PUF Annual
Pulse of Power Survey

How You Answered Twelve Questions

For the third straight spring, *Public Utilities Fortnightly* asked you what you think about the state and future of power. Sponsored by Navigant, we developed and fielded a dozen-question survey to tease out how PUF readers see some of the industry's most important trends.

Who completed the survey – specifically – is not known. It was intentionally confidential. But who completed the survey – generally – is known. Since PUF readers are disproportionately leaders in utility regulation and policy, it's a safe assumption that survey respondents were disproportionately experienced and knowledgeable about utilities past, present and future.

Well, let's get to it. How you all see where this great industry is heading.

Please rank these stakeholders in order of importance to utilities in successfully navigating industry transformation.

Survey respondents felt strongly about the role of utility regulatory commissions. Regulators were ranked the most important, and by a lot. Forty-eight percent of you rated regulators first or second.

Customers, who ranked second, were the only other stakeholders at the front of the pack. Forty-one percent rated customers first or second.

Who was in the middle of the pack? Elected policy makers and investors picked up votes but mostly for third and fourth place.

Please share just one word that best describes how you see the state of the industry today.

Most common words to describe state of power industry:
1. *Transitional, transition, transitioning*
2. *Evolving, evolution*
3. *Change, changing*
4. *Uncertain, uncertainty*
5. *Transforming, transformation*
6. *Flux, in flux*
7. *Confused, confusion, confusing*

It was a lot of fun to see the diversity of answers to this one. One of you said discombobulated. Another said hijacked. Another said rocky. And another said trainwreck.

But the greatest number of you voted for transitional, transition or transitioning. And nearly as many voted for evolving or evolution. Which isn't all that different from transitional et al.

We also got a bunch of transforming and transformation. Again, it's all about change.

Which reminds me. Many of you voted for change or changing. And many voted for flux or in flux. Ch-ch-ch-ch-changes, turn and face the strange, sang David Bowie.

There was a group of you who went a different way with this question. A large number voted for uncertain or uncertainty. And a large number of you voted for confused, confusion or confusing. If you were in this group, you might think things are changing but mostly you think things are foggy.
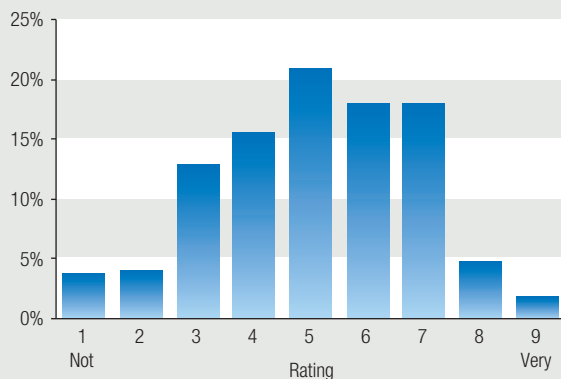
How disruptive are these trends to the traditional utility business models?
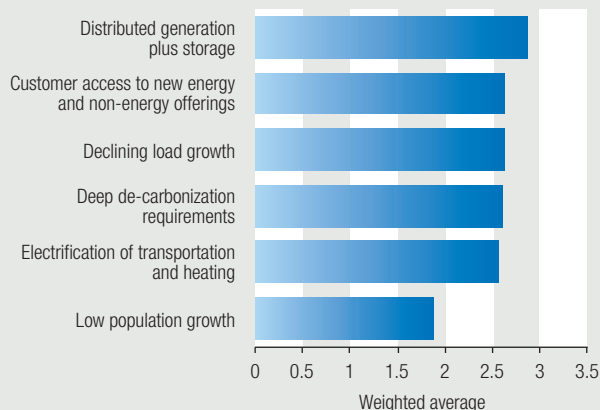
Here, survey respondents had six trends to rate. Was a trend so disruptive that its impact is shattering? Or its impact is significant? Or noticeable? Or minor?
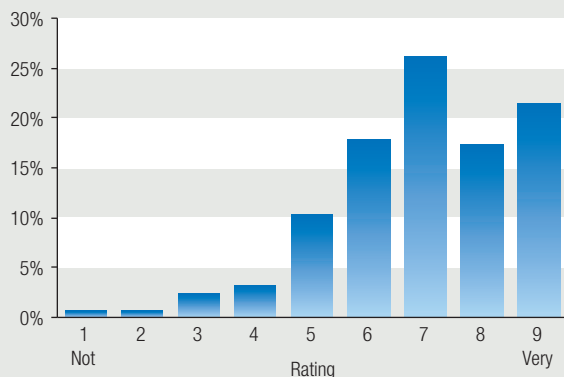
There was broad agreement that five trends were significant or a touch less, but at least noticeable. Distributed generation plus storage was one of these trends, as was declining load growth and customer access to new offerings.

How soon should the power industry adapt to a clean, intelligent, mobile, and distributed grid?

Real soon. That's what you said when asked, how soon should the industry adapt to grid two point oh?

On a scale of one to nine, where nine was immediate and one was never (huh?), only six percent voted 1, 2, 3 or 4. Combined. While sixty-five percent voted 7, 8 or 9. The results were clear-cut. Adapt!

Rate how confident you are that the electric industry is on the right track.

Most of you came out in or near the middle. On a scale from 1 (not at all confident) to 9 (highly confident), eighty-six percent voted 3, 4, 5, 6 or 7. Not that confident. But not that un-confident. So, is the industry on the right track? The consensus seems to be, kinda.

How well aligned is current utility regulation with the realities of the industry today?
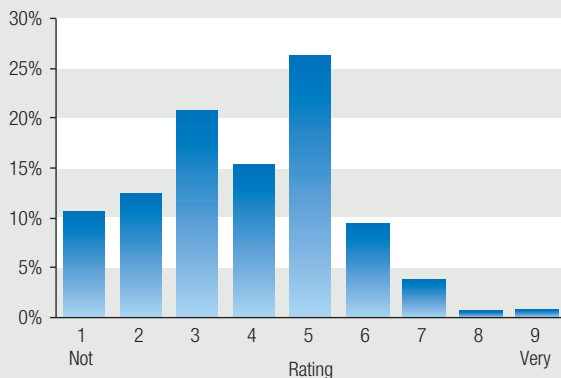
The people have spoken. Only fifteen percent of survey respondents said the alignment of utility regulation and industry realities is anything better than just ok. While fifty-four percent said there's a yawning gap between regulation and realities or nearly so.

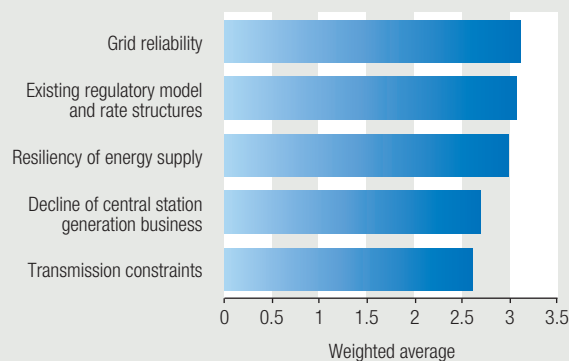## Which one of these forces is the most likely to drive utilities to aggressively pursue owning and operating distributed energy resources?

Policy mandates and supportive rate regulation

Substantial revenue loss from central generation assets

Customer demand for access to DER

Decline in DER costs

Comprehensive quantification of grid benefits

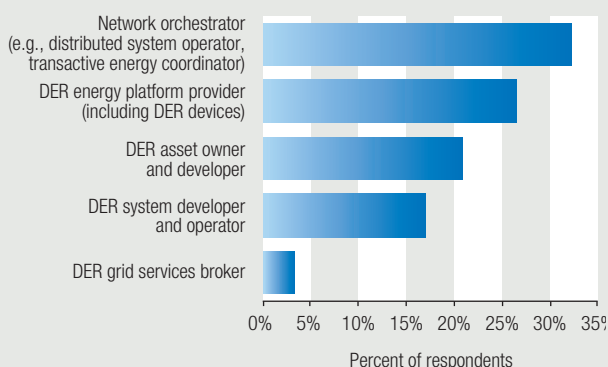Percent of respondents

0% 5% 10% 15% 20% 25% 30% 35%
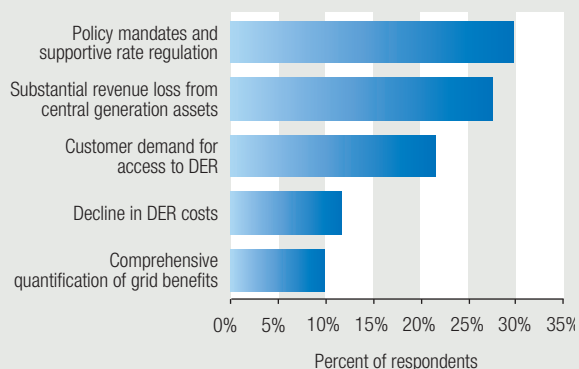
Two of the forces were often chosen as the most likely to drive utilities towards distributed resources. Policy and regulatory measures, and substantial loss from central generation. Customer demand for distributed resources was chosen somewhat often too.

How should utilities prioritize the following challenges ahead of 2030?

Grid reliability

Existing regulatory model and rate structures

Resiliency of energy supply

Decline of central station generation business

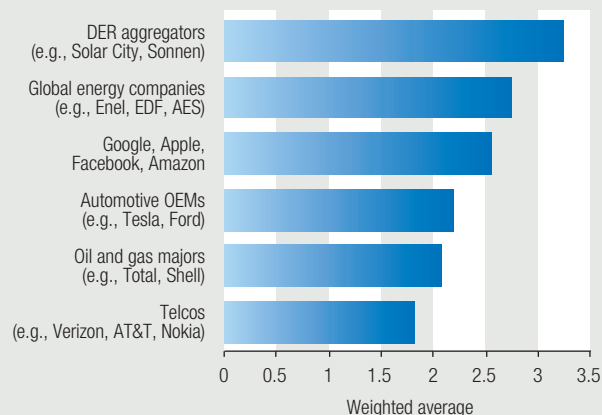Transmission constraints

Weighted average

0 0.5 1 1.5 2 2.5 3 3.5

On this question, you couldn't decide. It was that tight a finish between the challenges of grid reliability and regulatory models. Forty-one percent ranked both challenges as immediate priorities. With resiliency of energy supply so very close to those two. Though just thirty-two percent ranked it as an immediate priority.

What business model should utilities pursue to harness the full value (financial, operational, or otherwise) of distributed energy resources for their organization?

Network orchestrator (e.g., distributed system operator, transactive energy coordinator)

DER energy platform provider (including DER devices)

DER asset owner and developer

DER system developer and operator

DER grid services broker

Percent of respondents

0% 5% 10% 15% 20% 25% 30% 35%

Almost one-third of survey respondents selected network orchestrator as the business model that utilities should pursue. But close behind was the model of distributed resources platform provider. And next in line was distributed resources asset owner and developer.
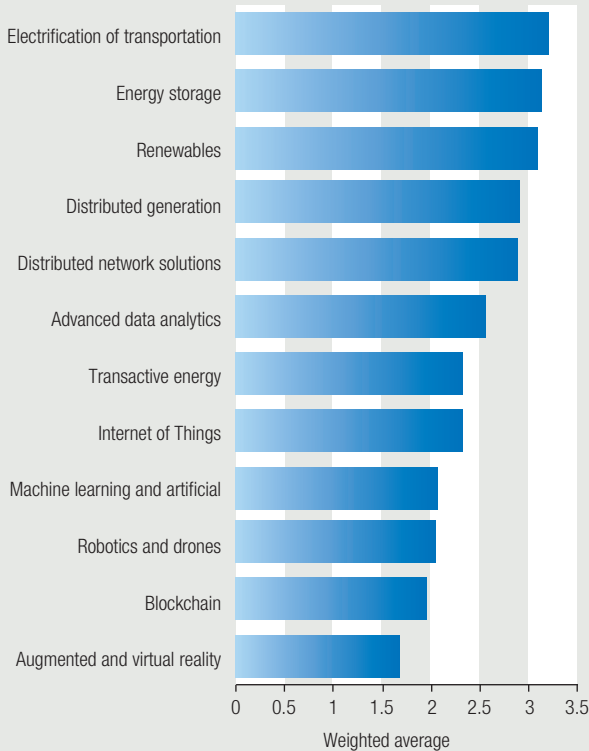
Looking ahead, how likely is it that these industry actors will compete directly with utilities for revenue?

DER aggregators (e.g., Solar City, Sonnen)

Global energy companies (e.g., Enel, EDF, AES)

Google, Apple, Facebook, Amazon

Automotive OEMs (e.g., Tesla, Ford)

Oil and gas majors (e.g., Total, Shell)

Telcos (e.g., Verizon, AT&T, Nokia)

Weighted average

0 0.5 1 1.5 2 2.5 3 3.5

Forty-four percent of survey respondents said it was highly likely that distributed resources aggregators would compete with utilities. An additional thirty-nine percent said it was nearly that likely.

Global energy companies also did well at the polls. Twenty-four percent rated them as highly likely competitors to utilities and an additional thirty-five percent rated them as nearly as likely. Otherwise, the Internet companies picked up a number of votes, as likely utility competitors.

Rate utilities' potential to grow revenue and extend customer value in these areas.

Electrification of transportation
Energy storage
Renewables
Distributed generation
Distributed network solutions
Advanced data analytics
Transactive energy
Internet of Things
Machine learning and artificial
Robotics and drones
Blockchain
Augmented and virtual reality

Weighted average

Which of these areas offer utilities the best way to prepare their organizations for sustained future growth?

Electrification of transportation
Energy as a service
Integrated DER
Digitization
Decarbonization and sustainability
Workforce development
Transportation-to-grid
Smart Cities
Internet of Energy
Buildings-to-grid
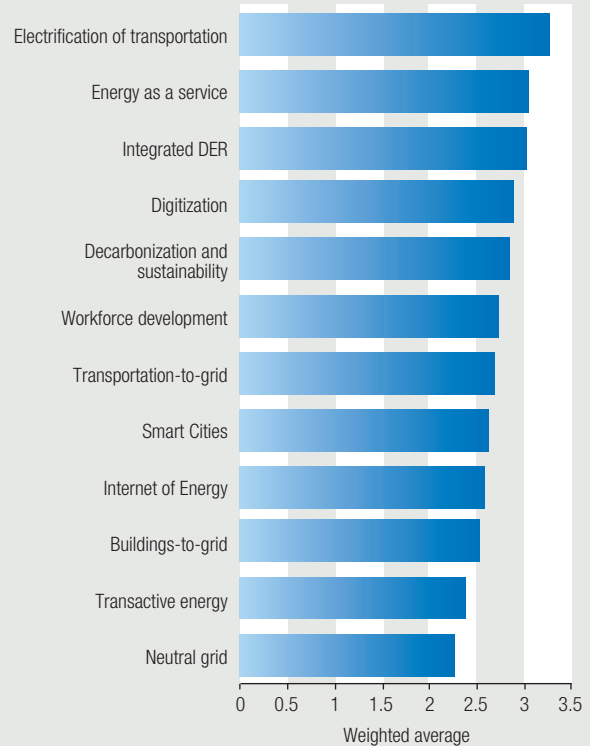Transactive energy
Neutral grid

Weighted average

Where can utilities grow revenue and customer value? One of the most interesting questions among the dozen in the survey.

An impressive eighty-two percent and eighty-one percent chose energy storage and electrification of transportation respectively, with the top or second-to-the-top score. Also right there with them were renewables, with seventy-nine percent. And distributed generation, with seventy-two percent. And distributed network solutions, with seventy-one percent.

None of the other business potential areas came close. The closest was advanced data analytics, at fifty-three percent.

To this last question, you ranked electrification of transportation very high. Forty-nine percent said it had a high potential to prepare utilities for growth. And an additional thirty percent gave it a fairly high potential.

Other high-scoring areas were energy as a service, and integrated distributed resources. Thirty-five percent said energy as a service had a high potential and thirty-eight percent gave it a fairly high potential. Twenty-nine percent said integrated DR had a high potential and forty-seven percent gave it a fairly high potential.