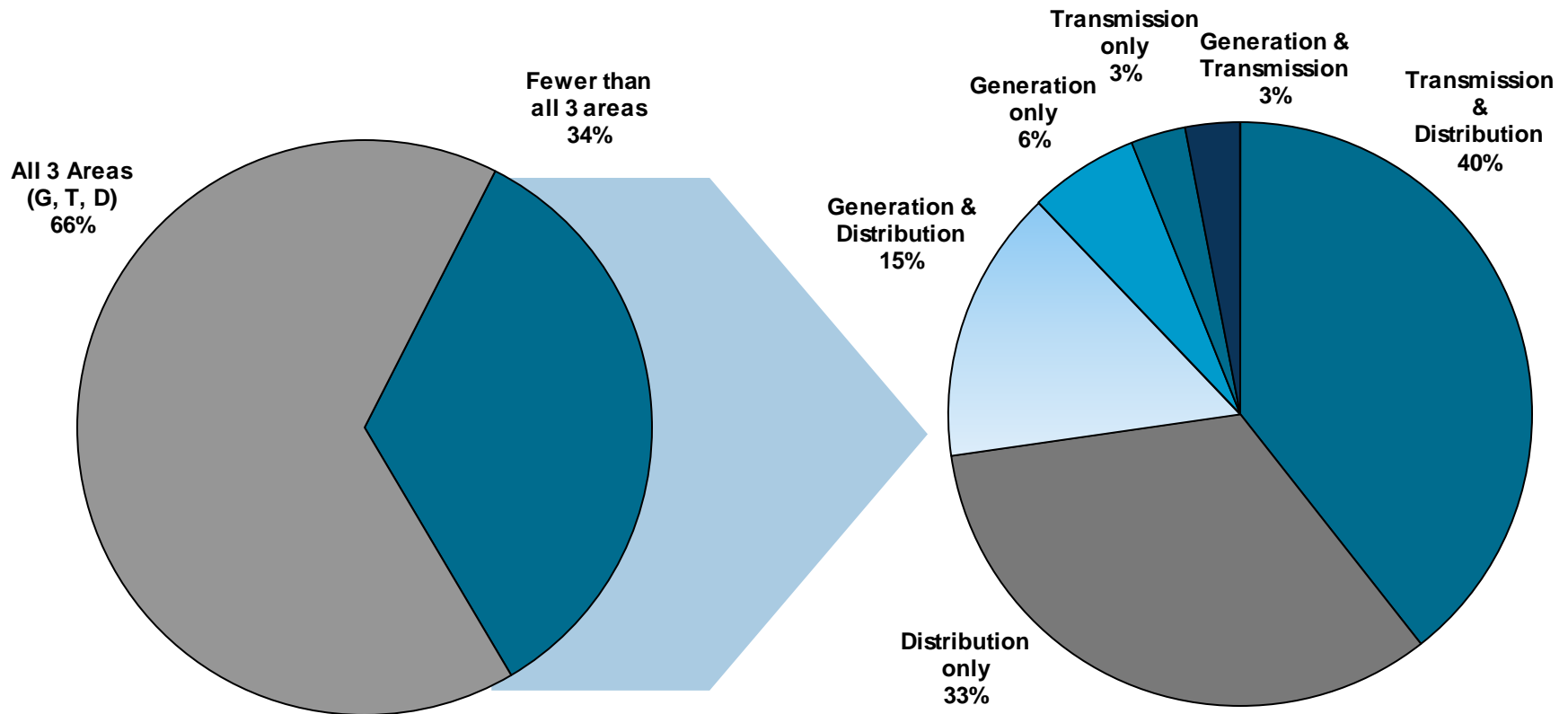
Question S1: Does your company provide electricity, natural gas, or both electricity and natural gas to retail customers?  
Anyone answering "none of the above" was terminated from the survey.

# Type of Organization



Base: Total sample (n=96)  
Question A3: Which of the following best describes your organization?

# Organization's Areas of Operation

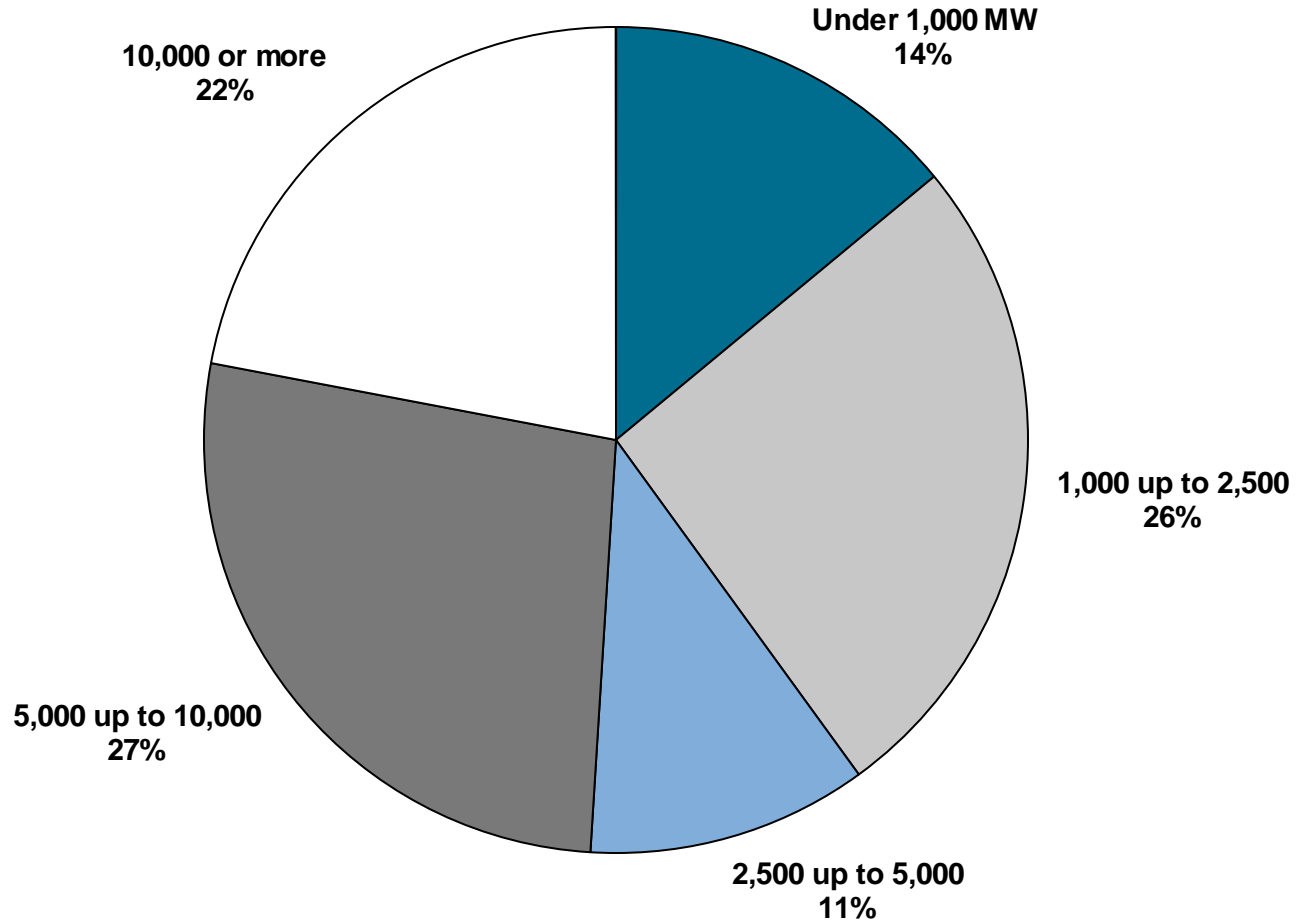


Base: Total sample (n=96)  
 Question A2: Which areas does your company operate?  
 (Please check all that apply.)

Base: Total sample (n=33) Caution small base size  
 Question A2: Which areas does your company operate?  
 (Please check all that apply.)  
 Filtered by those who do not have all 3 areas G, T, and D (n=33)  
 Two cases recoded



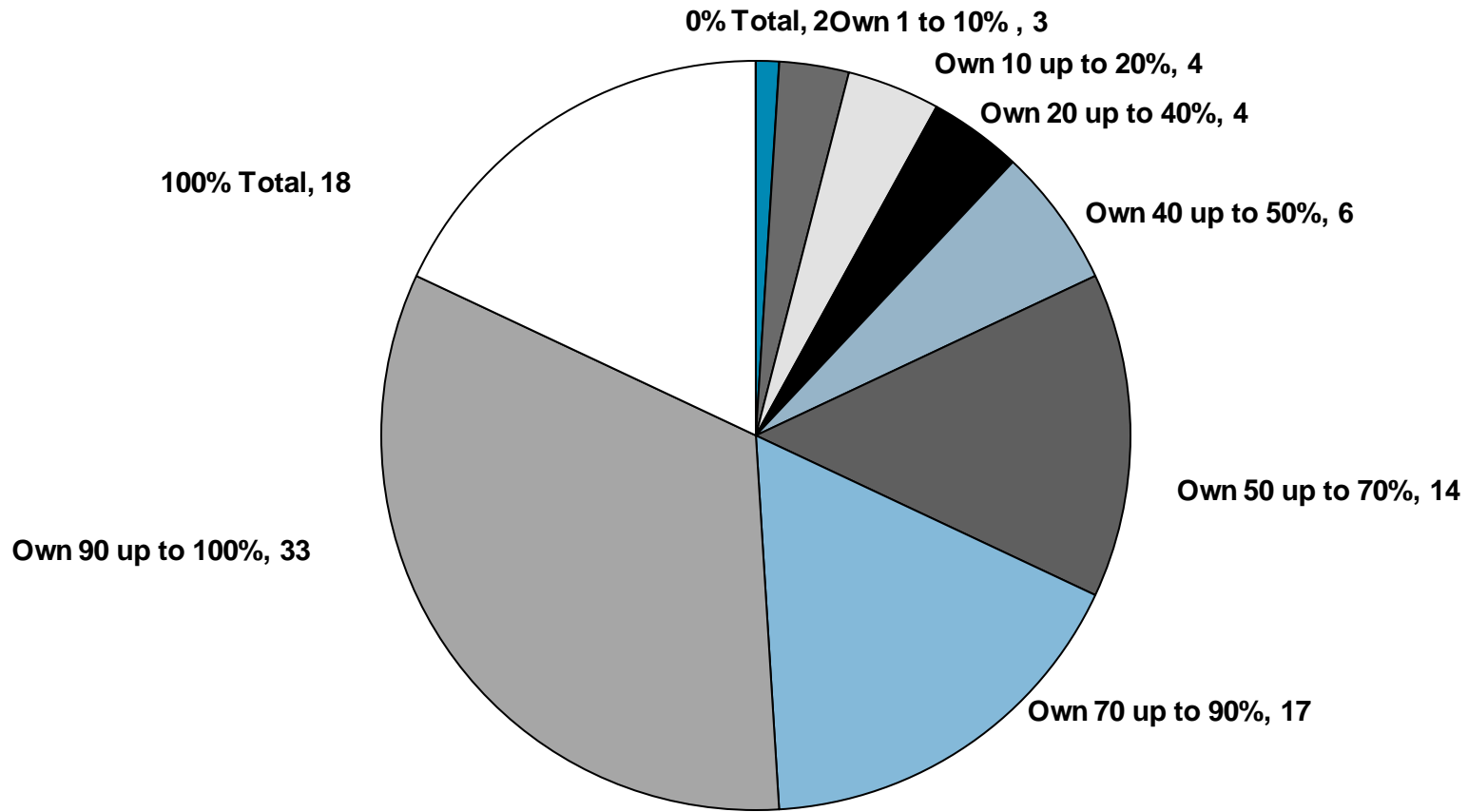
# For those with Generation: How many Megawatts?



Base (n=70) "No Answer" is excluded (n=2); Total sample (n=96).

Question A5: If you have generation, how many megawatts of generation does your organization have? (Please check only one.)

# For those with Generation: What percentage do you own as opposed to have under contract?

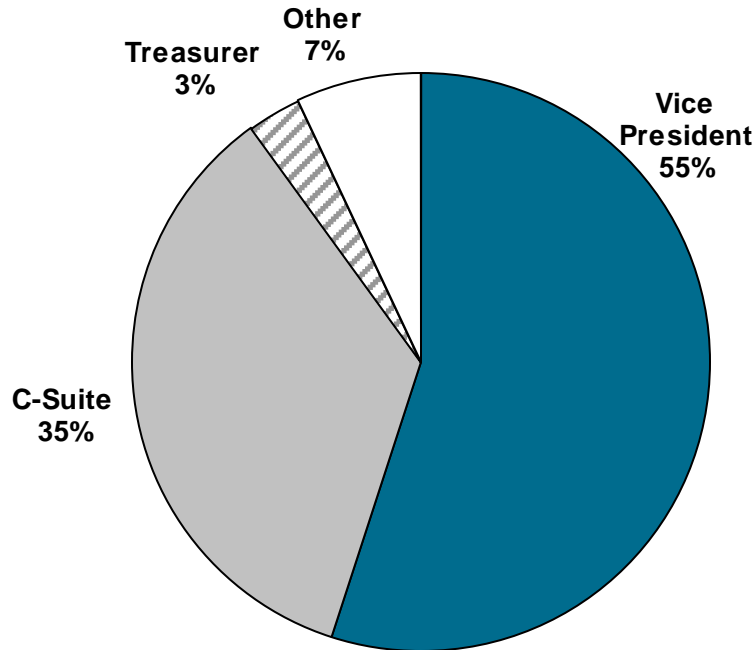


Base (n=72) "No Answer" is excluded. Total sample (n=96).

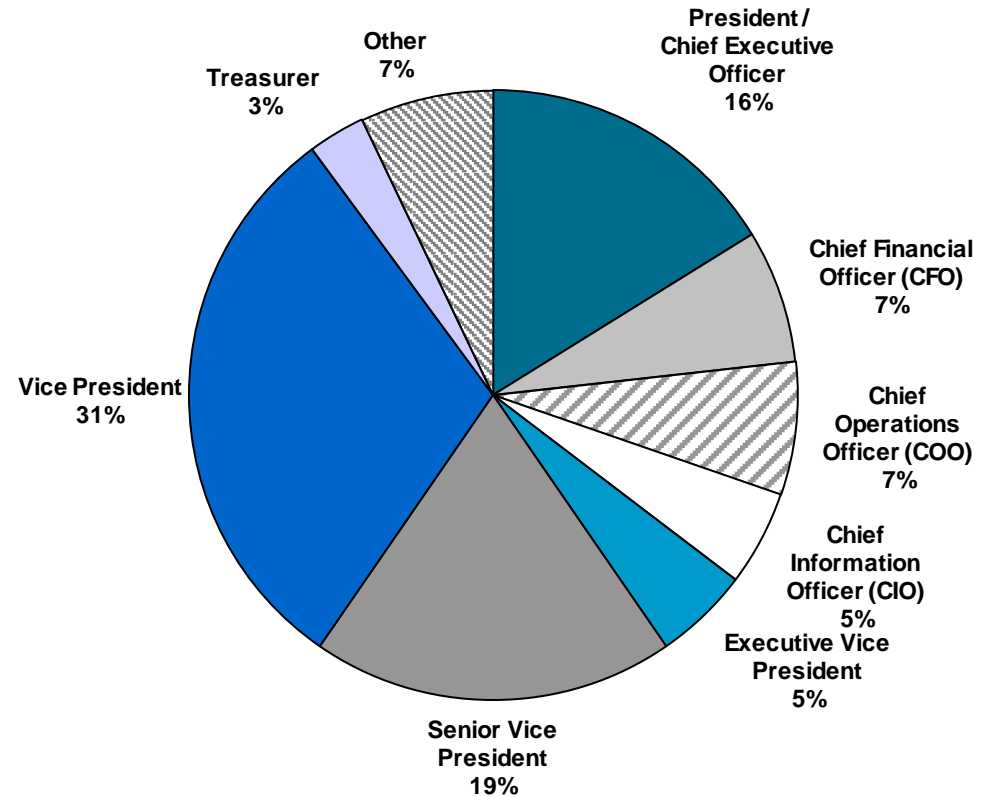
Question A6: If you have generation, what percentage of generation do you own (as opposed to have under contract)? (Please check only one.)

# Role Within Organization – Summary & Detail

## Summary



## Detail



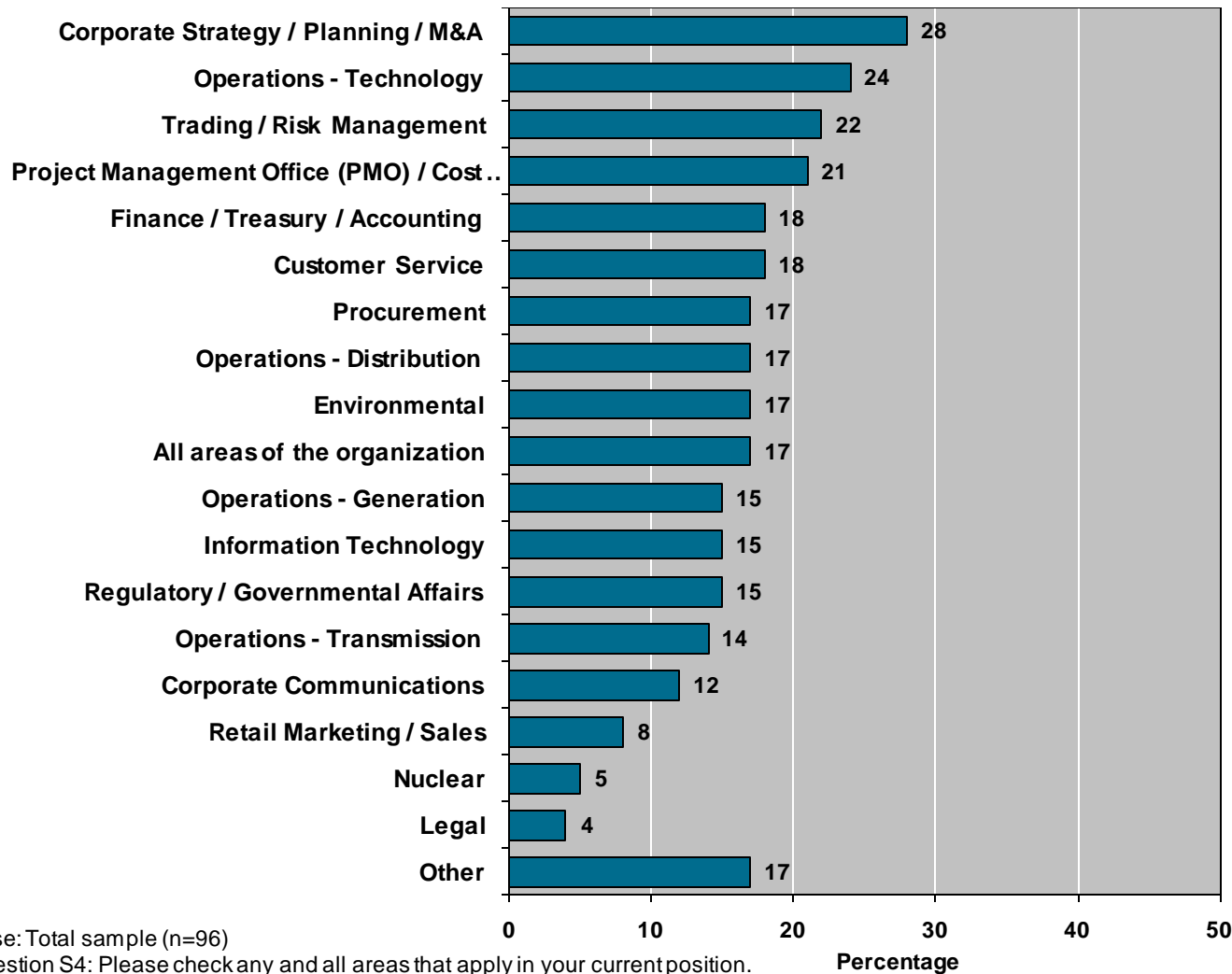
Other mentions include:

- Chief Risk Officer
- Division President
- Manager on behalf of Senior VP

Base: Total sample (n=96); "No Answer" is excluded.

Question S3: How would you characterize your role within your organization? Note May not sum due to rounding

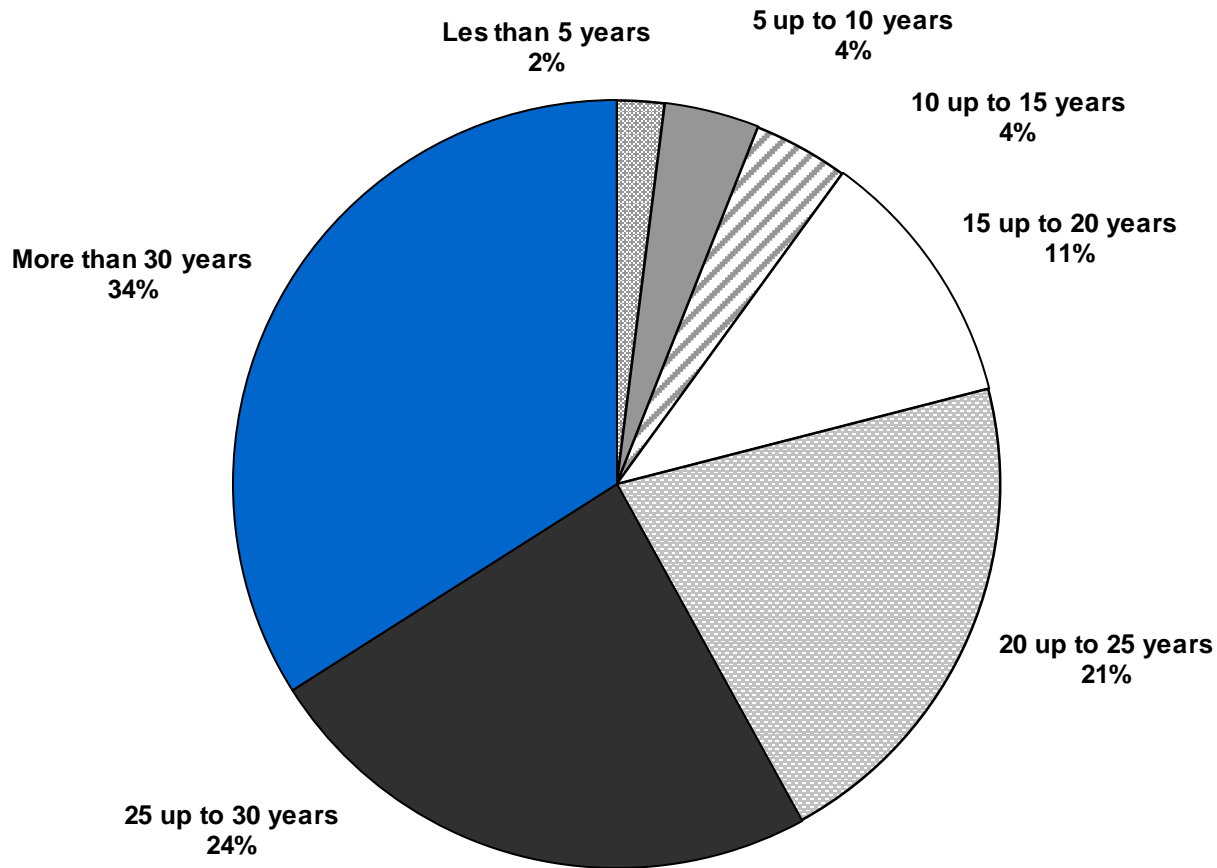
# Areas of Responsibility



Other mentions include:
• Audit, Ethics & Compliance and Corporate Safety
• Distributed Energy Services
• Energy efficiency and demand response
• Energy Efficiency, Supply Chain
• Fuels & Fossil Gen Engineering
• HR
• HR, Facilities
• Internal Audit and Insurance
• Large Strategic Projects
• Supply
• Corporate governance, issues management, etc.
• Water supply, engineering, and operations
• Public Communications
• Power supply, Transmission contracts, Rates, NERC, Compliance

Base: Total sample (n=96)  
 Question S4: Please check any and all areas that apply in your current position.  
 (Respondent could select >1 response.)

# Years in the Energy Industry



Base: Total sample (n=96); No answer not included.  
Question Y1: How many years have you worked in the energy industry?

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# The Current State of the Industry – Definitions (Page 1 of 2)

The first section of the quantitative survey asked executives to identify the three most important issues facing the electricity and natural gas industries today. Each participant could select from a list of the 13 issues identified in the qualitative phase of research. Alternatively participants could add new issues.

The items tested are below and on the following slide:

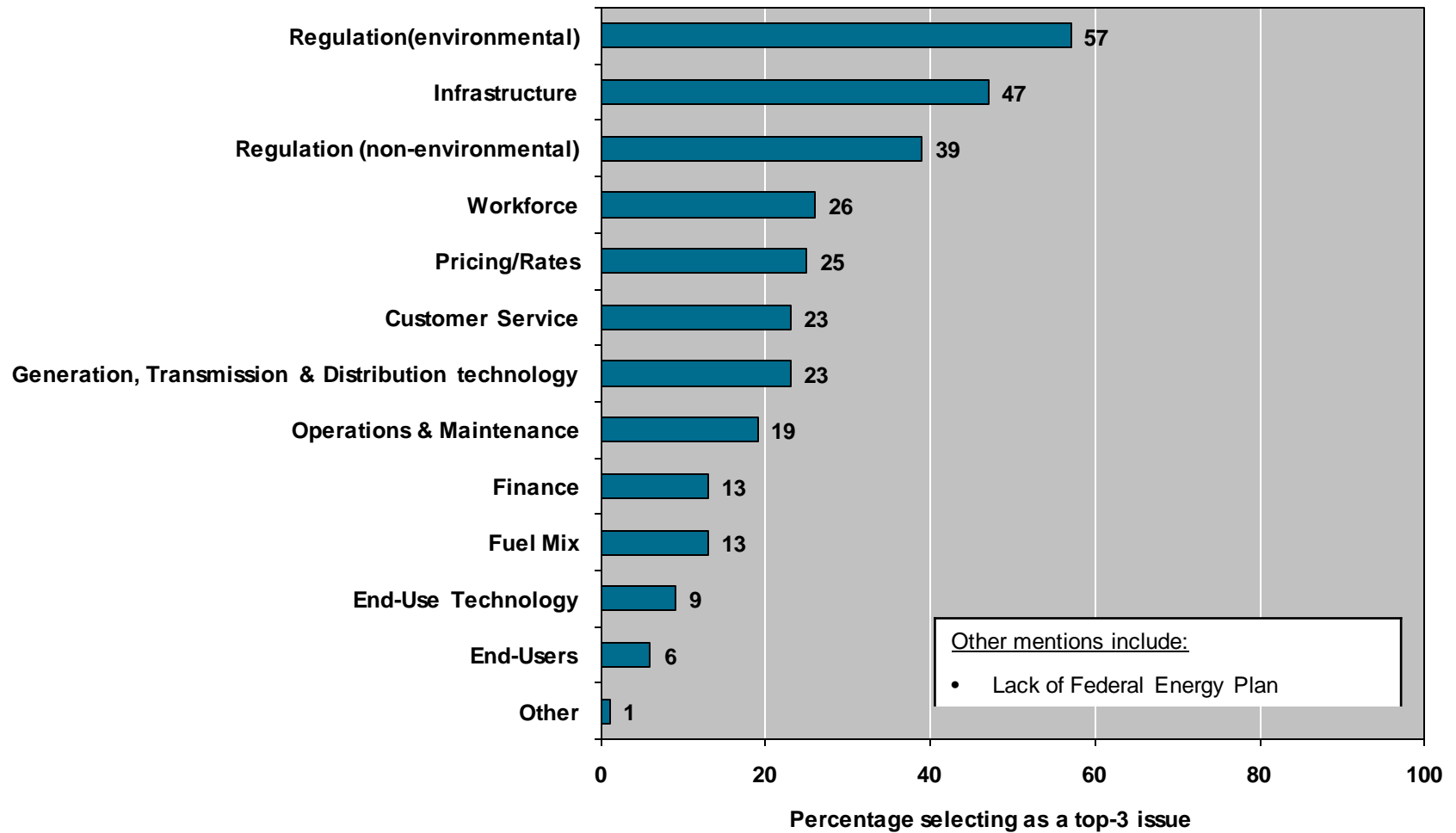
- **Regulation (environmental)** (e.g. emission/ carbon requirements, cap and trade, environmental standards, Renewable Portfolio Standards (RPS), increasing environmental advocacy and awareness, uncertainty, Federal oversight, government stimulus)
- **Regulation (non-environmental)** (e.g. [Federal Energy Regulatory Commission](#) (FERC), Nuclear Regulatory Commission, regional transmission, Independent System Operator (ISO), complexity, jurisdictional issues, Federal oversight, compliance / reporting requirements)
- **Fuel Mix** (e.g. LNG, 'clean coal', nuclear, supply, shale gas, integrating renewables such as wind and solar, demand side resources)
- **Operations & Maintenance (O&M)** (e.g. fuel costs, price volatility, maintenance and repair costs, process improvement, salary, healthcare and pension costs)
- **Infrastructure** (e.g. costs to build and/or retrofit generation, costs for building transmission, siting and nimbyism, transmission, security, aging infrastructure, reliability)

# The Current State of the Industry – Definitions (Page 2 of 2)

- **End Users** (e.g. expectations for renewable energy, mixed knowledge of the costs related to ‘green’ energy, increasing sensitivity to power outages and fluctuations, increasing expectations for self-service and online energy management tools, changing communication requirements)
- **Regulation (environmental)** (e.g. emission/ carbon requirements, cap and trade, environmental standards, Renewable Portfolio Standards (RPS), increasing environmental advocacy and awareness, uncertainty, Federal oversight, government stimulus)
- **Generation, Transmission, & Distribution Technology** (e.g. distributed generation, smart meter, smart grid, automation, system controls, battery storage, demand response systems, clean coal technology, cyber security, gas turbine technology)
- **End-Use Technology** (e.g. electric vehicles, home energy networks, third party products & services, load control devices)
- **Workforce** (e.g. aging workforce, loss of talent, turnover, knowledge capture and transfer, training, balance between technology and human resources)
- **Customer Service** (e.g. maintaining customer satisfaction, education around cost of ‘green energy’, community outreach, focus on customer experience, energy efficiency and conservation programs, utilizing online channels for service delivery, changing communication methods via social media/twitter)
- **Finance** (e.g. raising capital, credit quality, economy, international accounting standards, M&A, liquidity, credit ratings, rate recovery, financing costs, maintaining financial health)
- **Pricing / Rates** (e.g. decoupling, time of use rates, critical peak pricing, interruptible rates)



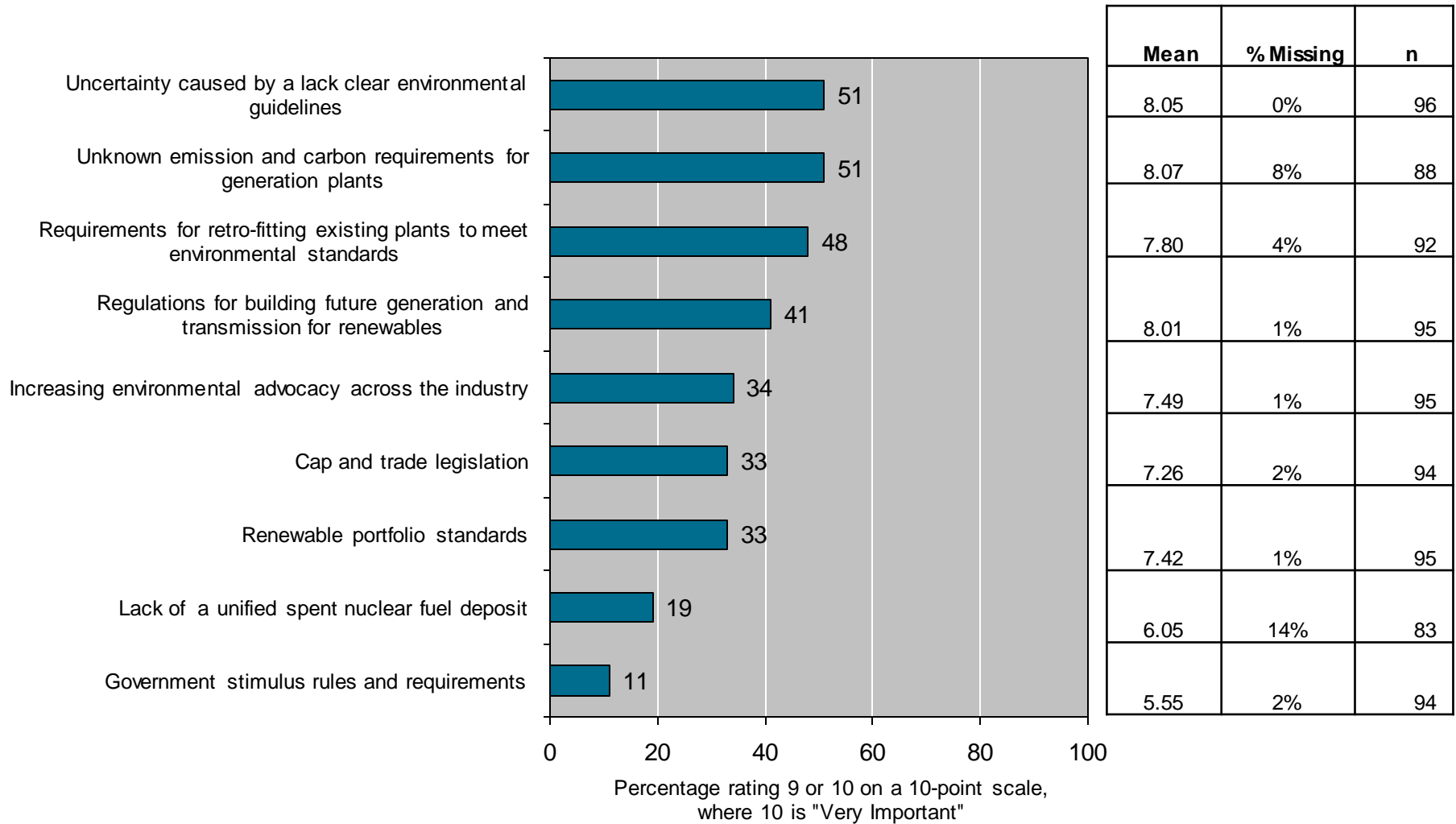
# Current Industry Issues



Base: Total sample (n=96)

Question C0: In your opinion, which are the three most important issues facing the electricity and gas industries today? Respondents can select >1 answer.

# Importance Detail Regulation - Environmental



Base: Total sample (n=96); "No Answer" is excluded.

Questions C1 to C12 (C1): On a scale of 1 to 10 where 10 means "Very Important" and 1 means "Not at all Important", please rank the importance of the following issues to the industry.

# Selected Quotes Regarding “Regulation (environmental)”

*I don't think much is going to happen on the generation side. Prices are low, there is environmental uncertainty, so I think people are going to stay put there. As a matter of fact, with the environmental regulations now, we even have more companies mothballing and very few are going to be built or come online other than the renewables.*

*I think certainly for a while there following the election of Obama, I think a lot of folks thought that the chances of getting comprehensive energy legislation were a lot higher than they are today.*

*I think uncertainty in regulation is impacting us. In [state] there isn't anything definitive on the whole renewable standard out there.*

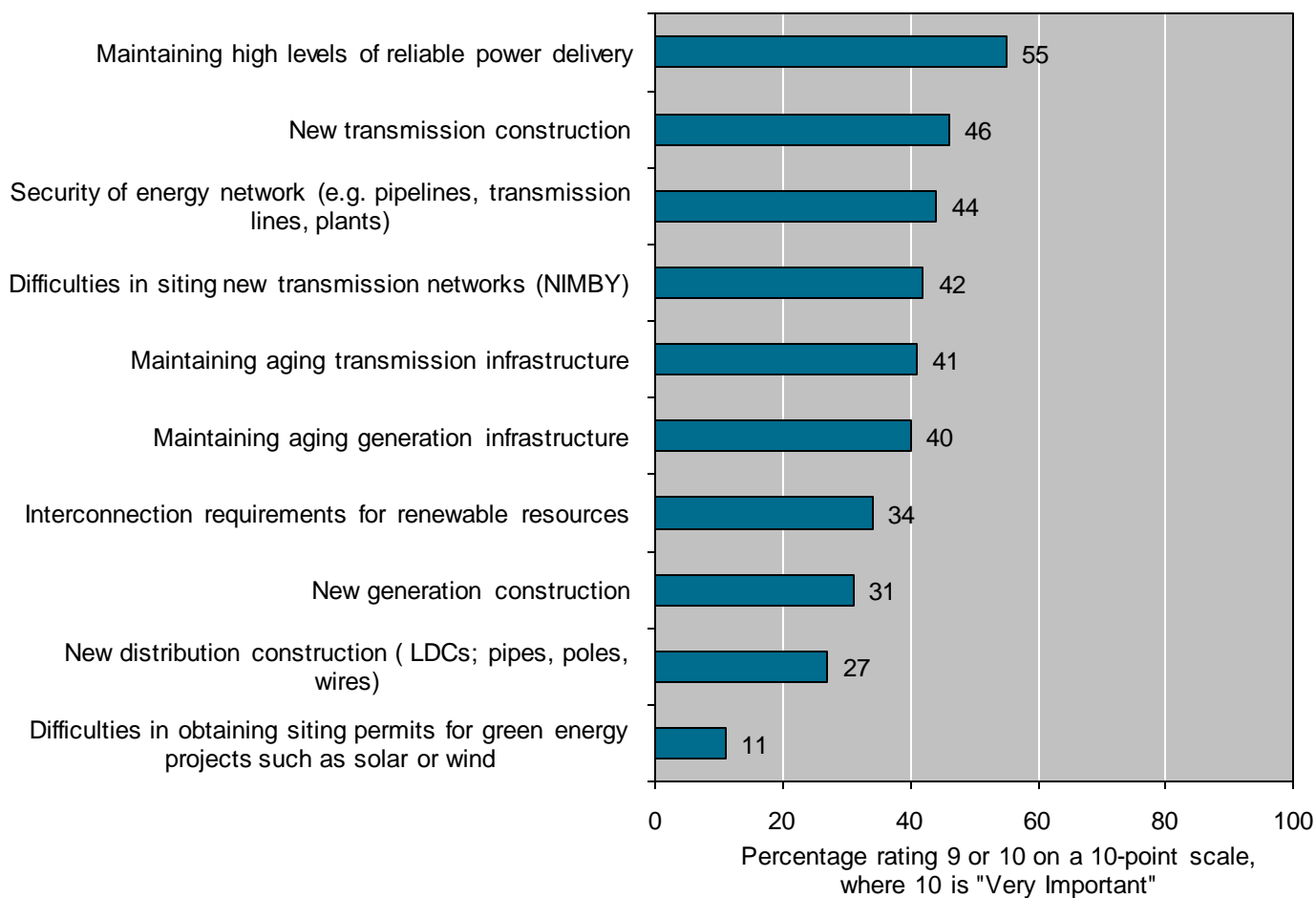
*I know there has been a lot of talk about greenhouse gas being uncertain, but for our system carbon legislation is not what makes or breaks coal, it's Nox or Sox.*

*I think where utilities are thinking about going...the worst thing for us is uncertainty. That's because regulators may not like something, but at least if you have a Federal Order that says you have to do it, you can at least get cost recovery. I think what utilities have to do is be proactive in Congress and be willing to give something, for example, on climate legislation, to get some certainty over a longer period of time for coal plants.*

*As an industry, as a company, we still don't have that certainty or a road map as to what will happen around carbon legislation. . . .I don't think as an industry we can afford to be on hold.*

Source: Selected quotes from Phase I of the study

# Importance Detail Infrastructure



Mean	% Missing	n
8.43	2%	94
7.96	5%	91
7.95	3%	93
8.13	6%	90
7.83	6%	90
7.99	5%	91
7.50	4%	92
7.50	6%	90
7.10	3%	93
6.23	6%	90

Base: Total sample (n=96); No Answer" is excluded.

Questions C1 to C12 (C5): On a scale of 1 to 10 where 10 means "Very Important" and 1 means "Not at all Important", please rank the importance of the following issues to the industry.

# Selected Quotes Regarding “Infrastructure”

*Obviously, our biggest investments come out of our generating area, but another large area is our energy delivery area. One of the things we need to do is if you look across the nation, assets are aging, much like people, we need to be sure that we have a program or plan for replacement of our equipment.*

*Our system is aging faster than we are able to fix it.*

*Transmission lines are very expensive to build. So if you have a wind farm in west Texas which is where most of them are, and you need to build a 300, 400, or 500 mile transmission line to Dallas or Austin or whatever major city you're trying to get the power to, and let's just say it costs \$3 million a mile. The renewable that you're trying to get in in would have to be significantly cheaper than the existing energy to make that economically viable. We all know it's not, so now you have something that's expensive to start with and then you throw some greater expense on top of it and say the beneficiary is going to pay; who's going to sign up for that contract?*

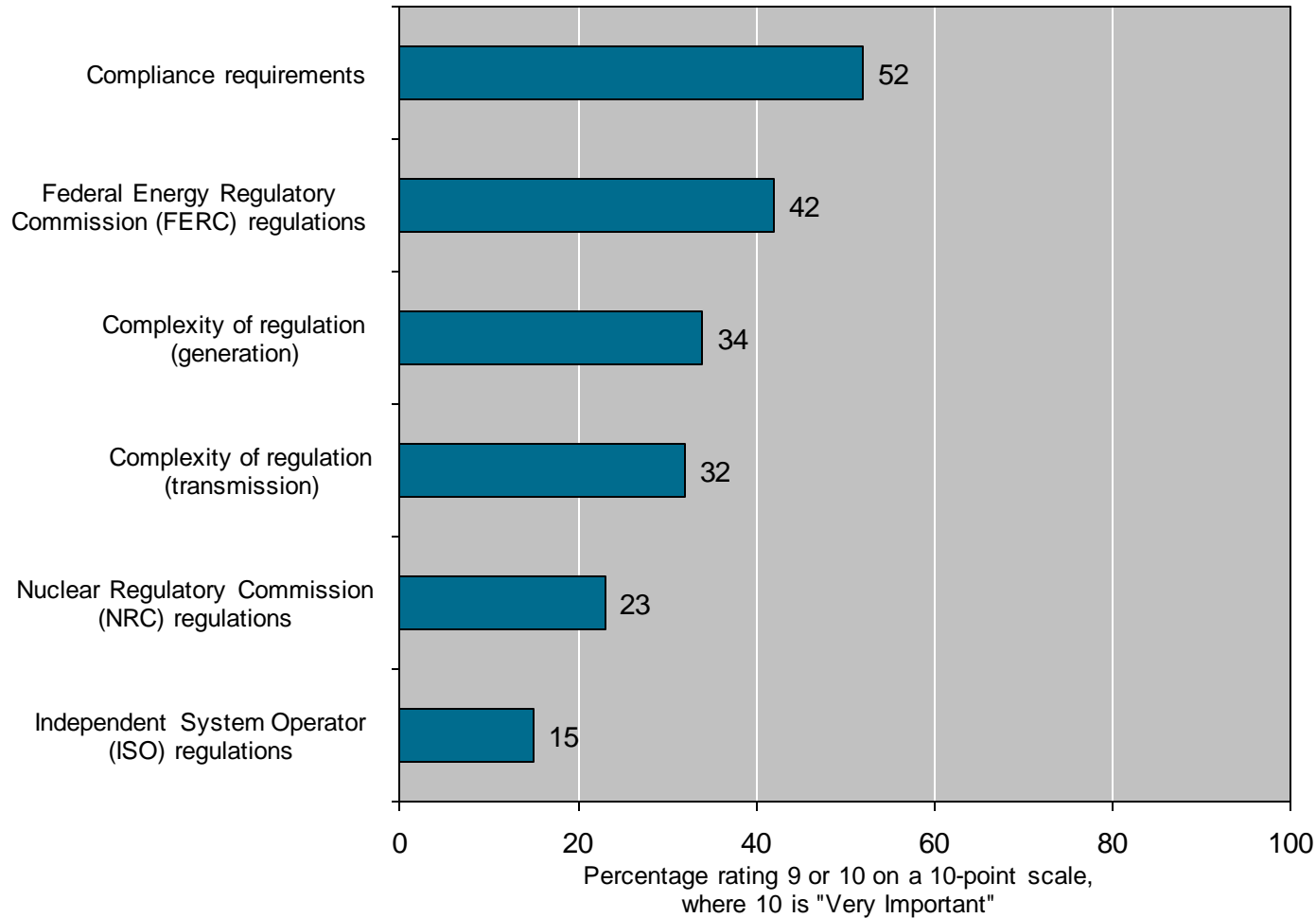
*Our biggest concern is infrastructure. Power plants and transmission lines are such long-dated resource investments that we are concerned the economy could start to recover, loads could start to grow, and without some certainty in Washington coming out about what they're doing to do with respect to renewable standards ... that we could find ourselves with our back up against a wall if we do eventually get some bills in that department.*

*Most of the challenges we've had around transmission expansion have been around the economics and the need ... the overall economic/business case for a particular line upgrade. ... The biggest risk area is not keeping up with aging infrastructure.*

Source: Selected quotes from Phase I of the study

# Importance Detail

## Regulation – Non-Environmental



Mean	% Missing	n
8.38	2%	94
7.87	4%	92
7.54	7%	89
7.54	6%	90
6.68	24%	73
6.76	9%	87

Base: Total sample (n=96); "No Answer" is excluded.

Questions C1 to C12 (C2): On a scale of 1 to 10 where 10 means "Very Important" and 1 means "Not at all Important", please rank the importance of the following issues to the industry.

# Selected Quotes Regarding “Regulation (non environmental)”

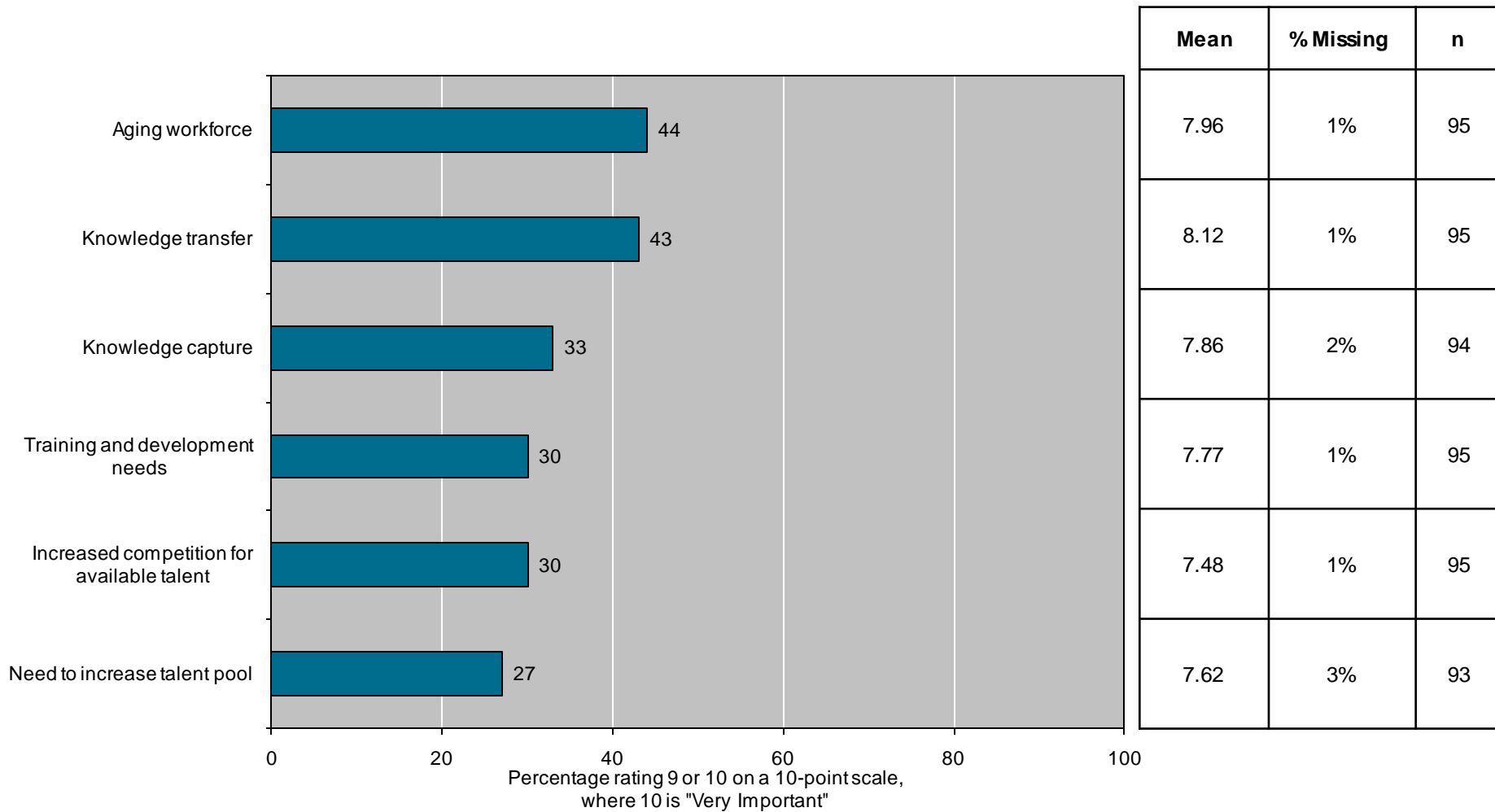
*What I find a bit frustrating is that this whole notion of re-regulation and deregulation has been spotty and really ineffective. ... Now we have this patchwork hodge-podge of industry structure that really doesn't make a lot of sense, and it's really hard to understand. It's very regional. It almost makes you wish for the old days...*

*I would like some sort of concerted effort among all the utilities to push back on the reliability standards and everything and make some sense of what is the right level of oversight. Get some common sense on all of these regulations.*

*The amount of regulation being brought in, and the amount of oversight, primarily at the Federal level but even at the State level, as to how they want you to operate these systems is unique. We have obviously always had a lot of standards and a lot of rules and regulations surrounding them, but generally very much driven by the business i.e. by the industry and very much focused on finding a cost-effective way to do in on behalf of our customers. ... ultimately we've got to find the right balance and what's the right outcome for our customers. ...I think the Federal regulatory oversight has become very significant and troublesome.*

Source: Selected quotes from Phase I of the study

# Importance Detail Workforce



Base: Total sample (n=96); No Answer" is excluded.

Questions C1 to C12 (C9): On a scale of 1 to 10 where 10 means "Very Important" and 1 means "Not at all Important", please rank the importance of the following issues to the industry.



# Selected Quotes Regarding “Workforce”

*It's really quite scary if you look at the numbers. We've got a pretty robust apprentice program right now .....some utilities don't and they are going to wait and watch and see, and maybe they're going to try and poach from other utilities. But the numbers are scary. There are thousands of people who are going to be leaving in the next few years.*

*It's always a myth to me. You hear this over the years “well if you put in technology that can reduce your workforce”, but it actually doesn't work. .... I cannot see technology displacing the basic workforce we have.*

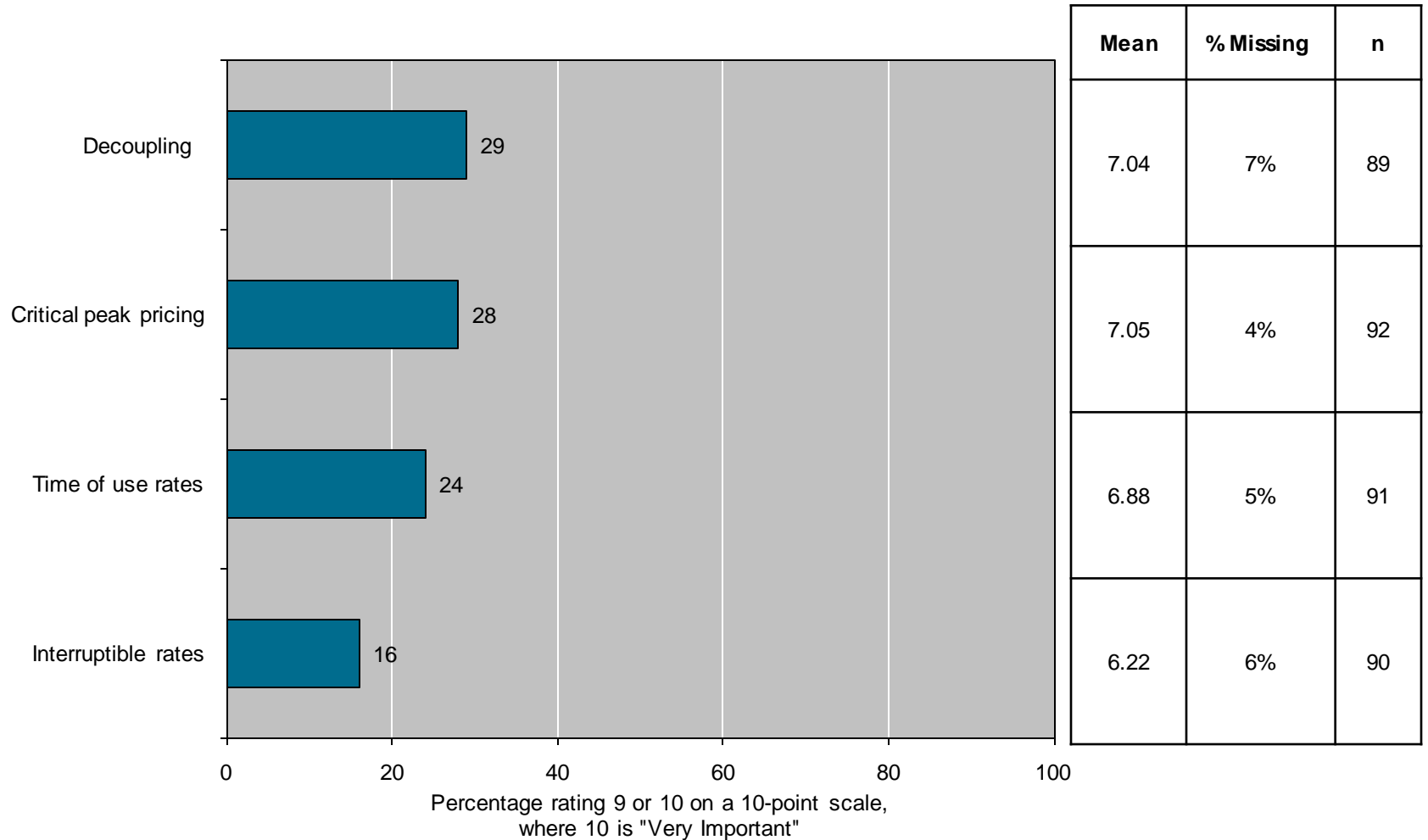
*I think most utilities like us are dealing with an aging workforce, and so we are doing a lot to restructure our whole workforce.*

*I do think the nature of the younger workforce that's coming today is different. They are much more technology-savvy, they are very socially aware and conscious, and they want to quickly get into a job where they can make a difference and do some really cool stuff. So we need to adapt our management practices and our organization structures to be flatter, push more decision-making closer to where the work gets done. This is really to challenge the young people coming in and set much higher expectations, because they can do stuff 10 times better than we ever could. If you don't challenge them and tap into that, they are going to get bored and go somewhere else.*

Source: Selected quotes from Phase I of the study

# Importance Detail

## Pricing / Rates



Base: Total sample (n=96); No Answer" is excluded.

Questions C1 to C12 (C12): On a scale of 1 to 10 where 10 means "Very Important" and 1 means "Not at all Important", please rank the importance of the following issues to the industry.

# Selected Quotes Regarding “Pricing / Rates”

*Utilities have thus far tried but not succeeded at decoupling our revenues as basically a deliverer of energy from sales ... pure T&D utilities need to move in the direction of decoupling their revenues from sales, and coupling them more to their costs.*

*We just can't continue to pay people to use less and continue doing the maintenance and capital projects that we need to fund.*

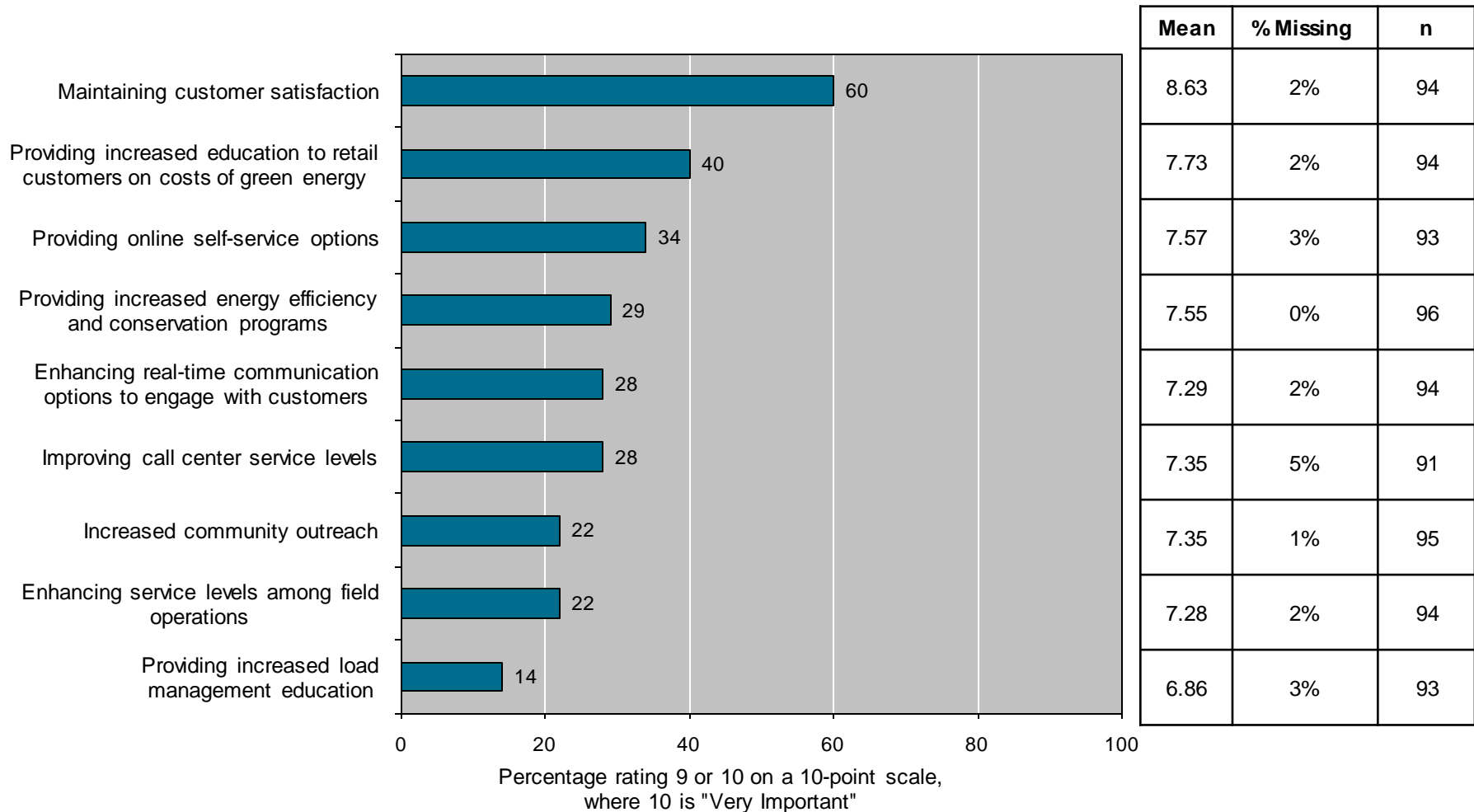
*We have time of day pricing as one of the pricing options our customers can use, but very few of them use it. We haven't gotten to that point yet. I don't think it's gotten widespread.*

*We need to send a clearer signal to the end use consumer on the true cost of their energy. We also need to adequately assure that our cost recovery mechanisms are properly covering fixed costs and that we are not subsidizing customers in a way that causes them to go off grid and strand costs for others.*

*Customers expect more options when it comes to energy pricing. With more focus on green energy, consumers will look to the utility to broaden their offerings.*

Source: Selected quotes from Phase I of the study

# Importance Detail Customer Service



Base: Total sample (n=96); No Answer" is excluded.

Questions C1 to C12 (C10): On a scale of 1 to 10 where 10 means "Very Important" and 1 means "Not at all Important", please rank the importance of the following issues to the industry.

# Selected Quotes Regarding “Customer Service”

*We invested a lot of time and money to find out what makes customers happy or conversely, unhappy, and put in place a pretty robust strategy to try to keep our [customer satisfaction] numbers up. By doing this, we figure that when some of the ugly things happen, like price increases, that we will be able to weather them better.*

*It's tough. It's really tough because the shareholder still wants the dividend and the customers don't want to pay any more, but they want better and better service all the time. So it's not easy. This is the thing that worries me – customers are getting grumpier but they are also getting more demanding. I frankly don't have the magic bullet.*

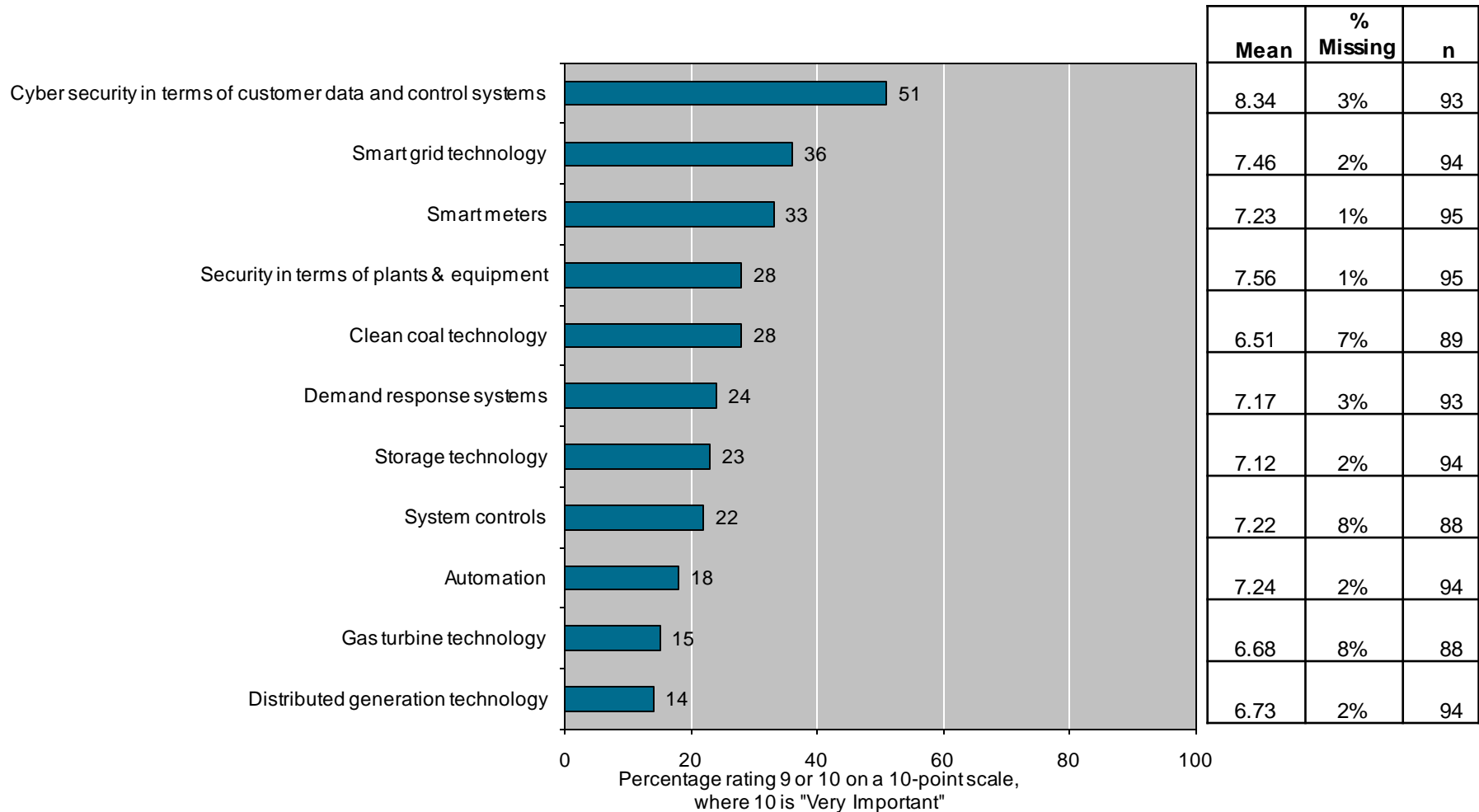
*We do not couch our conversation in terms of the customer and let's face it, the customer can make our lives really miserable if they want to. OR they can make our jobs really easy if we make it easy for them.*

*[For customers] the biggest thing is better information, more accurate information, more quickly. When a storm rolls in and a customer is having an interruption, they want to know with some degree of confidence when they're going to be back in service so they can plan their lives around it. They also want us to be proactive in informing them as the situation changes.*

Source: Selected quotes from Phase I of the study

# Importance Detail

## Generation, Transmission and Distribution Technology



Base: Total sample (n=96); No Answer" is excluded.

Questions C1 to C12 (C7): On a scale of 1 to 10 where 10 means "Very Important" and 1 means "Not at all Important", please rank the importance of the following issues to the industry.

# Selected Quotes Regarding “Generation, Transmission & Distribution Technology”

*We have got a lot of developers in the renewables space. I think the thing that is challenging and almost frustrating too, is we want to be able, as a regulated industry, to understand the economics from those developers perspective. They are not very forthright in providing information.....*

*I do believe there is a place for smart grid rollout. Utilities have to be careful. The argument for smart grid is that It brings the customer and the distribution system closer together so you can be more flexible, you can have things like self-links, better reliability. But we have to be pretty careful because the system works pretty well now. It's not perfect..... But we don't want to start investing billions in gee-whiz stuff if we're really not getting a lot of leverage for the money. There is a place for smart grid, we just have to get really surgical on how we apply it.*

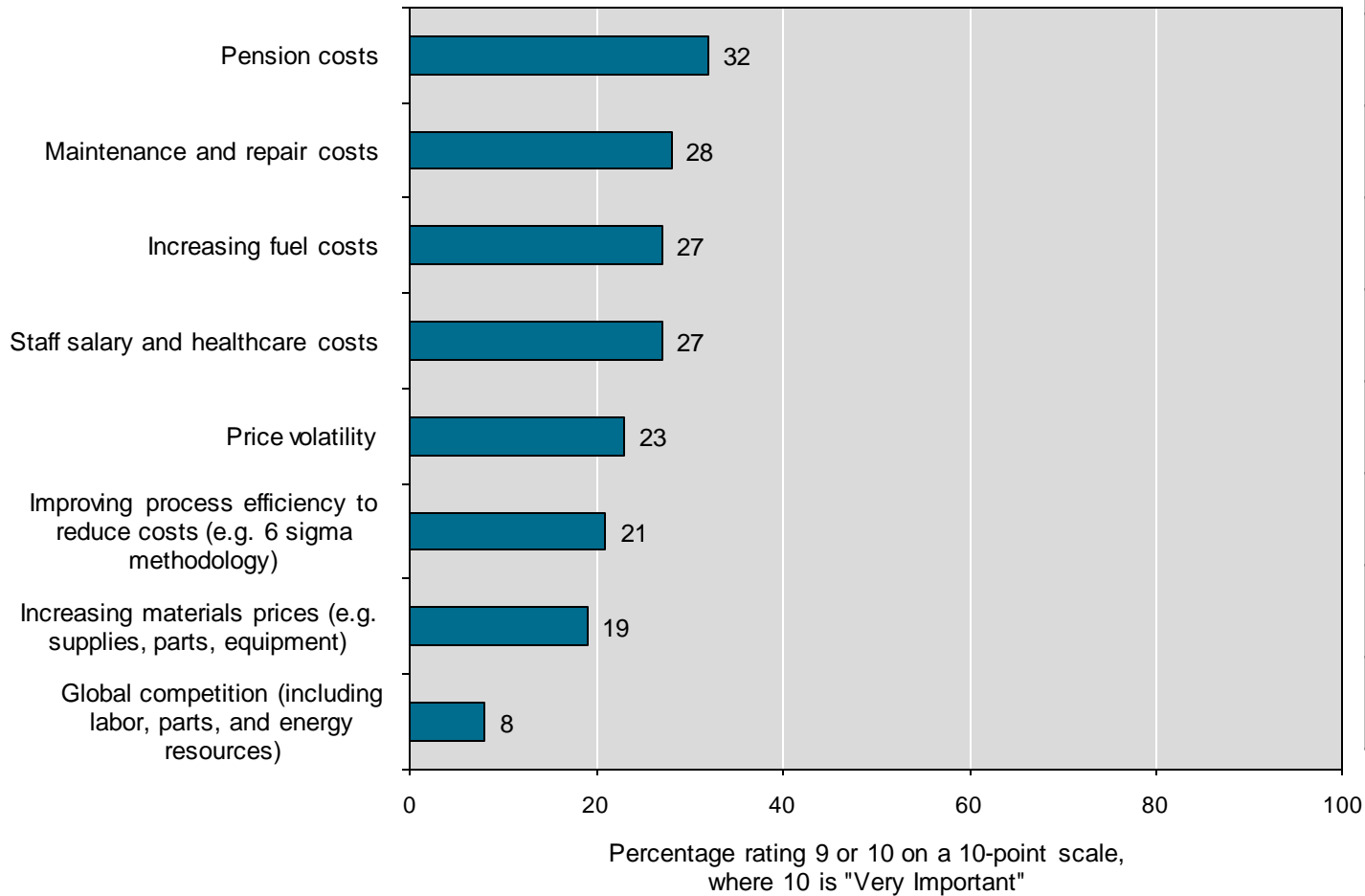
*I would like to have more access to storage capability if it was a little less expensive. That's the ideal situation, that's nirvana. You have PVs sitting beside storage capability and when the sun goes behind the cloud the battery kicks in or when the power system doesn't need the photovoltaics, it charges up the batteries and it's perfect. But these things are expensive, they need to come down in price.*

*Distribution automation... many companies, including ourselves, are already into automated distribution.*

*The battery and storage technology is one area where we see real possibilities emerging in the coming years. ... That could be very transformative particularly in dealing with the intermittency of renewables.*

Source: Selected quotes from Phase I of the study

# Importance Detail Operations and Maintenance (O&M)



Mean	% Missing	n
7.32	3%	93
7.31	5%	91
7.41	1%	95
7.57	1%	95
7.28	3%	93
7.04	2%	94
7.04	4%	92
5.80	5%	91

Base: Total sample (n=96); No Answer" is excluded.

Questions C1 to C12 (C4): On a scale of 1 to 10 where 10 means "Very Important" and 1 means "Not at all Important", please rank the importance of the following issues to the industry.



# Selected Quotes Regarding “O&M”

*We are rationalizing cashbacks and O&M expenses to ensure that our cash flow ratios are within the ratings that we desire.*

*I look at cost cutting through process improvement, call it what you want, the Sigma process improvement, there is always somewhere to cut.*

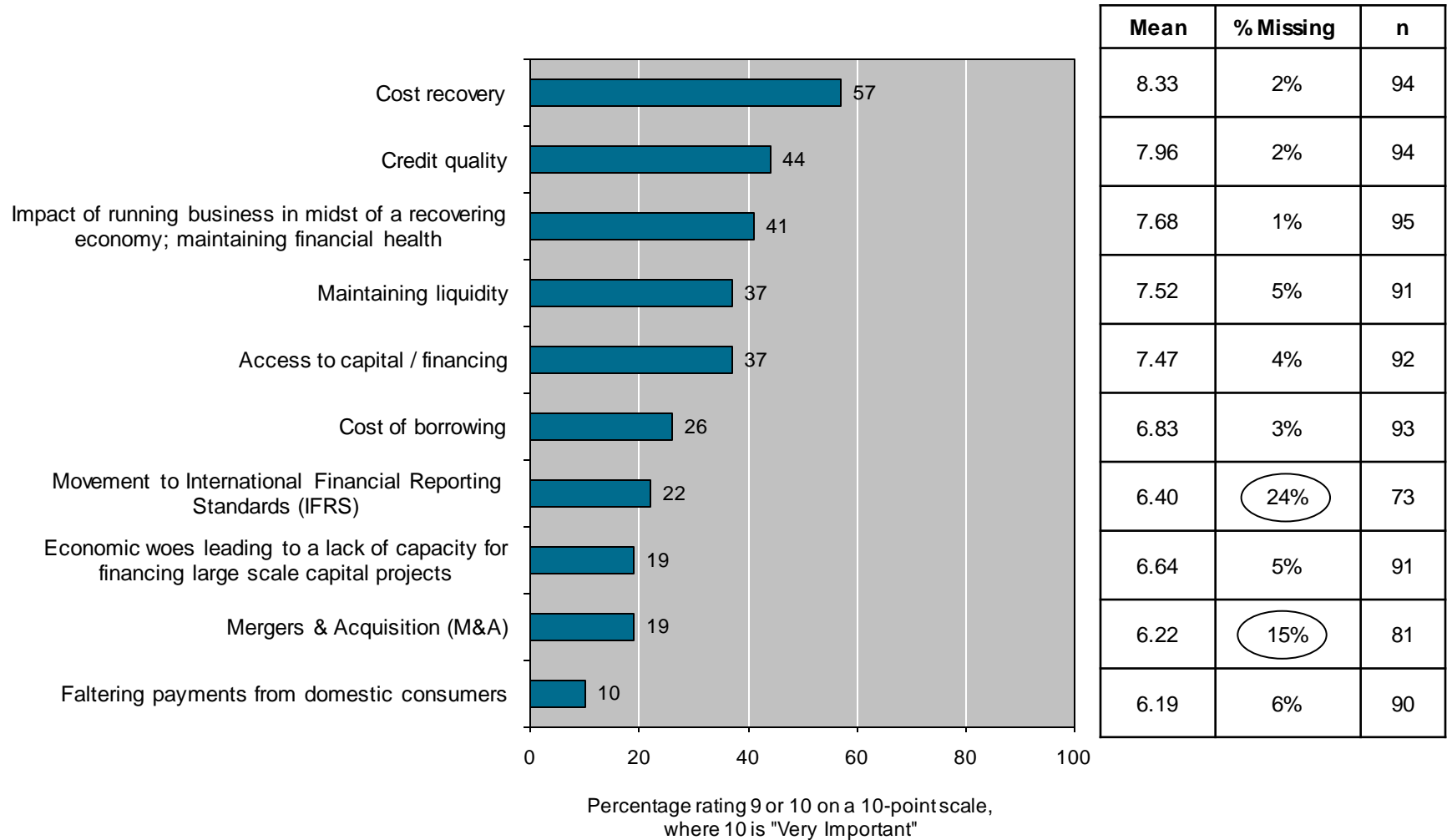
*Now what we have gotten into is a ruthless attention to duplication, inefficiency in the process so that as individuals retire, which they continue to do as we have an aging workforce, that those positions aren't replaced so the costs are permanently taken out of the business, because we are trying to learn more efficient ways to do everything. ... it's the simple things, how many times is it just process work, this end-to-end process of every operational task that you can think of that runs across a company like ours.*

*I think it is challenging to get our workforce to work more effectively. What tools can we give them to operate in a more efficient fashion? So, it's constantly analyzing our work processes and really what our employees are doing all the way down to our field employees.*

Source: Selected quotes from Phase I of the study

# Importance Detail

## Finance



Base: Total sample (n=96); No Answer" is excluded.

Questions C1 to C12 (C11): On a scale of 1 to 10 where 10 means "Very Important" and 1 means "Not at all Important", please rank the importance of the following issues to the industry.

# Selected Quotes Regarding “Finance”

*Liquidity is something we talk about much more frequently today than five years ago. Along that line, as we talk about the financial crisis of 2008, just generally speaking, how do you operate your business in this type of economy and when do we see it coming back to more the normal type of operations...*

*There are uncertainties with respect to the International Accounting Standards where there is a conversion to a more principles-based accounting and what that means for regulated businesses.*

*Financing costs are going to get quite expensive. You're going to have treasuries that are going to go from a 10-year end clause to two and a half, and it's likely going to triple. So the cost of serving is going to go up and that's forgetting about any green initiatives.*

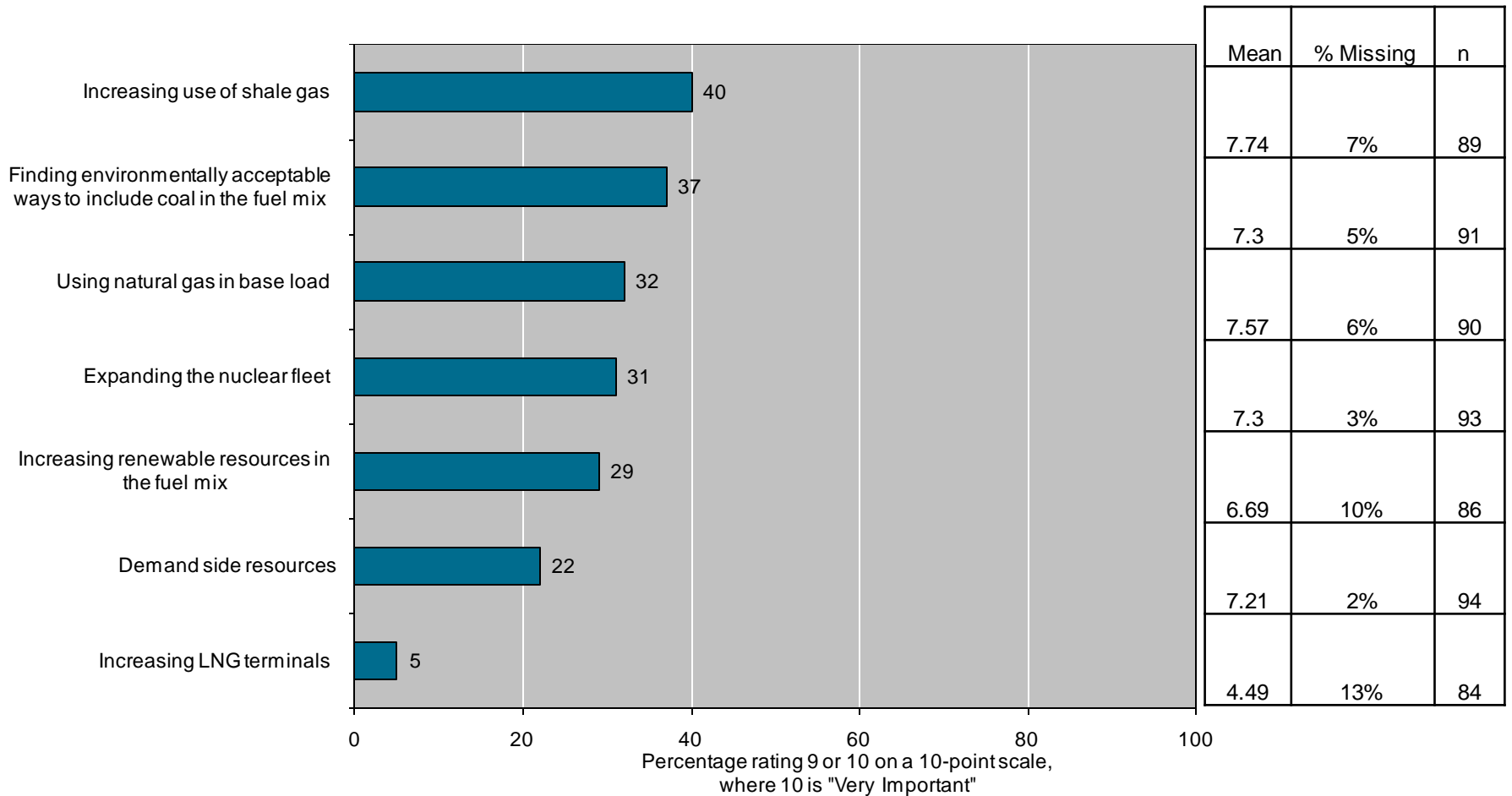
*Day-to-day issues are more centered around the larger economy. As far as the recession, we have rate recovery issues. The customer is clearly feeling a financial strain due to the economy, so what that leads to is the amount of investment one would make in a regulated utility in that the reason you would make the investment, aside from safe, reliable service, is to build base rate and then get a return from rate cases.*

*On the wires side or the distribution side, at the end of the day what weighs on your mind more is the forward-looking industry and the capital-intensive industry and making sure that you have the regulator's understanding that the costs are going to go up and this isn't a cost that's going to benefit the utility, because it's going to be passed through to the capital markets because they are going to demand a higher rate of interest just due to the deficit.*

Source: Selected quotes from Phase I of the study

# Importance Detail

## Fuel Mix



Base: Total sample (n=60); "No Answer" is excluded.

Questions C1 to C12 (C3): On a scale of 1 to 10 where 10 means "Very Important" and 1 means "Not at all Important", please rank the importance of the following issues to the industry.

# Selected Quotes Regarding “Fuel Mix”

*Many companies are getting into renewables building more wind farms or buying power from wind farm producers, looking at all of these alternative mechanisms or our customers and then trying to understand what impact it has on our company. I think that's general nationwide.*

*As we start retiring some of the big fellows, the big nuclear and coal plants, there will still be large scale plants being built, but I think we're going to see more and more the renewables because it politically something that you have to do.*

*There has been a fair bit of shale gas found in our neck of the woods and there is more shale gas all the way down through Texas. The question is going to be, from an environmental perspective, what are they going to do as far as the fracking? .... To the extent they can extract it within EPA rules in size or in great quantity, I think that gas is going to more and more start displacing coal.*

*I don't think on the generation side, aside from the governmental guarantees that are going on with the nukes right now, I don't think there is going to be really any headway with the nukes right now.*

*I think the minute we all bring natural gas into our portfolio the prices will go way back up again.*

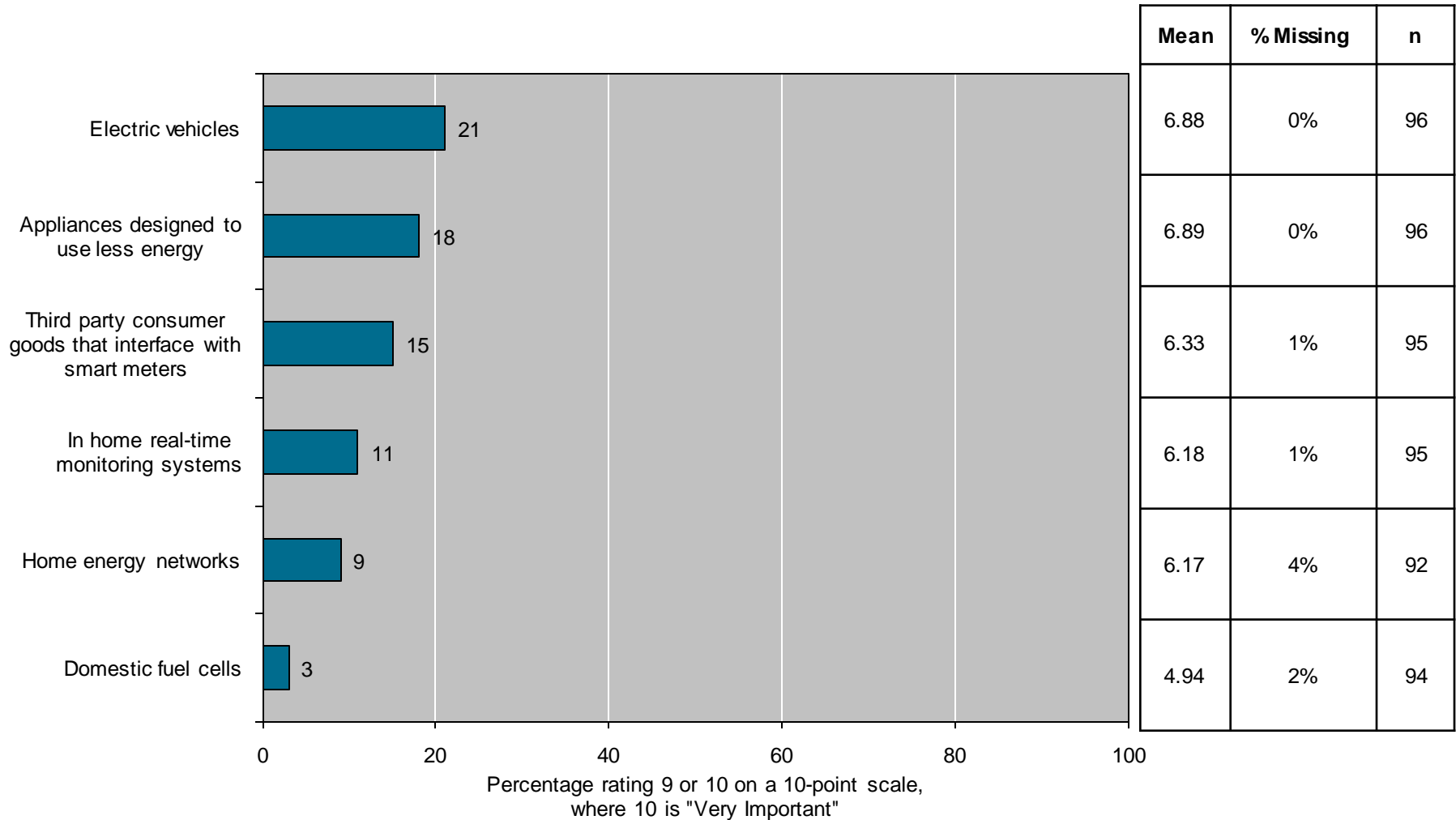
*I don't think you can even get a conventional coal plant permitted in the United States right now.*

*At the macro level, there is a very important role for nuclear and coal. More than 50% of our states get more than 50% of their electricity from coal today.*

Source: Selected quotes from Phase I of the study

# Importance Detail

## End-Use Technology



Base: Total sample (n=96); No Answer" is excluded.

Questions C1 to C12 (C8): On a scale of 1 to 10 where 10 means "Very Important" and 1 means "Not at all Important", please rank the importance of the following issues to the industry.

# Selected Quotes Regarding “End Use Technology”

*I think there is room for a lot of players in this market, it could be third party vendors through Lowe's or Home Depot and places like that, but we know through our survey that the customers are looking to the utility as the trusted sources for this kind of stuff.*

*I wouldn't say it's looming in the next 12 or 18 months, but there is a large push toward electric cars, which strains the logic as to how that helps anybody. ... Even to the extent that they get the technology along so that it's economical ..what do you do with the batteries? These batteries don't have a long shelf life, at least not yet. It's like nuclear waste, what question is “what do you do with it”?*

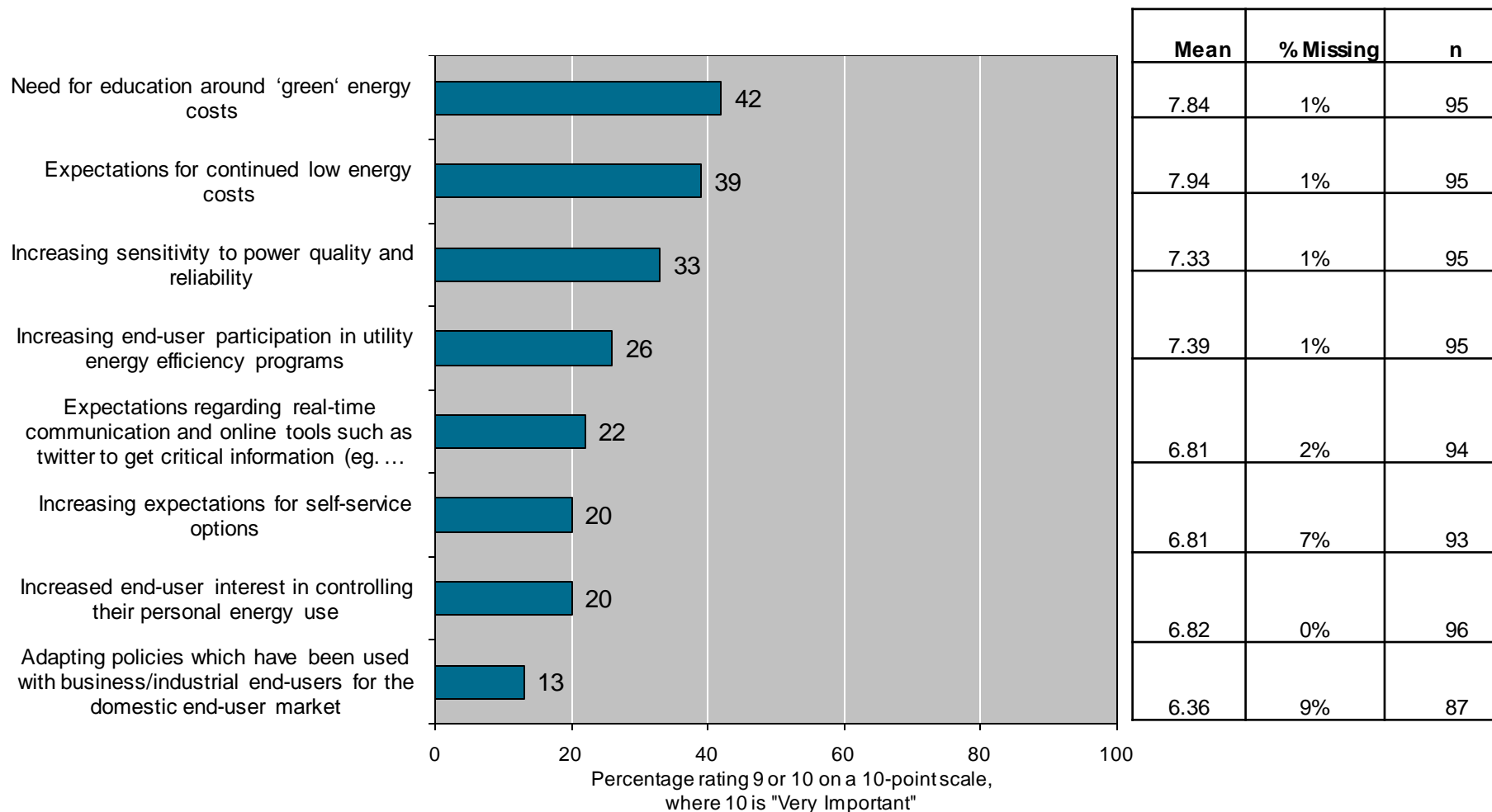
*I do think there is going to be a big push on the demand side, no doubt, especially with all the smart grid investments. We are starting to look at hot water heaters and other sorts of dispatchable load as a way to store excess energy.*

*The advent of the electric vehicle, if and when it takes place, [will have significant impact on the industry overall]. ...but I think it's probably 7 to 10 year out before we see that.*

*I think there is coming to be a shift to more distributed generation.*

Source: Selected quotes from Phase I of the study

# Importance Detail End Users



Base: Total sample (n=96); No Answer" is excluded.

Questions C1 to C12 (C6): On a scale of 1 to 10 where 10 means "Very Important" and 1 means "Not at all Important", please rank the importance of the following issues to the industry.



# Selected Quotes Regarding “End Users”

*The bottom line is if you are an industrial manufacturer your costs are going to go up ... [with renewables]. Their margins are not that robust to begin with, and then you take their energy costs and ramp them up by 10% or 15%; clearly they would look for another domain in which to operate. If you go to Mexico, if you go to China, there aren't any of these laws and you can produce at lowest costs and just import it, and net, it's cheaper.*

*Customers are getting used to having instant information and having ease of use.*

*I think it's a joke. At the end of the day people say “talk green, but leave a light on”. If you look at consumption, it has continually gone up, the population has gone up. Conservation sounds good, people just don't do it.*

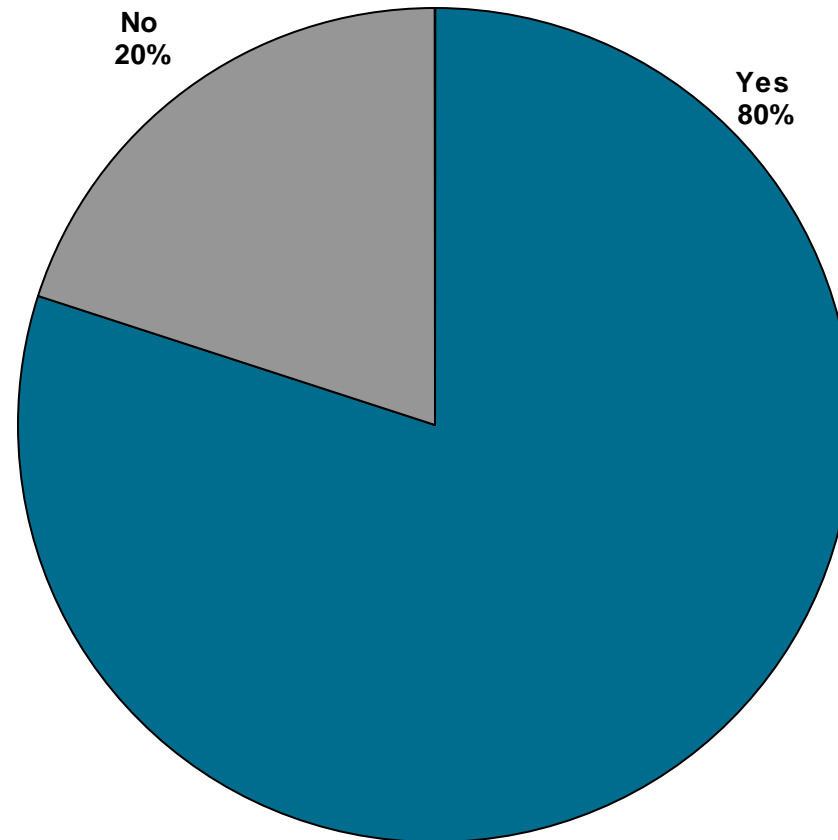
*Customers still have growing expectations around the environment, and the utility cleaning it up.*

*I think people want to have more control...so, it's going to be different rate plans, different things for conservation.*

*There is the continued expectation from customers that service should continue to improve. Their customers expect more and more from them. Our customers have the same expectations of us as a utility, and I think it's a fair expectation. But at the same time they expect cost to stay relatively flat or low, low relative to other nations and the reality is we have been living off an infrastructure and generation resources that were put in place many years ago.*

Source: Selected quotes from Phase I of the study

# Should the industry create business models that support decoupling?



Base (n=96); "No Answer" is excluded.

Question C13: Do you think North American electricity industry should create business models that support decoupling (separating fixed expenses from the variability of fuel costs?)

# Reasons the industry should move to create business models that support decoupling

Better info for consumers and others
Continued focus on demand side and energy efficiency programs will need to drive alternate pricing mechanisms to maintain utility financial health.
Customers must know the real price impact for them to make good decisions regarding energy consumption.
Customers need price signals to best optimize value chain of energy production to end use.
Declining Kwh's & declining revenues plus distributed generation - The distribution price should better reflect the size of the pipe, rather than the flow through the pipe.
Decoupling allows the consumer to focus on use (amount) and the utility to focus on efficiency of Transmission and Distribution. This puts control in the right places and allows accountability.
Decoupling is more importantly about separating REVENUES from volume of sales. That is the work that needs to be done in a world where customers have more and more tools to manage and reduce consumption.
Decoupling is necessary for energy efficiency and conservation efforts that can be funded through the distribution charges.
Depends on the regulatory construct.
Electricity is an essential service and a must for future development of any economy. The companies that provide service are entitled to a fair and reasonable rate of return on the investment assuming they have made prudent investments. The infrastructure to generate and deliver have large fixed or reasonably predictable fixed cost and O&M. the fuel however ( coal, & gas and oil in particular) are major factors and there is no business need to gain or loss on that from a utility perspective. The cost should be passed on. There will however be a need for companies to ensure they are striving for least cost in acquiring those resources but competition in that area is pretty healthy, however oil companies need to be better at controlling cost.
Encourages utilities to focus on T&D infrastructure while encouraging competitive supply in the marketplace.
focus on efficiency gains in each segment
Fuel cost recovery is vital to the credit health of utilities. Decoupling revenues -keeping revenues constant for non-fuel reasons, is not as vital.
Fuel cost volatility in recent years has made price forecasting problematic. Decoupling would allow recovery of these variable fuel costs in a more timely manner.
Fuel costs are beyond the control of a utility, unless the utility hedges everything forward, which is not a sensible strategy, nor would it be in the customers' interest.

Question C14: Why do you say that? (Asked after C13 Do you think North American electricity industry should created business models that support decoupling (separating fixed expenses from the variability of fuel costs?) All comments are shown.

# Reasons the industry should move to create business models that support decoupling

Fuel costs are very difficult to control in our regulatory environment.
Fuel is very volatile and will be increasingly volatile. The better the end user can see and manage this the better we will be.
I believe that decoupling would present the true cost causality picture to the consumer.
I expect that there will be continued pressure on consumption due to the economy and the trends toward "downsizing" in residential housing markets causing per capita consumption to begin to level out. This may require alternate methods for allocating cos to consumers.
I say yes to the extent that decoupling means separating pricing from variable commodity sales and shifting to a model that focuses more of pricing based on customer value received.
If we do not, we will have a vicious cycle of under recovery and under reinvestment
I'm not sure what "decoupling" is here. California has been decoupled for many years the return a utility earns and the energy sales. This "decoupling" aligns the environmental concerns with energy efficiency. If decoupling of fuel from fixed costs is omething is the same then I believe it is good policy, otherwise, I'm not sure.
Important to ensure adequate cost recovery and return on capital and appropriately align utility incentives.
In order to have a sustainable model we need to be able to at least cover our fixed costs.
Increase in distributed generation, energy efficiency lead to reduced energy sales. Collect the fixed costs more fairly among all customers, customers can make better long-term decisions. Their decisions won't be as subject to impact by changing rate stuctures before they achieve payback
Increasing fuel prices will reduce consumption and impact fixed cost recovery.
Increasing the seperation of D, T and G. Also allows you to focus on EE without being so negative about the proposition
It places cost more inline with actuals.
It will enable us to place more emphasis on conservation messages without compromising revenue margins.
It will provide more flexibility in pricing while ensuring coverage for fixed costs.
It's a subsidy from one group of customers to another.

Question C14: Why do you say that? (Asked after C13 Do you think North American electricity industry should created business models that support decoupling (separating fixed expenses from the variability of fuel costs?) All comments are shown.

# Reasons the industry should move to create business models that support decoupling

Must have to 1) meet growing customer demand for efficiency/conservation and 2) maintain the utility's financial health.
Need to impart on customers that the volatility is created by the energy fuel and not the infrastructure that is in place to deliver the energy. This leads to better understanding of the underlying costs and appropriate behaviours on the part of consumers based on better economic rationale.
Need to move away from volumetric pricing if are really go to drive conservation
Provides customers with greater clarity.
Provides more transparency to customers as well as educates them regarding the actual costs to provide service. For example, everyone is for "greener" electricity, but most do not understand the extra cost associated with accomplishing this.
Sales forecasts used to set rates are never 100% accurate, therefore someone is paying for the risk associated with sales variance from forecast. Neither the customers nor the companies should wear this risk. Once revenue requirements are established by the regulator, the company should receive that revenue from customers regardless of unit sales.
Separating fixed expenses would support cost recovery through rates to maintain/replace aging infrastructure.
Tends to flatten bills to customers, and make bills more predictable.
The historic electricity growth that has been seen for decades may be permanently affected by this latest recession, thus a decoupled environment may be now good timing.
The industry business model is changing with new technology, customer IT use and expectations, and regulatory pressures. The model must adapt. Decoupling is a way of covering costs with less volatility in customer kwh use and weather impacts.
This is already done in my territory
This question may not be relevant for a publicly-owned utility. However, I believe ratemaking for IOUs should be structured to align investor incentives and public policy goals.
This way we can show the consumer the impact fluctuating fuel costs have on their energy price
To compare the best choice for customers
To enable utilities to move forward with promoting energy efficiency programs to their customers and still be able to grow earnings to run the business effectively.
To encourage the use of greener fuels which are typically more expensive.
To pay for infrastructure and allow utility to have revenue stream to support operation despite decreasing use.

Question C14: Why do you say that? (Asked after C13 Do you think North American electricity industry should create business models that support decoupling (separating fixed expenses from the variability of fuel costs?) All comments are shown.

# Reasons the industry should move to create business models that support decoupling

To reduce income volatility that in turn improves capital access at reasonable rates.
Utilities have shown that the inability to predict fuel prices during the rate case process is detrimental to the utility and the end use customer.
Utility rates should be efficient in an economic sense. There should be no intra- or inter-class subsidies and "decoupling" (which in my view is a trendy, nonsense term that should be replaced by something more direct--straight fixed/variable comes to mind). Proper cost allocation and rate design is essential to an efficient energy market. It is as simple as that.
Very complex process for rate recovery in today's market conditions and decreases the fuel variability risks.
We are seeing substantially increased regulatory demand for non-income-producing investment and costs (reliability, safety, emergency response) that have to be recovered, at the same time as regulatory programs (like energy efficiency, demand response and net metering), technology shifts and price-induced reductions are tending to push down sales growth.
We foresee little to no growth given the rise of efficiency programs. Financial performance is based on a business model that assumes steady growth.
We need to send a clearer signal to the end use consumer on the true cost of their energy. We also need to adequately assure that our cost recovery mechanisms are properly covering fixed costs and that we are not subsidizing customers in a way that causes them to go off grid and strand costs for others.
We were successful in doing this at our municipal utility in the past year, and this has significantly improved financial stability for the utility.
will foster energy efficiency and conservation efforts without financial harm

Question C14: Why do you say that? (Asked after C13 Do you think North American electricity industry should create business models that support decoupling (separating fixed expenses from the variability of fuel costs?) All comments are shown.

# Reasons the industry should not move to create business models that support decoupling

Consumer focus is on the entire bill
Customers will never understand
Decoupling is a significant step toward further socializing the cost of electricity and a move away from market driven forces of supply and demand. Rates under decoupling are really a form of tax rather than a rate which the consumer can control by managing usage. The industry needs to follow a consistent policy to either continue the efforts of the last 15 years to introduce supply and demand driven market pricing into the retail level, or expressly declare that effort a failure and abandoning it before iling on yet another and inconsistent pricing model. Consumers are already confused about which direction we are going, and as a utility executive so am I.
Each element is a cost of doing business that a customer must pay. It is of little use to the customer to break out costs that the customer cannot control and will encourage litigation
Many track it now, but it shouldn't be required.
Need to understand the thesis better.
Not sure the timing is right for this. we may a decade or so away from moving in this direction.
The effort should be on improved load factors. If existing generation can be used without the buildout of additional peaking capacity (due to declining load factors), all customers will benefit from the greater efficiency.
The electric industry has had the capability of successfully managing in an environment of coupled rates. This has encouraged utilities to look to constantly improve overall and manage through good times and in bad. Decoupling creates different regulatory challenges with many of them being subjective around energy efficiency efforts, decision making, etc. These challenges lead to uncertainty from rating agencies and others. While it has made sense for certain natural gas companies, it does not make sense or the electric industry.
We do business in an area of historic and future economic growth
We have experimented with the decoupling and find it to be complex and not always workable in a changing market place.
With the potential roll-out of electric vehicles and substantial increase in off-peak load, why would you move to decoupling?

Question C14: Why do you say that? (Asked after C13 Do you think North American electricity industry should created business models that support decoupling (separating fixed expenses from the variability of fuel costs?) All comments are shown.

# Presentation Outline

Study Background

Key Findings

Methodology

Respondent Profile

Current Industry Issues

Future Industry Trends

Strategic Planning

Smart Meter / Smart Grid

Appendix



# Future Trends & Predictions

The quantitative survey also asked participants for their opinions about the future of the electricity and natural gas industry in the next 5 to 10 years.

Each participant was asked to rate 26 items identified during Phase II of the research by using a 10-point scale, where 10 means “Strongly disagree” and 1 means “Strongly agree.”

The statements respondents’ **most strongly agree with** are:

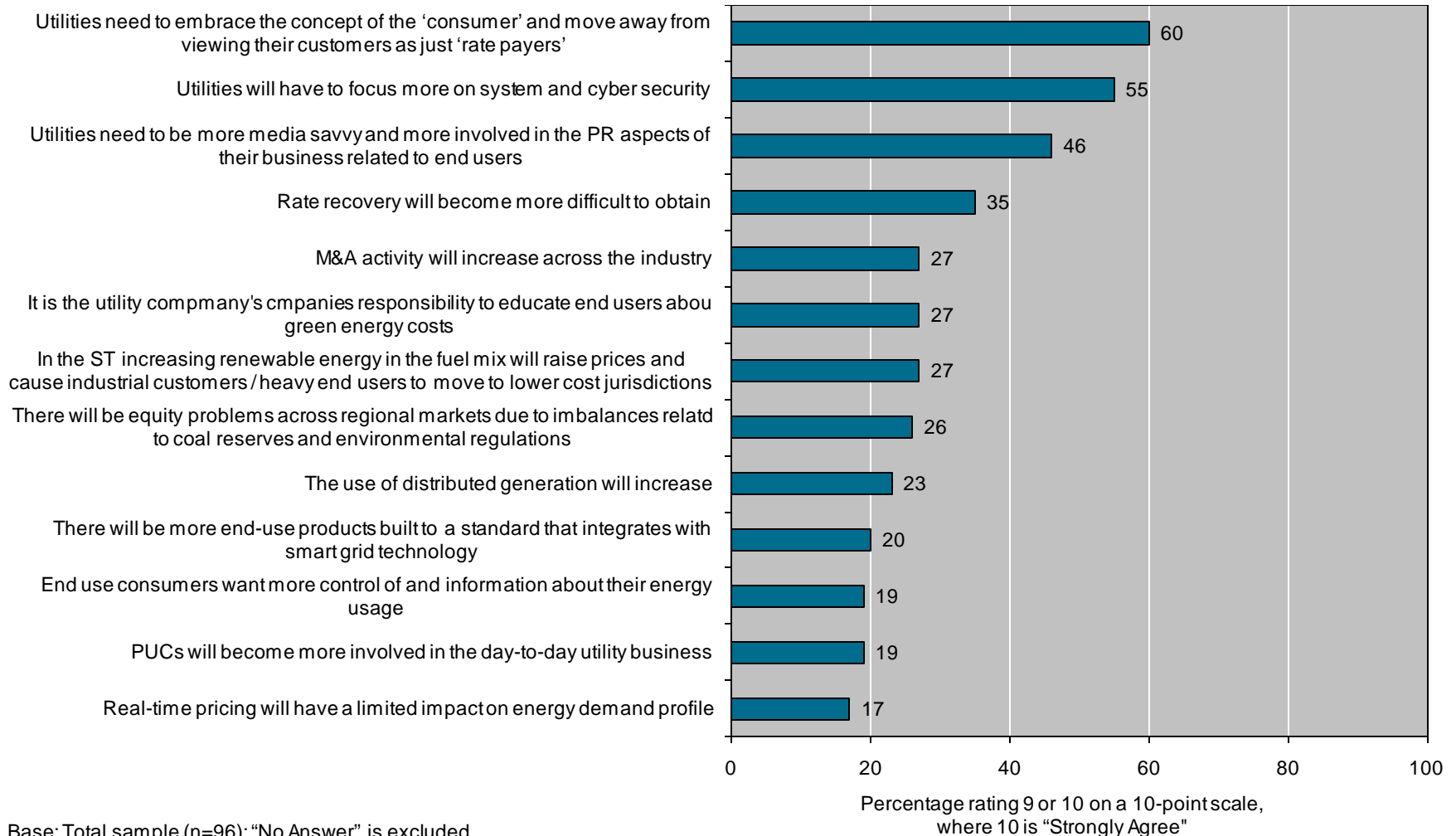
- Utilities need to embrace the concept of the ‘consumer’ and move away from viewing their customers just as ‘rate payers’ (60 percent rating 9 or 10)
- Utilities will have to focus more on system and cyber security (55 percent)
- Utilities need to be more media savvy and become more involved in the PR aspects of their business related to end-users (46 percent)

The statements respondents’ **least strongly agree with** are:

- In the long term, energy prices will trend downwards because of the addition of renewable energy (6 percent rating 9 or 10)
- Energy policy in the United States will become clearer and less punitive toward conventional energy sources such as coal (3 percent)
- The utility industry has performed very well in educating the end user about green energy costs (1 percent)

# Overview of Future Trends & Predictions

## (Page 1 of 2, see following slides for detail by topic)

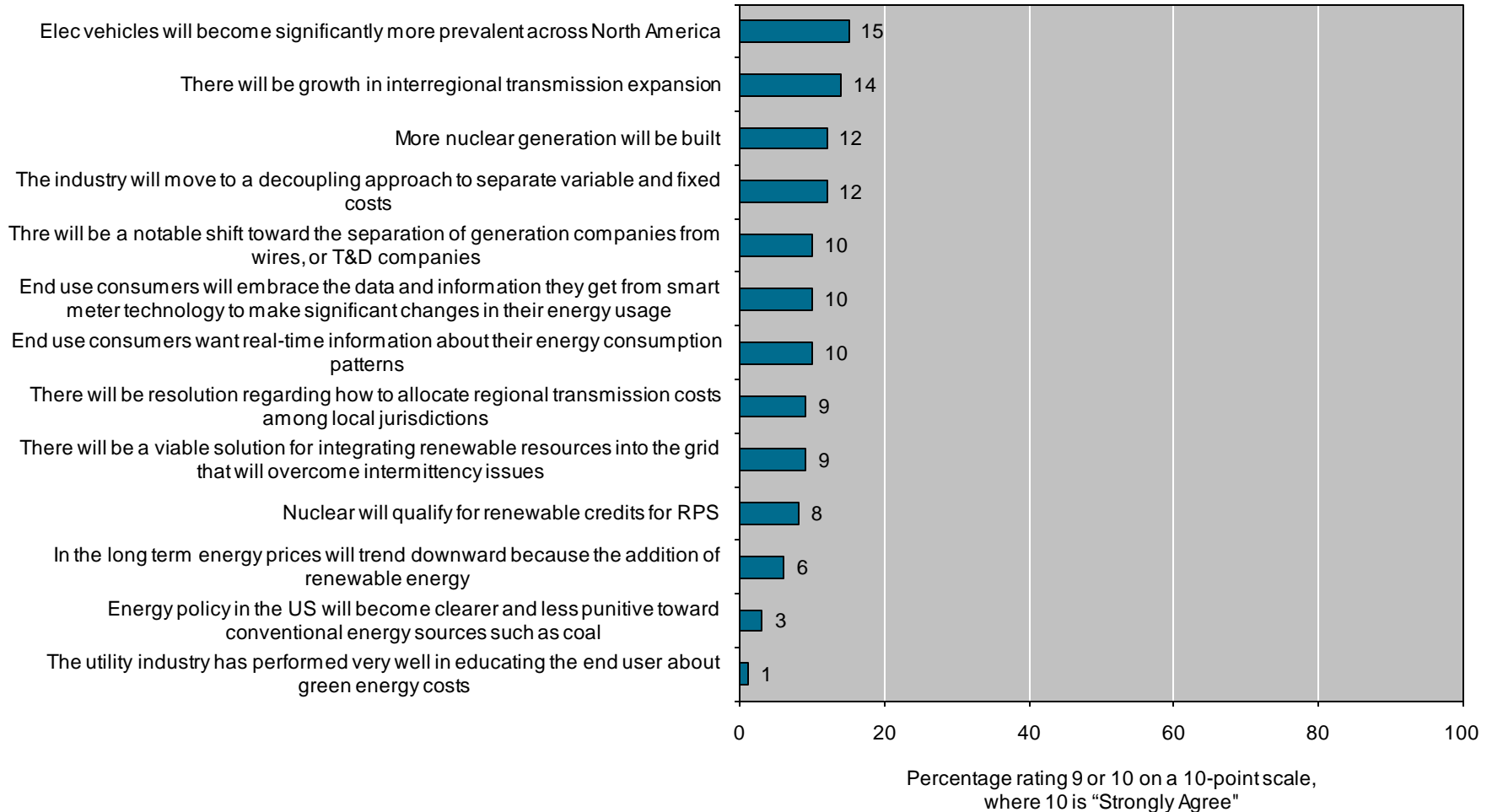


Base: Total sample (n=96); "No Answer" is excluded.

Questions F1 to F7 (F1): On a scale of 1 to 10 where 10 means "Strongly Agree" and 1 means "Strongly Disagree", please rank your agreement or disagreement with the following statements.

# Overview of Future Trends & Predictions

## (Page 2 of 2, see following slides for detail by topic)

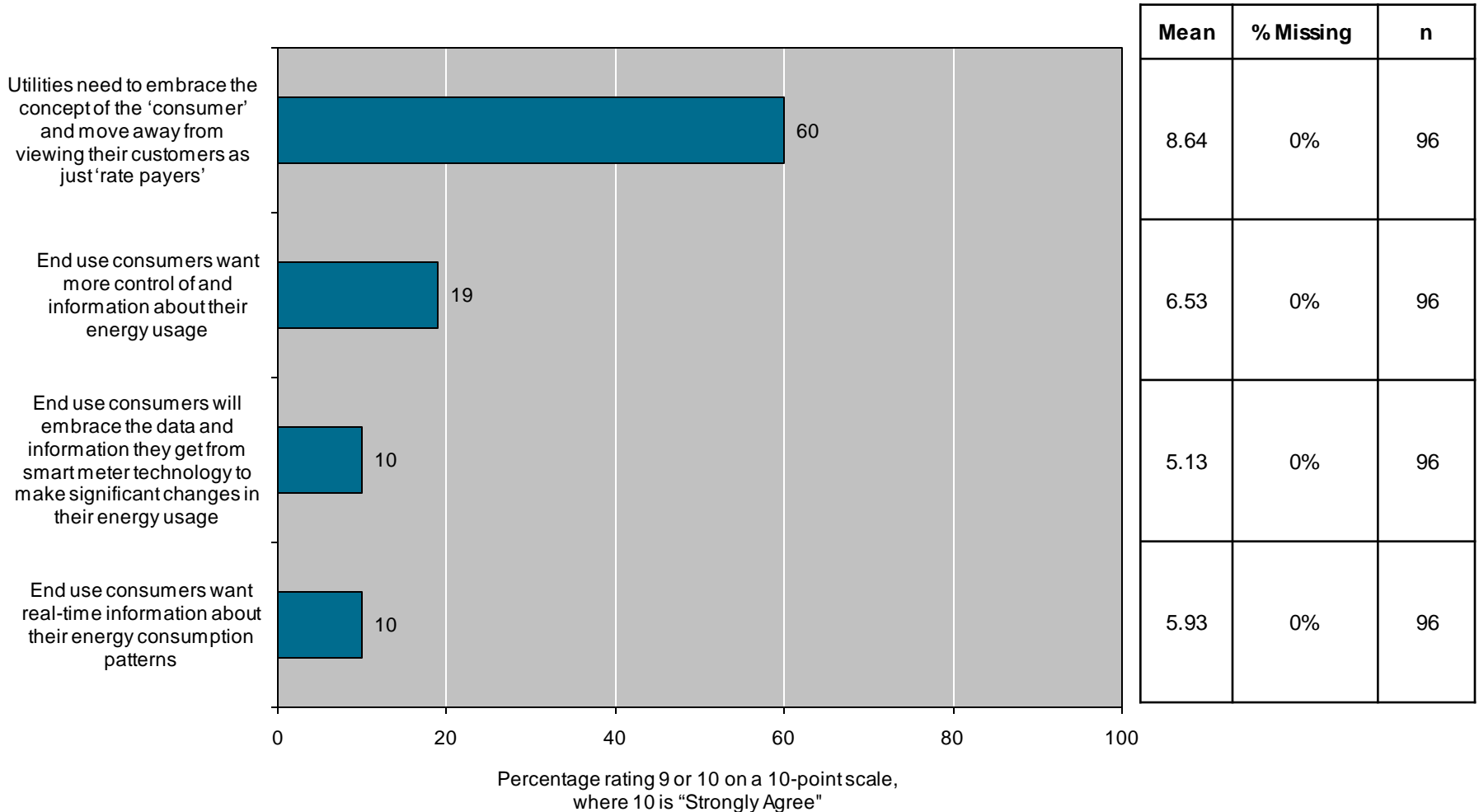


Base: Total sample (n=96); "No Answer" is excluded.

Questions F1 to F7 (F1): On a scale of 1 to 10 where 10 means "Strongly Agree" and 1 means "Strongly Disagree", please rank your agreement or disagreement with the following statements.

# Agreement Detail

## End Users

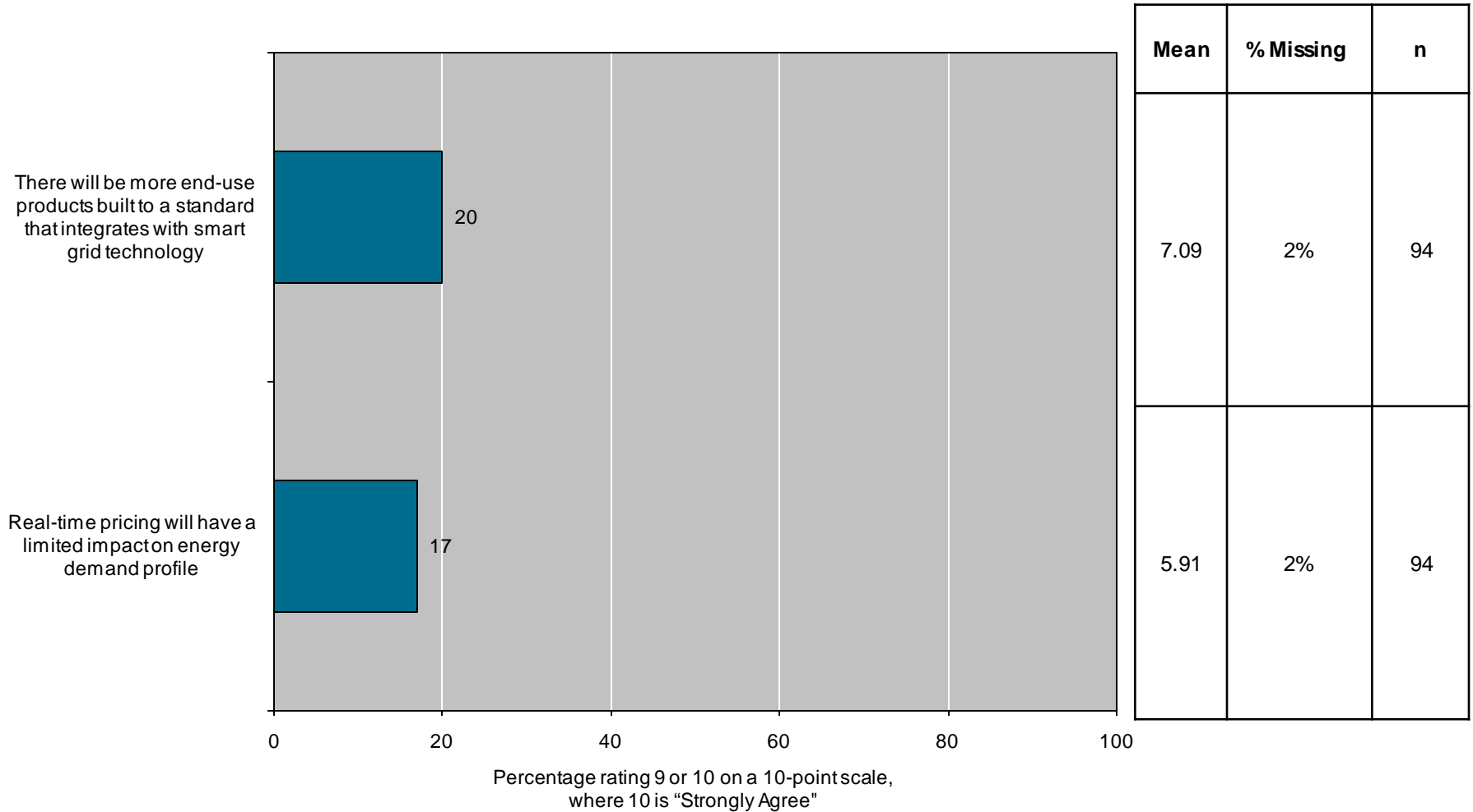


Base: Total sample (n=96); "No Answer" is excluded.

Questions F1 to F7 (F1): On a scale of 1 to 10 where 10 means "Strongly Agree" and 1 means "Strongly Disagree", please rank your agreement or disagreement with the following statements.

# Agreement Detail

## Energy Efficiency and Conservation

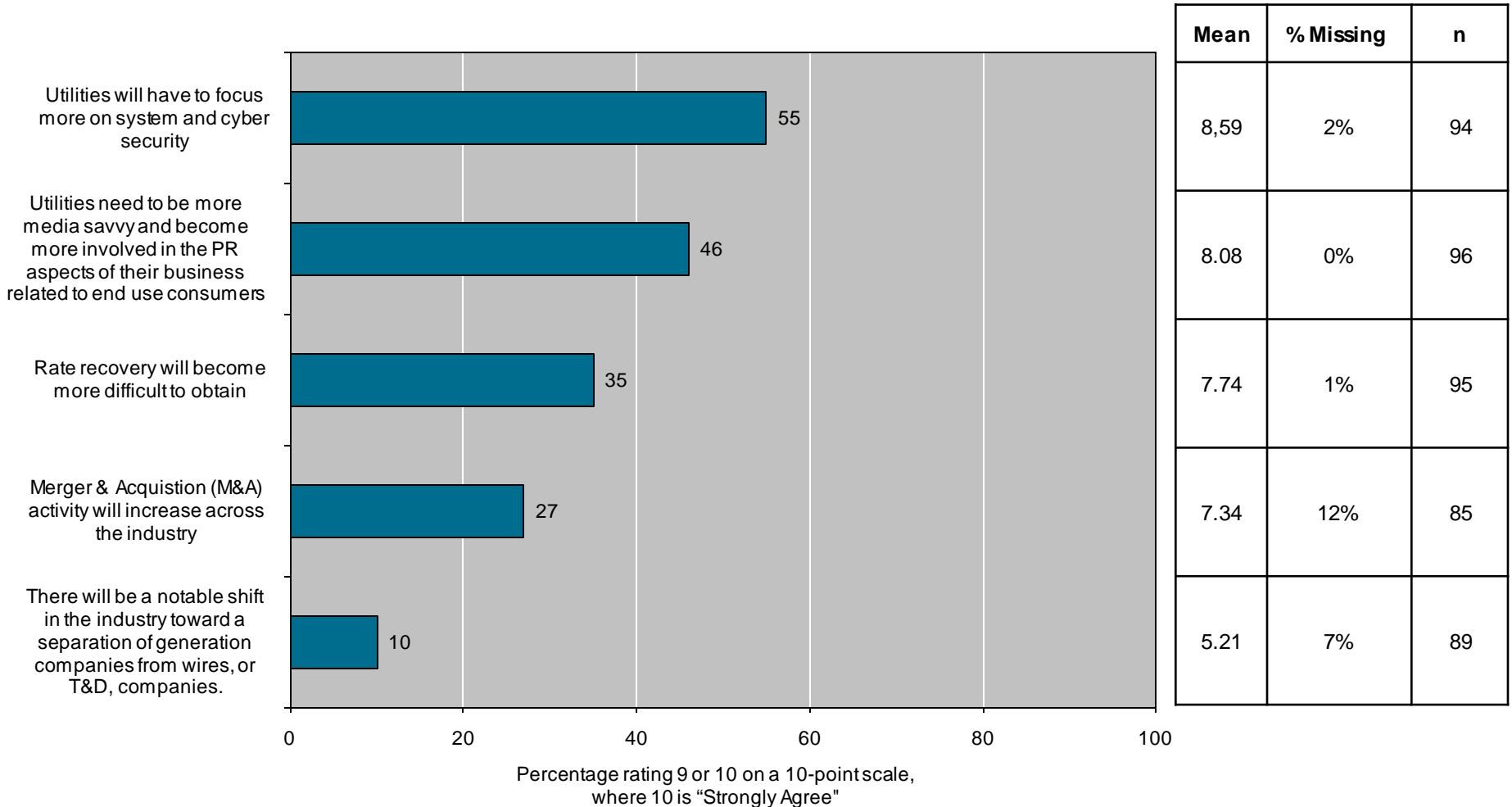


Base: Total sample (n=96); "No Answer" is excluded.

Questions F1 to F7 (F2): On a scale of 1 to 10 where 10 means "Strongly Agree" and 1 means "Strongly Disagree", please rank your agreement or disagreement with the following statements.

# Agreement Detail

## Business and Finance

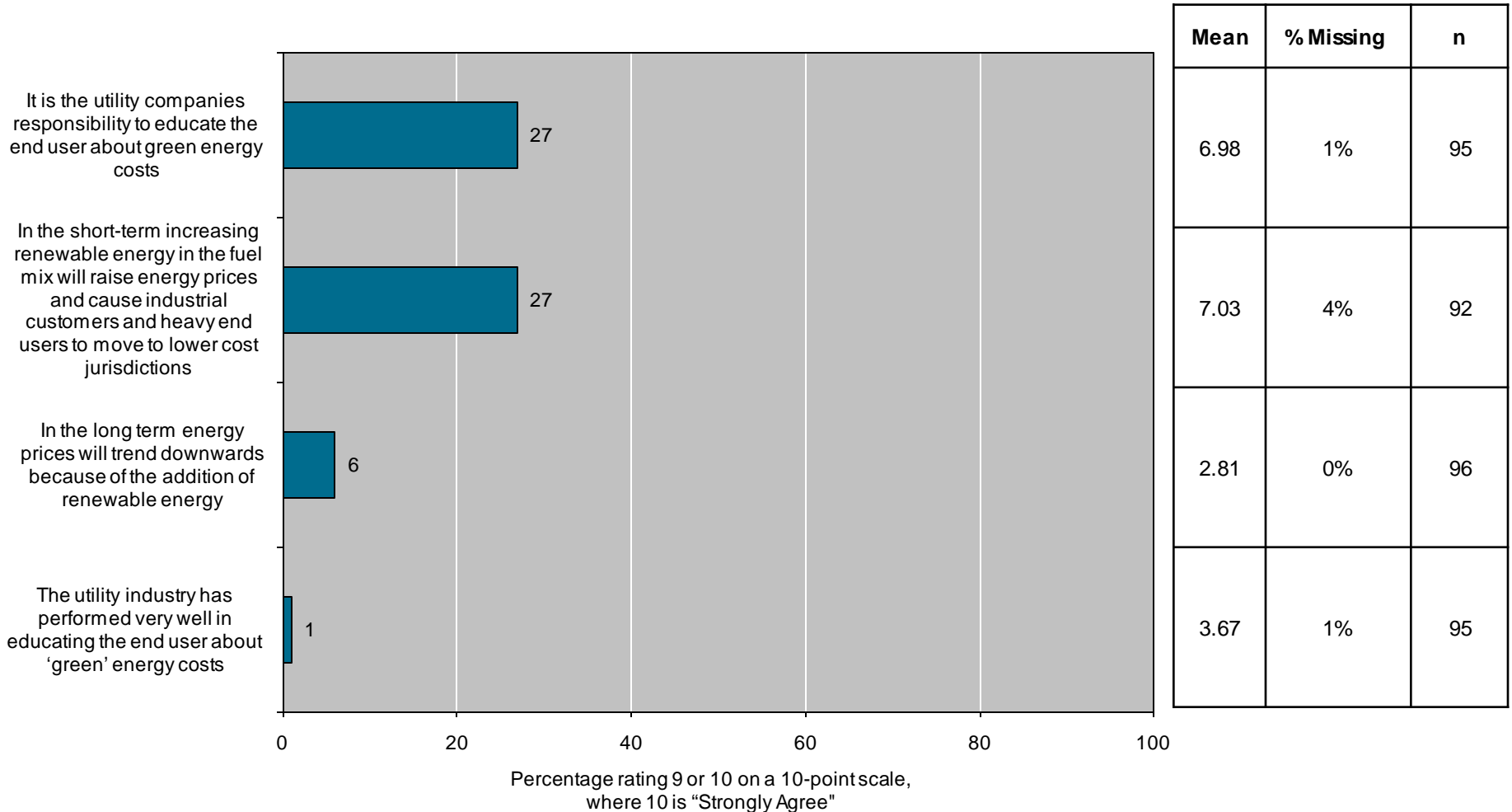


Base: Total sample (n=96); "No Answer" is excluded.

Questions F1 to F7 (F3): On a scale of 1 to 10 where 10 means "Strongly Agree" and 1 means "Strongly Disagree", please rank your agreement or disagreement with the following statements.

# Agreement Detail

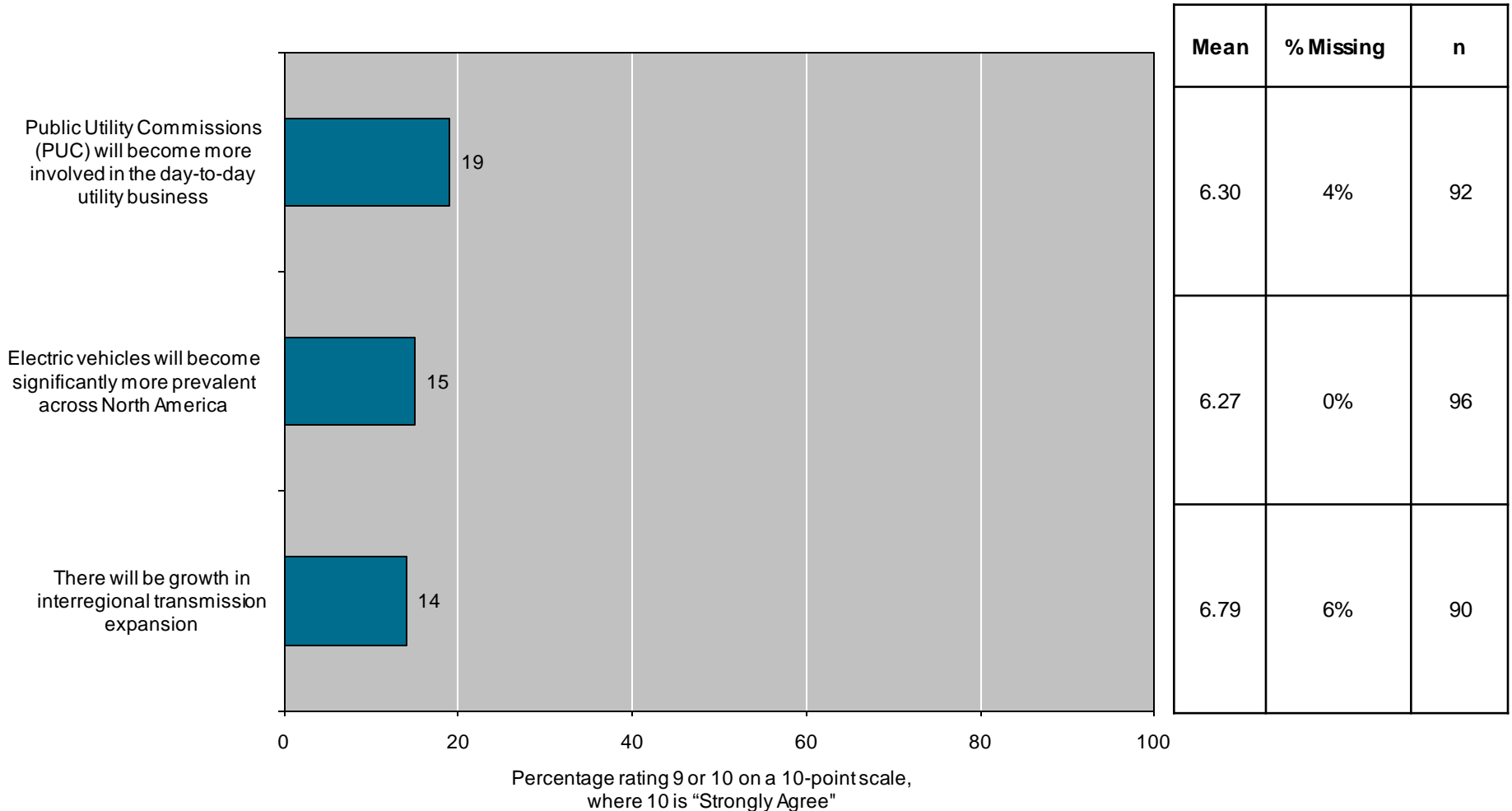
## Green Energy



Base: Total sample (n=96); "No Answer" is excluded.

Questions F1 to F7 (F4): On a scale of 1 to 10 where 10 means "Strongly Agree" and 1 means "Strongly Disagree", please rank your agreement or disagreement with the following statements.

# Agreement Detail Environment



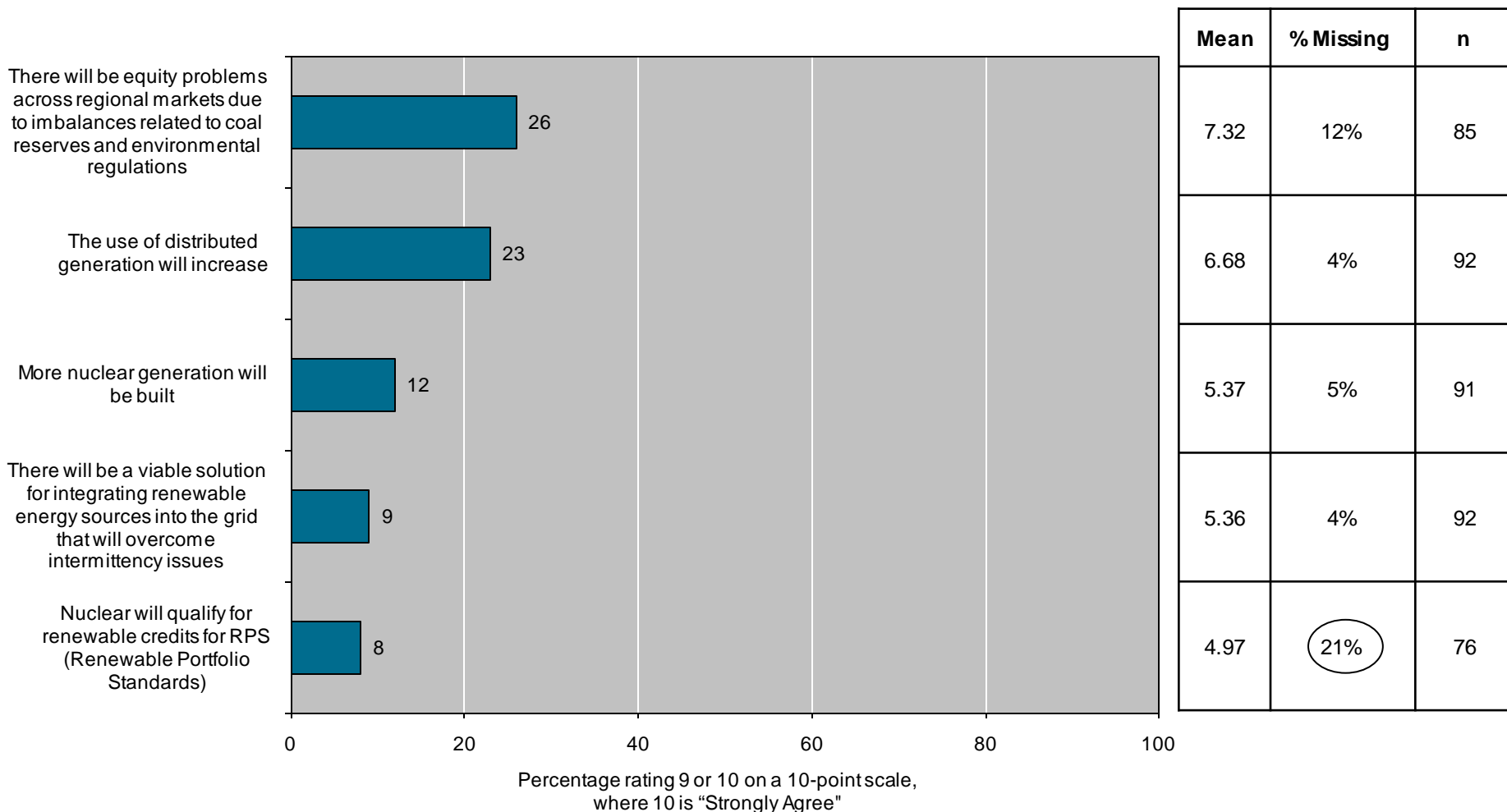
Base: Total sample (n=96); "No Answer" is excluded.

Questions F1 to F7 (F5): On a scale of 1 to 10 where 10 means "Strongly Agree" and 1 means "Strongly Disagree", please rank your agreement or disagreement with the following statements.



# Agreement Detail

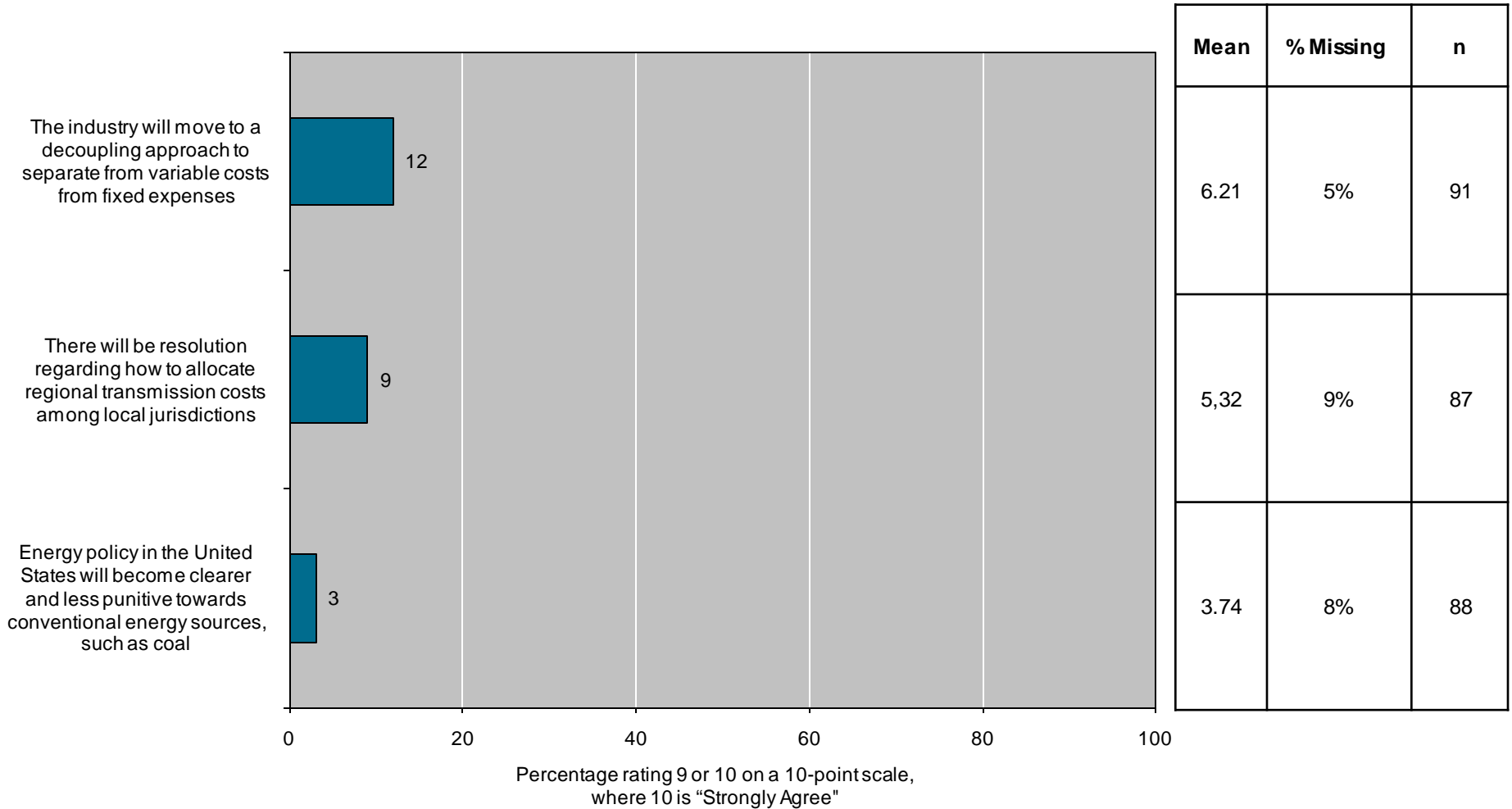
## Fuel Mix



Base: Total sample (n=96); "No Answer" is excluded.

Questions F1 to F7 (F6): On a scale of 1 to 10 where 10 means "Strongly Agree" and 1 means "Strongly Disagree", please rank your agreement or disagreement with the following statements.

# Agreement Detail Regulation

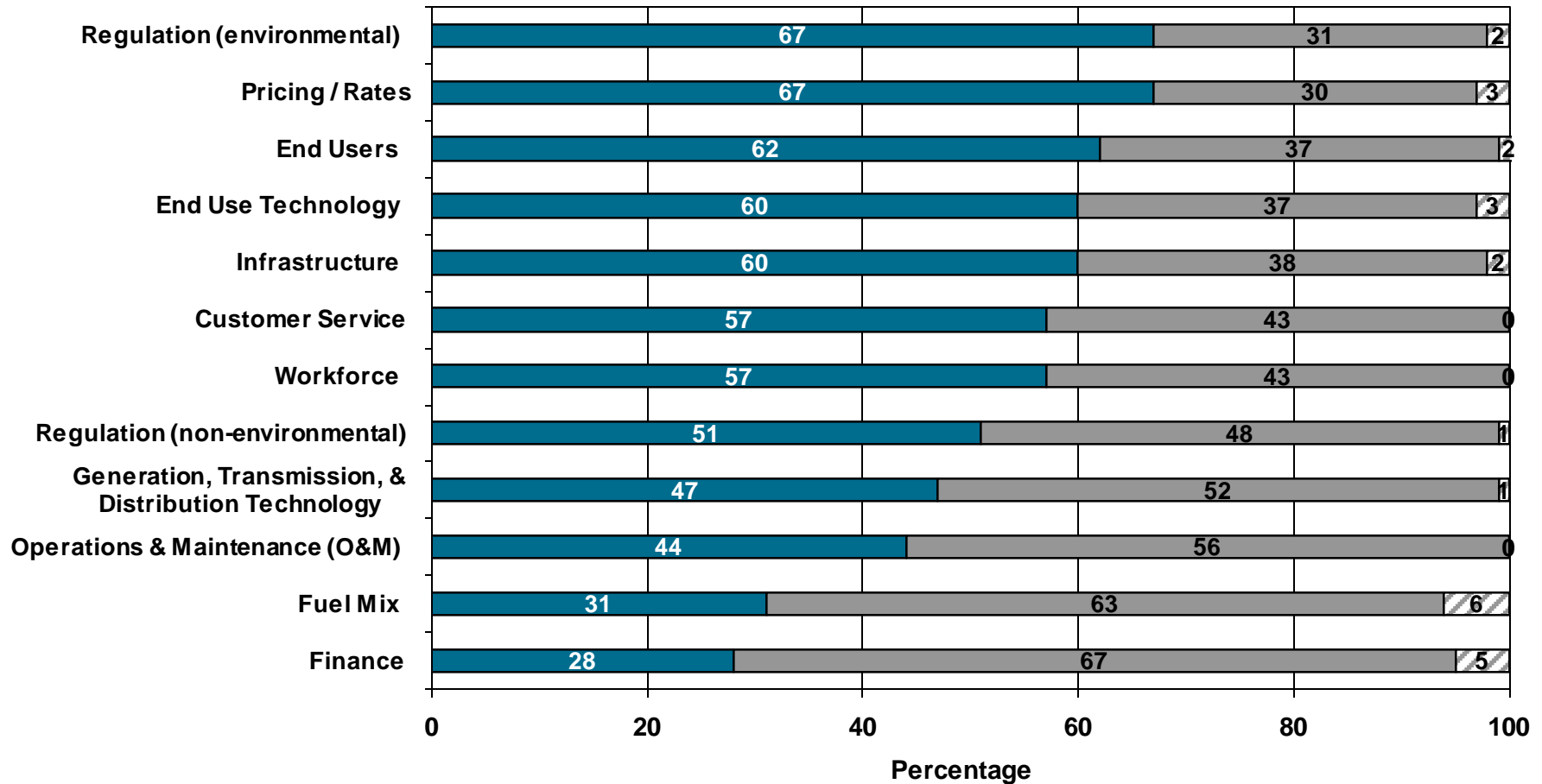


Base: Total sample (n=96); "No Answer" is excluded.

Questions F1 to F7 (F7): On a scale of 1 to 10 where 10 means "Strongly Agree" and 1 means "Strongly Disagree", please rank your agreement or disagreement with the following statements.

# Focus on Issues over the next 5 to 10 years

■ Increase ■ Stay the Same ■ Decrease



Base: Total sample (n=96); "No Answer" is excluded

Question P1: Will your focus on the following areas increase, decrease or remain the same over the next 5 to 10 years?

Note may not sum to 100% due to rounding.

# Greatest concerns for the future of the electricity and natural gas industry over the next 5 to 10 years

A highly qualified workforce to both replace the aging workforce and transition to new technologies.

Ability to increase rates

Ability to innovate

Ability to recover costs through higher rates approved by PUC's

Affordability of rates

Age of generations fleet and the ability to replace it

Aging infrastructure

Aging infrastructure and impact on rate of needed investment

Aging infrastructure replacement

Aging Infrastructure

Aging Workforce and knowledge transfer

Carbon cost in whatever format it eventually comes. There needs to be a Consistent method overall and a common approach to what these revenues are used for

Carbon Dioxide Regulation

Competition fostered by smart grid infrastructure

Complexity of regulation/Gov't interference in day-to-day business

Consumer cost impacts related to renewable generation and state renewable portfolio standards

Cost

Cost and physical ability to integrate renewables mandated by Renewable Portfolio Standards

Cost of continuing regulations issued from govt.

Cost of energy to the customer - rate increases

Cost of Environmental Regulations.

Cost of increasing regulations

Cost recovery

Cost/integration of renewables

Costs

Critical need for improved infrastructure and the associated price impact on consumers

Customer backlash from rising electricity pricing

Customer satisfaction

Electrical reliability due to increase of renewables

Environmental compliance with our generation fleet.

P2. What are your three greatest concerns for the future of the electricity and natural gas industry over the next 5 to 10 years?

The 1<sup>st</sup> mentions from executives are shown here. For the complete set of verbatim comments, including the 2<sup>nd</sup> and 3<sup>rd</sup> mentions, please see the appendix.

# Greatest concerns for the future of the electricity and natural gas industry over the next 5 to 10 years

Federal environmental regulation.

Getting a meaningful carbon price signal

Getting a reasonable and comprehensive national energy policy.

Greenhouse gas regulation

How will utilities meet the renewable energy targets.

Inability of regulators, policy makers and utilities to agree on a new business model priced on value of service instead of quantity of commodity used.

Increased costs and rate pressure due to increased environmental standards

Increased government regulation requiring significantly more resources that otherwise would be running the business

Increasing costs

Increasing federal regulations

Increasing fuel costs. Customer ability to pay.

Infrastructure maintenance and construction.

Integration of gas to replace or supplement coal for power generation in a more rapid time frame

Lack of certainty on environmental policy

Lack of clear policy and direction

Lack of National Energy Policy

Lack of regulatory clarity

Long term impact of shale gas supply on heat rates

Maintaining high system reliability

Managing Aging infrastructure

Managing customer expectations around "smart grid" and green technologies.

Managing the impact of greater environmental pressure on non-renewable generation sources

Misallocation of resources to high cost renewables

Natural gas will be drastically effected by a move to a carbon free future therefore a risk of stranding assets. Non hydro electricity will also be affected

New generation and fuel

Non-competitive electric rates, causing customer flight

Outdated regulatory/business model

Over reaching regulation

Overreaching EPA

Pipeline infrastructure not being built to utilize Marcellus.

P2. What are your three greatest concerns for the future of the electricity and natural gas industry over the next 5 to 10 years?

The 1<sup>st</sup> mentions from executives are shown here. For the complete set of verbatim comments, including the 2<sup>nd</sup> and 3<sup>rd</sup> mentions, please see the appendix.

# Greatest concerns for the future of the electricity and natural gas industry over the next 5 to 10 years

Potential for rising prices

Rate regulation and fair rates of return

Rate shock from environmental policies

Rates/Costs

Regulation

Regulation and legislation costs

Regulations that are fair to utilities and consumers.  
regulatory issue

Renewable Portfolio Standards will lead to increased  
generation costs as well as instances of negative market prices.

Replacement of aging infrastructure

Replacing aging infrastructure

RPS will drive costs sharply higher.

Sagging economy

Status of carbon regulation.

Strategic approach for addressing the aging workforce that  
results in efficient, cost effective replenishment.

The increasing politization of the utility business. Rather than  
focus on public policies, regulators and legislator respond more  
to political concerns than fundamental needs of the country's  
energy needs. Policy decisions now are made by 50 separate  
states and a number of different federal agencies. Not a model  
one would design if starting out fresh.

The overall price impact of significant infrastructure build and  
decommissioning.

The patchwork of state and federal regulation is ponderous,  
costly and impedes innovation.

Uncertain environmental regulations

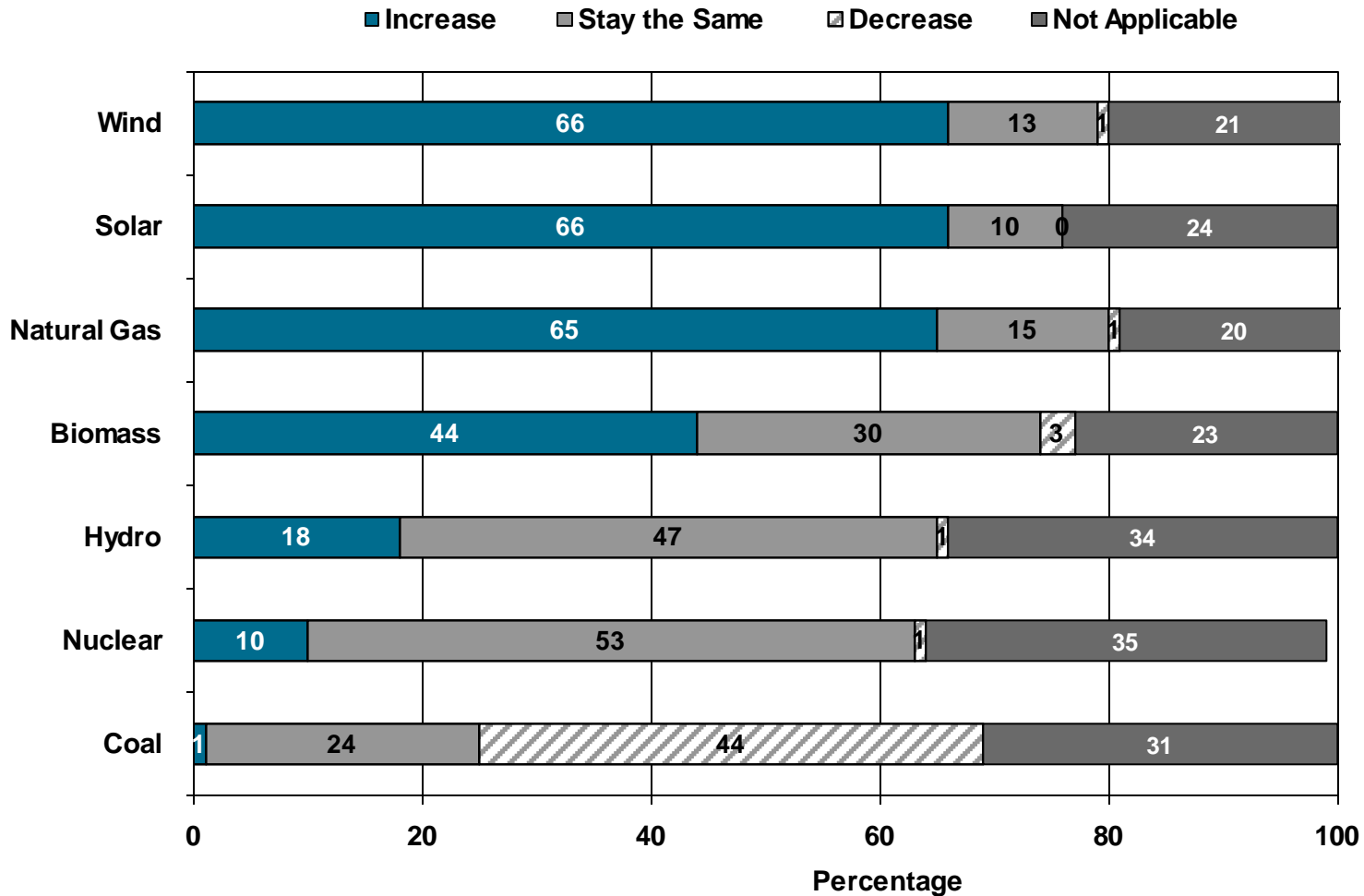
Uncertainty of environmental regulations

Willingness or regulators to allow recovery or reasonable costs

P2. What are your three greatest concerns for the future of the electricity and natural gas industry over the next 5 to 10 years?

The 1<sup>st</sup> mentions from executives are shown here. For the complete set of verbatim comments, including the 2<sup>nd</sup> and 3<sup>rd</sup> mentions, please see the appendix.

# Future Use of Fuels



Other mentions include:

- Demand Management
- Geothermal
- Landfill gas
- Landfill methane
- Pumped storage
- Tidal energy; geothermal
- Market purchases

We still have some No 2 and No 6 oil of which No 6 will decrease and No 2 will stay the same more or less

Base: Total sample (n=96)

Question P4: Do you think your company's use of the following fuels will increase, decrease, or remain the same in the next 5 to 10 years?

Note may not sum to 100% due to rounding.

# Presentation Outline

Study Background

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Future Industry Trends

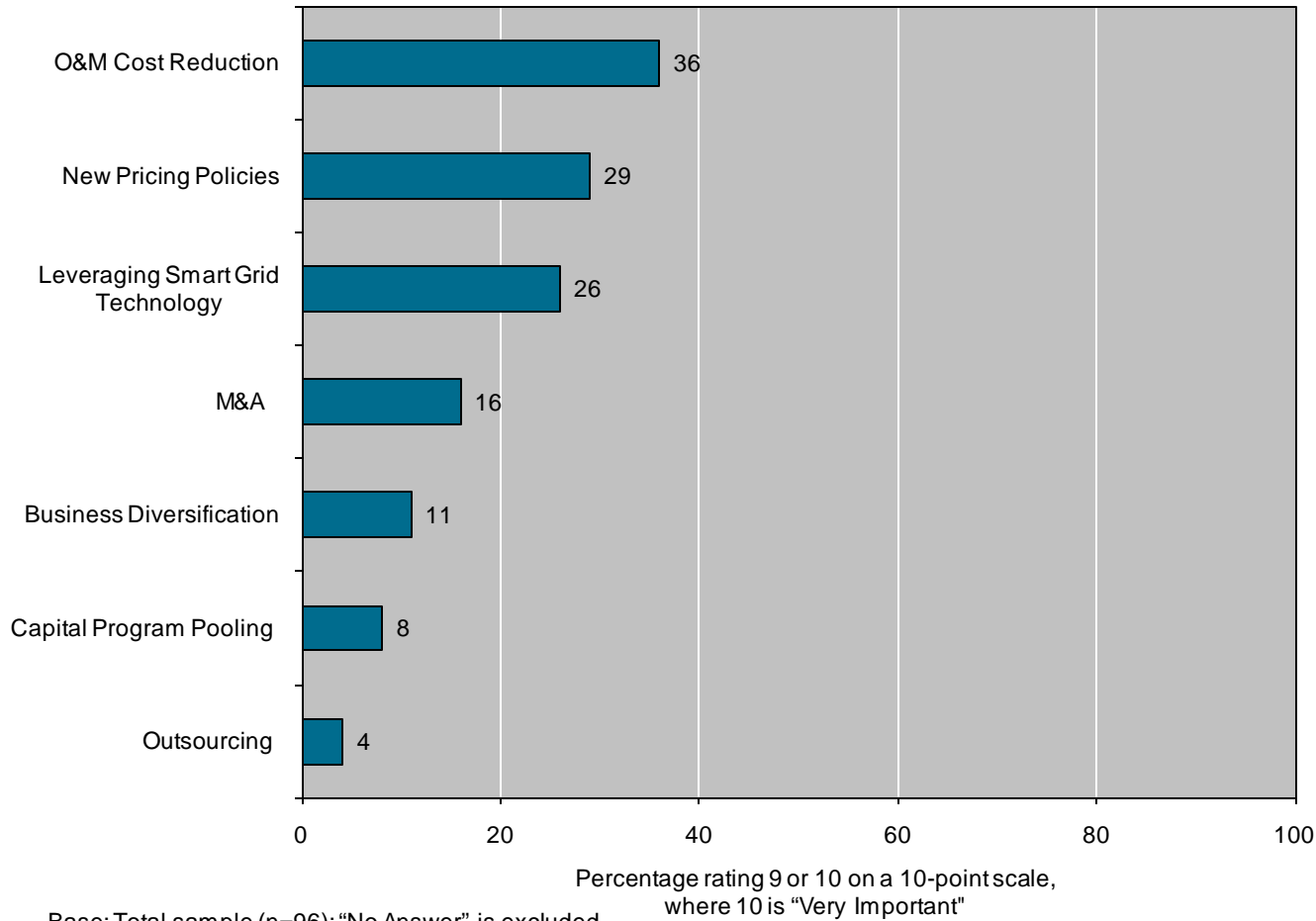
Strategic Planning

Smart Meter / Smart Grid

Appendix



# Importance of Areas to Strategic Planning



Mean	% Don't Know/ Missing	n
7.89	2%	94
7.29	9%	87
6.79	2%	94
5.46	14%	83
4.57	7%	89
6.05	20%	77
4.97	10%	86

Base: Total sample (n=96); "No Answer" is excluded

Question SP2: On a scale of 1 to 10 where 10 means "Very Important" and 1 means "Not at all Important", please rate the importance of the following business areas in your overall strategic planning.

# O&M Planning – Changes Being Made to Decrease O&M Costs (Page 1 of 2)

A lot, mostly automation and enterprise solutions
Adopting work management systems and RCM to reduce costs.
All changes we are making will actually increase it
AMI roll out, Continuous Improvement
AMR will be the main focus.
Better planning/scheduling. Review possibility of outsourcing certain functions. Benchmarking.
Better use of smart grid technology to reduce outage durations, reduce meter reading significantly through smart meters
Capital investment to improve productivity
capital replacement of high cost assets
Consolidate maintenance contracts to drive lower pricing. Implement better analytics to deliver more efficient maintenance plans and programs. Retire non-critical legacy assets with low utilization.
Consolidation of operations where at all possible. Creating consistency across regions that avoid duplication of activities and lead to streamlines processes.
Constantly refining costs in all areas
Continued emphasis on controlling head count - use of temps / contractors to meet short term needs (head count = escalating payroll and benefit costs).
Continued integration of technology in field operations.
Continuous Improvement activity in all facets
Control of staff additions, reducing outside activities, planning major changes over several years, continuous improvement, project management focus
Converting variable back office support costs to fixed through automation and sourcing activities.
Deployment of ERT meters (gas) and Smart Meters (electric) eliminating/greatly reducing people cost. Not just meter reading but service rolls, outage response, system management.
Deployment of technology to capture increasing efficiency and reduce human resources effort.

Developing sourcing partnerships, grouping multiple purchases over several years into a single purchase
Focus in on reducing the O&M/customer which doesn't mean absolute reduction in O&M.
Have already downsize via layoff/retirement programs
Have build an internal department focused on operational excellence
Improve supply chain process, strategic buying
Improvement in operations and corporate support functions, particularly the latter, to limit non-essential activities.
Increase scale to leverage synergies, consolidate onto ERP
Increased efficiencies in areas such as supply chain. Lowering staff levels through attrition.
Increased outage cycles.
Increased planning of outages and asset management across plants and T&D.
Increasing capital replacement program
Lean
M&A to gain scale and size
Managing headcount factoring with aging workforce implications factored in.
Managing headcount through attrition. finishing pension program changes. Increasing employee share of medical costs.
Managing rate of hiring
Matrix mgmt, rapid results, lean six sigma, benchmarking/best practices, etc.
More efficient O&M planning through use of more actual equipment health data

Base: Total sample (n=69 answered)  
 Question SP5 Think about how the current industry issues are impacting your O & M planning?  
 What changes are you making to decrease your O&M costs in the coming year? .

# O&M Planning – Changes Being Made to Decrease O&M Costs (Page 2 of 2)

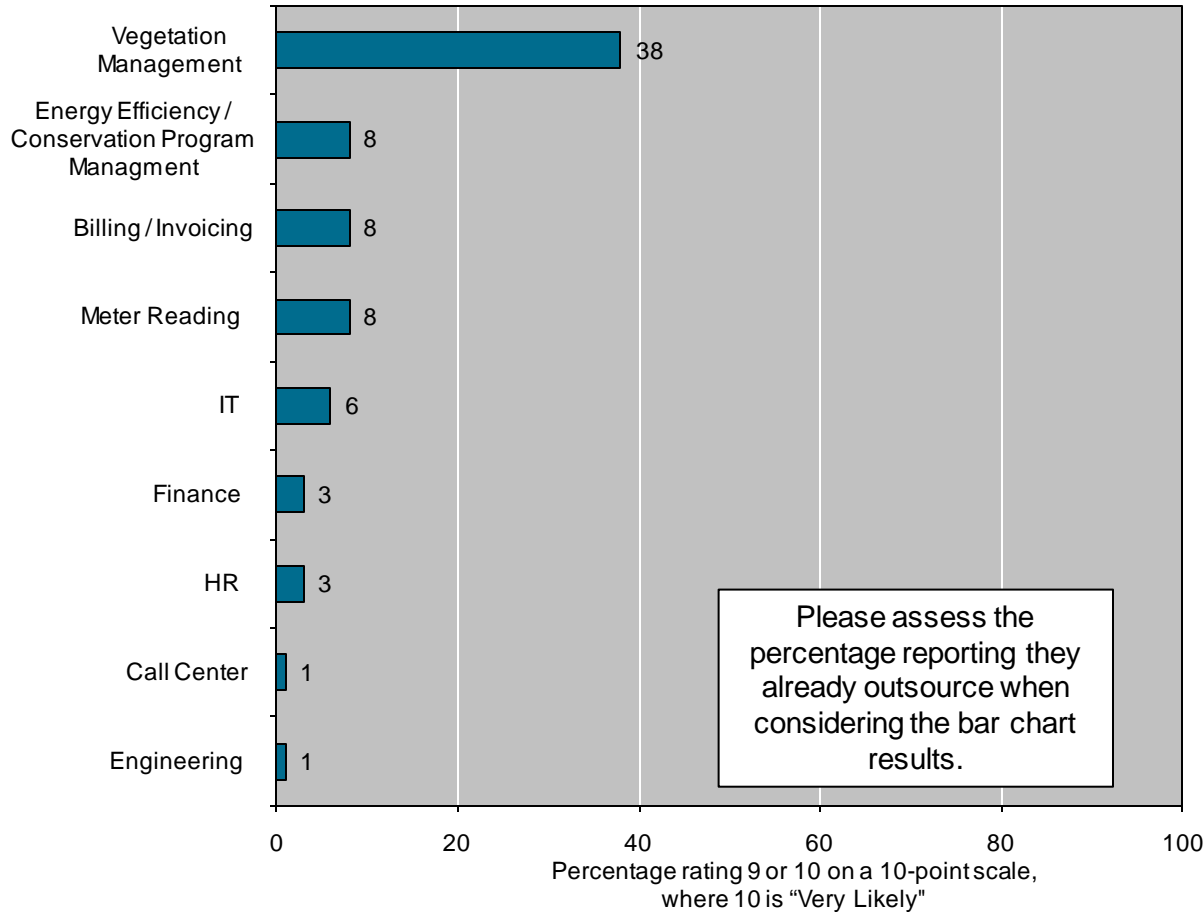
More focus on process improvement
More outsourcing, more automation. Need to prepare to do more with less.
More predictive maintenance, ultimately reducing the cost of "fall-down" maintenance.
Multiple, have a performance management area
negotiated termination of defined pension plans and retiree medical for new employees
No specific activities other than a relentless effort to control costs and budgets.
Nothing major other than traditional cost reduction methods too numerous to mention here.
Potential partnerships for service delivery e.g. procurement/materials management, civil construction, vegetation management
Process improvements
Process improvements. Planning and execution excellence. Procedure use and compliance.
Reassessing maintenance schedules and outsourcing certain functions where it is cost effective to do so.
Reducing staff. Reducing maintenance on older plants, and possibly retiring older plants.
Reducing staffing (outsourcing certain functions), better strategic planning, lean and six sigma, consolidating and combining functions.
Reduction in staff, evaluation performed to cut expenses in all areas.
Review maintenance practices in association with Asset management review.
Review of the use of contractors and process/procedures of various activities.
Reviewing multiple processes, obtaining employee input, benchmarking efforts.
Revised the table of organization to focus on specific functions and eliminate some non-essential. Spreading out in time (over more than one fiscal year) some project activities that have an O&M component, employing (now for several years) a process improvement activity, reducing some plant outages, continuing to reduce and control overtime.

Seeking regulatory approval for key areas of vegetation management, reliability and safety programs (does not decrease O&M but allows it to be recovered).
Strategic Procurement and outsourcing. Process improvements using new technology such as smart grid and an improved customer care & billing system.
Strategic use of technology, business process improvement, asset management
Substation and distribution automation.
Technology
We are continuing to outsource, but bit-by-bit. O&M has been essentially frozen for five years.
We are currently trying to absorb large O&M increases caused by NERC compliance requirements that do not benefit our customers. We have been successful at bidding below estimate on many types of work that has offset these costs to a large extent.
We continue to focus on operating more efficiently but our O&M costs are increasing not decreasing as we attempt to stay ahead of aging infrastructure
We have made significant changes over the past few years. We are benchmarking with other utilities to identify further ways to manage costs.
We're looking at changes in work schedules, assessing vehicle and equipment utilization, lengthening certain maintenance schedules, cutting back promotional materials.

Base: Total sample (n=69 answered)

Question SP5 Think about how the current industry issues are impacting your O & M planning? What changes are you making to decrease your O&M costs in the coming year? .

# Likelihood of Outsourcing Business Activities



Mean	% Already Outsourcing	% Don't Know / Missing	N that Answered
6.69	43%	10%	45
4.27	9%	8%	79
3.97	14%	5%	78
3.55	13%	9%	75
4.63	12%	5%	80
2.01	2%	4%	90
2.74	1%	6%	89
3.58	8%	7%	81
3.31	9%	4%	83

Base: Total sample (n=96); "No Answer" and "Already Outsourcing" is excluded

Question SP3: On a scale of 1 to 10 where 10 means "Very Likely" and 1 means "Not at all Likely", please rate the likelihood of outsourcing the following business activities.

# Ways Strategic Planning has Changed in View of Challenges Facing the Industry

Adjusted rate models to put increase base customer fees so that less emphasis is placed on charging for commodity consumed.
becoming more active legislatively
Considering options that would not have been considered 5 years ago
continue seeking decoupling albeit unsuccessful to date
Critical focus on retail energy and services sales to customers in competitive markets. Intense focus on energy efficiency and demand response as well as smart grid deployment.
cutting costs to avoid need to file rate cases and expose ourselves to likely rate reductions
Doing studies on specific options to assist in decisions.
Focus has turned to repositioning as a T&D company.
Focus is on the long term value of resources in providing the integration needed for renewables, how to be ready for electric transportation
Focus on asset management given aging infrastructure.
Focus on gaoing renewable ( large hydro) sources constructed to displace thermal generation.
Focus on renewing aging infrastructure within a Smart Grid environment, with a focus on improving accessibility and reliability while keeping rate increases reasonable.
From a focus on stability to a focus on growth
fuel diversity
Gasgeneration will be the choice for the foreseeable future
Generation retirements and fuel mix
Greater empasis on technology enabling efficiency
Greater focus on delivering customer value as energy prices keep rising. More attention to security and reliability of transmission supply into our service territory. Developing strategies to fund increasing capital investments in electrical infrastructre to achieve a sustainable level of capital replacement.
Have become ultra sensitive towards costs, credit, and liquidity. There is much more scruitney in each of these areas and we have completely re-evaluated our past planning exercises.
I'm not sure what you mean by "challenges." We believe that their will be a significant increase in the usage of NG and are positioned to meet that increase

Base: Total sample (n=96); "Total answering n=75

SP1. We would like your opinions about how your company's strategic planning has changed in view of the challenges facing the industry (e.g. increased demand from consumers for renewable energy, perceived government carbon regulation, the economy, etc)

# Ways Strategic Planning has Changed in View of Challenges Facing the Industry

In a rapidly changing and undefined strategic environment, our strategies are moving to more small-bet types of investments and initiatives. It is difficult to make larger plays in this high risk environment.
Increased focus on M&A. Increased focus on diversification into related energy businesses but that are not regulated.
Increased focus on productivity and employee engagement, increased focus on connecting renewables
increasing investment regarding aging infrastructure
Intense focus on fixing a broken regulatory model and finding ways to incent needed investment
It has become more formalized with input throughout the organization. Its focus is on the immediate challenges.
It is beginning to as we try to understand the potential for disruption and the emergence of new business models.
less capital investment in maintaining generation fleet--focus on expanding retail presence including residential as a credit hedge
Longer-term planning
Looking at more renewables, smart grid, and distributed generation.
More balance in fuel portfolio, more efficiency, more innovation, smart grid investments
More emphasis on strategic planning and disruptive technologies or operating models
More focus on how to leverage metering technology advances into greater product offerings to end-use mass markets. Redirection of capex in light of changing fundamentals in gas supply/demand--both commodity and transportation/storage infrastructure(ie, lational and seasonal basis)
more focus on non-regulated growth to offset reduced regulated growth
More focused on environmental issues and environmental performance, focus on new talent
More focused on longer term horizons and stakeholders
More focused on public policy issues
More reliance on non-emitting renewable technologies: hydro, wind, DSM.

Base: Total sample (n=96); "Total answering n=75

SP1. We would like your opinions about how your company's strategic planning has changed in view of the challenges facing the industry (e.g. increased demand from consumers for renewable energy, perceived government carbon regulation, the economy, etc)

# Ways Strategic Planning has Changed in View of Challenges Facing the Industry

More Risk Analysis regarding uncertain outcomes
Move away from new coal to DSM, renewables and gas generation.
Much more active in advocating for effective carbon pricing to incent non-emitting technologies and emission reductions.
Needs to be very flexible as the environment keeps changing relative to the various rules/regulations.
No change.
None - we still work to supply low cost energy at high customer service levels.
Not significantly as we have been anticipating many of the challenges
nuclear will be part of our portfolio
our long term horizon has become a bit shorter
Our strategic plan deals with the challenges facing the utility.
Over the past few years we have been factoring the customer impact or perspective into our strategies which are now transcending the organization through culture change. The approach is a mix of new ideas plus back to basics across the board with integration across business units to address broad, similar areas such as "aging workforce". We have also been focused on strategies to mitigate the rate impact of investments in infrastructure.
Planning is increasingly short term. There has been an increase in the focus on regulatory challenges, with a consequent result that the planning is more defensive (what do we have to watch out for - how do we stay out of trouble).
Pursue more gas generation, and consider early retirement of coal generation rather than trying to keep up with more and more EPA regulations
Retirement, fuel switching, and reduced operation of coal.
Slower expansion given financial health
Strategic plan focuses on delivering profitable growth and better results. Emphasis on taking advantages of opportunities in business lines as allowed by legislation, smart grid development and integration of renewables to the distribution system.
Strategic thinking needs to be broader and consider future competition for the consumers
Taking a longer term view of the possible "tipping points" that could impact our near-term decisions. Paying more attention to the relationship with our customers.
The most significant shift has probably been to increase efforts to identify growth opportunities outside traditional utility initiatives. Lack of significant natural growth in the markets we operate combined with lack of need for new generation will incentivise all utilities to look beyond their typical opportunities.

Base: Total sample (n=96); "Total answering n=75

SP1. We would like your opinions about how your company's strategic planning has changed in view of the challenges facing the industry (e.g. increased demand from consumers for renewable energy, perceived government carbon regulation, the economy, etc)

# Ways Strategic Planning has Changed in View of Challenges Facing the Industry

There is significant focus on infrastructure and on the aging workforce. Our planning horizon is probably shorter than it used to be in order to adapt to the changing regulatory environment.
We are focussed on developing and gaining regulatory support for business models that allow for pricing based on value of service.
We are looking at employing a more robust IRP tool to allow us to more rapidly analyze industry changes.
We are predominately a wires and customer service company so strategy has not changed significantly. We have moved in the direction of smart-grid but can only move as fast as the regulator.
We continue to update our short-term strategy to keep pace with the short-term (2-5 years) issues while continuing to focus on adequacy, reliability, cost and environmental stewardship. The end goals remain the same.
We continuously review our assumptions regarding environmental regulations.
We have adopted a scenario planning approach as a tool for dealing with future uncertainty.
We have diversified into renewables and are focused research on small generation sources located in our service territory.
We have taken a more wholistic view in determining what businesses we should be focusing on to achieve long term shareholder returns; less of a focus on meeting short term targets by transacting in businesses that are not core to our strategy.
We've become more focused on addressing the aging workforce.
We've had the same strategic plan for the last few years but we review the plan annually to check for durability.
Yes significant increase in scenario planning
Yes, but it is more correct to call our planning tactical and operational. In my experience there is very little truly "strategic" planning that occurs at traditional vertically integrated utilities.
Yes, increased focus on future regulatory environment; impact of changing environmental considerations and critical human resource issues.
yes. Natural gas combined cycle is now on the table.
Yes. Over the past two years, we have formed a strategic planning department which leads corporate efforts to focus on better defining the company's strategic direction.

Base: Total sample (n=96); "Total answering n=75

SP1. We would like your opinions about how your company's strategic planning has changed in view of the challenges facing the industry (e.g. increased demand from consumers for renewable energy, perceived government carbon regulation, the economy, etc)



# Where Investment Dollars are Going in the Next 1 to 3 Years?

- Base T&D
- Capital ~\$60M per year.
- Capital investment of approximately \$1.2B over next 3 years
- Constant at about \$6 billion a year
- Core T&D infrastructure. Environmental retrofits.
- Distribution-both electric and gas
- Electric system integrity, gas pipeline safety, technology platforms
- enviro capex
- Environmental, renewables, AMI, replacement (exiting) capital.
- Expansion/maintenance of network. Smart meters.
- Gen/PP and transmission, followed by distribution
- generation including renewables, transmission
- Generation, T&D and IT infrastructure improvements
- Generation, T&D.
- Increased investment in gas distribution pipeline replacement
- Increasing - especially in pole replacement, station transformer replacement and construction of new stations
- Infrastructure, Smart grid/AMI.
- Infrastructure.
- Into a new energy control center, repair and replacement of generation and T&D facilities on a planned schedule.
- IT Capital budgets will increase by \$10M each year and Distribution Capital budgets will increase by \$50M each year (subject to Regulatory approval)
- IT Infrastructure; smart grid.
- Long term stability
- Major investment in reliability (electric) and safety (gas) related programs.
- Meeting regulatory requirements.
- Meters. Gas gathering and processing, electric transmission, customer growth (Texas based operations)
- Mostly new infrastructure for integrating renewable generation, new generation, and aging T&D infrastructure replacement
- New corp yard, 125 MW wind project, AMI meters, replace two substations
- New generation and T&D infrastructure
- New generation and transmission
- New generation and transmission as upgrades/refurb of existing facilities
- New generation and transmission, emissions controls projects.
- new IT systems
- No current plans, but would likely be towards natural gas generation.
- Nuclear plant upgrade. Support of strategic initiatives. Infrastructure improvements (T&D).
- Pay down debt. Replace aging infrastructure.
- Pipelines
- Plant maintenance and aging infrastructure
- Primarily aging infrastructure, and some updated IT systems (EMS, customer billing).
- Primarily development of transmission infrastructure
- Regulated T&D with focus on automation
- Renewable energy supplies, "smart grid" updates, and facilities improvements.
- Renewable generation and distribution infrastructure
- Renewing infrastructure. depending on how new mining activities go possible some major dollars in new lines and associated equipment to serve mining load.
- Replacing aging infrastructure, building new renewable sources (small hydro, tidal, and solar), smart grid infrastructure (excluding smart meters), and new infrastructure to serve growth.
- Replacing underground cable, natural gas plants and renewable projects
- Replacement of aging infrastructure
- RPS implementation, System reliability
- Significant Transmission project.
- Smart grid technology and current system/process automation.
- Solar, electric vehicle infrastructure
- Substations
- Sustainment and development
- System modernization and smart grid
- T&D improvements for reliability, upgrading the nuclear plant by 75 MW, smart grid initiation
- T&D, environmental controls, new generation.
- Transmission line upgrades
- upgrade SCADA
- wires infrastructure and generation environmental retrofits

Base: Total sample (n=96); "Total answering n=61  
SP6 Where are your investment dollars going in the next 1 to 3 years?"

# Presentation Outline

Study Background

Key Findings

Methodology

Respondent Profile

Current Industry Issues

Future Industry Trends

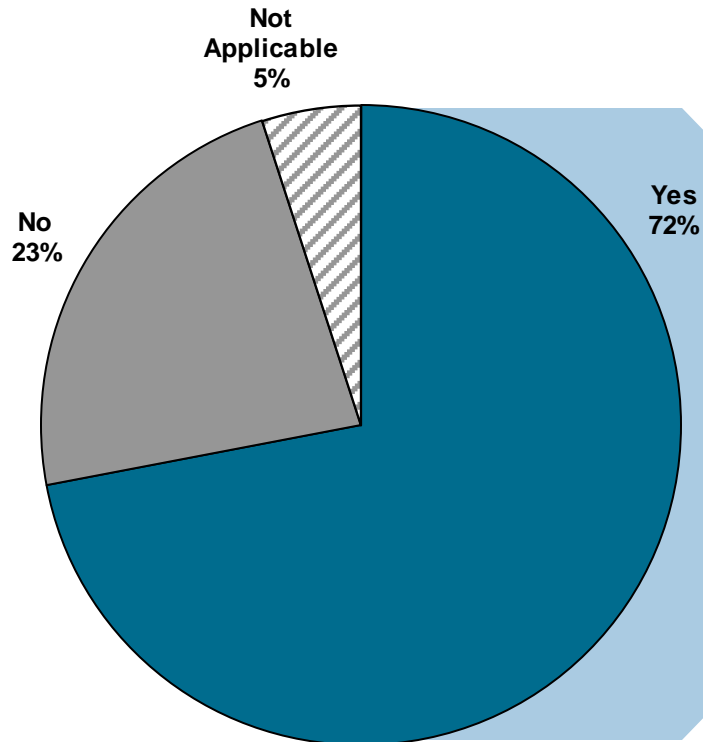
Strategic Planning

Smart Meter / Smart Grid

Appendix

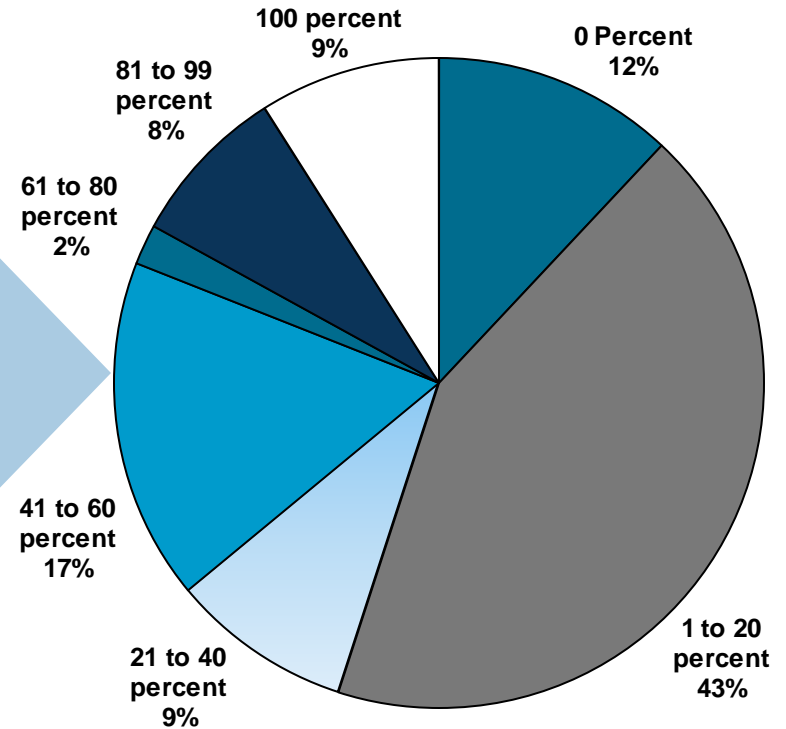
# Smart Meter Roll Out

Past or present involvement of smart meter roll out



Base: Total sample (n=96)  
 Question SM1: Is your company currently involved in, or has it been involved, in the roll out of smart meters to your customers?

Approximate percentage of end users with Smart Meters installed



Base (n=65) "No Answer" is excluded.  
 Question SM3: Approximately what percentage of your end users have smart meters installed? Note ask ONLY of those responding YES in SM1 (n=69).

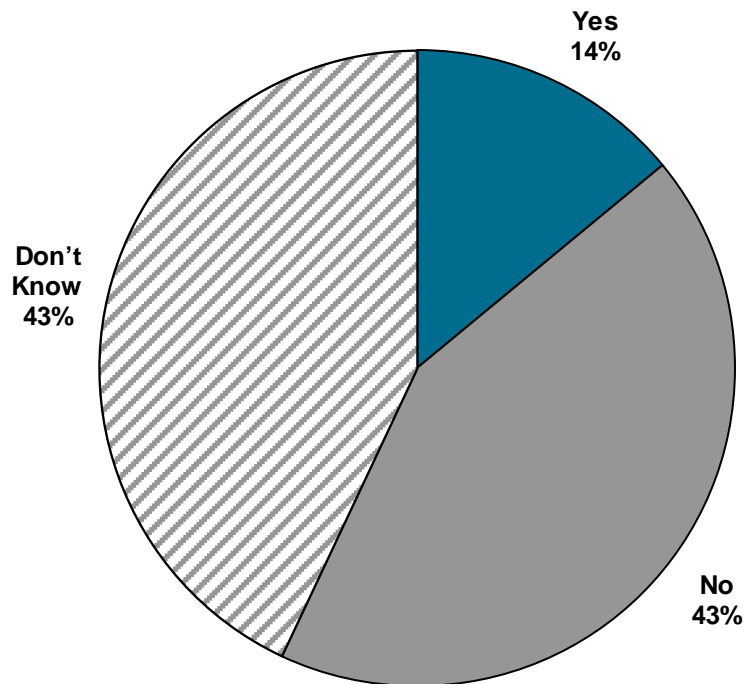
# How was Smart Meter Rollout Prioritized?

- Availability of outside meters, geographic considerations, likelihood of better educated customers.
- Condominiums, Low Income
- Density of area served.
- Deployment has been based upon timing of jurisdictions approving the installation programs.
- Electric customers
- Geographically based.
- Geographically prioritized
- Geography
- High risk regarding payment
- Large industrial customers.
- Largest impact and those willing.
- Most difficult to read then those areas where disconnections occur more frequently.
- Most sophisticated customers and most difficult customers
- Non-Residential First and then we will offer them to customers that want to take advantage of the offering.
- Residential prioritized due to availability of Industry certified devices
- Rural areas
- Selected a representative sample of our customers within a defined area
- Started with our densest areas and moved to the most remote
- Strength of communications network
- The prioritization was geographical.
- We apply products to the smart meters but have no control over the roll-out. PUC determines with the wires companies.
- We are planning to introduce the technology to all customer classes at the same time
- We received a federal stimulus grant. We targeted the largest customers. We will have meters on less than 5% of total customers, but representing close to 2/3 of total revenue.
- We selected a specific area of the city
- We're in a limited rollout using smart meters at the end of circuits to obtain voltage information. We've not planned for a full implementation at this time.

Base: Those involved in rollout; n=26 answered question, some deleted if identified organization  
;Question SM2: Tell us how you prioritized which end users firstly received the meters?

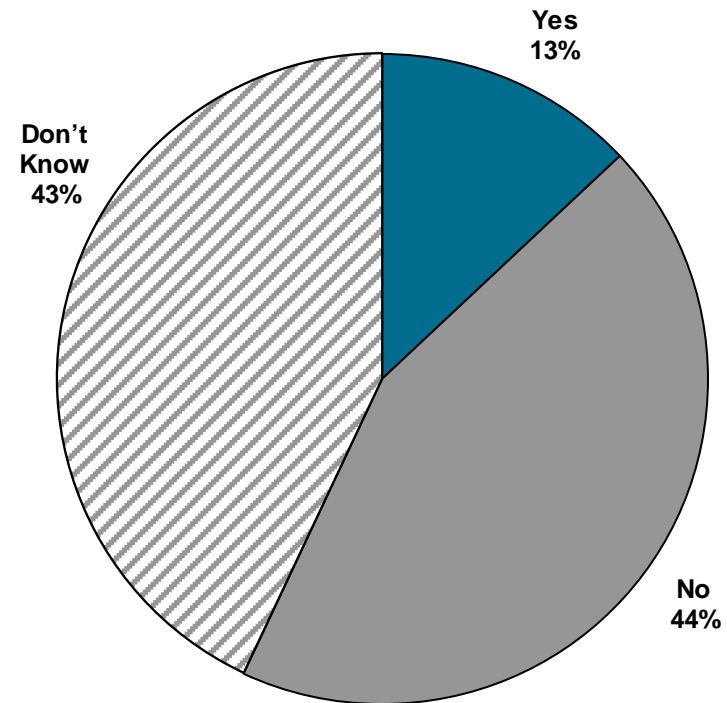
# Among those with Involvement in Smart Meter Roll Out ..... What is the Impact?

## Reduced Peak Demand since Roll Out



Base n=63; Those not answering are excluded  
 Question SM6: Have you experienced a reduction in energy demand at peak times since the roll out of smart meters?  
 (Note: ask only of those who answered involved in a smart meter rollout in SM1) (n=69)

## Reduced Usage since Roll Out



Base n=61; Those not answering are excluded  
 Question SM7: Have you experienced a reduction in overall energy use since the roll out which can be attributed to smart meters?  
 (Note: ask only of those who answered involved in a smart meter rollout in SM1) (n=69)

# Challenges Experienced When Deploying Smart Meters

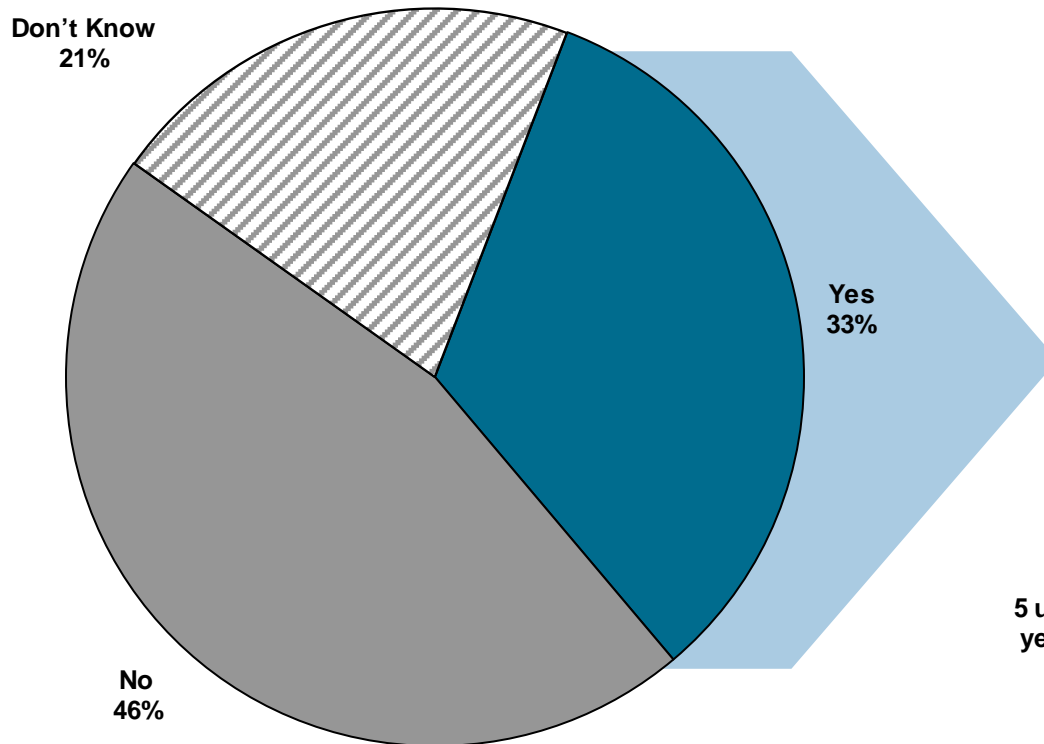
- Ability to provide discreet consumption data to customers, better manage high bill complaints, customer transitions, theft of service and bad debt due to remote disconnect features.
- Access and condition to existing meter base installations. Workforce requirements. Capital funding and rate recovery to procure the meters.
- Access to indoor meters
- Access to inside meters
- Adequate customer communications on the need, schedule, and impact to them. A lot of hand holding has been involved in our successful launch.
- Adoption by the customer
- Communications challenges
- Concerns about accuracy, access, value
- Cost and logistics were important.
- Cost concerns
- Cost recovery from regulators
- Cost, cost, cost
- Customer acceptance and the lack of experience with time of use rates.
- Customer use and acceptance.
- Customers wanting the ability to opt out over health and security concerns. Some technical issue as well
- Cyber-security
- Dealing with DOE stimulus red tape.
- Deciding on a technology standard for both the meters and the associated AMI systems.
- Delays in receiving meters from the OEMs.

- Developing organizational expertise with new technology
- From a consumer standpoint, each end-point has a blinking red light which drove some crazy.
- Implementing and integrating back office systems to support AMI (MDMS & CIS)
- Lack of clear appreciation of functionality requirements
- Major customer communications, access to inside meters.
- Meter failures, communications problems
- Needed a lot of customer interface
- No significant challenges - deployment process took lessons from other jurisdictions into account
- Not fully deployed and functioning yet. Customer education and communication have been two of the issues faced.
- Our service territory is not very dense so telecommunications infrastructure had to be built out.
- Regulatory concern over technology and cost.
- Technology and vendor stability
- Technology not mature, causing us to stop installation and replan initiative
- Technology, acceptance, educating customers
- The network needed to be tuned appropriately to be able to experience a high level of accuracy and read rate.
- They are clearly not "plug and play" systems
- Utilities were not prepared to deliver info to customers or deregulated suppliers
- We did not install any meters until we had a meter data management system that we knew would properly handle the data. That process took longer than expected. We had a problem with a vendor that wanted to change technologies after having delivered some meters; that took a little time to resolve. Testing of the data accuracy and return to the MDMS was initially a challenge. The current challenge is assuring that our customer educational system is working and properly preparing our customer base to utilize the technology. We will not begin actually using the meters for the intended purpose until we have a sufficient number installed - expected to be by October this year.

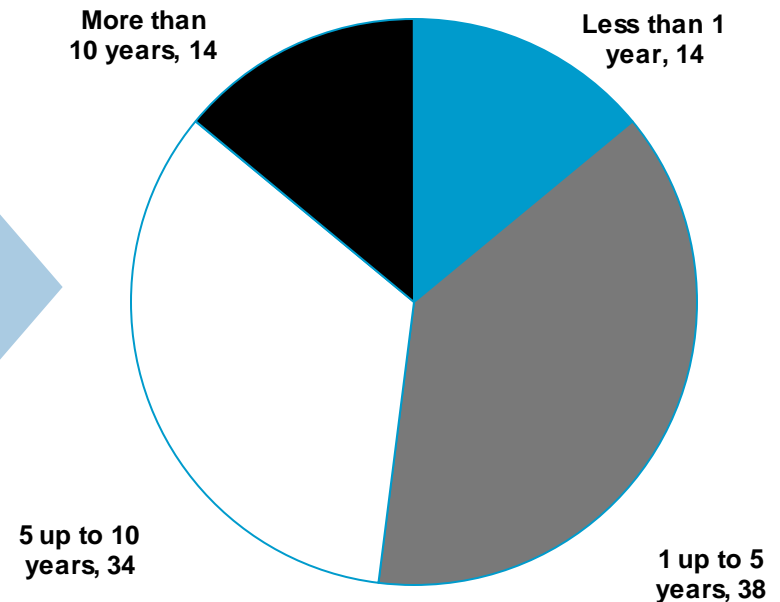
Base: Those involved in rollout; n=37 answered question, some deleted if identified organization ; Question SM5: What challenges did you experience in deploying the meters?

# Future Use of Smart Meter Information

**Will consumer use of Smart Meter info to manage consumption become mainstream?**



**When Consumer Use of Smart Meter Information will become Mainstream**



Base n=89; "No Answer" is excluded; Total sample (n=96).  
 Question SM9: In your opinion, will consumer use of smart meter information to manage energy consumption become mainstream?

Base (n=29) Total asked question (n=29); Caution small base size  
 Question SM10: When do you expect consumers using smart meter information to manage their energy consumption to become mainstream?

Note – Asked if respondent said Yes at SM9

# Reasons Consumer use of Smart Meter Information to Manage Energy Consumption will not become Mainstream (Page 1 of 2)

- 50% of our customers make less than \$50,000 income per year
- Behavior change takes time.
- Customer don't want to be bothered
- Depends on many factors including system peaks and pricing in different jurisdictions as residential consumers would likely need a very significant incentive to fundamentally change their use of electricity
- Electricity cost isn't a big component of the overall household budget. It will require technology that allows the customer to "set it and forget it" for energy consumption management to become mainstream or a substantial increase in electricity prices.
- I don't believe the typical consumer has time to manage their energy usage in this manner.
- I have a fairly dim view of the industry within which I work, at least as compared to the consumer products industries that will ultimately develop the technologies that can take advantage of the utility communication infrastructure. I think the timeline will be driven by these other industries' ability to drive customer value. Much as digital music didn't really take off until the i-Pod, consumer interest in energy management needs to have some buzz before people will start to care about the energy used to run their various plug loads.
- In those areas that utilized smart meters, there is no indication that consumption patterns changed. They have new info and data points, but they continue with the same habits.
- People don't want to have to worry about it
- Presently there is a high cost but underdetermine benefit for AMI. Cases before commission will be challenging to support for full inclusion in rates.
- Smart meter program is being tracked in another side of the business. Have not seen a report.
- There is a backlash to time-of-use pricing which has focused customers on the wrong aspects of smart meters. We need to do a better job of communicating with customers but unfortunately, our government has taken over that role.
- Too difficult.
- We don't see the interest by customers to want to manage usage—they are concerned about price but continue to want flexibility on usage.
- Consumers don't understand electricity, so it's not intuitive for them to have an understanding of how to conserve. And/or consumers have been reluctant to recognize that they have the ability to manage their electric costs; there's too much mis-information for consumers to understand cost effective ways to conserve.
- Customer apathy.
- Demographics and current state of in-house monitoring of information. Most older consumers will not adapt to using the meter to manage energy consumption on an ongoing basis. Will change with technology savvy consumers eventually replacing the older generation.
- We won't have time of use pricing or other pricing signals due to resource mix.

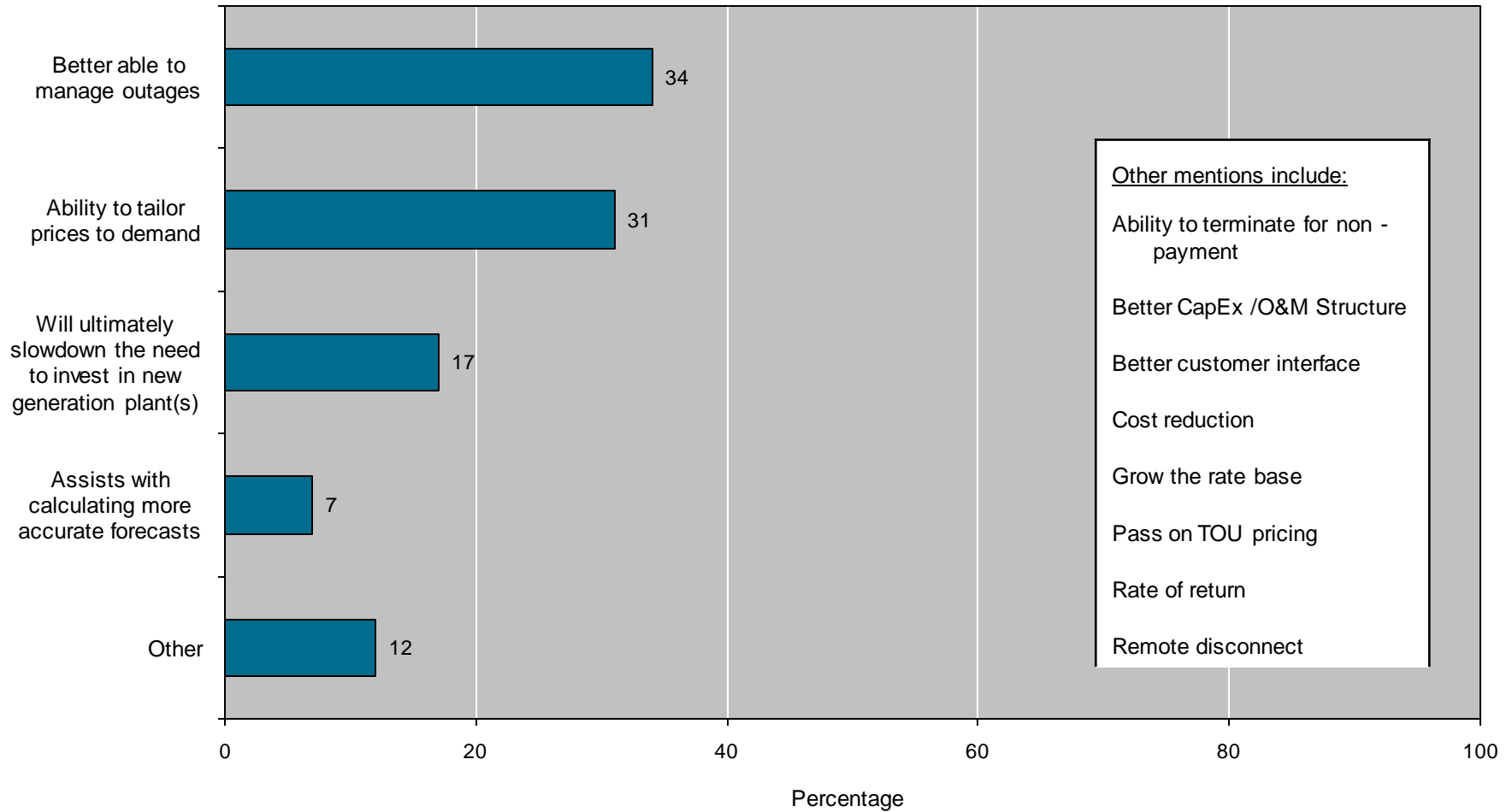
Base: Those who say no or don't know at SM9; n=40 answered question, some deleted if identified organization;  
Question SM11: Why do you say that?



# Reasons Consumer use of Smart Meter Information to Manage Energy Consumption will not become Mainstream (Page 2 of 2)

- Energy consumption by the average consumer is primarily for lifestyle, convenience, and comfort purposes. Unless the cost of energy becomes a primary financial driver for the consumer, they have not shown a willingness to make active choices in their consumption patterns.
- Energy prices are not exceptionally high and customers do not understand nor do they appear to want to all of the details around managing costs
- Full build out will take more than 10 years let alone getting to consumer education, use and benefit.
- However overtime meter technology will change, smarter meters will become more prevalent elsewhere, customers will want more information such that smart meters will eventually become the norm
- I believe the industry will experience a "high say / low do" reaction from customers regarding use of smart meter information. Residential consumers may toy with the capability, but persistence of effect will be a problem.
- I think that will be appropriate.
- [Our state] still has declining rate block rates. The more you use the cheaper the unit price.
- Needs to be coupled with implementation of Time-of-use rates and the utility needs to provide the consumer with access to their smart meter information in a readily accessible manner. As well, the utility needs to educate the consumer on the impacts on TU rates and offer conservation programs and demand management tools to help them manage their electricity usage patterns.
- No national policy to ensure consistent roll out. Many states hesitant to adopt
- Not a focus
- Not a priority for most consumers
- Not enough financial incentive
- Our rates in the Northwest are so low that customers have shown very little appetite to modify behavior around energy consumption that is price related. Those who wish to conserve do so without price signals.
- Prices are low here so customers are uninvolved
- Residential customers aren't going to do this to save a few dollars a month on their bill.
- Some will obviously and in particular commercial. The rates (time or day) and storage means will need to be considered and improved to get a huge uptake. This will as well depend on the jurisdiction and the overall rate feedback, including carbon aspects.
- That is when we will complete the meter install and then roll out the pricing/load management equipment etc
- The industry is in a Pilot stage in areas like Boulder CO. It is my opinion it will take more than 10 years to get widespread acceptance and agreement on system architecture.
- The majority of consumers do not understand the technology. It is not something they can touch, like a cell phone; a device that they understand what it means to manage their usage of.
- We are not a product that people want to think about
- we have relatively low rates and there is no compelling saving for the customer. We use it primarily for load shifting. Understanding of the cost of our product will require many years of advertising before the customer believes and sign up.

# What is or would be the main benefit of smart meter technology?



Base: Total sample (n=96); "No Answer" is excluded.

Question SM12: What is, or would be, the main benefit to your organization of smart meter technology? (please select only one)

# Contacts for Further Information

## Platts

Ms. Patsy Wurster  
Director  
Strategic Media  
10225 Westmoor Drive, Suite 325  
Westminster, Colorado 80021  
Office: 1-720-548-5583  
Email: patsy\_wurster@platts.com

Ms. Vicki Peterson  
Strategic Account Manager  
Strategic Media  
10225 Westmoor Drive, Suite 325  
Westminster, Colorado 80021  
Office: 1-970-461-1090  
Email: vicki\_peterson@platts.com

Ms. Tia Hensler Heath  
Director, Market Research & Operations  
10225 Westmoor Drive, Suite 325  
Westminster, Colorado 80021  
Office: 1-720-548-5614  
Email: tia\_hensler@platts.com

Ms. Larna Bernard  
Manager, Market Intelligence  
20 Canada Square  
Canary Wharf, 12th Floor  
London, England  
Office: 44-207-176-7174  
Email: larna\_bernard@platts.com

## Capgemini

Mr. John Christens  
Vice President Smart Energy Services  
201 E. John Carpenter Freeway, Suite 700  
Irving, Texas 75062  
Office: +1-214-686-9645  
Email: John.Christens@capgemini.com

Ms. Jenifer Bush  
Sector Marketing Leader, North America  
201 E. John Carpenter Freeway, Suite 700  
Irving, Texas 75062  
Office: 1-214-914-4297  
Email: Jenifer.Bush@capgemini.com

# Presentation Outline

Study Background

Key Findings

Methodology

Respondent Profile

Current Industry Issues

Future Industry Trends

Strategic Planning

Smart Meter / Smart Grid

Appendix

# Top Industry Concerns – Items Rated #1

P2. What are your three greatest concerns for the future of the electricity and natural gas industry over the next 5 to 10 years?

A highly qualified workforce to both replace the aging workforce and transition to new technologies.
ability to increase rates
Ability to innovate
Ability to recover costs through higher rates approved by PUC's
Affordability of rates
age of generations fleet and the ability to replace it
Aging infrastructure
Aging infrastructure and impact on rate of needed investment
aging infrastructure replacement
Aging Infrastructure
Aging Workforce and knowledge transfer
Carbon cost in whatever format it eventually comes. There needs to be a Consistent method overall and a common approach to what these revenues are used for
Carbon Dioxide Regulation
competition fostered by smart grid infrastructure
Complexity of regulation/Gov't interference in day-to-day business
consumer cost impacts related to renewable generation and state renewable portfolio standards
cost
Cost and physical ability to integrate renewables mandated by Renewable Portfolio Standards
Cost of continuing regulations issued from govt.
cost of energy to the customer - rate increases
Cost of Environmental Regulations.
Cost of increasing regulations
Cost recovery
cost/integration of renewables
Costs
Critical need for improved infrastructure and the associated price impact on consumers

Customer backlash from rising electricity pricing
Customer satisfaction
Electrical reliability due to increase of renewables
Environmental compliance with our generation fleet.
Federal environmental regulation.
getting a meaningful carbon price signal
Getting a reasonable and comprehensive national energy policy.
greenhouse gas regulation
How will utilities meet the renewable energy targets.
Inability of regulators, policy makers and utilities to agree on a new business model priced on value of service instead of quantity of commodity used.
Increased costs and rate pressure due to increased environmental standards
Increased government regulation requiring significantly more resources that otherwise would be running the business
increasing costs
Increasing federal regulations
Increasing fuel costs. Customer ability to pay.
Infrastructure maintenance and construction.
integration of gas to replace or supplement coal for power generation in a more rapid time frame
Lack of certainty on environmental policy
Lack of clear policy and direction
Lack of National Energy Policy
Lack of regulatory clarity
Long term impact of shale gas supply on heat rates
Maintaining high system reliability
Managing Aging infrastructure

# Top Industry Concerns – Items Rated #1

P2. What are your three greatest concerns for the future of the electricity and natural gas industry over the next 5 to 10 years?

Managing customer expectations around "smart grid" and green technologies.
Managing the impact of greater environmental pressure on non-renewable generation sources
Misallocation of resources to high cost renewables
natural gas will be drastically effected by a move to a carbon free future therefore a risk of stranding assets. Non hydro electricity will also be affected
New generation and fuel
Non-competitive electric rates, causing customer flight
Outdated regulatory/business model
Over reaching regulation
overreaching EPA
Pipeline infrastructure not being built to utilize Marcellus.
Potential for rising prices
Rate regulation and fair rates of return
Rate shock from environmental policies
Rates/Costs
Regulation
Regulation and legislation costs
Regulations that are fair to utilities and consumers.
regulatory issue
Renewable Portfolio Standards will lead to increased generation costs as well as instances of negative market prices.
Replacement of aging infrastructure
Replacing aging infrastructure
RPS will drive costs sharply higher.
Sagging economy
Status of carbon regulation.
Strategic approach for addressing the aging workforce that results in efficient, cost effective replenishment.

The increasing politization of the utility business. Rather than focus on public policies, regulators and legislator respond more to political concerns than fundamental needs of the country's energy needs. Policy decisions now are made by 50 separate states and a number of different federal agencies. Not a model one would design if starting out fresh.
The overall price impact of significant infrastructure build and decommissioning.
The patchwork of state and federal regulation is ponderous, costly and impedes innovation.
Uncertain environmental regulations
Uncertainty of environmental regulations
Willingness or regulators to allow recovery or reasonable costs

# Top Industry Concerns – Items Rated #2

P2. What are your three greatest concerns for the future of the electricity and natural gas industry over the next 5 to 10 years?

Increasing regulation
A strong need for electric and natural gas utilities to collaborate which may lead to the need for mergers etc to create flexibility
Ability to build needed transmission infrastructure to maintain adequate reliability.
Ability to build transmission and allocate costs appropriately
Ability to embrace distributed energy resources
Ability to recover fixed costs.
Acceptable fuel sources to provide electricity
Aging infrastructure
Aging infrastructure and replacement costs
Aging transmission and distribution infrastructure and their impacts on reliability and security of supply
Availability and price of natural gas for generation usage.
Balancing the federal budget
Better utilization of technology to improve efficiency/automation
Building necessary transmission and distribution infrastructure in a timely way
Cap & Trade rules in California
Competing interests on how to run the grid
Consumer understanding of cost of renewables systemically.
Cost and operating deficiencies of renewables
cost of service incenting bypass
Customer Costs
Customer Service and billing
Cyber Security
Decreasing interest by college/university students in engineering and technical programs. We will need them to continue!
Delay of adequate new generation
Efficiency improvement

Environmental regulation
Environmental regulations
environmental regulations
Eventual retail cost to consumers for various mandated programs and upgrade requirements.
Ever increasing regulation
Failure among customers, regulators, policymakers and utility executives to be realistic about costs - transitioning away from imported fossil fuels will be expensive.
financial and reliability costs of "renewables"
Full cost pricing and ensuring that all sectors (governments, customers, utilities) understand the true cost of energy.
Gaining Cost recovery for capital investment and rising O&M
Generation Availability
generation types/capacity
Impact of investments in existing infrastructure on rates.
inability to build needed transmission due to regulations, environmental restrictions, and NIMBY's.
Increased compliance regulations.
Increasing rates for customers.
Influx of third-parties attempting to interject between utilities and customers with less than accurate information and "too good to be true" offerings
Infrastructure renewal.
Keeping rates at affordable levels while meeting infrastructure challenges.
Lack of federal public policy on energy and environmental matters to enable planning
Level of needed infrastructure investment
Managing increasing regulatory impacts on operations of our systems.
Misplaced regulation due to pressure from environmental groups
Need for affordable clean coal technology
Need to improve environmental technology and controls to optimize use of coal & gas for fuel sources

# Top Industry Concerns – Items Rated #2

P2. What are your three greatest concerns for the future of the electricity and natural gas industry over the next 5 to 10 years?

Overall economy and its impact on utility financial strength driven by company and customer liquidity issues.
Pace of deregulation is too slow
Parochial industry management causing dysfunctional industry approaches to solving problems
Poor environmental performance and issues for the industry which itself will lead to environmental over regulation
Public expectations surrounding reliability, cost, renewables and the need to adapt to sustainable consumption.
Regulation (FERC and NERC) will drive costs sharply higher with no increase in reliability.
Regulators enforcing environmental standards, leveling playing field with those who have already made environmental investments
Reliability and aging infrastructure
Renewable integration
Renewing infrastructure
Replacing our aging workforce
Resulting in steeply rising energy costs with adverse general economic consequences
Rising cost of business
RPS driving up commodity costs and more pressure on the LDCs to reduce distribution costs
Security of the energy network
Significant economic dislocation of energy markets due to renewable energy (e.g., gas plants will be run less efficiently to integrate wind driving up the costs, but energy prices will drop due to zero cost fuel of renewables = missing money for fossil generation).
State commissions opposing rate increases and holding down ROE for IOU's
State vs. federal rights and models
Taxation through energy rates
The aging infrastructure repair and replacement will need both capital and time: I am concerned about the availability of both.
The impact of environmental challenges to fracking leading to the demise of shale gas production.
The industry is rushing to smart grid solutions with technology and suppliers that may not be supported in the long term. There is still a lot of shakeout yet to occur.
The impact of energy efficiency programs on organizations.
The lack of a long term energy strategy for the US
Transmission cost allocation inequities.
Uncertain enviro rules
Uncertainty of Clean energy standard
Volatility of fuel costs
With flat or declining sales, utilities will be challenged to grow earnings without significant rate increases under the current utility business model.



# Top Industry Concerns – Items Rated #3

P2. What are your three greatest concerns for the future of the electricity and natural gas industry over the next 5 to 10 years?

3rd party disintermediation in the utility value chain will challenge relationship between utilities and customers.
Ability to finance major projects.
Additional environmental regulations
Aging infrastructure and workforce
Aging infrastructure (2)
Aging infrastructure (D, T, and G) and the capital requirements to maintain/replace it.
Attracting and retaining the right people for the changes coming.
Bridging the environmental gap
Change out of boomers to gen-x to millennial generations.
Concerns over the customer embracing and understanding renewables and the impact on their bill. Customers inability or lack of desire to mitigate their electricity usage in response to price signals
Consumer technology - load control etc.
Cost of power to end-use consumers
Cost of Renewable Generation and impact on Transmission
Cost recovery
Cost recovery for the replacement of aging infrastructure
Costs of renewables will be socialized, distorting the economics.
Customer acceptance/adaptation to understanding and being responsible for energy usage
Customer backlash over rising costs
Cyber and physical attacks on the grid
Cyber security
Environmental Regulation
Environmental concerns will lead to much higher shale gas costs, which will prove wrong today/'s forecasts.
Environmental regs on CO2 if changed rapidly it will diminish our ability to effectively respond to the other concerns. The uncertainty absorbs planning resources that could be better applied.
Environmental regulation

Environmental Retrofits of existing Coal fleet
EPA regulations
Exploding environmental regulations and mandates
Financial issues related to rate control will lead to the greater need for improved optimization and leveraging of all energy mixes available to a utility.
Government fiscal policies
Impact of environmental regs on customer rates
Impact of investments in new G&T in rates.
Implementing technology in a sound business case
Implementation of smart grid and demand response technology
Increasing customer expectations -Maintaining/improving Reliability
Infrastructure
Labour / workforce
Lack of clarity over what is truly "green" energy. e.g. is wind "green" if it fails to displace requirement for any other generation source due to intermittency issues and if it has other negative environmental impacts and drives up already high costs for infrastructure
Lack of leadership
Lack of qualification on part of regulators, more political than business focused
Legacy investments
Low utility growth rates due to slow economic recovery and energy efficiency
Lower ROE's used by PUCs in the face of rising interest rates
need for greater customer communication
No viable replacement for coal
Non recognition of the value of the basic grid infrastructure and customers not wanting to pay what is required to maintain it
Not meeting customer expectations with automated billing options, communication options, etc.

# Top Industry Concerns – Items Rated #3

P2. What are your three greatest concerns for the future of the electricity and natural gas industry over the next 5 to 10 years?

Permanent recession in American economy/inflation
Politics
Properly pricing our "product" to assure recovery and no unintended cross subsidies are created.
Providing a way forward for nuclear energy
Ratcheting of expectations and pressure regarding outages, accidents, emergency response.
Rate recovery in the building cycle
Recovery of those costs - reducing shareholder risk exposure
Regulation
Regulation (non environmental)
Regulatory complexity/burden (non-environmental).
Responsiveness and constructiveness of state utility regulatory jurisdictions
Rising cost of electricity
Rising Costs/Rates
Rising personnel costs - pension/health
Security of grid infrastructure as smart grid components are introduced
Stability of the economy and energy independence.
Storage of non scheduable generation ( wind, solar, tidal and some hydro)
Supply
That credit standards and liquidity allow the necessary supply growth to meet increasing demand.
The ability to attract talented employees to a utility environment.
The costs of complying with environmental regulations.
The customer reaction to price shock from infrastructure investment above and beyond base consumption growth requirements.
The quality of utility management infrastructure and talent.
Timely regulatory recovery of investments required to continued safe, reliable and in full compliance service to our customers.
Transmission infrastructure. Where will it be built and who will pay for it.
Uncertainty of recovery/weather
Unstable state/federal energy policy
Vastly excessive environmental regulations
Workforce demographics