



# S&C's 2019 State of Commercial & Industrial Power Reliability Report

An S&C report in collaboration with Frost & Sullivan



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# INTRODUCTION

S&C Electric Company's "2019 State of Commercial and Industrial Power Reliability Report," researched and written in collaboration with Frost & Sullivan, is the second annual foray into identifying, defining, and understanding critical aspects of grid power reliability experienced by the commercial and industrial (C&I) business sector in the United States. The survey attempts to gauge their expectations of electric power as well as the impacts of and resources around electric power outages.

Last year's report uncovered that, although C&I businesses claimed to be content with their power provider, their behaviors of implementing on-site alternative energy resources indicated otherwise—and they readily admitted power reliability was a concern. The 2019 report aimed to better understand the motivations and triggers for taking action on the concerns and decisions uncovered in last year's initial findings.

The voices are significant for the 255 respondents surveyed, constituting a considerable proportion of the economy, with average yearly revenues of \$4 billion. These business sizes and industries represent utilities' most ambitious customers, with growing needs for continuous, reliable, and high-quality power.

The individuals surveyed were high-level managers responsible for power-related decisions. The typical titles of respondents included Facility Directors, Facility Managers, Operations Directors, Energy Management Managers, Property Managers, and Purchasing Managers. In these decision-maker and influencer roles, the research represents an accurate pulse of the market for utility-related concerns and considerations across an important swath of the U.S. economy.

The research was split into four regions of the U.S. and taken across five major C&I categories: manufacturing, healthcare, small franchises, education, and retailers.

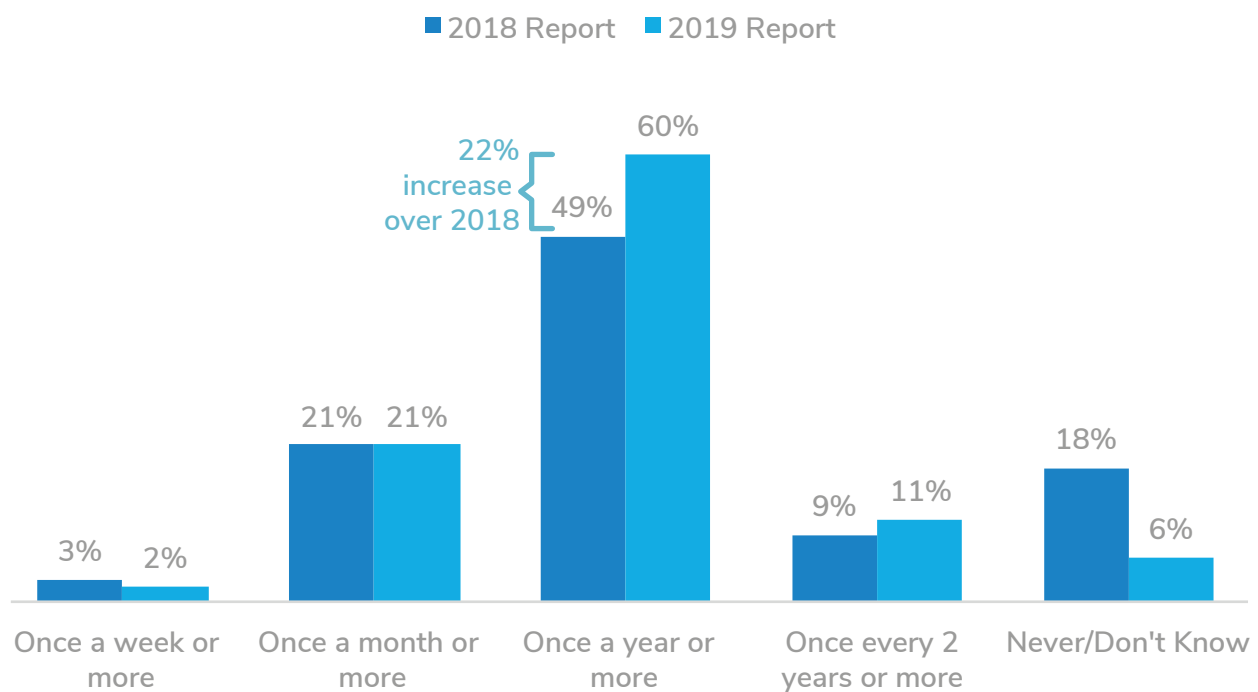
The objectives of the research were as follows:

- Review power-outage occurrences and compare them over time
- Gauge the importance of outages to today's businesses, regardless of duration
- Understand the triggers leading to C&I customers implementing their own alternative energy solutions
- Ascertain C&I customer sentiments of power reliability on the future of business health

## SECTION 1: OUTAGE AUDIT: THE TRUTH ABOUT C&I POWER RELIABILITY

The 2019 study begins by establishing the existing power-reliability experiences of each respondent to set a baseline. Power outages have two primary metrics: how frequently they happen and how long they last.

**CHART 1: U.S. C&I OUTAGE FREQUENCY OVERALL (2018 REPORT VS. 2019 REPORT)**



n = 251

A6a. How frequently do you lose power?

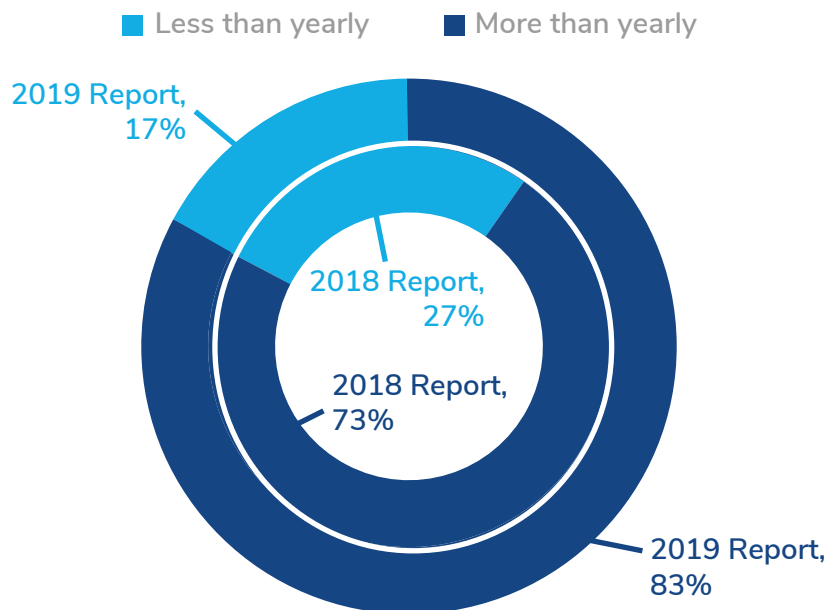
\* 2018 report data collected in 2017

\*\* 2019 report data collected in 2018

Source: Frost & Sullivan

Measuring the frequency of outages, more C&I customers were aware of the outages they experience. The majority of respondents (60%) noting outages once a year or more, as shown in Chart 1. In comparison to the 2018 report, the percentage of businesses reporting the same outage frequency was 49%. Outages reported for the 2019 study were 11% higher than 2018, which amounts to a 22% growth rate over 2018.

There was not even a slight change in the number of companies that reported having outages at least monthly, with a rate of over 12 outages per year. This alarming frequency is the reality for roughly one out of five companies (21%) that must deal with the repercussions of outages on a monthly basis.

**CHART 2: U.S. C&I OUTAGE FREQUENCY (2018 REPORT VS. 2019 REPORT)**

n = 251

A6a. How frequently do you lose power?

\* 2018 report data collected in 2017

\*\* 2019 report data collected in 2018

Source: Frost &amp; Sullivan

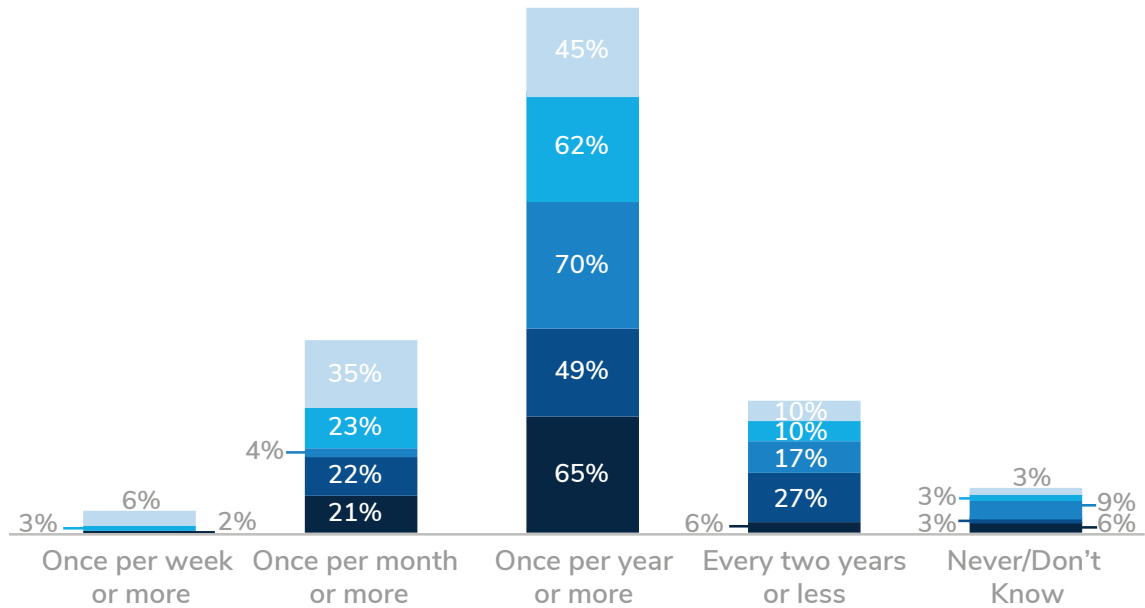
Aggregating outage frequencies into two categories—"less than yearly" and "more than yearly"—83% of businesses reported an outage experience more than once per year (Chart 2) in the 2019 report. Not only is this 14% more companies than the 2018 report's 73% finding but is disquieting placed in context next to the U.S. Department of Energy's Energy Information Administration (EIA) annual reliability report.<sup>1</sup> The EIA metrics are misleading, showing that, on average, customers experience 1.5 outages per year, and these measurements factor in both residential and C&I customers. Circling back to the significance of the voices in this report for some of the nation's largest businesses, this 83% highlights that these C&I customers experience average reliability at best. With Chart 1 setting the tone for outage frequency, a decent percentage of these C&I customers' experiences are far worse than average, with the 21% reporting monthly outages being in a stark contrast to the 1.5 average outages per year.

The discordance between the EIA report and the survey results is likely due to how utilities track power outages. By and large, utilities only consider "outages" per the standard definition set forth by the Institute of Electrical and Electronics Engineers (IEEE), in which outages, or "sustained interruptions," are those lasting longer than five minutes. This research indicates customers' indifference to outage length; to customers, an outage is an outage, regardless of industry definition. Shorter outages of five minutes or less, or "momentaries," are prominent and problematic enough for C&I customers to count them as outages. This highlights a potential disconnect between utility and customer, in which utilities are only tracking and managing outages exceeding five minutes while customers are experiencing, acknowledging, and remembering *all* outages.

1 <https://www.eia.gov/todayinenergy/detail.php?id=27892>

**CHART 3: MONTHLY OUTAGES BY INDUSTRY**

■ Manufacturing ■ Healthcare ■ Small Franchise ■ Education ■ Retailer



n = 255

(Q1) How frequently does your company lose power?

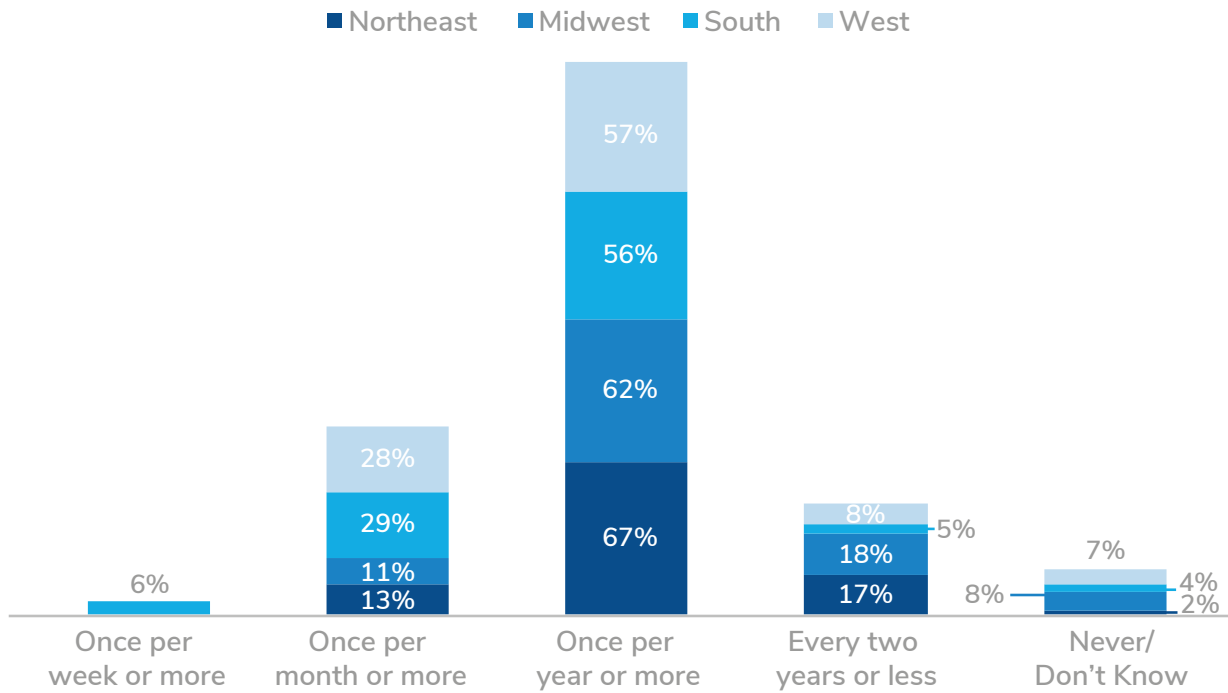
Source: Frost & Sullivan

As noted in the introduction, the survey also looked at how frequently outages occurred in different regions and industries (Chart 3). In terms of industries, small franchises had the greatest experience of outages seen at least yearly (70%). Other greatly affected industries included education and manufacturing, which can have direct impacts on a vast student body or the quality and quantity of products.

On a monthly-or-more basis, over one-third of retailers (35%) were affected by outages. Considering most of these enterprises interact with the public daily, frequent power interruptions have an extended, collateral impact. Business reputations may be tarnished as well, with visiting consumers experiencing the interruption and leaving with negative perceptions of the business.



CHART 4: MONTHLY OUTAGES BY REGION

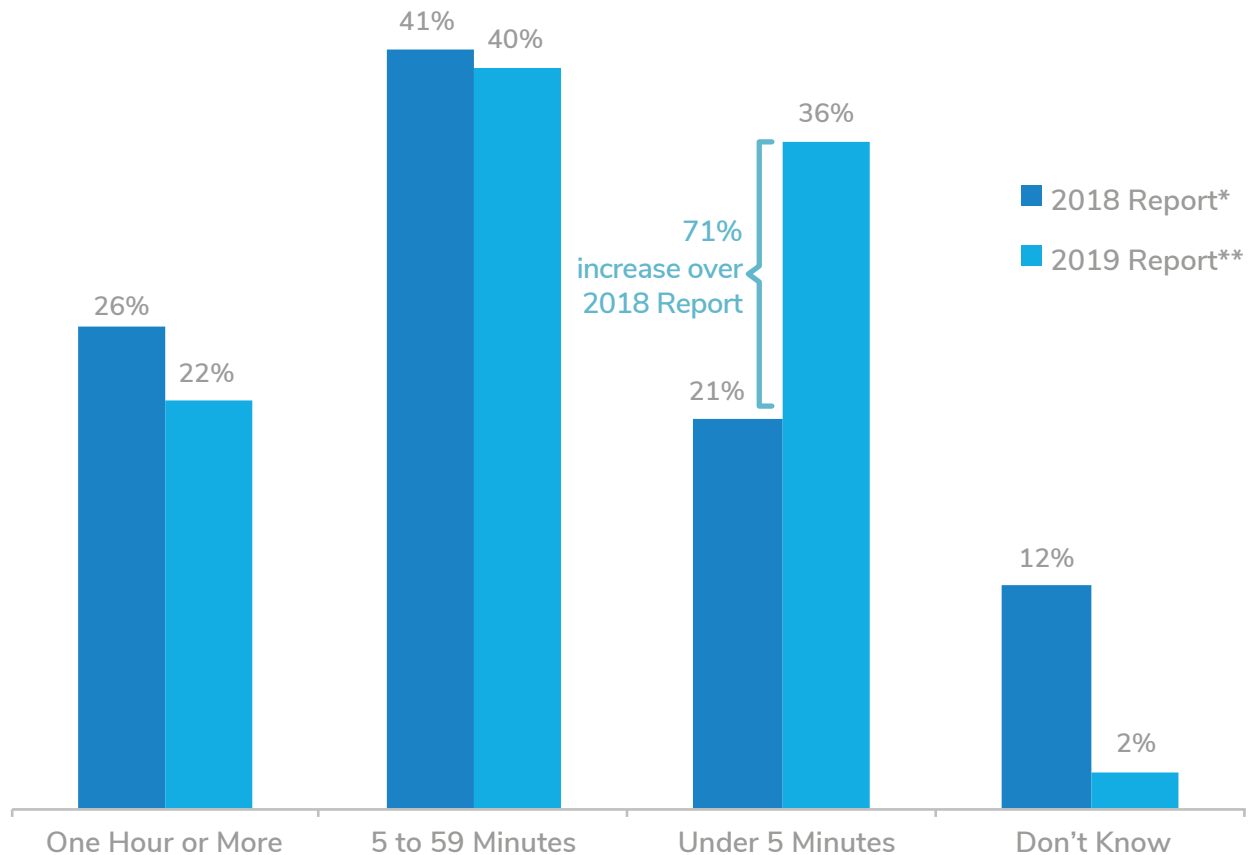


n = 255  
(Q1) How frequently does your company lose power?

Source: Frost & Sullivan

On a regional basis, the Northeast had the highest reported incidents, with more than two-thirds (67%) experiencing outages yearly or more. However, in the monthly or more category, the South and West experienced twice the frequency of outages than did the other two regions, 29% and 28% respectively, in contrast to 11% in the Midwest and 13% in the Northeast (Chart 4).



**CHART 5: U.S. C&I AVERAGE DURATION OUTAGE  
(2018 REPORT VS. 2019 REPORT)**

n = 200

(Q3) What was the duration of the typical power outage that you experienced in the past 12 months?

\* 2018 report data collected in 2017

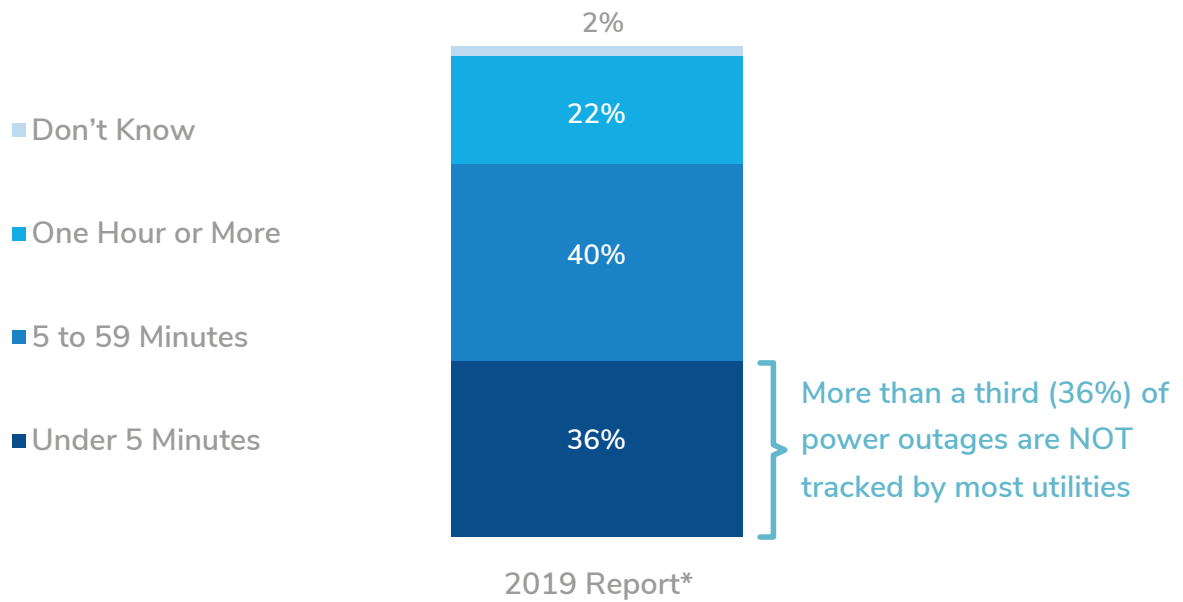
\*\* 2019 report data collected in 2018

Source: Frost & Sullivan

Moving to a discussion on duration, the survey measured outages across industries and regions, and in aggregate. The percentage reporting “momentaries,” or outages lasting five minutes or less, grew significantly from the previous year’s research. In the 2018 report, just more than 20% of companies noted outages of five minutes or less. In the recent study, this percentage rose to 36% of the interview sample (Chart 5). This increase from 21% to 36% represents a 71% growth rate over the 2018 report. As noted earlier, the significance of this finding is arguably compounded by the lack of visibility that most utilities have on these outages because they typically do not track outages lasting less than five minutes. The percentage reporting outages lasting five minutes to an hour remained relatively flat, but high, with 40% reporting them in the 2019 study versus 41% in the 2018 study.



CHART 6: DURATION OF A TYPICAL OUTAGE THIS YEAR

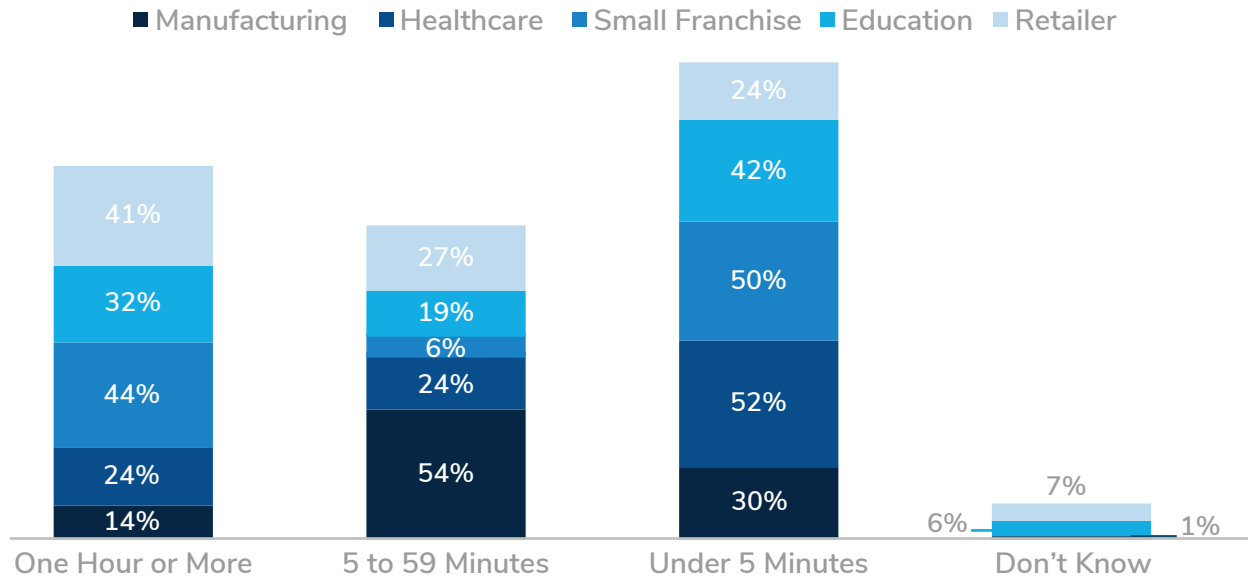


Note: The differences highlighted above are statistically significant at 95% confidence level.  
Base: Comparable Groups for 2018 and 2017 Surveys (Same Industry and Company Size Representation)  
(Q3) What was the duration of the typical power outage that you experienced in the past 12 months?  
Source: Frost & Sullivan

Focusing in on outage duration from the 2019 study, Chart 6 emphasizes how more than one-third of companies experienced power outages lasting less than five minutes. Considering the size and breadth of companies surveyed, a major portion of the U.S. economy is reporting outages that fall unreported based on industry definitions and what utilities track. Furthermore, respondents are oblivious to industry definitions, yet they easily recalled the slightest blink in power. This implies outages of any length, and specifically short-duration momentaries, incur real costs and memorable consequences to the affected businesses.



CHART 7: MOMENTARIES BY INDUSTRY



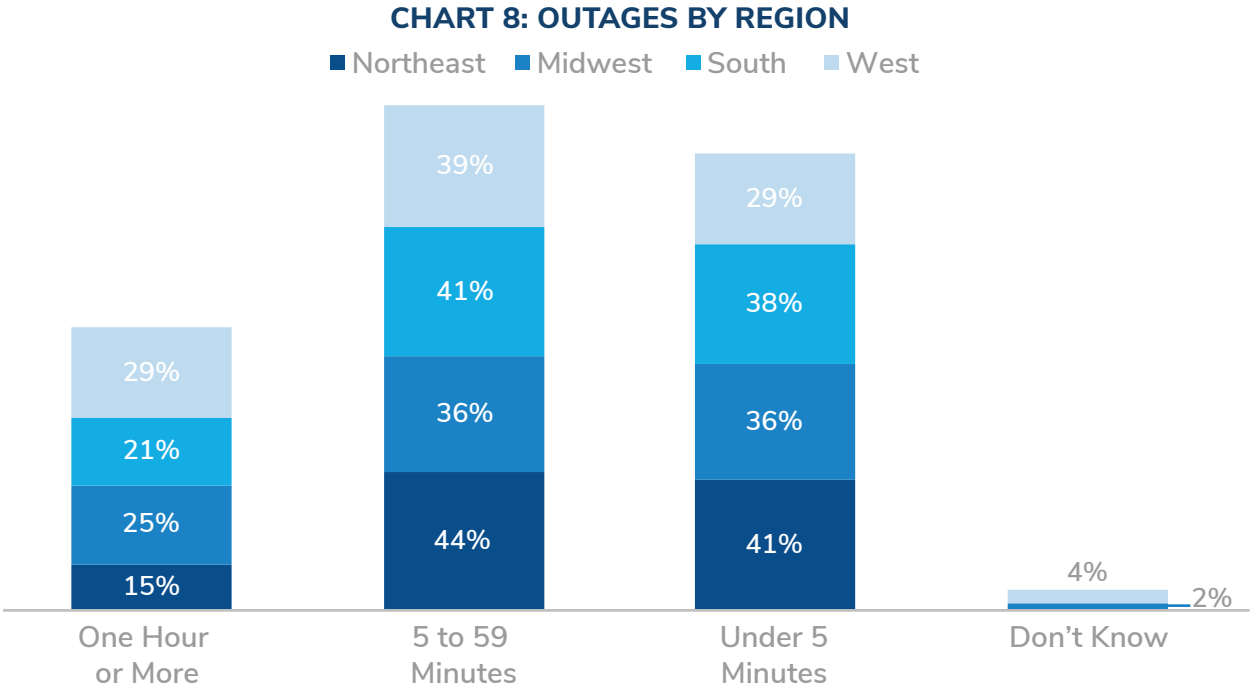
n = 200

(Q3) What was the duration of the typical power outage that you experienced in the past 12 months?

Source: Frost & Sullivan

Looking at how various industries feel the effect of short outages, by and large, momentaries affect all segments, from nearly a quarter of retailers (24%), to half of small franchises, and just more than half (52%) of healthcare facilities (Chart 7). With the healthcare, small-franchise, and education segments having the highest percentage of reporting momentary outages, the research reveals that most C&I industries clearly recall short-duration momentaries, even if their utilities do not track them.





n = 200  
(Q3) What was the duration of the typical power outage that you experienced in the past 12 months?  
Source: Frost & Sullivan

Both momentaries and sustained outages are relatively evenly spread across regions (Chart 8). Respondents in nearly a third of all regions recalled momentaries, which was almost as high as those reporting outages lasting 5-59 minutes. As with outage distribution across industry, this research emphasizes outages of any length do not discriminate by location.

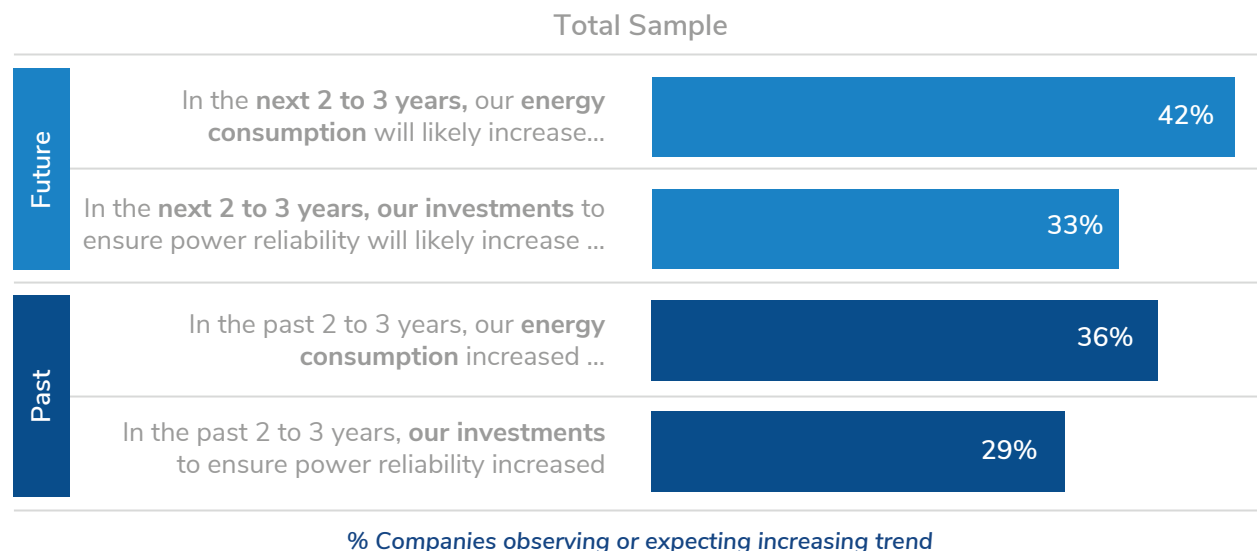
### Section Comments

Outage frequency and duration are the core measures of power reliability, and yet, how utilities measure these outages does not accurately capture what C&I customers experience. The total percentage of companies reporting outages once a year or more significantly grew by 22%, from 77% in the 2018 population to 83% of the 2019 population reported. There was no improvement in monthly outages year over year, with over 1 in 5 companies (21%) experiencing outages every month or more. The study revealed that businesses do not differentiate outages based on duration. An outage is an outage, and they occur more frequently than what utilities track. Even momentaries are memorable enough to C&I customers that they can not only notice their impact but can recall them when surveyed.

## SECTION 2: OUTAGE IMPACTS

Many contemporary conversations discuss the world's growing dependence on energy. This study investigated energy dependence and to what degree do outages impact business.

**CHART 9: PERCENTAGE OF COMPANIES OBSERVING OR EXPECTING AN INCREASING TREND**

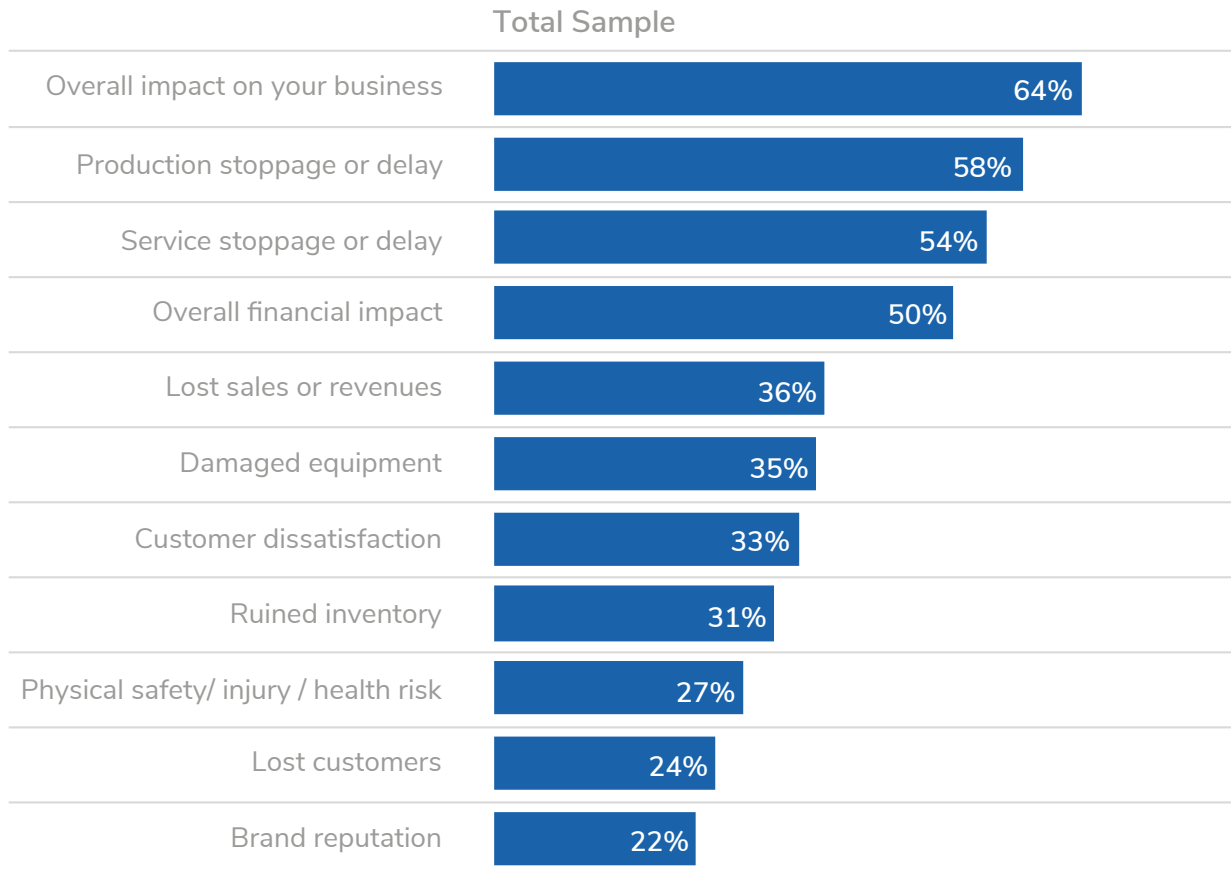


n = 255

(Q15) Please indicate if the trend for each item. - Top two box scores (Increasing) and Bottom two box scores (Decreasing)

Source: Frost & Sullivan

Correlating two data trends, energy consumption and internal investment on reliability, is summarized in Chart 9. A significant percentage of survey respondents (36%) experienced increased consumption in the past and more (42%) expect consumption to continue two to three years into the future. Interestingly, these same companies responded with increasing investments (29%) in power reliability over the last two to three years. More importantly, a growing percentage of respondents (33%) are planning increased investments in reliability going forward. These data suggest that as power requirements grow, so, too, does the need to invest in on-site power-reliability solutions to protect those needs, versus relying on their power providers to support or scale with them. This underscores a growing dependence on energy and a diminishing trust of utilities.

**CHART 10: IMPACT OF TYPICAL POWER OUTAGES IN THE PAST 12 MONTHS**


n = 200

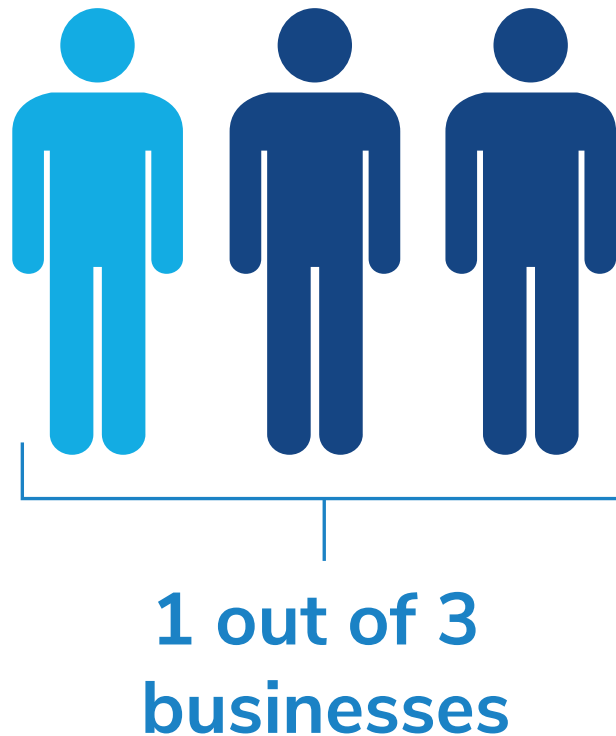
(Q5) On average, what was the impact of typical power outages that you had experienced these past 12 months in terms of the following? - Top four box scores

Source: Frost & Sullivan

Delving into the impacts for companies that experience frequent or sustained outages, it is clear that most (64%, in Chart 10) were aware of outage impacts and incurred significant expenses as a result of them. The most common, measurable impacts on operations, such as production or service stoppage, was noted by more than half of respondents (58% and 54%, respectively).

Half of the respondents also noted overall financial impacts. More than one in five (22%) respondents recalled at least some negative impact to their business due to outages. Respondents also noted the “softer” or less-quantifiable impacts, such as customer dissatisfaction and brand reputation, indicating concerns for business repercussions that can be felt but that are more difficult to measure.

**CHART 11: IMPACT OF BLINKS EXPERIENCED IN THE PAST 12 MONTHS**



Source: Frost & Sullivan

These challenges are not limited to extensive outages either; even blinks, or momentaries of very short duration, caused business disruptions. Of the C&I companies interviewed for this research, nearly 1 in 3 businesses (31%) noted that momentaries affected their businesses (Chart 11). Although it may seem logical to correlate the duration of outages to their gravity, these data challenge that assumption, uncovering that even a quick blip in power has immediate and poignant impacts on the nation's largest businesses.

## Section Comments

The survey revealed that both energy consumption and investment are on the rise, indicating both a high level of importance being placed on power reliability, coupled with a concern over a utility's ability to meet their needs. This correlation shows companies' need to hedge their reliability future with supplemental investment.

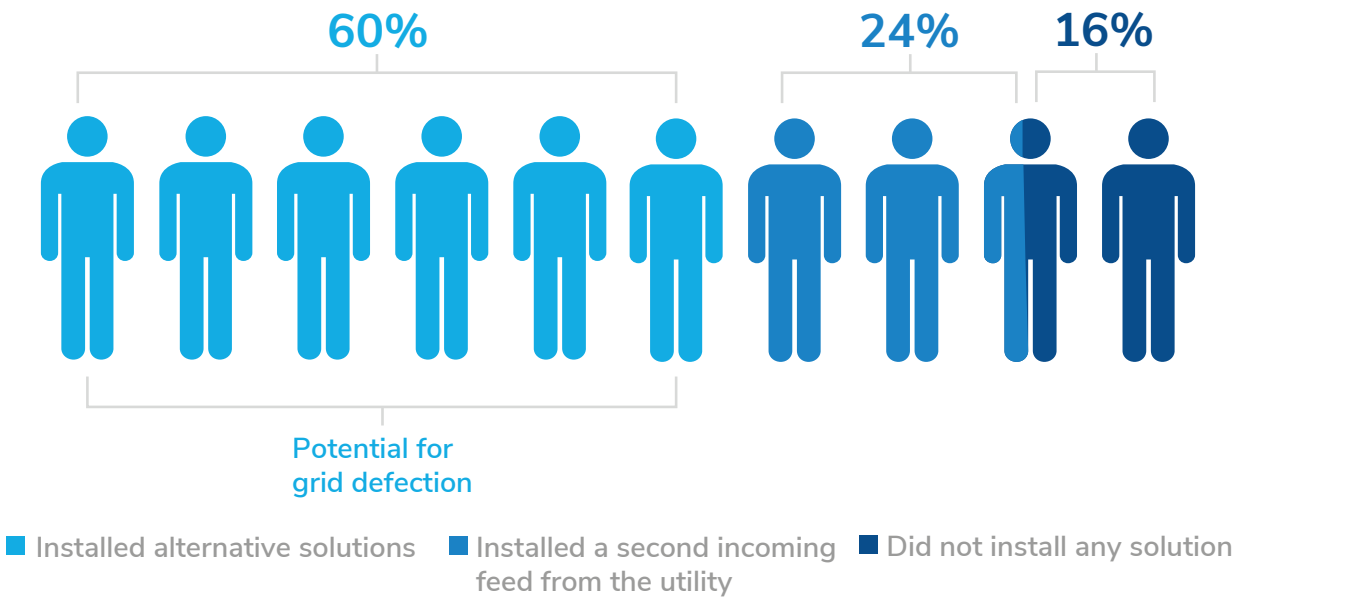
The survey revealed that the impact of outages does not only pertain to the length of outage, but rather a growing dependency on power. One out of three companies (31%) reported remembering and being negatively affected by a mere blink in power.



### SECTION 3: ALTERNATIVE SOLUTIONS & CONCERN FOR THE FUTURE

Concerns with power reliability resonate with businesses and cause them to draw conclusions on how well their utility can help their businesses sustain and grow over time. The 2018 report uncovered that, while C&I customers stated they were content with their power reliability, in the same breath, 70% noted that power reliability was an important cause for concern in their business. Additionally, 71% stated they had, or were planning to install, solutions to mitigate utility power concerns. With installing their own on-site reliability solutions indicating a lack of confidence in their utility, the 2019 report tapped into these unstated concerns, investigating whether shaky power reliability hindered long-term business needs.

CHART 12: PERCENTAGE OF RESPONDENTS INSTALLING SOLUTIONS

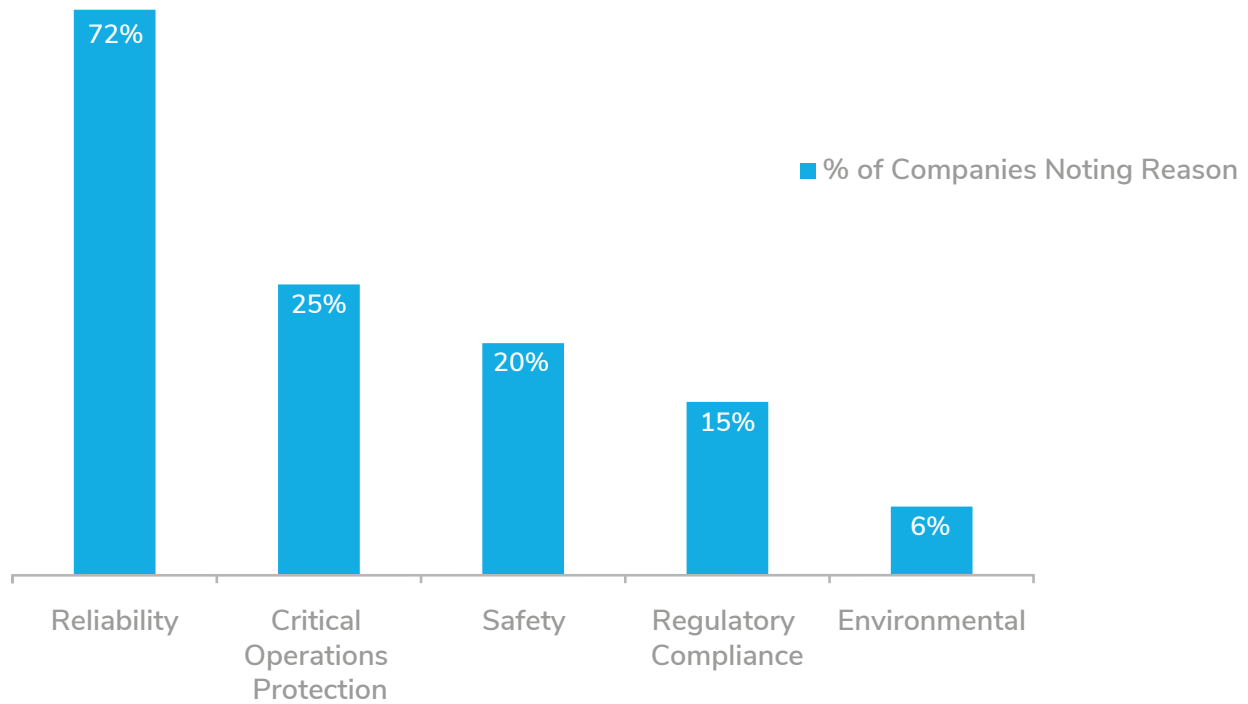


n = 255  
(Q13) Which of the following energy and power reliability solutions have you adopted or installed in your facility? - Already Installed

Source: Frost & Sullivan

Investigating the type of power-reliability solutions respondents installed, 60% of companies installed a solution or set of solutions needed to offset possible utility power outages (Chart 12). This reveals a large portion of C&I companies show the potential to turn away from their utilities and seek out their own power reliability solutions to supplement current grid shortcomings.

**CHART 13: FACTORS THAT TRIGGERED THE ADOPTION OF SOLUTIONS**



n = 218

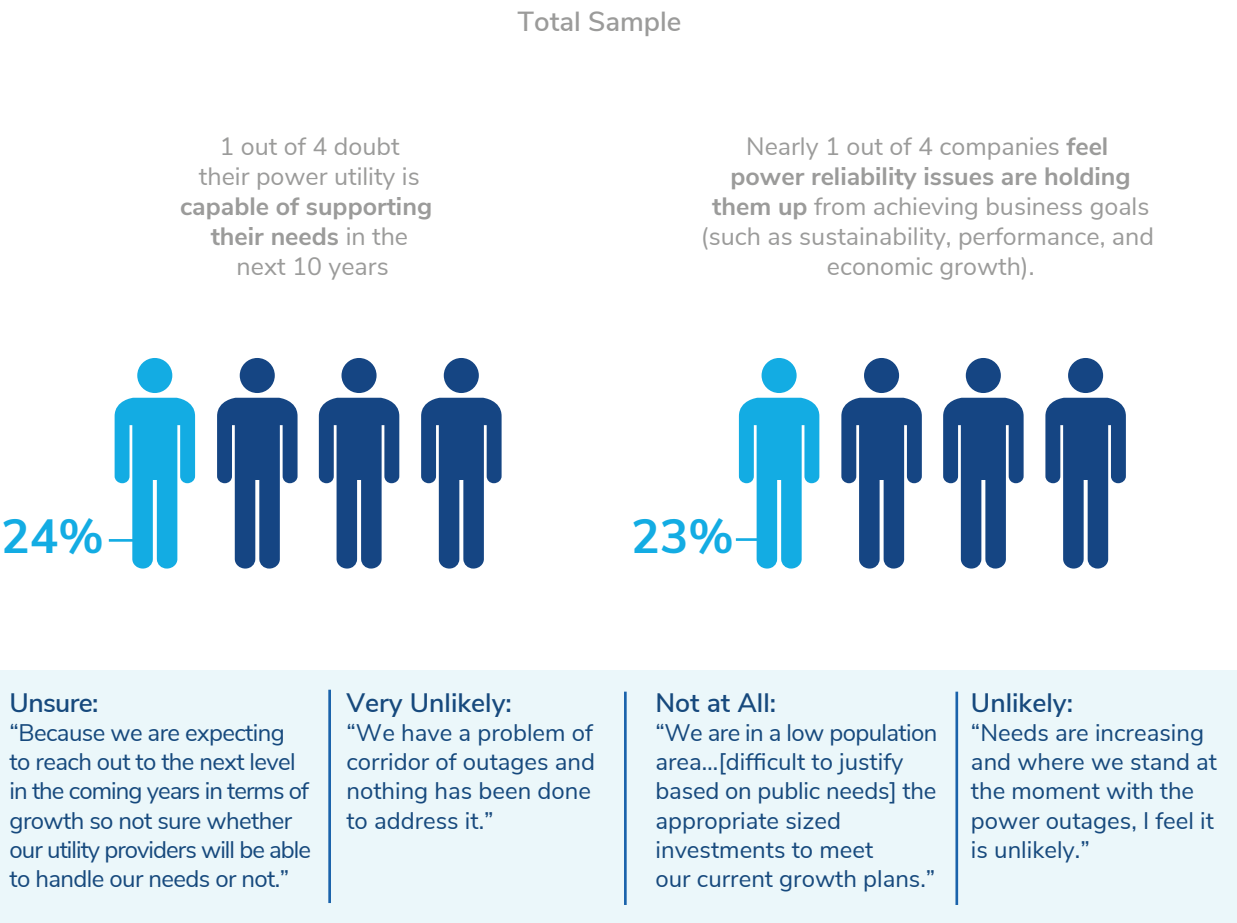
(Q14) What triggered the adoption or installation of these solutions? OPEN END

Source: Frost & Sullivan

Asked what triggered these businesses to install their own alternatives, 72% of companies were driven by the need to improve power reliability (Chart 13). This urgency for and a high expectation of steady power leads to the point where C&I customers will go above and beyond their utility's offerings to meet that need.



CHART 14: % COMPANIES AGREEING/DISAGREEING TO THE STATEMENT

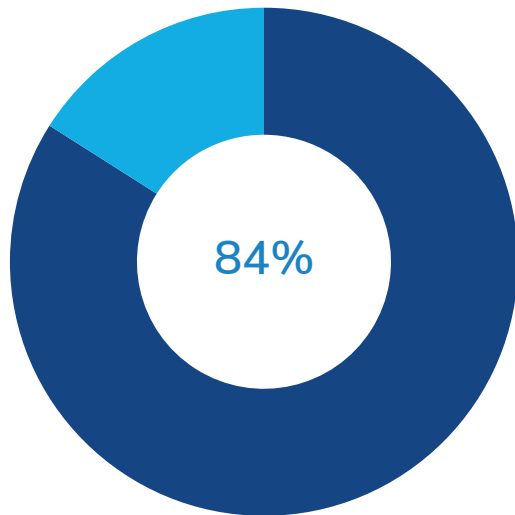


n = 255  
(Q16) To what extent would you agree or disagree that the following statements? - Top two box scores

Source: Frost & Sullivan

While the survey tracked the decisions C&I customers made to supplement their existing energy needs, it also probed into future needs. Almost a quarter (24%) of respondents believed their utility could not support their growth objectives a decade from now due to inadequate power (Chart 14). As noted in the prior section, a notable portion of businesses believe power is becoming increasingly important to business health. Nearly a quarter (23%) of respondents noted this explicitly, stating they agreed power reliability issues were actually preventing them from achieving their business goals.

CHART 15: % COMPANIES AGREEING TO THE STATEMENT



Agreed: Utility companies  
should be continually  
improving their service

n = 255

(Q16) To what extent would you agree or disagree that the following statements? - Top two box scores

Source: Frost & Sullivan

With business goals and future success a top priority, C&I customers believed their utility needed the same long-term vision and improvement mindset. The vast majority of companies (84% in Chart 15) believe utilities must continue improving their services. With the previous data as a backdrop—the poignant impacts of existing outages, long or short, and skepticism toward the state of power reliability—these respondents are calling for utilities to plan for the capabilities and enhancements they feel are critical to the backbone of the U.S. economy.

## Section Comments

With the realization that there's a gap between their power-reliability needs and their utility's ability to meet them, most C&I companies are turning away from utility-based solutions to secure themselves against outage-induced damages to revenues and operations. Especially in the face of increasingly competitive and digitalized environments, nearly a quarter (23%) of businesses say they cannot achieve their business goals if subjected to unreliable power, and 60% have invested in power-reliability technology to mitigate utility power outages.

## OVERALL CONCLUSIONS & KEY FINDINGS

Overall, the 2019 study revealed companies are increasingly aware of outages, and the impact of outages does not only pertain to the length of outage, but it also suggests a growing dependency on power. The disconnect between what C&I customers experience and utilities report hinges on the conversation of outage duration; utilities do not track all the outages business know to be affecting both their short-term and long-term prosperity. Here are the following key findings and related conclusions:

### Section 1 Conclusion: Power outages are frequent, but many are not tracked by the industry.

- Companies experienced a 22% increase in yearly outages from the 2018 report, and monthly outages remained flat, with more than 1 in 5 companies experiencing outages every month.
- One out of three (36%) C&I customers are affected by momentaries, or outages lasting less than five minutes, yet utilities do not typically consider these as outages and do not track them.
- C&I customers experience average reliability at best, and typically they're on the most stable feeders. They will report any length of outage as a power outage.

### Section 2 Conclusion: Reliable power is increasingly important, and even the shortest outages have negative impacts on businesses.

- Both energy consumption and investment are on the rise, indicating a high level of importance being placed on power reliability coupled with a concern over a utility's ability to meet their needs.
- Two out of three companies (64%) report negative operational and financial disturbances due to power outages.
- One out of three companies (31%) reported being affected by a mere blink in power. An outage, whether of short or long in duration, has negative effects.

### Section 3 Conclusion: C&I customers fear their utility will not be able to support their future needs.

- Reliability issues are the most commonly noted drivers for installing on-site power.
- Almost a quarter (24%) of C&I customers doubt their utility will be able to support long-term growth.
- A long-term view of power reliability is critical: almost a quarter of companies (23%) said power-reliability issues actually reduce their prospects for growth.








## APPENDIX

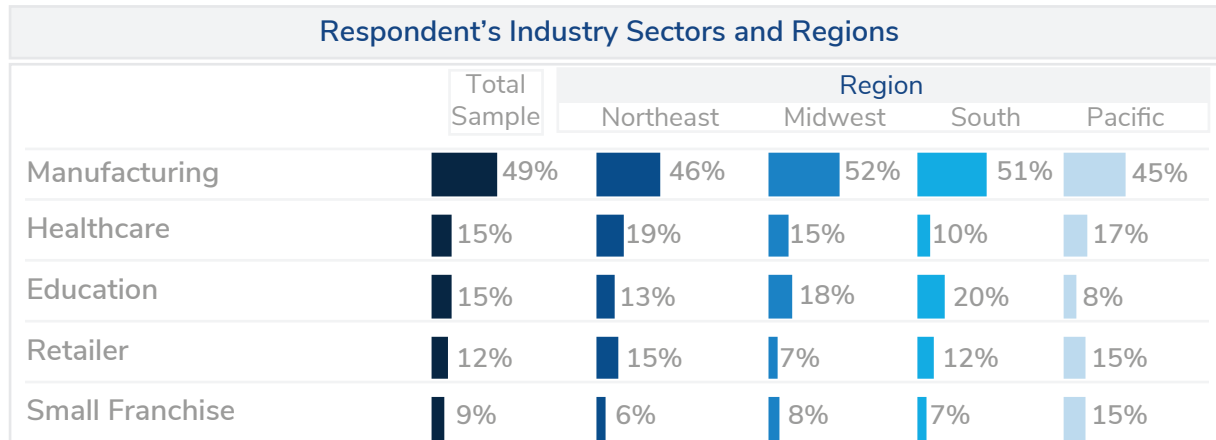




## RESEARCH AND METHODOLOGY

Between October and November 2018, Frost & Sullivan conducted a customer survey of 255 C&I customers across the United States, segmented into four regions to determine perception of power reliability. The quantitative and qualitative analysis consisted of both telephone and online interviews.

<div>Methodology</div> <div></div>	<ul style="list-style-type: none"><li>• Hybrid of telephone and online interviewing</li><li>• Segmented U.S. into four regions</li></ul>
<div>Those Interviewed</div> <div></div>	<ul style="list-style-type: none"><li>• Commercial and industrial market segments</li><li>• Average revenues per company were \$4Billion/year</li><li>• Interviews 255 decision makers</li><li>• Each managed and/or made decisions on power reliability and power provider selection</li></ul>
<div>Survey Duration</div> <div></div>	<ul style="list-style-type: none"><li>• October to November 2018</li></ul>

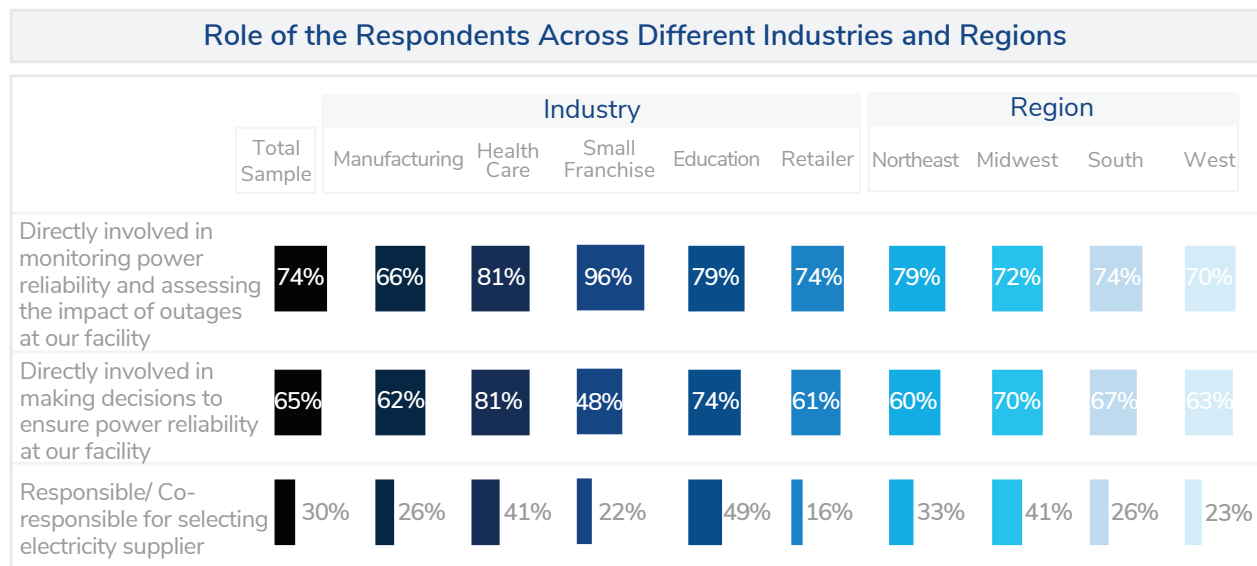
**CHART 16: RESPONDENT PROFILE – INDUSTRY AND REGION**

n = 255

(S1) Which of the following industry sectors best describes your company? SELECT ONE

Source: Frost &amp; Sullivan

Chart 16 shows the spread of respondents across regions and industry. Chart 17 shows the roles the respondents have in their respective organizations.

**CHART 17: RESPONDENT PROFILE – ROLE**

n = 255

(S3) Which of the following describe your role in your company? SELECT AS MANY AS APPLICABLE

Source: Frost &amp; Sullivan

## ABOUT S&C ELECTRIC COMPANY

S&C, with global headquarters in Chicago, is applying its heritage of innovation to address challenges facing the world's power grids, thus shaping the future of reliable electricity delivery. The mission of employee-owned S&C is to continually develop new solutions for electricity delivery, fostering the improved reliability, resiliency, and efficiency required for the intelligent grid.

## ABOUT FROST & SULLIVAN

Frost & Sullivan, the Growth Partnership Company, works in collaboration with clients to leverage visionary innovation that addresses the global challenges and related growth opportunities that will make or break today's market participants. For more than 50 years, we have been developing growth strategies for the global 1000, emerging businesses, the public sector and the investment community.





# S&C ELECTRIC COMPANY

Excellence Through Innovation

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