

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pa. Public Utility Commission	:	
v.	:	Docket No. R-2020-3017206
Philadelphia Gas Works	:	

Direct Testimony of
Scott J. Rubin

on Behalf of
the Pennsylvania Office of Consumer Advocate

June 15, 2020

Table of Contents

Introduction.....	1
Summary	4
Purpose of this Case	4
Determining “Just and Reasonable” Rates at this Time	9
Introduction of OCA’s Other Witnesses	25
Conclusion	26

List of Figures

Figure 1:	Traditional Zone of Reasonableness
Figure 2:	Divergent Interests: A Null Zone of Reasonableness
Figure 3:	Initial Unemployment Claims in Pennsylvania: Weeks Ending March 7 to May 30, 2020
Figure 4:	Unemployment Rate in Philadelphia, January to April 2020
Figure 5:	Percentage of Households Experiencing Loss in Employment Income Since March 13, 2020
Figure 6:	Percentage of Small Businesses in Pennsylvania Expecting it to Take at Least Six Months to Return to Usual Level of Operations (April 26 to May 30, 2020)

List of Schedules and Attachments

Appendix A:	Curriculum vitae
Schedule SJR-1:	Excerpt from Board of Governors of the Federal Reserve System, Report on the Economic Well-Being of U.S. Households in 2019, Featuring Supplemental Data from April 2020 (released May 14, 2020)
Schedule SJR-2:	Federal Reserve Bank of Philadelphia, Special Weekly Business Outlook Survey on COVID-19 (week ending May 31, 2020)
Schedule SJR-3:	Federal Reserve Bank of Philadelphia, Manufacturing Business Outlook (May 2020)
Schedule SJR-4:	Federal Reserve Bank of Philadelphia, Nonmanufacturing Business Outlook (May 2020)

Schedule SJR-5: Impact of COVID-19 on Consumer Energy Use & Outlook: Results of EPRI National Survey (April 29, 2020)

Schedule SJR-6: Moody's Investors Service, Announcement of Periodic Review: Moody's Announces Completion of a Periodic Review of Ratings of Philadelphia (City of) PA Gas Works, Feb. 13, 2020

Introduction

Q. Please state your name and business address.

A. My name is Scott J. Rubin. My business address is 333 Oak Lane, Bloomsburg, PA.

Q. By whom are you employed and in what capacity?

A. I am an independent consultant and an attorney. My practice is limited to matters affecting the public utility industry.

Q. What is the purpose of your testimony in this case?

A. I have been asked by the Office of Consumer Advocate (“OCA”) to provide an overview of this case from a public policy perspective, particularly in light of the COVID-19 pandemic affecting the world at this time. I also will introduce the OCA’s other witnesses who will address various aspects of the rate request filed by Philadelphia Gas Works (“PGW”).

Q. What are your qualifications to provide this testimony in this case?

A. I have testified on more than 200 occasions as an expert witness before utility commissions or courts in the District of Columbia, the province of Nova Scotia, and the states of Alaska, Arizona, California, Connecticut, Delaware, Illinois, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Mississippi, New Hampshire, New Jersey, New York, North Dakota, Ohio, Pennsylvania, South Carolina, Washington, and West Virginia. I also have testified as an expert witness before two committees of the U.S. House of Representatives and various state and local legislative committees. I also have served as a consultant to the staffs of four utility commissions, several national utility

1 trade associations in the United States, and state and local governments throughout the
2 United States. Prior to establishing my own consulting and law practice, I was employed
3 by the OCA from 1983 through January 1994 in increasingly responsible positions. From
4 1990 until I left the OCA, I was one of two senior attorneys in that office. Among my
5 other responsibilities in that position, I had a major role in setting the office's policy
6 positions on water and electric matters. In addition, I was responsible for supervising the
7 technical staff of the office. I also testified as an expert witness for the OCA on rate
8 design, cost of service issues, and policy matters.

9 Throughout my career, I developed substantial expertise in matters relating to the
10 economic regulation of public utilities. I have published articles, contributed to books,
11 written speeches, and delivered numerous presentations relating to regulatory issues. I
12 have attended numerous continuing education courses involving the utility industry. I
13 also have participated as a faculty member in utility-related educational programs for the
14 Institute for Public Utilities at Michigan State University, the American Water Works
15 Association, and the Pennsylvania Bar Institute. My complete curriculum vitae is
16 provided as Appendix A.

17 Q. Do you have any experience that is particularly relevant to the issues in this case?

18 A. Yes, I do. Over the years, I have testified concerning numerous types of regulatory
19 policy issues before utility commissions and legislative committees. Obviously, before
20 this year, I did not have experience recommending an appropriate regulatory response
21 during a global pandemic, but I believe my more than 35 years of experience in utility
22 regulation can provide some useful insights and recommendations. Recently, I submitted

1 testimony on the same topic in two rate proceedings. One of those involved a
2 government-owned utility, the Halifax Regional Water Commission, whose rates are
3 regulated by the Nova Scotia Utility and Review Board. The other case is UGI Utilities'
4 base rate case for its gas division that is currently pending before this Commission.

5 Q. Do you have any other preliminary matters to address?

6 A. Yes, there are two matters I would like to discuss about the focus of my testimony and
7 some of the terminology used. First, my testimony deals with regulatory policy issues.
8 Given the nature of public utility regulation, much of the public policy in this field is
9 contained in decisions by regulatory agencies and courts; or in statutes, ordinances, or
10 regulations. I may be citing or referring to these types of sources. This should not be
11 taken as a legal opinion (though I am qualified to provide expert testimony as a
12 regulatory attorney in Pennsylvania), but rather as sources supporting my expert opinion
13 concerning appropriate public policy and regulatory practice.

14 Second, in portions of my testimony I refer to PGW's investors. I recognize that
15 PGW is owned by the City of Philadelphia ("City") and that it does not have common
16 stock or the same types of investors as an investor-owned utility. Nevertheless, PGW
17 does have investors. The City ultimately owns (and has invested in) the assets of PGW,
18 and the City receives an annual dividend of \$18 million from PGW. Further, PGW has
19 more than \$900 million outstanding in revenue bonds.¹ Those bondholders also are
20 investors in the utility.

¹ Minimum Filing Requirements, II.A.6.

Summary

Q. Please summarize your conclusions and recommendations.

A. I summarize my conclusions and recommendations as follows:

- As a consequence of the pandemic devastating the health and economy of the Commonwealth and the world, the Commission cannot rely on many of the assumptions made in PGW's filing. It also would not be just or reasonable to impose a rate increase on customers at this time.
- I recommend that the Commission deny any rate increase to PGW in this case, unless it finds that an increase is needed for PGW to comply with its bond indentures.

Purpose of this Case

Q. What is your understanding of the purpose of this proceeding?

A. As I understand it, the purpose of this matter is to determine the "just and reasonable" rates for PGW under Chapter 13, and other provisions, of the Public Utility Code.

Q. In your more than 35 years of experience with utility rate-setting, are there standards or criteria used to determine whether a rate is "just and reasonable"?

A. Yes. There are thousands of administrative and judicial decisions throughout the United States that interpret the phrase "just and reasonable" as it relates to utility rates. Without going into all of the nuances and jurisdictional differences that arise from those decisions, and without providing a legal opinion, I will provide my general understanding of how that phrase is used in the field of public utility ratemaking.

In general, we regulate the rates (and other terms of service) of public utilities because they are natural monopolies, meaning that it would be economically inefficient (more expensive) to have competing enterprises provide the service. It is often stated that

1 regulation is a substitute for competitive market forces. At its core, regulation is
2 designed to protect utility consumers from what otherwise would be the unfettered power
3 of a monopoly to set prices and the conditions of service. In protecting consumers,
4 however, regulators cannot confiscate the property of the utility's investors. That is,
5 regulators cannot tilt the scale so far in favor of consumers (for example by providing
6 free service) that the utility's investors are deprived of an opportunity to earn a
7 reasonable return on their investment.

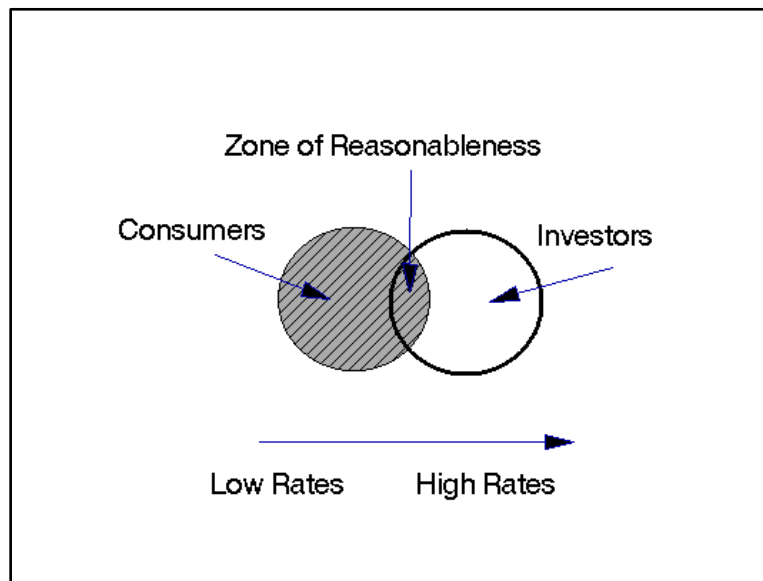
8 Importantly, though, regulation is not designed to insulate the utility or its
9 investors from normal market forces, technological improvements, or general economic
10 conditions. If market forces (such as technological change) result in significant
11 reductions in the demand for service, then the utility may not be able to recover its costs.
12 That is not a failure of regulation, but a natural evolution of the market -- businesses fail
13 if they cannot keep up with changes in consumers' preferences or respond to
14 technological innovations.

15 Similarly, if economic conditions change such that rates become unaffordable to
16 many customers, rates may need to be reduced in order to remain "just and reasonable"
17 from the perspective of customers.

18 Q. Is there a general framework in which to evaluate whether a rate is just and reasonable?

19 A. Yes, regulators, analysts, and courts often speak of a "zone of reasonableness." In setting
20 rates, regulators should attempt to balance the interests of all relevant sectors of the
21 public. This includes the utility's investors, the utility's officers and employees, the
22 customers (recognizing that different customer classes also have different interests), and

1 local governments whose residents are served by the utility. Ideally, rates should be set
2 within a “zone of reasonableness” which represents a range within which all of the
3 relevant interests intersect. To help explain the concept, I have provided Figure 1 which
4 illustrates this zone of reasonableness as a simplified diagram, showing only consumers
5 as a whole and investors.

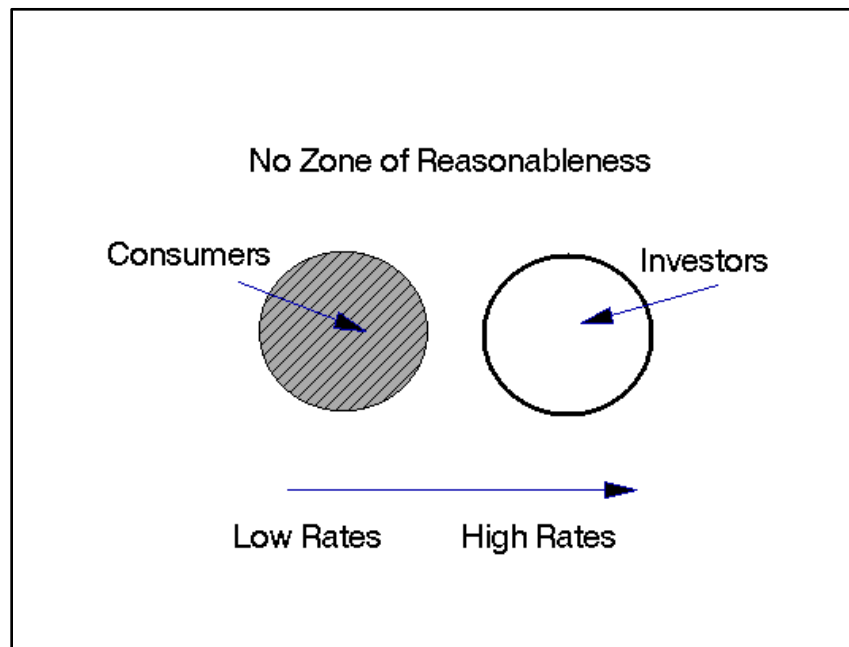


6
7 **Figure 1. Traditional Zone of Reasonableness**
8

9 In this example, which illustrates the situation in which rate regulators usually
10 find themselves, there is an overlap between the interests of consumers and investors.
11 That is, there is a range of rates that consumers are willing and able to pay (ranging from
12 zero at the low end to a rate which is so high that they can no longer afford utility
13 service) and a range of rates which will provide investors with what they consider to be a
14 reasonable return on their investment (presumably ranging from something more than the
15 risk-free rate of return up to a return well above that which the market provides to
16 similar-risk investments). In this illustration, these two ranges overlap. This provides the

1 regulator with a range within which it can set rates that still meet the needs of both
2 consumers and investors. The size and relative position of the range may change, but we
3 are used to having at least a partial convergence of these ranges.

4 It is possible, however, that the interests of investors and consumers might
5 diverge. This divergence is illustrated in Figure 2.



6
7 **Figure 2. Divergent Interests: A Null Zone of Reasonableness**
8

9 For example, if a utility is providing poor service (or a service which is becoming
10 obsolete), the highest price which consumers are willing to pay may be very small,
11 thereby falling below the low end of the investors' range. Similarly, if interest rates or
12 the levels of investment become very high, investors' minimum return requirements may
13 become so high as to fall above the range of rates which consumers can afford to pay.
14 When this happens, the rate regulators may have to set rates which fall outside of the

1 normal zone of reasonableness, but which still attempt to fairly balance the interests of all
2 parties to the extent possible.

3 It also must be remembered that while these concepts can be easily illustrated
4 using circles on a diagram, the real world is not so simple. There is no bright line
5 delineating any of these interests. The regulator is forced to discern the relative interests
6 of the parties from the arguments and evidence which are placed on the record.

7 Q. Are you saying that the Commission should not set rates outside the zone of
8 reasonableness?

9 A. No, I am not saying that. In fact, in certain instances it may be impossible for the
10 Commission to simultaneously satisfy all aspects of the public interest. As I view the
11 role of rate regulators, they must act within the broad public interest. Sometimes, that
12 may mean setting rates which fail to meet the needs of a certain segment of the public. I
13 believe, however, that whenever it sets rates, the Commission must attempt to determine
14 whose needs are being met and whose are not.

15 Q. Isn't that usually done in the traditional ratemaking process?

16 A. Unfortunately, it is not usually done. In most cases, the investors' interest becomes a
17 central focus of the case, by attempting to determine the return on capital which investors
18 require in order to continue to invest money in the utility. This is usually examined in
19 great detail, with each side spending thousands of dollars on attorneys and expert
20 witnesses skilled in the presentation of this subject. Very rarely, though, do regulators or
21 parties place as much emphasis on attempting to define the consumers' interest.

Determining “Just and Reasonable” Rates at this Time

Q. You have testified on numerous occasions before this Commission. Do you always go into such detail about “just and reasonable” rates or the “zone of reasonableness”?

A. No. As best as I can recall, prior to this year, the only time I raised these issues in such detail before this Commission was in 1993 in a rate case involving Colony Water Company, Docket No. R-00922375. As I remember it, that utility was proposing extremely high rates that would be unaffordable for many of its customers. I recommended a ratemaking approach that would have set rates based on the rates charged by that small utility’s water supplier, even though the rates would be below the traditional revenue requirement calculation for the utility.

Q. Why are you raising these concerns in this case?

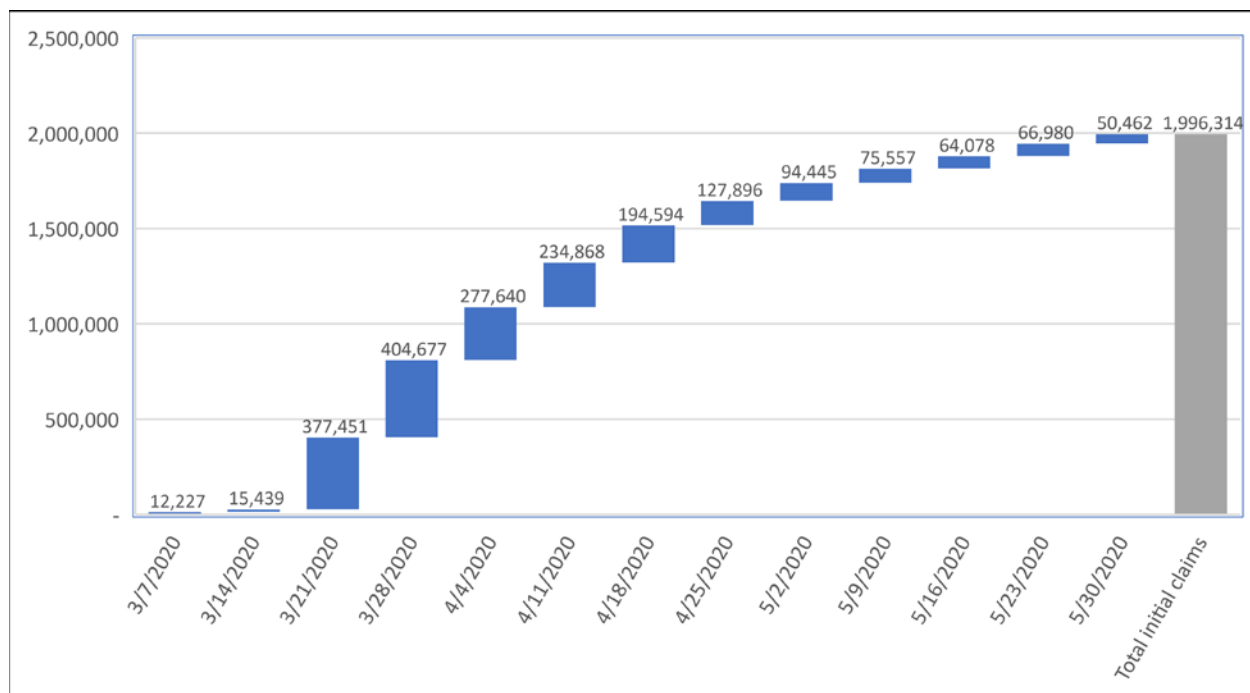
A. Through no fault of its own, PGW ended up filing its application just weeks before its service area -- indeed the entire world -- was devastated with the worst pandemic in a century. Understandably, PGW prepared this case assuming “business as usual,” but life and business in its service territory is now anything but normal.

In particular, I am very concerned about the impact that significant rate increases would have on PGW’s customers at this time. To be blunt, this is not the time to impose higher costs on either people or businesses. If regulation is supposed to be a substitute for market forces, then we must recognize that except for those commodities experiencing significant imbalances of supply and demand due to the pandemic, competitive businesses cannot sustainably raise prices when their customers’ incomes have decreased significantly. We’re seeing supply gluts of necessities such as gasoline,

certain types of food (because restaurants are either closed or operating very limited take-out service), skyrocketing unemployment, and a significant reduction in hours for many people who are still employed. Simply stated, what may have been a “just and reasonable” rate three months ago may be unreasonable today.

Q. Can you be more specific about the impacts of the pandemic on Pennsylvania and PGW’s service territory?

A. Yes, I can be more specific to some extent. Data on new statewide unemployment claims are released each week, but county-level data are released only monthly. Figure 3 shows the devastating effect the pandemic has had on unemployment in the Commonwealth.



**Figure 3. Initial Unemployment Claims in Pennsylvania:
Weeks Ending March 7 to May 30, 2020**

1 Figure 3 shows the effect of the pandemic on employment. The huge spike in
2 unemployment claims during the weeks ending March 21 and March 28 coincides with
3 the entry of the Governor's order of March 19 closing all dine-in restaurants on that date
4 and all non-life-sustaining businesses on March 21. To put these figures in perspective,
5 according to the U.S. Census Bureau, Pennsylvania had a workforce of approximately
6 6,576,000 people in 2018.² In the past three months, almost 2 million Pennsylvanians
7 have filed initial unemployment claims -- more than 30% of Pennsylvania's workforce.

8 Q. Can you estimate the pandemic's effect on employment in Philadelphia?

9 A. Yes. The most recent county-level unemployment reports for Pennsylvania were released
10 on June 2, 2020, with data as of mid-April.³ The report shows that Philadelphia's
11 unemployment rate in mid-April was 17.2%. As shown in Figure 4, this is nearly a
12 tripling of the City's unemployment rate prior to the pandemic.

² U.S. Census Bureau, 2018 American Community Survey, Table S2301: Employment Status.

³ <https://www.workstats.dli.pa.gov/MediaCenter/MonthlyNews/Pages/default.aspx>

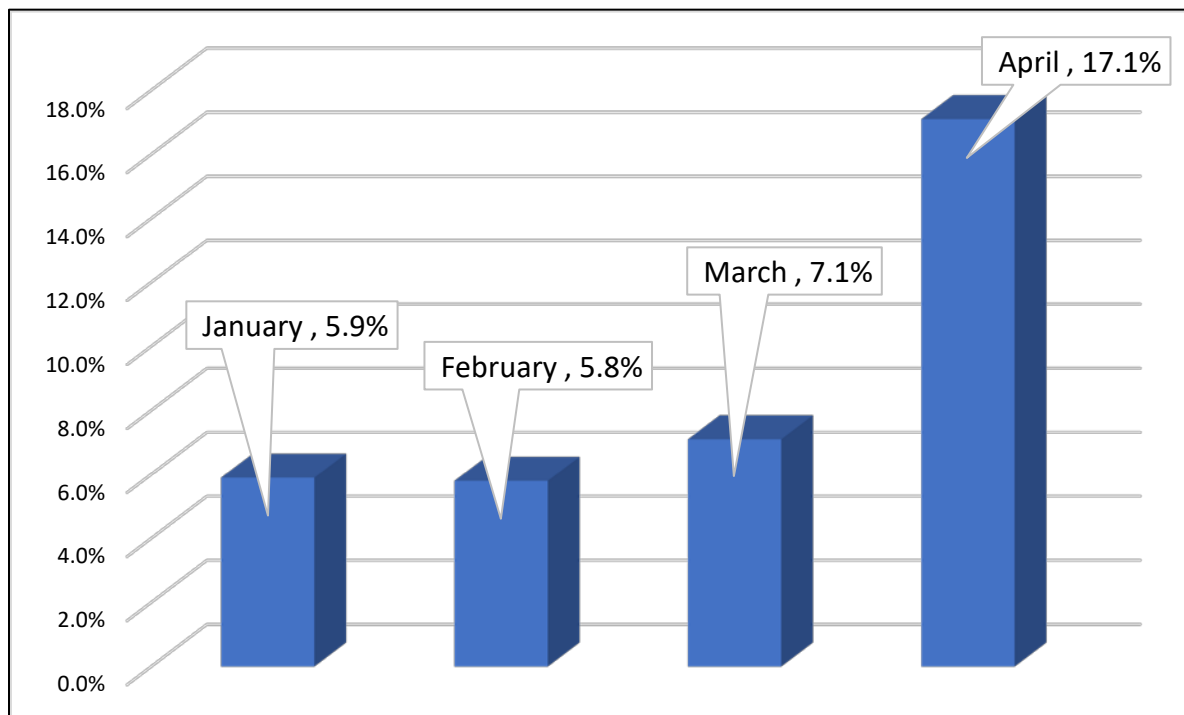


Figure 4. Unemployment Rate in Philadelphia, January to April 2020

Q. Generally, what effect has the pandemic had on families' finances?

A. The Federal Reserve System is attempting to measure the effects of the pandemic on household finances. On May 14, 2020, the Federal Reserve System released its annual report on the economic well-being of households.⁴ Most of the report is based on surveys conducted during 2019, but a supplemental survey was conducted in the first week of April 2020 to assess the impacts of the pandemic on household finances. I am attaching as Schedule SJR-1, the cover page and the portion of the report dealing with the April 2020 supplemental survey (pages 53-56 of the report).

⁴ Board of Governors of the Federal Reserve System, Report on the Economic Well-Being of U.S. Households in 2019, Featuring Supplemental Data from April 2020 (May 2020), <https://www.federalreserve.gov/publications/files/2019-report-economic-well-being-us-households-202005.pdf>.

1 The survey found that “20 percent of people who had been working in February
2 reported that they lost a job or were furloughed in March or the beginning of April
3 2020.”⁵ Among lower-income households, however, the impact was even more severe.
4 The report states: “Thirty-nine percent of people working in February with a household
5 income below \$40,000 reported a job loss in March.”⁶ Further, approximately 9 percent
6 of people who were still working had their hours reduced or were required to take unpaid
7 leave.⁷

8 Overall, “23 percent of adults said their income in March was lower than in
9 February.”⁸ Of those who lost their job or had their hours reduced, only 64% said they
10 would be able to pay all of their bills in full during April.⁹ That is, more than one-third
11 of the families that suffered a loss in income during March will not be able to pay all of
12 their bills the following month.

13 Data for Pennsylvania show an even more serious result. The U.S. Census
14 Bureau has been conducting weekly surveys of households since April 23. In the first
15 week, 46.9% of Pennsylvania households reported a loss of at least some employment
16 income since March 13. By the fourth week of the survey (late May), that had risen to
17 53.9% of households, as shown in Figure 5.

18 Figure 5 also shows the comparable figures for the Philadelphia-Camden-
19 Wilmington metropolitan area. Employment income was lost more quickly in the region,

⁵ Schedule SJR-1, p. 2.

⁶ *Id.*

⁷ *Id.* The report states that 6% of all adults had their hours reduced. Given the number of all adults in the workforce, this would equate to approximately 9% of working adults.

⁸ *Id.*, p. 3.

⁹ *Id.*, pp. 3-4.

with 50.2% of households reporting an income loss in the first week of the survey. By late May, however, the percentage of the region's households reporting a loss was almost identical to the statewide total (53.8% in the region compared to 53.9% in all of Pennsylvania).¹⁰

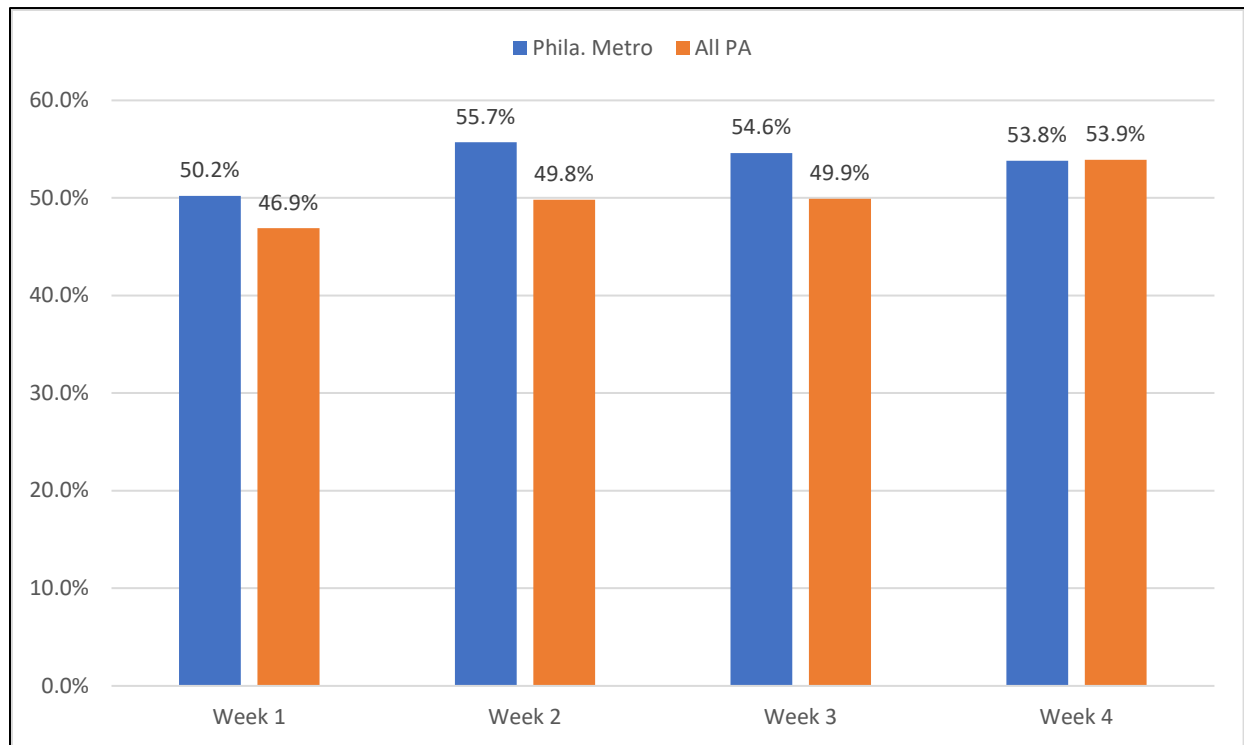


Figure 5. Percentage of Households Experiencing Loss in Employment Income Since March 13 (week 1 begins April 23)

Q. Are you aware of any attempts to evaluate the effects of the pandemic on the business community in the Philadelphia region?

A. Yes. The Federal Reserve Bank of Philadelphia has been conducting surveys of businesses throughout its region. Its region includes central and eastern Pennsylvania,

¹⁰ U.S. Census Bureau, Household Pulse Survey, <https://www.census.gov/data-tools/demo/hhp/#/table>.

1 which includes Philadelphia of course, as well as Delaware, and part of New Jersey. The
2 most recent survey, as I am preparing this testimony, covers the week ending May 31,
3 2020, which I am attaching as Schedule SJR-2. The Bank also conducts separate surveys
4 of manufacturing and non-manufacturing businesses. I am attaching the most recent
5 versions of those surveys as Schedules SJR-3 and SJR-4, respectively.

6 Q. Do the Federal Reserve Bank's surveys support your conclusions about the effects of the
7 pandemic on Pennsylvania?

8 A. Yes. For example, the survey in Schedule SJR-2 shows that at least 90% of
9 manufacturers have experienced at least a 5% decline in orders, with the majority
10 experiencing at least a 15% decline. Many businesses reported laying off employees
11 (either permanently or temporarily), ceasing new hiring, and reducing employees' work
12 hours.

13 The survey of manufacturers hit an all-time low in April. While manufacturing
14 activity recovered somewhat in May, almost one-third of manufacturers in the region
15 expect their business to be worse or about the same six months from now.¹¹

16 The survey of non-manufacturers is even more pessimistic. Again, while there
17 has been some recovery from the all-time lows in April, more than half of survey
18 respondents expect either a worsening of business conditions or no change six months
19 from now.¹²

¹¹ Schedule SJR-3, p. 2 ("What is your evaluation of the level of general business activity, six months from now vs. May": 19.0% no change, 12.8% decrease).

¹² Schedule SJR-4, p. 2 ("What is your assessment of general business activity for the region, six months from now vs. May": 9.2% no change, 48.7% decrease).

1 Q. Are there any other indicators of the condition of Pennsylvania's economic outlook as a
2 result of the pandemic?

3 A. Yes. A recently initiated small-business survey by the U.S. Census Bureau provides
4 further insights into the condition of small businesses in Pennsylvania. The Census
5 Bureau estimates that, as of the week ending May 2, 31.6% of small businesses in
6 Pennsylvania said they would not return to normal operations for more than six months
7 and 6.6% of the Commonwealth's small businesses expected to never return to their pre-
8 pandemic level of operations.¹³ By the end of May, the small-business outlook was even
9 worse with more than 50% of businesses selecting these two categories. I show the trend
10 over the past five weeks graphically in Figure 6.

¹³ U.S. Census Bureau, Small Business Pulse Survey, <https://www.census.gov/data/experimental-data-products/small-business-pulse-survey.html>.

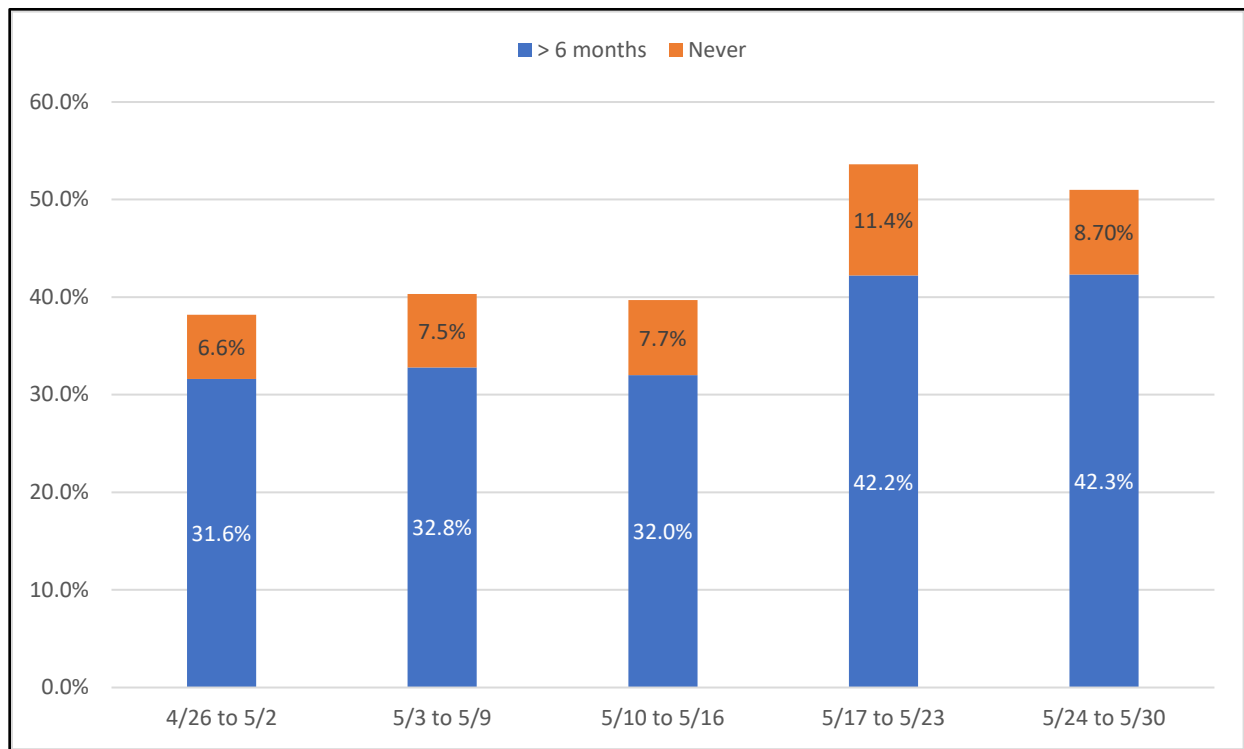


Figure 6. Percentage of Small Businesses in Pennsylvania Expecting it to Take at Least Six Months to Return to Usual Level of Operations (April 26 to May 30, 2020)

Q. Has there been an overall assessment of the pandemic's effects on Pennsylvania's economy?

A. Yes. Each month, the Federal Reserve Bank calculates a "coincident index" for each state and the country as a whole. The index is described as follows: "The coincident indexes combine four state-level indicators to summarize current economic conditions in a single statistic. The four state-level variables in each coincident index are nonfarm payroll employment, average hours worked in manufacturing by production workers, the unemployment rate, and wage and salary disbursements plus proprietors' income deflated

1 by the consumer price index (U.S. city average).”¹⁴ The index is set so that the level of
2 economic activity in 2007 is equal to 100.

3 Between January and April, Pennsylvania’s coincident index plunged from
4 122.54 to 89.49, a decline of 27%.¹⁵ Indeed, Pennsylvania’s current level of economic
5 activity is the lowest it has been in 20 years.

6 Q. Are people concerned about being able to afford their utility bills during this time?

7 A. Yes. A recent survey conducted by the Electric Power Research Institute (“EPRI”) found
8 that about two-thirds of people who lost their jobs during the pandemic are concerned
9 about being able to pay their energy bills.¹⁶ Moreover, more than 20% of survey
10 respondents reported that their energy bills were higher because of the pandemic.¹⁷
11 Interestingly, the survey also found that more than 25% of people who lost their jobs are
12 planning to skip at least one utility bill payment,¹⁸ but a much lower percentage were
13 planning to contact their utilities for assistance.¹⁹

14 Q. How does this affect the decisions the Commission must make in this case?

15 A. Faced with this unprecedented public health and economic crisis, I respectfully submit
16 that the Commission cannot treat this case as “business as usual.” Almost no other

¹⁴ <https://www.philadelphiafed.org/research-and-data/regional-economy/indexes/coincident>

¹⁵ Federal Reserve Bank of Philadelphia, State Coincident Indexes as of April 2020 (released May 27, 2020), <https://www.philadelphiafed.org/-/media/research-and-data/regional-economy/indexes/coincident/2020/coincidentindexes0420.pdf?la=en>

¹⁶ Omar Siddiqui and Min Long, Impact of COVID-19 on Consumer Energy Use & Outlook: Results of EPRI National Survey (April 29, 2020), http://mydocs.epri.com/Docs/public/covid19/COVID-19_survey_report.pdf, a copy of which is attached as Schedule SJR-5. The referenced question is on page 4 of Schedule SJR-5.

¹⁷ Schedule SJR-5, p. 3.

¹⁸ Schedule SJR-5, p. 7.

¹⁹ Schedule SJR-5, p. 12 (15% of those who lost their jobs said they planned to contact the utility about alternate rate plans or other ways to lower their bills).

1 business in PGW's service area is conducting business as usual; residential consumers are
2 using PGW's services differently than they do during normal circumstances (few if any
3 people are usually at home 24 hours per day, 7 days a week, preparing every meal at
4 home, fully heating the home all day during March and April, and so on).

5 Respectfully, the Commission cannot focus on PGW's historic costs, or on cost
6 projections prepared before the pandemic, and assume that the resulting rates will be "just
7 and reasonable." The Commission must focus on what rates are reasonable for
8 consumers to pay under these extraordinary conditions.

9 Q. How are other utilities and regulators addressing these unprecedented circumstances?

10 A. I have not conducted exhaustive research to try to identify every regulatory and utility
11 response to ratesetting during the pandemic. I can, however, provide a few examples.

12 Hydro One, a large electric utility in Ontario, Canada, temporarily modified its
13 rate structure to eliminate peak-period pricing, recognizing that people are at home 24-
14 hours per day and cannot avoid peak-period usage. The utility estimates this will reduce
15 a typical customer's bills by more than 14%.²⁰

16 In the case I mentioned earlier where I submitted similar testimony, the Halifax
17 (Nova Scotia) Regional Water Commission filed rebuttal testimony that withdrew its
18 request to increase water rates. It also delayed and significantly reduced its proposed
19 increase in wastewater rates.

20 Utilities throughout the United States also are deferring rate increases or
21 implementing rate reductions during this period. These actions provide some relief to

²⁰ <https://www.hydroone.com/about/corporate-information/rate-relief>.

1 customers who are facing a horrible confluence of events: an increase in home utility bills
2 (as they are home essentially 24 hours per day, 7 days per week) coupled with declines in
3 income. A few examples are summarized as follows:

- 4 • Dominion Energy in South Carolina is pushing back the effective date for
5 its rate increase to March 1, 2021, instead of January 1, 2021.²¹
- 6 • Minnesota Power significantly reduced its requested rate increase and is
7 refunding more than \$12 million to customers to help alleviate pandemic-
8 related financial concerns.²²
- 9 • California Water Service Co. is eliminating all scheduled rate increases
10 during 2020.²³
- 11 • Chelan County (Washington) Public Utility District is postponing
12 previously approved increases in electric, water, and wastewater rates by
13 six months to provide customers some relief during the pandemic.²⁴
- 14 • The City of Austin (Texas) reduced its electricity rates by about 4%,
15 eliminated the residential price increment for usage in excess of 1,000
16 kilowatt-hours per month, and reduced rates for residential water and
17 wastewater consumption by 10%.²⁵
- 18 • PEPCO, the electric utility serving the District of Columbia and
19 surrounding areas, announced on June 1st that it would forego a \$25
20 million rate increase scheduled for this year in D.C., make a shareholder
21 donation to its low-income assistance fund, and take other actions to assist
22 customers during the pandemic.²⁶

²¹ Dominion Energy wants rate increase pushed back, trying to help customers during pandemic, NBC - 2 WCBD (Charleston, South Carolina), April 2, 2020; see letter filed by Dominion with the South Carolina Public Service Commission at <https://dms.psc.sc.gov/Attachments/Matter/eb126cd9-6804-47de-8b7d-775984d8a4e5>.

²² Minnesota Power Proposes Plan to Resolve Rate Request in Response to Economic Challenges of COVID-19; Customers will receive refund on bills and lower rates under proposal to state regulators, Business Wire, April 23, 2020.

²³ Utility; Cal Water requests a delay in rate changes, Oroville Mercury Register (California), April 30, 2020.

²⁴ Chelan PUD delays rate increase by 6 months, S&P Global Market Intelligence, <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/chelan-pud-delays-rate-increase-by-6-months-58041707>.

²⁵ <https://austinenergy.com/ae/rates/residential-rates/residential-electric-rates-and-line-items>.

²⁶ PEPCO press release, PEPCO Proposes to Freeze DC Customer Energy Delivery Rates Until 2022, <https://www.pepco.com/News/Pages/PepcoProposestoFreezeDCCustomerEnergyDeliveryRatesUntil2022andAssistCustomerswithPandemicEconomicRecovery.aspx>.

- A report by Moody's Investors Service expects similar delays in numerous electric, gas, and water utility rate proceedings throughout the U.S. as a way of providing some relief to consumers during the pandemic.²⁷

Q. What do you recommend?

A. I recommend that the Commission deny PGW's request to increase rates in this case, unless it finds that an increase is required for PGW to meet its 1.5 times interest coverage requirement. Now is not the time to impose additional, unavoidable costs on consumers. Residential customers are experiencing unprecedented levels of unemployment and other economic dislocation (such as reduced hours of work), while many are battling the COVID-19 infection. Businesses of all sizes, as well as local governments, schools, universities, and nonprofit organizations are struggling to remain viable. I expect many will not be able to survive or, if they do, it might take them months or years to return to pre-pandemic levels of operations.

To put all of this in terms of utility ratemaking: it would be neither just nor reasonable for PGW to increase its rates at this time. The Commission should deny PGW's request in its entirety and keep the PGW's existing rates (and all other tariff provisions) in effect.

Q. Other than the information you provided above, is there any other information that lends support to your recommendation?

A. Yes. PGW's filing is based on data for the utility under normal conditions. In 2019, under its existing rates, PGW had net income before interest expense of \$153.5 million.²⁸

²⁷ Moody's Investors Service, Coronavirus outbreak delays rate cases, but regulatory support remains intact, April 6, 2020, https://www.eenews.net/assets/2020/04/09/document_ew_04.pdf.

²⁸ Minimum Filing Requirements, § 53.52(b)(2).

1 After paying its interest expense and distributing \$18 million to the City, PGW had net
2 income of \$95.9 million.²⁹ On February 13, 2020, just two weeks before PGW filed this
3 case, Moody's Investors Service announced the results of its periodic review of PGW's
4 bond ratings, a copy of which is attached as Schedule SJR-6. The review concluded:
5 "Current rates are sufficient to not only adequately cover annual debt service but also
6 provide excess cash flow to continue to increase the cash funded share of capital
7 expenditures."

8 Q. What do the OCA's revenue requirements experts conclude about the ability of PGW's
9 existing rates to meet the interest coverage requirement?

10 A. Those witnesses' testimonies and exhibits will speak for themselves, but I can provide
11 my basic understanding of their in-depth analyses of PGW's operations. As I understand
12 it, the OCA's experts have concluded that PGW's rates should be reduced by
13 approximately \$1 million. I also would note that this assumes none of PGW's costs or
14 revenues are affected by the pandemic or the ongoing economic fallout from the past few
15 months. As I understand it, under OCA's revenue requirement recommendation, PGW
16 would continue to pay the City a dividend of \$18 million per year.

17 I would emphasize that we are not living under normal conditions. Businesses,
18 small and large, throughout Philadelphia are facing the very real prospect of not being
19 able to pay their out-of-pocket expenses and laying off most or all of their workforce.
20 They are facing negative returns on their investments. That is the real-world competitive
21 market that regulation is trying to mirror.

²⁹ Minimum Filing Requirements, § 53.52(c)(5).

1 I am not suggesting that PGW should have rates that are inadequate to ensure the
2 provision of safe and reliable service to its customers. My recommendation allows PGW
3 to continue operations, recover all of its expenses, pay its bondholders, and even pay an
4 \$18 million annual dividend to the City. Most of PGW's customers would be absolutely
5 thrilled if they could pay all their bills (including various increases in expenses that may
6 or may not occur next year), make all of their debt payments, and still have enough left
7 over to earn 50% more than their debt payments. Most businesses would find that result
8 absolutely amazing at this time. When compared to the economic devastation gripping
9 its service territory, I cannot find anything just or reasonable about increasing PGW's
10 rates at this time.

11 Moreover, it is my opinion that the Commission cannot lend any credence to
12 PGW's projections for the FPFTY. That applies to essentially every aspect of PGW's
13 projections. Since PGW filed the case, interest rates have dropped to near zero;³⁰ oil
14 prices have plunged;³¹ inflation is negative;³² residential gas consumption is increasing
15 and non-residential consumption is decreasing.³³ No one can say how much gas PGW
16 will sell next winter and to which customer classes. How much gas will businesses use
17 next winter? How many children will be in school remotely this fall? How many

³⁰ Board of Governors of the Federal Reserve System, Policy Tools (interest rates were decreased to the range of 0% to 0.25% on March 16, 2020), <https://www.federalreserve.gov/monetarypolicy/openmarket.htm>.

³¹ U.S. Department of Energy, Energy Information Administration, Petroleum and Other Liquids (the price of a standard crude oil contract fell from \$53.14 on January 27 to \$36.81 on June 2), <https://www.eia.gov/dnav/pet/hist/RCLC1D.htm>.

³² U.S. Bureau of Labor Statistics, Consumer Price Index: Latest Numbers (the CPI for April was -0.8%), <https://www.bls.gov/cpi/latest-numbers.htm>.

³³ U.S. Department of Energy, Energy Information Administration, Short-Term Energy Outlook (May 12, 2020), <https://www.eia.gov/outlooks/steo/report/natgas.php>.

1 colleges and universities will be able to open their doors next semester? Will restaurants
2 and retail stores and factories be operating at their normal capacities next fall and winter?

3 Based on all of these factors, I conclude that the Commission cannot have any
4 confidence in the projections made by PGW for the FPFTY; there is simply too much
5 uncertainty. It would be neither just nor reasonable to set rates based on the assumptions
6 PGW made when it filed this case in February. Virtually every assumption is changing
7 as a result of the pandemic. As a consequence, it is my opinion that it is reasonable -- I
8 would go so far as to say required -- for the Commission to reject PGW's request to
9 increase its rates. The Commission cannot have any certainty about the appropriate,
10 ongoing level of expenses, interest rates, consumption patterns, and the numerous other
11 factors that affect the determination of an appropriate level of rates.

12 Q. If the economic situation worsens significantly and cash flow becomes a concern for the
13 PGW, are there other actions it could take?

14 A. Yes, one obvious way to preserve cash is to defer construction projects that are not
15 needed to ensure the current provision of safe and reliable service to existing customers.
16 For example, growth-related projects or system rehabilitation activities that are longer-
17 term in nature (that is, projects that are not needed to ensure current levels of service
18 within the next six to 12 months) could be delayed by several months to preserve cash, if
19 necessary. In addition, if cash flow became extremely serious, PGW also could work
20 with the City to temporarily reduce or eliminate the cash dividend PGW pays to the City.

Introduction of OCA's Other Witnesses

Q. If the Commission disagrees with you and decides to determine PGW's revenue requirement and rates as if we were not in the midst of a pandemic, what do you recommend?

A. The OCA is sponsoring the testimony of four other witnesses who will provide a more traditional rate case presentation. If the Commission rejects my recommendation, I would respectfully suggest that it carefully evaluate the proposals made by the OCA's other witnesses, and allocate any rate change equitably among all customers.

Q. Who are the OCA's other expert witnesses?

A. Mark Garrett supports the OCA's traditional revenue requirements recommendation in OCA Statement 2. Mr. Garrett also discusses the reasons why PGW cannot meet its burden of proving the reasonableness of its FPFTY projections in light of all of the changes caused by the pandemic.

In developing his recommendations, Mr. Garrett relies on the interest coverage and cash flow analysis presented by David Habr in OCA Statement 3. Dr. Habr also discusses some of the pandemic's effects on capital markets and potential impacts on PGW's financing costs.

Jerome Mierzwa discusses the PGW's cost-of-service study, allocation of any rate increase among the customer classes, and issues associated with the design of residential rates. His testimony is marked OCA Statement 4.

Finally, in OCA Statement 5, Roger Colton addresses the particular plight of PGW's low-income customers during this time. He recommends changes in the PGW's

1 universal-service programs, and related matters to help all PGW customers afford
2 essential utility service.

3 **Conclusion**

4 Q. Please summarize your conclusions and recommendations.

5 A. I strongly recommend that the Commission reduce rates as recommended by the OCA's
6 other witnesses, or, at a minimum, deny any rate increase to PGW in this case, unless it
7 finds that some increase is needed to ensure that PGW meets its interest coverage
8 obligation to bondholders. PGW's projections for the FPFTY cannot be relied upon to
9 make reasonable findings or conclusions about its level of revenues, expenses, or any of
10 the other elements that enter into the ratemaking calculus.

11 Moreover, given the current economic situation, I conclude that it is neither just
12 nor reasonable to increase rates to PGW's customers at this time. Unemployment rates
13 are skyrocketing in Philadelphia, businesses are closed or conducting limited operations,
14 schools and universities have closed their campuses with no clear path for reopening,
15 nonprofit organizations are stressed to the breaking point, and local government tax
16 revenues are declining. I cannot identify any segment of PGW's customer base for which
17 a rate increase would be just or reasonable at this time. Finally, as I explained above,
18 PGW would not suffer severe financial hardship if rates remained at their current level
19 through the FPFTY.

20 Q. Does this conclude your direct testimony?

21 A. Yes, it does.

Appendix A

Scott J. Rubin

Attorney + Consultant

333 Oak Lane • Bloomsburg, PA 17815

Current Position

Public Utility Attorney and Consultant. 1994 to present. I provide legal, consulting, and expert witness services to various organizations interested in the regulation of public utilities.

Previous Positions

Lecturer in Computer Science, Susquehanna University, Selinsgrove, PA. 1993 to 2000.

Senior Assistant Consumer Advocate, Office of Consumer Advocate, Harrisburg, PA. 1990 to 1994.

I supervised the administrative and technical staff and shared with one other senior attorney the supervision of a legal staff of 14 attorneys.

Assistant Consumer Advocate, Office of Consumer Advocate, Harrisburg, PA. 1983 to 1990.

Associate, Laws and Staruch, Harrisburg, PA. 1981 to 1983.

Law Clerk, U.S. Environmental Protection Agency, Washington, DC. 1980 to 1981.

Research Assistant, Rockville Consulting Group, Washington, DC. 1979.

Current Professional Activities

Member, American Bar Association, Infrastructure and Regulated Industries Section.

Member, American Water Works Association.

Admitted to practice law before the Supreme Court of Pennsylvania, the New York State Court of Appeals, the United States District Court for the Middle District of Pennsylvania, the United States Court of Appeals for the Third Circuit, and the Supreme Court of the United States.

Served as peer reviewer for *Electricity Journal*, *Journal American Water Works Association*, *Journal of Benefit-Cost Analysis*, and *Utilities Policy*.

Previous Professional Activities

Member, American Water Works Association, Rates and Charges Subcommittee, 1998-2001.

Member, Federal Advisory Committee on Disinfectants and Disinfection By-Products in Drinking Water, U.S. Environmental Protection Agency, Washington, DC. 1992 to 1994.

Chair, Water Committee, National Association of State Utility Consumer Advocates, Washington, DC. 1990 to 1994; member of committee from 1988 to 1990.

Member, Board of Directors, Pennsylvania Energy Development Authority, Harrisburg, PA. 1990 to 1994.

Member, Small Water Systems Advisory Committee, Pennsylvania Department of Environmental Resources, Harrisburg, PA. 1990 to 1992.

Member, Ad Hoc Committee on Emissions Control and Acid Rain Compliance, National Association of State Utility Consumer Advocates, 1991.

Member, Nitrogen Oxides Subcommittee of the Acid Rain Advisory Committee, U.S. Environmental Protection Agency, Washington DC. 1991.

Education

J.D. with Honors, George Washington University, Washington, DC. 1981.

B.A. with Distinction in Political Science, Pennsylvania State University, University Park, PA. 1978.

Publications and Presentations (* denotes peer-reviewed publications)

1. "Quality of Service Issues," a speech to the Pennsylvania Public Utility Commission Consumer Conference, State College, PA. 1988.
2. K.L. Pape and S.J. Rubin, "Current Developments in Water Utility Law," in *Pennsylvania Public Utility Law* (Pennsylvania Bar Institute). 1990.
3. Presentation on Water Utility Holding Companies to the Annual Meeting of the National Association of State Utility Consumer Advocates, Orlando, FL. 1990.
4. "How the OCA Approaches Quality of Service Issues," a speech to the Pennsylvania Chapter of the National Association of Water Companies. 1991.
5. Presentation on the Safe Drinking Water Act to the Mid-Year Meeting of the National Association of State Utility Consumer Advocates, Seattle, WA. 1991.
6. "A Consumer Advocate's View of Federal Pre-emption in Electric Utility Cases," a speech to the Pennsylvania Public Utility Commission Electricity Conference. 1991.
7. Workshop on Safe Drinking Water Act Compliance Issues at the Mid-Year Meeting of the National Association of State Utility Consumer Advocates, Washington, DC. 1992.
8. Formal Discussant, Regional Acid Rain Workshop, U.S. Environmental Protection Agency and National Regulatory Research Institute, Charlotte, NC. 1992.
9. S.J. Rubin and S.P. O'Neal, "A Quantitative Assessment of the Viability of Small Water Systems in Pennsylvania," *Proceedings of the Eighth NARUC Biennial Regulatory Information Conference*, National Regulatory Research Institute (Columbus, OH 1992), IV:79-97.
10. "The OCA's Concerns About Drinking Water," a speech to the Pennsylvania Public Utility Commission Water Conference. 1992.
11. Member, Technical Horizons Panel, Annual Meeting of the National Association of Water Companies, Hilton Head, SC. 1992.
12. M.D. Klein and S.J. Rubin, "Water and Sewer -- Update on Clean Streams, Safe Drinking Water, Waste Disposal and Pennvest," *Pennsylvania Public Utility Law Conference* (Pennsylvania Bar Institute). 1992.

13. Presentation on Small Water System Viability to the Technical Assistance Center for Small Water Companies, Pa. Department of Environmental Resources, Harrisburg, PA. 1993
14. "The Results Through a Public Service Commission Lens," speaker and participant in panel discussion at Symposium: "Impact of EPA's Allowance Auction," Washington, DC, sponsored by AER*X. 1993.
15. "The Hottest Legislative Issue of Today -- Reauthorization of the Safe Drinking Water Act," speaker and participant in panel discussion at the Annual Conference of the American Water Works Association, San Antonio, TX. 1993.
16. "Water Service in the Year 2000," a speech to the Conference: "Utilities and Public Policy III: The Challenges of Change," sponsored by the Pennsylvania Public Utility Commission and the Pennsylvania State University, University Park, PA. 1993.
17. "Government Regulation of the Drinking Water Supply: Is it Properly Focused?," speaker and participant in panel discussion at the National Consumers League's Forum on Drinking Water Safety and Quality, Washington, DC. 1993. Reprinted in *Rural Water*, Vol. 15 No. 1 (Spring 1994), pages 13-16.
18. "Telephone Penetration Rates for Renters in Pennsylvania," a study prepared for the Pennsylvania Office of Consumer Advocate. 1993.
19. "Zealous Advocacy, Ethical Limitations and Considerations," participant in panel discussion at "Continuing Legal Education in Ethics for Pennsylvania Lawyers," sponsored by the Office of General Counsel, Commonwealth of Pennsylvania, State College, PA. 1993.
20. "Serving the Customer," participant in panel discussion at the Annual Conference of the National Association of Water Companies, Williamsburg, VA. 1993.
21. "A Simple, Inexpensive, Quantitative Method to Assess the Viability of Small Water Systems," a speech to the Water Supply Symposium, New York Section of the American Water Works Association, Syracuse, NY. 1993.
22. * S.J. Rubin, "Are Water Rates Becoming Unaffordable?," *Journal American Water Works Association*, Vol. 86, No. 2 (February 1994), pages 79-86.
23. "Why Water Rates Will Double (If We're Lucky): Federal Drinking Water Policy and Its Effect on New England," a briefing for the New England Conference of Public Utilities Commissioners, Andover, MA. 1994.
24. "Are Water Rates Becoming Unaffordable?," a speech to the Legislative and Regulatory Conference, Association of Metropolitan Water Agencies, Washington, DC. 1994.
25. "Relationships: Drinking Water, Health, Risk and Affordability," speaker and participant in panel discussion at the Annual Meeting of the Southeastern Association of Regulatory Commissioners, Charleston, SC. 1994.
26. "Small System Viability: Assessment Methods and Implementation Issues," speaker and participant in panel discussion at the Annual Conference of the American Water Works Association, New York, NY. 1994.

27. S.J. Rubin, "How much should we spend to save a life?," *Seattle Journal of Commerce*, August 18, 1994 (Protecting the Environment Supplement), pages B-4 to B-5.
28. S. Rubin, S. Bernow, M. Fulmer, J. Goldstein, and I. Peters, *An Evaluation of Kentucky-American Water Company's Long-Range Planning*, prepared for the Utility and Rate Intervention Division, Kentucky Office of the Attorney General (Tellus Institute 1994).
29. S.J. Rubin, "Small System Monitoring: What Does It Mean?," *Impacts of Monitoring for Phase II/V Drinking Water Regulations on Rural and Small Communities* (National Rural Water Association 1994), pages 6-12.
30. "Surviving the Safe Drinking Water Act," speaker at the Annual Meeting of the National Association of State Utility Consumer Advocates, Reno, NV. 1994.
31. "Safe Drinking Water Act Compliance -- Ratemaking Implications," speaker at the National Conference of Regulatory Attorneys, Scottsdale, AZ. 1995. Reprinted in *Water*, Vol. 36, No. 2 (Summer 1995), pages 28-29.
32. S.J. Rubin, "Water: Why Isn't it Free? The Case of Small Utilities in Pennsylvania," *Utilities, Consumers & Public Policy: Issues of Quality, Affordability, and Competition, Proceedings of the Fourth Utilities, Consumers and Public Policy Conference* (Pennsylvania State University 1995), pages 177-183.
33. S.J. Rubin, "Water Rates: An Affordable Housing Issue?," *Home Energy*, Vol. 12 No. 4 (July/August 1995), page 37.
34. Speaker and participant in the Water Policy Forum, sponsored by the National Association of Water Companies, Naples, FL. 1995.
35. Participant in panel discussion on "The Efficient and Effective Maintenance and Delivery of Potable Water at Affordable Rates to the People of New Jersey," at The New Advocacy: Protecting Consumers in the Emerging Era of Utility Competition, a conference sponsored by the New Jersey Division of the Ratepayer Advocate, Newark, NJ. 1995.
36. J.E. Cromwell III, and S.J. Rubin, *Development of Benchmark Measures for Viability Assessment* (Pa. Department of Environmental Protection 1995).
37. S. Rubin, "A Nationwide Practice from a Small Town in Pa.," *Lawyers & the Internet – a Supplement to the Legal Intelligencer and Pa. Law Weekly* (February 12, 1996), page S6.
38. "Changing Customers' Expectations in the Water Industry," speaker at the Mid-America Regulatory Commissioners Conference, Chicago, IL. 1996, reprinted in *Water* Vol. 37 No. 3 (Winter 1997), pages 12-14.
39. "Recent Federal Legislation Affecting Drinking Water Utilities," speaker at Pennsylvania Public Utility Law Conference, Pennsylvania Bar Institute, Hershey, PA. 1996.
40. "Clean Water at Affordable Rates: A Ratepayers Conference," moderator at symposium sponsored by the New Jersey Division of Ratepayer Advocate, Trenton, NJ. 1996.

41. "Water Workshop: How New Laws Will Affect the Economic Regulation of the Water Industry," speaker at the Annual Meeting of the National Association of State Utility Consumer Advocates, San Francisco, CA. 1996.
42. * E.T. Castillo, S.J. Rubin, S.K. Keefe, and R.S. Raucher, "Restructuring Small Systems," *Journal American Water Works Association*, Vol. 89, No. 1 (January 1997), pages 65-74.
43. * J.E. Cromwell III, S.J. Rubin, F.C. Marrocco, and M.E. Leevan, "Business Planning for Small System Capacity Development," *Journal American Water Works Association*, Vol. 89, No. 1 (January 1997), pages 47-57.
44. "Capacity Development – More than Viability Under a New Name," speaker at National Association of Regulatory Utility Commissioners Winter Meetings, Washington, DC. 1997.
45. * E. Castillo, S.K. Keefe, R.S. Raucher, and S.J. Rubin, *Small System Restructuring to Facilitate SDWA Compliance: An Analysis of Potential Feasibility* (AWWA Research Foundation, 1997).
46. H. Himmelberger, *et al.*, *Capacity Development Strategy Report for the Texas Natural Resource Conservation Commission* (Aug. 1997).
47. Briefing on Issues Affecting the Water Utility Industry, Annual Meeting of the National Association of State Utility Consumer Advocates, Boston, MA. 1997.
48. "Capacity Development in the Water Industry," speaker at the Annual Meeting of the National Association of Regulatory Utility Commissioners, Boston, MA. 1997.
49. "The Ticking Bomb: Competitive Electric Metering, Billing, and Collection," speaker at the Annual Meeting of the National Association of State Utility Consumer Advocates, Boston, MA. 1997.
50. Scott J. Rubin, "A Nationwide Look at the Affordability of Water Service," *Proceedings of the 1998 Annual Conference of the American Water Works Association*, Water Research, Vol. C, No. 3, pages 113-129 (American Water Works Association, 1998).
51. Scott J. Rubin, "30 Technology Tips in 30 Minutes," *Pennsylvania Public Utility Law Conference*, Vol. I, pages 101-110 (Pa. Bar Institute, 1998).
52. Scott J. Rubin, "Effects of Electric and Gas Deregulation on the Water Industry," *Pennsylvania Public Utility Law Conference*, Vol. I, pages 139-146 (Pa. Bar Institute, 1998).
53. Scott J. Rubin, *The Challenges and Changing Mission of Utility Consumer Advocates* (American Association of Retired Persons, 1999).
54. "Consumer Advocacy for the Future," speaker at the Age of Awareness Conference, Changes and Choices: Utilities in the New Millennium, Carlisle, PA. 1999.
55. Keynote Address, \$1 Energy Fund, Inc., Annual Membership Meeting, Monroeville, PA. 1999.

56. Scott J. Rubin, "Assessing the Effect of the Proposed Radon Rule on the Affordability of Water Service," prepared for the American Water Works Association. 1999.
57. Scott J. Rubin and Janice A. Beecher, The Impacts of Electric Restructuring on the Water and Wastewater Industry, *Proceedings of the Small Drinking Water and Wastewater Systems International Symposium and Technology Expo* (Phoenix, AZ 2000), pp. 66-75.
58. American Water Works Association, *Principles of Water Rates, Fees, and Charges, Manual M1 – Fifth Edition* (AWWA 2000), Member, Editorial Committee.
59. Janice A. Beecher and Scott J. Rubin, presentation on "Special Topics in Rate Design: Affordability" at the Annual Conference and Exhibition of the American Water Works Association, Denver, CO. 2000.
60. Scott J. Rubin, "The Future of Drinking Water Regulation," a speech at the Annual Conference and Exhibition of the American Water Works Association, Denver, CO. 2000.
61. Janice A. Beecher and Scott J. Rubin, "Deregulation Impacts and Opportunities," a presentation at the Annual Conference and Exhibition of the American Water Works Association, Denver, CO. 2000.
62. Scott J. Rubin, "Estimating the Effect of Different Arsenic Maximum Contaminant Levels on the Affordability of Water Service," prepared for the American Water Works Association. 2000.
63. * Janice A. Beecher and Scott J. Rubin, *Deregulation! Impacts on the Water Industry*, American Water Works Association Research Foundation, Denver, CO. 2000.
64. Scott J. Rubin, Methods for Assessing, Evaluating, and Assisting Small Water Systems, NARUC Annual Regulatory Studies Program, East Lansing, MI. 2000.
65. Scott J. Rubin, Consumer Issues in the Water Industry, NARUC Annual Regulatory Studies Program, East Lansing, MI. 2000.
66. "Be Utility Wise in a Restructured Utility Industry," Keynote Address at Be UtilityWise Conference, Pittsburgh, PA. 2000.
67. Scott J. Rubin, Jason D. Sharp, and Todd S. Stewart, "The Wired Administrative Lawyer," *5th Annual Administrative Law Symposium*, Pennsylvania Bar Institute, Harrisburg, PA. 2000.
68. Scott J. Rubin, "Current Developments in the Water Industry," *Pennsylvania Public Utility Law Conference*, Pennsylvania Bar Institute, Harrisburg, PA. 2000.
69. Scott J. Rubin, "Viewpoint: Change Sickening Attitudes," *Engineering News-Record*, Dec. 18, 2000.
70. Janice A. Beecher and Scott J. Rubin, "Ten Practices of Highly Effective Water Utilities," *Opflow*, April 2001, pp. 1, 6-7, 16; reprinted in *Water and Wastes Digest*, December 2004, pp. 22-25.
71. Scott J. Rubin, "Pennsylvania Utilities: How Are Consumers, Workers, and Corporations Faring in the Deregulated Electricity, Gas, and Telephone Industries?" Keystone Research Center. 2001.

72. Scott J. Rubin, "Guest Perspective: A First Look at the Impact of Electric Deregulation on Pennsylvania," *LEAP Letter*, May-June 2001, pp. 2-3.
73. Scott J. Rubin, Consumer Protection in the Water Industry, NARUC Annual Regulatory Studies Program, East Lansing, MI. 2001.
74. Scott J. Rubin, Impacts of Deregulation on the Water Industry, NARUC Annual Regulatory Studies Program, East Lansing, MI. 2001.
75. Scott J. Rubin, "Economic Characteristics of Small Systems," *Critical Issues in Setting Regulatory Standards*, National Rural Water Association, 2001, pp. 7-22.
76. Scott J. Rubin, "Affordability of Water Service," *Critical Issues in Setting Regulatory Standards*, National Rural Water Association, 2001, pp. 23-42.
77. Scott J. Rubin, "Criteria to Assess the Affordability of Water Service," White Paper, National Rural Water Association, 2001.
78. Scott J. Rubin, Providing Affordable Water Service to Low-Income Families, presentation to Portland Water Bureau, Portland, OR. 2001.
79. Scott J. Rubin, Issues Relating to the Affordability and Sustainability of Rates for Water Service, presentation to the Water Utility Council of the American Water Works Association, New Orleans, LA. 2002.
80. Scott J. Rubin, The Utility Industries Compared – Water, NARUC Annual Regulatory Studies Program, East Lansing, MI. 2002.
81. Scott J. Rubin, Legal Perspective on Water Regulation, NARUC Annual Regulatory Studies Program, East Lansing, MI. 2002.
82. Scott J. Rubin, Regulatory Options for Water Utilities, NARUC Annual Regulatory Studies Program, East Lansing, MI. 2002.
83. Scott J. Rubin, Overview of Small Water System Consolidation, presentation to National Drinking Water Advisory Council Small Systems Affordability Working Group, Washington, DC. 2002.
84. Scott J. Rubin, Defining Affordability and Low-Income Household Tradeoffs, presentation to National Drinking Water Advisory Council Small Systems Affordability Working Group, Washington, DC. 2002.
85. Scott J. Rubin, "Thinking Outside the Hearing Room," *Pennsylvania Public Utility Law Conference*, Pennsylvania Bar Institute, Harrisburg, PA. 2002.
86. Scott J. Rubin, "Update of Affordability Database," White Paper, National Rural Water Association. 2003.
87. Scott J. Rubin, *Understanding Telephone Penetration in Pennsylvania*, Council on Utility Choice, Harrisburg, PA. 2003.

88. Scott J. Rubin, *The Cost of Water and Wastewater Service in the United States*, National Rural Water Association, 2003.
89. Scott J. Rubin, What Price Safer Water? Presentation at Annual Conference of National Association of Regulatory Utility Commissioners, Atlanta, GA. 2003.
90. George M. Aman, III, Jeffrey P. Garton, Eric Petersen, and Scott J. Rubin, Challenges and Opportunities for Improving Water Supply Institutional Arrangements, *Water Law Conference*, Pennsylvania Bar Institute, Mechanicsburg, PA. 2004.
91. Scott J. Rubin, Serving Low-Income Water Customers. Presentation at American Water Works Association Annual Conference, Orlando, FL. 2004.
92. Scott J. Rubin, Thinking Outside the Bill: Serving Low-Income Water Customers. Presentation at National League of Cities Annual Congress of Cities, Indianapolis, IN. 2004.
93. Scott J. Rubin, Buying and Selling a Water System – Ratemaking Implications, *Pennsylvania Public Utility Law Conference*, Pennsylvania Bar Institute, Harrisburg, PA. 2005.
94. *Thinking Outside the Bill: A Utility Manager's Guide to Assisting Low-Income Water Customers*, American Water Works Association. 2005; Second Edition published in 2014
95. * Scott J. Rubin, "Census Data Shed Light on US Water and Wastewater Costs," *Journal American Water Works Association*, Vol. 97, No. 4 (April 2005), pages 99-110, reprinted in Maxwell, *The Business of Water: A Concise Overview of Challenges and Opportunities in the Water Market.*, American Water Works Association, Denver, CO. 2008.
96. Scott J. Rubin, Review of U.S. Environmental Protection Agency Notice Concerning Revision of National-Level Affordability Methodology, National Rural Water Association. 2006.
97. * Robert S. Raucher, et al., *Regional Solutions to Water Supply Provision*, American Water Works Association Research Foundation, Denver, CO. 2007; 2nd edition published in 2008.
98. Scott J. Rubin, Robert Raucher, and Megan Harrod, The Relationship Between Household Financial Distress and Health: Implications for Drinking Water Regulation, National Rural Water Association. 2007.
99. * John Cromwell and Scott Rubin, *Estimating Benefits of Regional Solutions for Water and Wastewater Service*, American Water Works Association Research Foundation, Denver, CO. 2008.
100. Scott J. Rubin, "Current State of the Water Industry and Stimulus Bill Overview," in *Pennsylvania Public Utility Law* (Pennsylvania Bar Institute). 2009.
101. Scott J. Rubin, Best Practice in Customer Payment Assistance Programs, webcast presentation sponsored by Water Research Foundation. 2009.
102. * Scott J. Rubin, How Should We Regulate Small Water Utilities?, National Regulatory Research Institute. 2009.

-
- 103.* John Cromwell III, et al., *Best Practices in Customer Payment Assistance Programs*, Water Research Foundation, Denver, CO. 2010.
- 104.* Scott J. Rubin, What Does Water Really Cost? Rate Design Principles for an Era of Supply Shortages, Infrastructure Upgrades, and Enhanced Water Conservation, , National Regulatory Research Institute. 2010.
105. Scott J. Rubin and Christopher P.N. Woodcock, Teleseminar: Water Rate Design, National Regulatory Research Institute. 2010.
106. David Monie and Scott J. Rubin, Cost of Service Studies and Water Rate Design: A Debate on the Utility and Regulatory Perspectives, Meeting of New England Chapter of National Association of Water Companies, Newport, RI. 2010.
107. * Scott J. Rubin, A Call for Water Utility Reliability Standards: Regulating Water Utilities' Infrastructure Programs to Achieve a Balance of Safety, Risk, and Cost, National Regulatory Research Institute. 2010.
- 108.* Raucher, Robert S.; Rubin, Scott J.; Crawford-Brown, Douglas; and Lawson, Megan M. "Benefit-Cost Analysis for Drinking Water Standards: Efficiency, Equity, and Affordability Considerations in Small Communities," *Journal of Benefit-Cost Analysis*: Vol. 2: Issue 1, Article 4. 2011.
- 109.Scott J. Rubin, A Call for Reliability Standards, *Journal American Water Works Association*, Vol. 103, No. 1 (Jan. 2011), pp. 22-24.
- 110.Scott J. Rubin, Current Topics in Water: Rate Design and Reliability. Presentation to the Water Committee of the National Association of Regulatory Utility Commissioners, Washington, DC. 2011.
- 111.Scott J. Rubin, Water Reliability and Resilience Standards, *Pennsylvania Public Utility Law Conference* (Pennsylvania Bar Institute). 2011.
- 112.Member of Expert Panel, Leadership Forum: Business Management for the Future, Annual Conference and Exposition of the American Water Works Association, Washington, DC. 2011.
- 113.Scott J. Rubin, Evaluating Community Affordability in Storm Water Control Plans, *Flowing into the Future: Evolving Water Issues* (Pennsylvania Bar Institute). 2011.
- 114.Invited Participant, Summit on Declining Water Demand and Revenues, sponsored by The Alliance for Water Efficiency, Racine, WI. 2012.
- 115.* Scott J. Rubin, Evaluating Violations of Drinking Water Regulations, *Journal American Water Works Association*, Vol. 105, No. 3 (Mar. 2013), pp. 51-52 (Expanded Summary) and E137-E147. Winner of the AWWA Small Systems Division Best Paper Award.
- 116.* Scott J. Rubin, Structural Changes in the Water Utility Industry During the 2000s, *Journal American Water Works Association*, Vol. 105, No. 3 (Mar. 2013), pp. 53-54 (Expanded Summary) and E148-E156.
- 117.* Scott J. Rubin, Moving Toward Demand-Based Residential Rates, *The Electricity Journal*, Vol. 28, No. 9 (Nov. 2015), pp. 63-71, <http://dx.doi.org/10.1016/j.tej.2015.09.021>.

118. Scott J. Rubin, Moving Toward Demand-Based Residential Rates. Presentation at the Annual Meeting of the National Association of State Utility Consumer Advocates, Austin, TX. 2015.
119. * Stacey Isaac Berahzer, et al., *Navigating Legal Pathways to Rate-Funded Customer Assistance Programs: A Guide for Water and Wastewater Utilities*, American Water Works Association, et al. 2017.
120. * Janet Clements, et al., *Customer Assistance Programs for Multi-Family Residential and Other Hard-to-Reach Customers*, Water Research Foundation, Denver, CO. 2017.
121. Scott J. Rubin, Water Costs and Affordability in the US: 1990 to 2015, *Journal American Water Works Association*, Vol. 110, No. 4 (Apr. 2018), pp. 12-16.

Testimony as an Expert Witness

1. *Pa. Public Utility Commission v. Pennsylvania Gas and Water Co. - Water Division*, Pa. Public Utility Commission, Docket R-00922404. 1992. Concerning rate design, on behalf of the Pa. Office of Consumer Advocate.
2. *Pa. Public Utility Commission v. Shenango Valley Water Co.*, Pa. Public Utility Commission, Docket R-00922420. 1992. Concerning cost allocation, on behalf of the Pa. Office of Consumer Advocate
3. *Pa. Public Utility Commission v. Pennsylvania Gas and Water Co. - Water Division*, Pa. Public Utility Commission, Docket R-00922482. 1993. Concerning rate design, on behalf of the Pa. Office of Consumer Advocate
4. *Pa. Public Utility Commission v. Colony Water Co.*, Pa. Public Utility Commission, Docket R-00922375. 1993. Concerning rate design, on behalf of the Pa. Office of Consumer Advocate
5. *Pa. Public Utility Commission v. Dauphin Consolidated Water Supply Co. and General Waterworks of Pennsylvania, Inc.*, Pa. Public Utility Commission, Docket R-00932604. 1993. Concerning rate design and cost of service, on behalf of the Pa. Office of Consumer Advocate
6. *West Penn Power Co. v. State Tax Department of West Virginia*, Circuit Court of Kanawha County, West Virginia, Civil Action No. 89-C-3056. 1993. Concerning regulatory policy and the effects of a taxation statute on out-of-state utility ratepayers, on behalf of the Pa. Office of Consumer Advocate
7. *Pa. Public Utility Commission v. Pennsylvania Gas and Water Co. - Water Division*, Pa. Public Utility Commission, Docket R-00932667. 1993. Concerning rate design and affordability of service, on behalf of the Pa. Office of Consumer Advocate
8. *Pa. Public Utility Commission v. National Utilities, Inc.*, Pa. Public Utility Commission, Docket R-00932828. 1994. Concerning rate design, on behalf of the Pa. Office of Consumer Advocate
9. *An Investigation of the Sources of Supply and Future Demand of Kentucky-American Water Company*, Ky. Public Service Commission, Case No. 93-434. 1994. Concerning supply and demand planning, on behalf of the Kentucky Office of Attorney General, Utility and Rate Intervention Division.

10. *The Petition on Behalf of Gordon's Corner Water Company for an Increase in Rates*, New Jersey Board of Public Utilities, Docket No. WR94020037. 1994. Concerning revenue requirements and rate design, on behalf of the New Jersey Division of Ratepayer Advocate.
11. *Re Consumers Maine Water Company Request for Approval of Contracts with Consumers Water Company and with Ohio Water Service Company*, Me. Public Utilities Commission, Docket No. 94-352. 1994. Concerning affiliated interest agreements, on behalf of the Maine Public Advocate.
12. *In the Matter of the Application of Potomac Electric Power Company for Approval of its Third Least-Cost Plan*, D.C. Public Service Commission, Formal Case No. 917, Phase II. 1995. Concerning Clean Air Act implementation and environmental externalities, on behalf of the District of Columbia Office of the People's Counsel.
13. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of the Dayton Power and Light Company and Related Matters*, Ohio Public Utilities Commission, Case No. 94-105-EL-EFC. 1995. Concerning Clean Air Act implementation (case settled before testimony was filed), on behalf of the Office of the Ohio Consumers' Counsel.
14. *Kennebec Water District Proposed Increase in Rates*, Maine Public Utilities Commission, Docket No. 95-091. 1995. Concerning the reasonableness of planning decisions and the relationship between a publicly owned water district and a very large industrial customer, on behalf of the Maine Public Advocate.
15. *Winter Harbor Water Company, Proposed Schedule Revisions to Introduce a Readiness-to-Serve Charge*, Maine Public Utilities Commission, Docket No. 95-271. 1995 and 1996. Concerning standards for, and the reasonableness of, imposing a readiness to serve charge and/or exit fee on the customers of a small investor-owned water utility, on behalf of the Maine Public Advocate.
16. *In the Matter of the 1995 Long-Term Electric Forecast Report of the Cincinnati Gas & Electric Company*, Public Utilities Commission of Ohio, Case No. 95-203-EL-FOR, and *In the Matter of the Two-Year Review of the Cincinnati Gas & Electric Company's Environmental Compliance Plan Pursuant to Section 4913.05, Revised Cost*, Case No. 95-747-EL-ECP. 1996. Concerning the reasonableness of the utility's long-range supply and demand-management plans, the reasonableness of its plan for complying with the Clean Air Act Amendments of 1990, and discussing methods to ensure the provision of utility service to low-income customers, on behalf of the Office of the Ohio Consumers' Counsel..
17. *In the Matter of Notice of the Adjustment of the Rates of Kentucky-American Water Company*, Kentucky Public Service Commission, Case No. 95-554. 1996. Concerning rate design, cost of service, and sales forecast issues, on behalf of the Kentucky Office of Attorney General.
18. *In the Matter of the Application of Citizens Utilities Company for a Hearing to Determine the Fair Value of its Properties for Ratemaking Purposes, to Fix a Just and Reasonable Rate of Return Thereon, and to Approve Rate Schedules Designed to Provide such Rate of Return*, Arizona Corporation Commission, Docket Nos. E-1032-95-417, *et al.* 1996. Concerning rate design, cost of service, and the price elasticity of water demand, on behalf of the Arizona Residential Utility Consumer Office.
19. *Cochrane v. Bangor Hydro-Electric Company*, Maine Public Utilities Commission, Docket No. 96-053. 1996. Concerning regulatory requirements for an electric utility to engage in unregulated business enterprises, on behalf of the Maine Public Advocate.

20. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Monongahela Power Company and Related Matters*, Public Utilities Commission of Ohio, Case No. 96-106-EL-EFC. 1996. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.
21. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Cleveland Electric Illuminating Company and Toledo Edison Company and Related Matters*, Public Utilities Commission of Ohio, Case Nos. 96-107-EL-EFC and 96-108-EL-EFC. 1996. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.
22. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Ohio Power Company and Columbus Southern Power Company and Related Matters*, Public Utilities Commission of Ohio, Case Nos. 96-101-EL-EFC and 96-102-EL-EFC. 1997. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.
23. *An Investigation of the Sources of Supply and Future Demand of Kentucky-American Water Company (Phase II)*, Kentucky Public Service Commission, Docket No. 93-434. 1997. Concerning supply and demand planning, on behalf of the Kentucky Office of Attorney General, Public Service Litigation Branch.
24. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Cincinnati Gas and Electric Co. and Related Matters*, Public Utilities Commission of Ohio, Case No. 96-103-EL-EFC. 1997. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.
25. *Bangor Hydro-Electric Company Petition for Temporary Rate Increase*, Maine Public Utilities Commission, Docket No. 97-201. 1997. Concerning the reasonableness of granting an electric utility's request for emergency rate relief, and related issues, on behalf of the Maine Public Advocate.
26. *Testimony concerning H.B. 1068 Relating to Restructuring of the Natural Gas Utility Industry*, Consumer Affairs Committee, Pennsylvania House of Representatives. 1997. Concerning the provisions of proposed legislation to restructure the natural gas utility industry in Pennsylvania, on behalf of the Pennsylvania AFL-CIO Gas Utility Caucus.
27. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Cleveland Electric Illuminating Company and Toledo Edison Company and Related Matters*, Public Utilities Commission of Ohio, Case Nos. 97-107-EL-EFC and 97-108-EL-EFC. 1997. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.
28. *In the Matter of the Petition of Valley Road Sewerage Company for a Revision in Rates and Charges for Water Service*, New Jersey Board of Public Utilities, Docket No. WR92080846J. 1997. Concerning the revenue requirements and rate design for a wastewater treatment utility, on behalf of the New Jersey Division of Ratepayer Advocate.
29. *Bangor Gas Company, L.L.C., Petition for Approval to Furnish Gas Service in the State of Maine*, Maine Public Utilities Commission, Docket No. 97-795. 1998. Concerning the standards and public policy

concerns involved in issuing a certificate of public convenience and necessity for a new natural gas utility, and related ratemaking issues, on behalf of the Maine Public Advocate.

30. *In the Matter of the Investigation on Motion of the Commission into the Adequacy of the Public Utility Water Service Provided by Tidewater Utilities, Inc., in Areas in Southern New Castle County, Delaware*, Delaware Public Service Commission, Docket No. 309-97. 1998. Concerning the standards for the provision of efficient, sufficient, and adequate water service, and the application of those standards to a water utility, on behalf of the Delaware Division of the Public Advocate.
31. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Cincinnati Gas and Electric Co. and Related Matters*, Public Utilities Commission of Ohio, Case No. 97-103-EL-EFC. 1998. Concerning fuel-related transactions with affiliated companies and the appropriate ratemaking treatment and regulatory safeguards involving such transactions, on behalf of the Ohio Consumers' Counsel.
32. *Olde Port Mariner Fleet, Inc. Complaint Regarding Casco Bay Island Transit District's Tour and Charter Service*, Maine Public Utilities Commission, Docket No. 98-161. 1998. Concerning the standards and requirements for allocating costs and separating operations between regulated and unregulated operations of a transportation utility, on behalf of the Maine Public Advocate and Olde Port Mariner Fleet, Inc.
33. *Central Maine Power Company Investigation of Stranded Costs, Transmission and Distribution Utility Revenue Requirements, and Rate Design*, Maine Public Utilities Commission, Docket No. 97-580. 1998. Concerning the treatment of existing rate discounts when designing rates for a transmission and distribution electric utility, on behalf of the Maine Public Advocate.
34. *Pa. Public Utility Commission v. Manufacturers Water Company*, Pennsylvania Public Utility Commission, Docket No. R-00984275. 1998. Concerning rate design on behalf of the Manufacturers Water Industrial Users.
35. *In the Matter of Petition of Pennsgrove Water Supply Company for an Increase in Rates for Water Service*, New Jersey Board of Public Utilities, Docket No. WR98030147. 1998. Concerning the revenue requirements, level of affiliated charges, and rate design for a water utility, on behalf of the New Jersey Division of Ratepayer Advocate.
36. *In the Matter of Petition of Seaview Water Company for an Increase in Rates for Water Service*, New Jersey Board of Public Utilities, Docket No. WR98040193. 1999. Concerning the revenue requirements and rate design for a water utility, on behalf of the New Jersey Division of Ratepayer Advocate.
37. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Ohio Power Company and Columbus Southern Power Company and Related Matters*, Public Utilities Commission of Ohio, Case Nos. 98-101-EL-EFC and 98-102-EL-EFC. 1999. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.
38. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Dayton Power and Light Company and Related Matters*, Public Utilities Commission of Ohio, Case No. 98-105-EL-EFC. 1999. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.

39. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Monongahela Power Company and Related Matters*, Public Utilities Commission of Ohio, Case No. 99-106-EL-EFC. 1999. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.
40. *County of Suffolk, et al. v. Long Island Lighting Company, et al.*, U.S. District Court for the Eastern District of New York, Case No. 87-CV-0646. 2000. Submitted two affidavits concerning the calculation and collection of court-ordered refunds to utility customers, on behalf of counsel for the plaintiffs.
41. *Northern Utilities, Inc., Petition for Waivers from Chapter 820*, Maine Public Utilities Commission, Docket No. 99-254. 2000. Concerning the standards and requirements for defining and separating a natural gas utility's core and non-core business functions, on behalf of the Maine Public Advocate.
42. *Notice of Adjustment of the Rates of Kentucky-American Water Company*, Kentucky Public Service Commission, Case No. 2000-120. 2000. Concerning the appropriate methods for allocating costs and designing rates, on behalf of the Kentucky Office of Attorney General.
43. *In the Matter of the Petition of Gordon's Corner Water Company for an Increase in Rates and Charges for Water Service*, New Jersey Board of Public Utilities, Docket No. WR00050304. 2000. Concerning the revenue requirements and rate design for a water utility, on behalf of the New Jersey Division of Ratepayer Advocate.
44. *Testimony concerning Arsenic in Drinking Water: An Update on the Science, Benefits, and Costs*, Committee on Science, United States House of Representatives. 2001. Concerning the effects on low-income households and small communities from a more stringent regulation of arsenic in drinking water.
45. *In the Matter of the Application of The Cincinnati Gas & Electric Company for an Increase in Gas Rates in its Service Territory*, Public Utilities Commission of Ohio, Case No. 01-1228-GA-AIR, *et al.* 2002. Concerning the need for and structure of a special rider and alternative form of regulation for an accelerated main replacement program, on behalf of the Ohio Consumers' Counsel.
46. *Pennsylvania State Treasurer's Hearing on Enron and Corporate Governance Issues*. 2002. Concerning Enron's role in Pennsylvania's electricity market and related issues, on behalf of the Pennsylvania AFL-CIO.
47. *An Investigation into the Feasibility and Advisability of Kentucky-American Water Company's Proposed Solution to its Water Supply Deficit*, Kentucky Public Service Commission, Case No. 2001-00117. 2002. Concerning water supply planning, regulatory oversight, and related issue, on behalf of the Kentucky Office of Attorney General.
48. *Joint Application of Pennsylvania-American Water Company and Thames Water Aqua Holdings GmbH*, Pennsylvania Public Utility Commission, Docket Nos. A-212285F0096 and A-230073F0004. 2002. Concerning the risks and benefits associated with the proposed acquisition of a water utility, on behalf of the Pennsylvania Office of Consumer Advocate.
49. *Application for Approval of the Transfer of Control of Kentucky-American Water Company to RWE AG and Thames Water Aqua Holdings GmbH*, Kentucky Public Service Commission, Case No. 2002-00018. 2002. Concerning the risks and benefits associated with the proposed acquisition of a water utility, on behalf of the Kentucky Office of Attorney General.

50. *Joint Petition for the Consent and Approval of the Acquisition of the Outstanding Common Stock of American Water Works Company, Inc., the Parent Company and Controlling Shareholder of West Virginia-American Water Company*, West Virginia Public Service Commission, Case No. 01-1691-W-PC. 2002. Concerning the risks and benefits associated with the proposed acquisition of a water utility, on behalf of the Consumer Advocate Division of the West Virginia Public Service Commission.
51. *Joint Petition of New Jersey-American Water Company, Inc. and Thames Water Aqua Holdings GmbH for Approval of Change in Control of New Jersey-American Water Company, Inc.*, New Jersey Board of Public Utilities, Docket No. WM01120833. 2002. Concerning the risks and benefits associated with the proposed acquisition of a water utility, on behalf of the New Jersey Division of Ratepayer Advocate.
52. *Illinois-American Water Company, Proposed General Increase in Water Rates*, Illinois Commerce Commission, Docket No. 02-0690. 2003. Concerning rate design and cost of service issues, on behalf of the Illinois Office of the Attorney General.
53. *Pennsylvania Public Utility Commission v. Pennsylvania-American Water Company*, Pennsylvania Public Utility Commission, Docket No. R-00038304. 2003. Concerning rate design and cost of service issues, on behalf of the Pennsylvania Office of Consumer Advocate.
54. *West Virginia-American Water Company*, West Virginia Public Service Commission, Case No. 03-0353-W-42T. 2003. Concerning affordability, rate design, and cost of service issues, on behalf of the West Virginia Consumer Advocate Division.
55. *Petition of Seabrook Water Corp. for an Increase in Rates and Charges for Water Service*, New Jersey Board of Public Utilities, Docket No. WR3010054. 2003. Concerning revenue requirements, rate design, prudence, and regulatory policy, on behalf of the New Jersey Division of Ratepayer Advocate.
56. *Chesapeake Ranch Water Co. v. Board of Commissioners of Calvert County*, U.S. District Court for Southern District of Maryland, Civil Action No. 8:03-cv-02527-AW. 2004. Submitted expert report concerning the expected level of rates under various options for serving new commercial development, on behalf of the plaintiff.
57. *Testimony concerning Lead in Drinking Water*, Committee on Government Reform, United States House of Representatives. 2004. Concerning the trade-offs faced by low-income households when drinking water costs increase, including an analysis of H.R. 4268.
58. *West Virginia-American Water Company*, West Virginia Public Service Commission, Case No. 04-0373-W-42T. 2004. Concerning affordability and rate comparisons, on behalf of the West Virginia Consumer Advocate Division.
59. *West Virginia-American Water Company*, West Virginia Public Service Commission, Case No. 04-0358-W-PC. 2004. Concerning costs, benefits, and risks associated with a wholesale water sales contract, on behalf of the West Virginia Consumer Advocate Division.
60. *Kentucky-American Water Company*, Kentucky Public Service Commission, Case No. 2004-00103. 2004. Concerning rate design and tariff issues, on behalf of the Kentucky Office of Attorney General.

61. *New Landing Utility, Inc.*, Illinois Commerce Commission, Docket No. 04-0610. 2005. Concerning the adequacy of service provided by, and standards of performance for, a water and wastewater utility, on behalf of the Illinois Office of Attorney General.
62. *People of the State of Illinois v. New Landing Utility, Inc.*, Circuit Court of the 15th Judicial District, Ogle County, Illinois, No. 00-CH-97. 2005. Concerning the standards of performance for a water and wastewater utility, including whether a receiver should be appointed to manage the utility's operations, on behalf of the Illinois Office of Attorney General.
63. *Hope Gas, Inc. d/b/a Dominion Hope*, West Virginia Public Service Commission, Case No. 05-0304-G-42T. 2005. Concerning the utility's relationships with affiliated companies, including an appropriate level of revenues and expenses associated with services provided to and received from affiliates, on behalf of the West Virginia Consumer Advocate Division.
64. *Monongahela Power Co. and The Potomac Edison Co.*, West Virginia Public Service Commission, Case Nos. 05-0402-E-CN and 05-0750-E-PC. 2005. Concerning review of a plan to finance the construction of pollution control facilities and related issues, on behalf of the West Virginia Consumer Advocate Division.
65. *Joint Application of Duke Energy Corp., et al., for Approval of a Transfer and Acquisition of Control*, Case Kentucky Public Service Commission, No. 2005-00228. 2005. Concerning the risks and benefits associated with the proposed acquisition of an energy utility, on behalf of the Kentucky Office of the Attorney General.
66. *Commonwealth Edison Company proposed general revision of rates, restructuring and price unbundling of bundled service rates, and revision of other terms and conditions of service*, Illinois Commerce Commission, Docket No. 05-0597. 2005. Concerning rate design and cost of service, on behalf of the Illinois Office of Attorney General.
67. *Pennsylvania Public Utility Commission v. Aqua Pennsylvania, Inc.*, Pennsylvania Public Utility Commission, Docket No. R-00051030. 2006. Concerning rate design and cost of service, on behalf of the Pennsylvania Office of Consumer Advocate.
68. *Central Illinois Light Company d/b/a AmerenCILCO, Central Illinois Public Service Company d/b/a AmerenCIPS, and Illinois Power Company d/b/a AmerenIP, proposed general increases in rates for delivery service*, Illinois Commerce Commission, Docket Nos. 06-0070, et al. 2006. Concerning rate design and cost of service, on behalf of the Illinois Office of Attorney General.
69. *Grens, et al., v. Illinois-American Water Co.*, Illinois Commerce Commission, Docket Nos. 5-0681, et al. 2006. Concerning utility billing, metering, meter reading, and customer service practices, on behalf of the Illinois Office of Attorney General and the Village of Homer Glen, Illinois.
70. *Commonwealth Edison Company Petition for Approval of Tariffs Implementing ComEd's Proposed Residential Rate Stabilization Program*, Illinois Commerce Commission, Docket No. 06-0411. 2006. Concerning a utility's proposed purchased power phase-in proposal, in behalf of the Illinois Office of Attorney General.
71. *Illinois-American Water Company, Application for Approval of its Annual Reconciliation of Purchased Water and Purchased Sewage Treatment Surcharges Pursuant to 83 Ill. Adm. Code 655*, Illinois Commerce

- Commission, Docket No. 06-0196. 2006. Concerning the reconciliation of purchased water and sewer charges, on behalf of the Illinois Office of Attorney General and the Village of Homer Glen, Illinois.
72. *Illinois-American Water Company, et al.*, Illinois Commerce Commission, Docket No. 06-0336. 2006. Concerning the risks and benefits associated with the proposed divestiture of a water utility, on behalf of the Illinois Office of Attorney General.
73. *Joint Petition of Kentucky-American Water Company, et al.*, Kentucky Public Service Commission, Docket No. 2006-00197. 2006. Concerning the risks and benefits associated with the proposed divestiture of a water utility, on behalf of the Kentucky Office of Attorney General.
74. *Aqua Illinois, Inc. Proposed Increase in Water Rates for the Kankakee Division*, Illinois Commerce Commission, Docket No. 06-0285. 2006. Concerning various revenue requirement, rate design, and tariff issues, on behalf of the County of Kankakee.
75. *Housing Authority for the City of Pottsville v. Schuylkill County Municipal Authority*, Court of Common Pleas of Schuylkill County, Pennsylvania, No. S-789-2000. 2006. Concerning the reasonableness and uniformity of rates charged by a municipal water authority, on behalf of the Pottsville Housing Authority.
76. *Application of Pennsylvania-American Water Company for Approval of a Change in Control*, Pennsylvania Public Utility Commission, Docket No. A-212285F0136. 2006. Concerning the risks and benefits associated with the proposed divestiture of a water utility, on behalf of the Pennsylvania Office of Consumer Advocate.
77. *Application of Artesian Water Company, Inc., for an Increase in Water Rates*, Delaware Public Service Commission, Docket No. 06-158. 2006. Concerning rate design and cost of service, on behalf of the Staff of the Delaware Public Service Commission.
78. *Central Illinois Light Company, Central Illinois Public Service Company, and Illinois Power Company: Petition Requesting Approval of Deferral and Securitization of Power Costs*, Illinois Commerce Commission, Docket No. 06-0448. 2006. Concerning a utility's proposed purchased power phase-in proposal, in behalf of the Illinois Office of Attorney General.
79. *Petition of Pennsylvania-American Water Company for Approval to Implement a Tariff Supplement Revising the Distribution System Improvement Charge*, Pennsylvania Public Utility Commission, Docket No. P-00062241. 2007. Concerning the reasonableness of a water utility's proposal to increase the cap on a statutorily authorized distribution system surcharge, on behalf of the Pennsylvania Office of Consumer Advocate.
80. *Adjustment of the Rates of Kentucky-American Water Company*, Kentucky Public Service Commission, Case No. 2007-00143. 2007. Concerning rate design and cost of service, on behalf of the Kentucky Office of Attorney General.
81. *Application of Kentucky-American Water Company for a Certificate of Convenience and Necessity Authorizing the Construction of Kentucky River Station II, Associated Facilities and Transmission Main*, Kentucky Public Service Commission, Case No. 2007-00134. 2007. Concerning the life-cycle costs of a planned water supply source and the imposition of conditions on the construction of that project, on behalf of the Kentucky Office of Attorney General.

-
82. *Pa. Public Utility Commission v. Pennsylvania-American Water Company*, Pennsylvania Public Utility Commission, Docket No. R-00072229. 2007. Concerning rate design and cost of service, on behalf of the Pennsylvania Office of Consumer Advocate.
 83. *Illinois-American Water Company Application for Approval of its Annual Reconciliation of Purchased Water and Purchased Sewage Treatment Surcharges*, Illinois Commerce Commission, Docket No. 07-0195. 2007. Concerning the reconciliation of purchased water and sewer charges, on behalf of the Illinois Office of Attorney General.
 84. *In the Matter of the Application of Aqua Ohio, Inc. to Increase Its Rates for Water Service Provided in the Lake Erie Division*, Public Utilities Commission of Ohio, Case No.07-0564-WW-AIR. 2007. Concerning rate design and cost of service, on behalf of the Office of the Ohio Consumers' Counsel.
 85. *Pa. Public Utility Commission v. Aqua Pennsylvania Inc.*, Pennsylvania Public Utility Commission, Docket No. R-00072711. 2008. Concerning rate design, on behalf of the Masthope Property Owners Council.
 86. *Illinois-American Water Company Proposed increase in water and sewer rates*, Illinois Commerce Commission, Docket No. 07-0507. 2008. Concerning rate design and demand studies, on behalf of the Illinois Office of Attorney General.
 87. *Central Illinois Light Company, d/b/a AmerenCILCO; Central Illinois Public Service Company, d/b/a AmerenCIPS; Illinois Power Company, d/b/a AmerenIP: Proposed general increase in rates for electric delivery service*, Illinois Commerce Commission Docket Nos. 07-0585, 07-0586, 07-0587. 2008. Concerning rate design and cost of service studies, on behalf of the Illinois Office of Attorney General.
 88. *Commonwealth Edison Company: Proposed general increase in electric rates*, Illinois Commerce Commission Docket No. 07-0566. 2008. Concerning rate design and cost of service studies, on behalf of the Illinois Office of Attorney General.
 89. *In the Matter of Application of Ohio American Water Co. to Increase Its Rates*, Public Utilities Commission of Ohio, Case No. 07-1112-WS-AIR. 2008. Concerning rate design and cost of service, on behalf of the Office of the Ohio Consumers' Counsel.
 90. *In the Matter of the Application of The East Ohio Gas Company d/b/a Dominion East Ohio for Authority to Increase Rates for its Gas Service*, Public Utilities Commission of Ohio, Case Nos. 07-829-GA-AIR, et al. 2008. Concerning the need for, and structure of, an accelerated infrastructure replacement program and rate surcharge, on behalf of the Office of the Ohio Consumers' Counsel.
 91. *Pa. Public Utility Commission v. Pennsylvania American Water Company*, Pennsylvania Public Utility Commission, Docket No. R-2008-2032689. 2008. Concerning rate design, cost of service study, and other tariff issues, on behalf of the Pennsylvania Office of Consumer Advocate.
 92. *Pa. Public Utility Commission v. York Water Company*, Pennsylvania Public Utility Commission, Docket No. R-2008-2023067. 2008. Concerning rate design, cost of service study, and other tariff issues, on behalf of the Pennsylvania Office of Consumer Advocate.

-
93. *Northern Illinois Gas Company d/b/a Nicor Gas Company*, Illinois Commerce Commission, Docket No. 08-0363. 2008. Concerning rate design, cost of service, and automatic rate adjustments, on behalf of the Illinois Office of Attorney General.
 94. *West Virginia American Water Company*, West Virginia Public Service Commission, Case No. 08-0900-W-42T. 2008. Concerning affiliated interest charges and relationships, on behalf of the Consumer Advocate Division of the Public Service Commission of West Virginia.
 95. *Illinois-American Water Company Application for Approval of its Annual Reconciliation of Purchased Water and Purchased Sewage Treatment Surcharges*, Illinois Commerce Commission, Docket No. 08-0218. 2008. Concerning the reconciliation of purchased water and sewer charges, on behalf of the Illinois Office of Attorney General.
 96. *In the Matter of Application of Duke Energy Ohio, Inc. for an Increase in Electric Rates*, Public Utilities Commission of Ohio, Case No. 08-0709-EL-AIR. 2009. Concerning rate design and cost of service, on behalf of the Office of the Ohio Consumers' Counsel.
 97. *The Peoples Gas Light and Coke Company and North Shore Gas Company Proposed General Increase in Rates for Gas Service*, Illinois Commerce Commission, Docket Nos. 09-0166 and 09-0167. 2009. Concerning rate design and automatic rate adjustments on behalf of the Illinois Office of Attorney General, Citizens Utility Board, and City of Chicago.
 98. *Illinois-American Water Company Proposed Increase in Water and Sewer Rates*, Illinois Commerce Commission, Docket No. 09-0319. 2009. Concerning rate design and cost of service on behalf of the Illinois Office of Attorney General and Citizens Utility Board.
 99. *Pa. Public Utility Commission v. Aqua Pennsylvania Inc.*, Pennsylvania Public Utility Commission, Docket No. R-2009-2132019. 2010. Concerning rate design, cost of service, and automatic adjustment tariffs, on behalf of the Pennsylvania Office of Consumer Advocate.
 100. *Apple Canyon Utility Company and Lake Wildwood Utilities Corporation Proposed General Increases in Water Rates*, Illinois Commerce Commission, Docket Nos. 09-0548 and 09-0549. 2010. Concerning parent-company charges, quality of service, and other matters, on behalf of Apple Canyon Lake Property Owners' Association and Lake Wildwood Association, Inc.
 101. *Application of Aquarion Water Company of Connecticut to Amend its Rate Schedules*, Connecticut Department of Public Utility Control, Docket No. 10-02-13. 2010. Concerning rate design, proof of revenues, and other tariff issues, on behalf of the Connecticut Office of Consumer Counsel.
 102. *Illinois-American Water Company Annual Reconciliation of Purchased Water and Sewage Treatment Surcharges*, Illinois Commerce Commission, Docket No. 09-0151. 2010. Concerning the reconciliation of purchased water and sewer charges, on behalf of the Illinois Office of Attorney General.
 103. *Pa. Public Utility Commission v. Pennsylvania-American Water Co.*, Pennsylvania Public Utility Commission, Docket Nos. R-2010-2166212, et al. 2010. Concerning rate design and cost of service study for four wastewater utility districts, on behalf of the Pennsylvania Office of Consumer Advocate.
 104. *Central Illinois Light Company d/b/a AmerenCILCO, Central Illinois Public Service Company d/b/a AmerenCIPS, Illinois Power Company d/b/a AmerenIP Petition for accounting order*, Illinois Commerce

- Commission, Docket No. 10-0517. 2010. Concerning ratemaking procedures for a multi-district electric and natural gas utility, on behalf of the Illinois Office of Attorney General.
105. *Commonwealth Edison Company Petition for General Increase in Delivery Service Rates*, Illinois Commerce Commission Docket No. 10-0467. 2010. Concerning rate design and cost of service study, on behalf of the Illinois Office of Attorney General.
106. *Pa. Public Utility Commission v. City of Lancaster Bureau of Water*, Pennsylvania Public Utility Commission, Docket No. R-2010-2179103. 2010. Concerning rate design, cost of service, and cost allocation, on behalf of the Pennsylvania Office of Consumer Advocate.
107. *Application of Yankee Gas Services Company for Amended Rate Schedules*, Connecticut Department of Public Utility Control, Docket No. 10-12-02. 2011. Concerning rate design and cost of service for a natural gas utility, on behalf of the Connecticut Office of Consumers' Counsel.
108. *California-American Water Company*, California Public Utilities Commission, Application 10-07-007. 2011. Concerning rate design and cost of service for multiple water-utility service areas, on behalf of The Utility Reform Network.
109. *Little Washington Wastewater Company, Inc., Masthope Wastewater Division*, Pennsylvania Public Utility Commission Docket No. R-2010-2207833. 2011. Concerning rate design and various revenue requirements issues, on behalf of the Masthope Property Owners Council.
110. *In the matter of Pittsfield Aqueduct Company, Inc.*, New Hampshire Public Utilities Commission Case No. DW 10-090. 2011. Concerning rate design and cost of service on behalf of the New Hampshire Office of the Consumer Advocate.
111. *In the matters of Pennichuck Water Works, Inc. Permanent Rate Case and Petition for Approval of Special Contract with Anheuser-Busch, Inc.*, New Hampshire Public Utilities Commission Case Nos. DW 10-091 and DW 11-014. 2011. Concerning rate design, cost of service, and contract interpretation on behalf of the New Hampshire Office of the Consumer Advocate.
112. *Artesian Water Co., Inc. v. Chester Water Authority*, U.S. District Court for the Eastern District of Pennsylvania Case No. 10-CV-07453-JP. 2011. Concerning cost of service, ratemaking methods, and contract interpretation on behalf of Chester Water Authority.
113. *North Shore Gas Company and The Peoples Gas Light and Coke Company Proposed General Increases in Rates for Gas Service*, Illinois Commerce Commission, Docket Nos. 11-0280 and 11-0281. 2011. Concerning rate design and cost of service on behalf of the Illinois Office of Attorney General, the Citizens Utility Board, and the City of Chicago.
114. *Ameren Illinois Company: Proposed general increase in electric delivery service rates and gas delivery service rates*, Illinois Commerce Commission, Docket Nos. 11-0279 and 11-0282. 2011. Concerning rate design and cost of service for natural gas and electric distribution service, on behalf of the Illinois Office of Attorney General and the Citizens Utility Board.
115. *Pa. Public Utility Commission v. Pennsylvania-American Water Co.*, Pennsylvania Public Utility Commission, Docket No. R-2011-2232243. 2011. Concerning rate design, cost of service, sales forecast,

and automatic rate adjustments on behalf of the Pennsylvania Office of Consumer Advocate.

116. *Aqua Illinois, Inc. Proposed General Increase in Water and Sewer Rates*, Illinois Commerce Commission, Docket No. 11-0436. 2011. Concerning rate design and cost of service on behalf of the Illinois Office of Attorney General.
117. *City of Nashua Acquisition of Pennichuck Corporation*, New Hampshire Public Utilities Commission, Docket No. DW 11-026. 2011. Concerning the proposed acquisition of an investor-owned utility holding company by a municipality, including appropriate ratemaking methodologies, on behalf of the New Hampshire Office of Consumer Advocate.
118. *An Application by Heritage Gas Limited for the Approval of a Schedule of Rates, Tolls and Charges*, Nova Scotia Utility and Review Board, Case NSUARB-NG-HG-R-11. 2011. Concerning rate design and cost of service, on behalf of the Nova Scotia Consumer Advocate.
119. *An Application of Halifax Regional Water Commission for Approval of a Cost of Service and Rate Design Methodology*, Nova Scotia Utility and Review Board, Case NSUARB-W-HRWC-R-11. 2011. Concerning rate design and cost of service, on behalf of the Nova Scotia Consumer Advocate.
120. *National Grid USA and Liberty Energy Utilities Corp.*, New Hampshire Public Utilities Commission, Docket No. DG 11-040. 2011. Concerning the costs and benefits of a proposed merger and related conditions, on behalf of the New Hampshire Office of Consumer Advocate.
121. *Great Northern Utilities, Inc., et al.*, Illinois Commerce Commission, Docket Nos. 11-0059, et al. 2012. Concerning options for mitigating rate impacts and consolidating small water and wastewater utilities for ratemaking purposes, on behalf of the Illinois Office of Attorney General.
122. *Pa. Public Utility Commission v. Aqua Pennsylvania, Inc.*, Pennsylvania Public Utility Commission, Docket No. R-2011-2267958. 2012. Concerning rate design, cost of service, and automatic rate adjustment mechanisms, on behalf of the Pennsylvania Office of Consumer Advocate.
123. *Golden State Water Company*, California Public Utilities Commission, Application 11-07-017. 2012. Concerning rate design and quality of service, on behalf of The Utility Reform Network.
124. *Golden Heart Utilities, Inc. and College Utilities Corporation*, Regulatory Commission of Alaska, Case Nos. U-11-77 and U-11-78. 2012. Concerning rate design and cost of service, on behalf of the Alaska Office of the Attorney General.
125. *Illinois-American Water Company*, Illinois Commerce Commission, Docket No. 11-0767. 2012. Concerning rate design, cost of service, and automatic rate adjustment mechanisms, on behalf of the Illinois Office of Attorney General.
126. *Application of Tidewater Utilities, Inc., for a General Rate Increase in Water Base Rates and Tariff Revisions*, Delaware Public Service Commission, Docket No. 11-397. 2012. Concerning rate design and cost of service study, on behalf of the Staff of the Delaware Public Service Commission.
127. *In the Matter of the Philadelphia Water Department's Proposed Increase in Rates for Water and Wastewater Utility Services*, Philadelphia Water Commissioner, FY 2013-2016. 2012. Concerning rate

design and related issues for storm water service, on behalf of Citizens for Pennsylvania's Future.

128. *Corix Utilities (Illinois) LLC, Hydro Star LLC, and Utilities Inc. Joint Application for Approval of a Proposed Reorganization*, Illinois Commerce Commission, Docket No. 12-0279. 2012. Concerning merger-related synergy savings and appropriate ratemaking treatment of the same, on behalf of the Illinois Office of Attorney General.
129. *North Shore Gas Company and The Peoples Gas Light and Coke Company*, Illinois Commerce Commission, Docket Nos. 12-0511 and 12-0512. 2012. Concerning rate design, cost of service study, and automatic rate adjustment tariff on behalf of the Illinois Office of Attorney General.
130. *Pa. Public Utility Commission v. City of Lancaster Sewer Fund*, Pennsylvania Public Utility Commission, Docket No. R-2012-2310366. 2012. Concerning rate design, cost of service, and cost allocation, on behalf of the Pennsylvania Office of Consumer Advocate.
131. *Aquarion Water Company of New Hampshire*, New Hampshire Public Utilities Commission, Docket No. DW 12-085. 2013. Concerning tariff issues, including an automatic adjustment clause for infrastructure improvement, on behalf of the New Hampshire Office of Consumer Advocate.
132. *In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in Electric Distribution Rates*, Public Utilities Commission of Ohio, Case No. 12-1682-EL-AIR, et al. 2013. Concerning rate design and tariff issues, on behalf of the Office of the Ohio Consumers' Counsel.
133. *In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in Natural Gas Distribution Rates*, Public Utilities Commission of Ohio, Case No. 12-1685-GA-AIR, et al. 2013. Concerning cost-of-service study, rate design, and tariff issues, on behalf of the Office of the Ohio Consumers' Counsel.
134. *In the Matter of the Application of The Dayton Power and Light Company to Establish a Standard Service Offer in the Form of an Electric Security Plan*, Public Utilities Commission of Ohio, Case No. 12-426-EL-SSO, et al. 2013. Concerning rate design, on behalf of the Office of the Ohio Consumers' Counsel.
135. *Application of the Halifax Regional Water Commission, for Approval of Amendments to its Schedule of Rates and Charges and Schedule of Rules and Regulations for the delivery of water, public and private fire protection, wastewater and stormwater services*, Nova Scotia Utility and Review Board, Matter No. M05463. 2013. Concerning rate design, cost-of-service study, and miscellaneous tariff provisions, on behalf of the Consumer Advocate of Nova Scotia.
136. *California Water Service Co. General Rate Case Application*, California Public Utilities Commission, Docket No. A.12-07-007. 2013. Concerning rate design, phase-in plans, low-income programs, and other tariff issues, on behalf of The Utility Reform Network.
137. *Application of The United Illuminating Company to Amend its Rate Schedules*, Connecticut Public Utility Regulatory Authority, Docket No. 13-01-19. 2013. Concerning sales forecast, rate design, and other tariff issues, on behalf of the Connecticut Office of Consumer Counsel.
138. *Application of Aquarion Water Company of Connecticut to Amend its Rate Schedules*, Connecticut Public Utility Regulatory Authority, Docket No. 13-02-20. 2013. Concerning sales forecast and rate design on

behalf of the Connecticut Office of Consumer Counsel.

139. *Ameren Illinois Company, Proposed General Increase in Natural Gas Delivery Service Rates*, Illinois Commerce Commission, Docket No. 13-0192. 2013. Concerning rate design and revenue allocation, on behalf of the Illinois Office of Attorney General and Citizens Utility Board.
140. *Commonwealth Edison Company, Tariff filing to present the Illinois Commerce Commission with an opportunity to consider revenue neutral tariff changes related to rate design*, Docket No. 13-0387. 2013. Concerning rate design and cost of service study issues, on behalf of the Illinois Office of Attorney General.
141. *In the Matter of the Potomac Electric Power Company for Authority to Increase Existing Retail Rates and Charges for Electric Distribution Service*, District of Columbia Public Service Commission, Formal Case No. 1103. 2013. Concerning rate design, revenue allocation, and cost-of-service study issues, on behalf of the District of Columbia Office of Peoples' Counsel.
142. *Pa. Public Utility Commission v. Pennsylvania-American Water Co.*, Pennsylvania Public Utility Commission, Docket No. R-2013-2355276. 2013. Concerning rate design, revenue allocation, and regulatory policy, on behalf of the Pennsylvania Office of Consumer Advocate.
143. *In the Matter of the Revenue Requirement and Transmission Tariff Designated as TA364-8 filed by Chugach Electric Association, Inc.*, Regulatory Commission of Alaska, U-13-007. 2013. Concerning rate design and cost-of-service study issues, on behalf of the Alaska Office of the Attorney General.
144. *Ameren Illinois Company: Tariff filing to present the Illinois Commerce Commission with an opportunity to consider revenue neutral tariff changes related to rate design*, Docket No. 13-0476. 2013. Concerning rate design and cost of service study issues, on behalf of the Illinois Office of Attorney General.
145. *Pa. Public Utility Commission v. City of Bethlehem Bureau of Water*, Pennsylvania Public Utility Commission, Docket No. R-2013-2390244. 2014. Concerning rate design, cost of service study, and revenue allocation on behalf of the Pennsylvania Office of Consumer Advocate.
146. *In the Matter of the Tariff Revision Designated as TA332-121 filed by the Municipality of Anchorage d/b/a Municipal Light and Power Department*, Regulatory Commission of Alaska, U-13-184. 2014. Concerning rate design and cost-of-service study issues, on behalf of the Alaska Office of the Attorney General.
147. *Pa. Public Utility Commission v. Pike County Light and Power Co. - Gas*, Pennsylvania Public Utility Commission, Docket No. R-2013-2397353. 2014. Concerning rate design and revenue allocation on behalf of the Pennsylvania Office of Consumer Advocate.
148. *Pa. Public Utility Commission v. Pike County Light and Power Co. - Electric*, Pennsylvania Public Utility Commission, Docket No. R-2013-2397237. 2014. Concerning rate design, cost of service study, and revenue allocation on behalf of the Pennsylvania Office of Consumer Advocate.
149. *The Peoples Gas Light and Coke Company North Shore Gas Company Proposed General Increase in Rates for Gas Service*, Illinois Commerce Commission, Docket Nos. 14-0224 and 14-0225. 2014. Concerning rate design on behalf of the Illinois Office of the Attorney General and the Environmental

Law and Policy Center.

150. *Apple Valley Ranchos Water Company*, California Public Utilities Commission, Docket No. A.14-01-002. 2014. Concerning rate design and automatic rate adjustment mechanisms on behalf of the Town of Apple Valley.
151. *Application by Heritage Gas Limited for Approval to Amend its Franchise Area*, Nova Scotia Utility and Review Board, Matter No. M06271. 2014. Concerning criteria, terms, and conditions for expanding a utility's service area and using transported compressed natural gas to serve small retail customers, on behalf of the Nova Scotia Consumer Advocate.
152. *Notice of Intent of Entergy Mississippi, Inc. to Modernize Rates to Support Economic Development, Power Procurement, and Continued Investment*, Mississippi Public Service Commission Docket No. 2014-UN-132. 2014. Concerning rate design and tariff issues, on behalf of the Mississippi Public Utilities Staff.
153. *Pa. Public Utility Commission v. City of Lancaster Bureau of Water*, Pennsylvania Public Utility Commission, Docket No. R-2014-2418872. 2014. Concerning rate design, cost of service study, and revenue allocation on behalf of the Pennsylvania Office of Consumer Advocate.
154. *Pa. Public Utility Commission v. Borough of Hanover Municipal Water Works*, Pennsylvania Public Utility Commission, Docket No. R-2014-2428304. 2014. Concerning rate design, cost of service study, and revenue allocation on behalf of the Pennsylvania Office of Consumer Advocate.
155. *Investigation of Commonwealth Edison Company's Cost of Service for Low-Use Customers in Each Residential Class*, Illinois Commerce Commission, Docket No. 14-0384. 2014. Concerning rate design on behalf of the Illinois Office of Attorney General.
156. *Application of the Halifax Regional Water Commission, for Approval of its Schedule of Rates and Charges and Schedule of Rules and Regulations for the Provision of Water, Public and Private Fire Protection, Wastewater and Stormwater Services*, Nova Scotia Utility and Review Board, Matter No. M06540. 2015. Concerning rate design, cost of service study, and tariff issues on behalf of the Nova Scotia Consumer Advocate.
157. *Testimony concerning organization and regulation of Philadelphia Gas Works*, Philadelphia City Council's Special Committee on Energy Opportunities. 2015.
158. *Testimony concerning proposed telecommunications legislation*, Maine Joint Standing Committee on Energy, Utilities, and Technology. 2015.
159. *Pa. Public Utility Commission v. United Water Pennsylvania, Inc.*, Pennsylvania Public Utility Commission, Docket No. R-2015-2462723. 2015. Concerning rate design, cost of service study, and revenue allocation on behalf of the Pennsylvania Office of Consumer Advocate.
160. *Ameren Illinois Company Proposed General Increase in Gas Delivery Service Rates*, Illinois Commerce Commission, Docket No. 15-0142. 2015. Concerning rate design on behalf of the Illinois Office of Attorney General.

161. *Maine Natural Gas Company Request for Multi-Year Rate Plan*, Maine Public Utilities Commission, Docket No. 2015-00005. 2015. Concerning rate design and automatic rate adjustment tariffs on behalf of the Maine Office of the Public Advocate.
162. *Application of Ohio Edison Company, The Cleveland Electric Illuminating Company and The Toledo Edison Company for Authority to Provide for a Standard Service Offer*, Public Utilities Commission of Ohio, Case No. 14-1297-EL-SSO. 2015. Concerning rate design and proposed rate discounts on behalf of the Office of the Ohio Consumers' Counsel.
163. *An Application of the Halifax Regional Water Commission, for approval of revisions to its Cost of Service Manual and Rate Design for Stormwater Service*, Nova Scotia Utility and Review Board, Matter No. M07147. 2016. Concerning stormwater rate design and cost of service, on behalf of the Nova Scotia Consumer Advocate.
164. *In the Matter of An Application by Heritage Gas Limited for Enhancement to Its Existing Residential Retro-Fit Assistance Fund*, Nova Scotia Utility and Review Board, Matter No. M07146. 2016. Concerning costs and benefits associated with utility system expansion, on behalf of the Nova Scotia Consumer Advocate.
165. *In the Matter of the Application of UNS Electric, Inc. for the Establishment of Just and Reasonable Rates and Charges*, Arizona Corporation Commission, Docket No. E-04204A-15-0142. 2016. Concerning rate design and residential demand charges on behalf of Arizona Utility Ratepayer Alliance.
166. *In the Matter of Application of Water Service Corporation of Kentucky for a General Adjustment in Existing Rates*, Kentucky Public Service Commission, Case No. 2015-00382. 2016. Concerning rate design and service area consolidation on behalf of the Kentucky Office of the Attorney General.
167. *Massachusetts Electric Company and Nantucket Electric Company*, Massachusetts Department of Public Utilities, Docket No. DPU 15-155. 2016. Concerning rate design and cost-of-service studies on behalf of the Massachusetts Office of Attorney General.
168. *In the Matter of Abenaki Water Company*, New Hampshire Public Utilities Commission, Docket No. DW 15-199. 2016. Concerning rate design on behalf of the New Hampshire Office of the Consumer Advocate.
169. *In the Matter of an Application by Heritage Gas Limited for Approval of its Customer Retention Program*, Nova Scotia Utility and Review Board Matter No. M07346. 2016. Concerning a regulatory response to competition and potential business failure on behalf of the Nova Scotia Consumer Advocate.
170. *Joint Application of Pennsylvania-American Water Company and the Sewer Authority of the City of Scranton*, Pennsylvania Public Utility Commission Docket No. A-2016-2537209. 2016. Concerning the lawfulness, costs and benefits, and ratemaking treatment of a proposed acquisition of a combined wastewater and storm water utility on behalf of the Pennsylvania Office of Consumer Advocate.
171. *Application of The United Illuminating Company to Amend its Rate Schedules*, Connecticut Public Utility Regulatory Authority Docket No. 16-06-04. 2016. Concerning rate design, cost-of-service study, and other tariff issues on behalf of the Connecticut Office of Consumer Counsel.

172. *Ameren Illinois Company Tariff filing to present the Illinois Commerce Commission with an opportunity to consider revenue neutral tariff changes related to rate design*, Illinois Commerce Commission Docket No. 16-0387. 2016. Concerning rate design and cost-of-service study on behalf of the Illinois Office of the Attorney General.
173. *Unitil Energy Systems, Inc.*, New Hampshire Public Utilities Commission Docket No. 16-384. 2016. Concerning rate design and cost-of-service study on behalf of the New Hampshire Office of Consumer Advocate.
174. *Liberty Utilities (Granite State Electric) Corp.*, New Hampshire Public Utilities Commission Docket No. 16-383. 2016. Concerning rate design and cost-of-service study on behalf of the New Hampshire Office of Consumer Advocate.
175. *Arizona Public Service Co.*, Arizona Corporation Commission Docket No. E-01345A-16-0123. 2017. Concerning rate design and cost-of-service study on behalf of the Arizona Utility Ratepayer Alliance.
176. *Commonwealth Edison Company, Tariff filing to present the Illinois Commerce Commission with an opportunity to consider revenue neutral tariff changes related to rate design*, Illinois Commerce Commission Docket No. 17-0049. 2017. Concerning rate design and cost of service study issues, on behalf of the Illinois Office of Attorney General.
177. *NSTAR Electric Company and Western Massachusetts Electric Company*, Massachusetts Department of Public Utilities Docket No. D.P.U. 17-05. 2017. Concerning rate design and cost of service study issues, on behalf of the Massachusetts Office of Attorney General.
178. *In the Matter of the Tariff Revision Designated as TA857-2 Filed by Alaska Power Company*, Regulatory Commission of Alaska No. U-16-078. 2017. Concerning rate design and cost of service study issues on behalf of the Alaska Office of the Attorney General.
179. *In the Matter of the Application of Minnesota Power for Authority to Increase Rates for Electric Utility Service in Minnesota*, Minnesota Public Utilities Commission Docket No. E015/GR-16-664. 2017. Concerning rate design and cost of service study issues on behalf of AARP.
180. *Pennsylvania Public Utility Commission v. Pennsylvania-American Water Company*, Pennsylvania Public Utility Commission, Docket No. R-2017-2595853. 2017. Concerning rate design, cost of service, and policy issues, on behalf of the Pennsylvania Office of Consumer Advocate.
181. *Aqua Illinois, Inc. Proposed Rate Increases for Water and Sewer Services*, Illinois Commerce Commission, Docket No. 17-0259. 2017. Concerning rate design and single-tariff pricing, on behalf of the Illinois Office of Attorney General.
182. *Petition of Pennsylvania-American Water Company for Approval of Tariff Changes and Accounting and Rate Treatment Related to Replacement of Lead Customer-Owned Service Pipes*, Pennsylvania Public Utility Commission, Docket No. P-2017-2606100. 2017. Concerning public policy and ratemaking issues associated with the replacement of customer-owned lead service lines, on behalf of the Pennsylvania Office of Consumer Advocate.
183. *In the Matter of Application and Notice of Change in Natural Gas Rates of Montana-Dakota Utilities Co.*, North Dakota Public Service Commission, Case No. PU-17-295. 2017. Concerning rate design and cost

of service study issues, on behalf of AARP.

184. *Aqua Illinois, Inc. Petition for the Issuance of a Certificate of Public Convenience and Necessity to Operate a Water and Wastewater System in the Village of Peotone*, Illinois Commerce Commission, Docket No. 17-0314. 2018. Concerning rate consolidation and rate design, on behalf of the Illinois Office of Attorney General.
185. *Application of the Connecticut Light and Power Company d/b/a Eversource Energy to Amend its Rate Schedules*, Connecticut Public Utilities Regulatory Authority, Docket No. 17-10-46. 2018. Concerning rate design issues, on behalf of the Connecticut Office of Consumer Counsel.
186. *Application by Heritage Gas for Approval of a Long-Term Natural Gas Transportation Contract and Cost Recovery Mechanism*, Nova Scotia Utility and Review Board, Matter M08473. 2018. Concerning evaluation of costs, benefits, and risks of a long-term natural gas pipeline contract, on behalf of the Consumer Advocate of Nova Scotia.
187. *Boston Gas Company and Colonial Gas Company*, Massachusetts Department of Public Utilities, D.P.U. 17-170. 2018. Concerning class revenue allocation and rate design, on behalf of the Massachusetts Office of Attorney General.
188. *In the Matter of the Application of Maryland-American Water Company for Authority to Adjust its Existing Schedule of Tariffs and Rates*, Maryland Public Service Commission, Case No. 9487. 2018. Concerning cost-of-service study, on behalf of the Staff of the Maryland Public Service Commission.
189. *Joint Application and Petition of South Carolina Electric & Gas Company and Dominion Energy, Inc. for review and approval of a proposed business combination between SCANA Corporation and Dominion Energy, Inc., as may be required, and for a prudence determination regarding the abandonment of the V.C. Summer Units 2 & 3 Project and associated merger benefits and cost recovery plans*, South Carolina Public Service Commission, Docket No. 2017-370-E. 2018. Concerning regulatory policy, prudence of decision-making, and cost sharing, on behalf of AARP.
190. *Application of Transource Pennsylvania, LLC for approval of the Siting and Construction of the 230 kV Transmission Line Associated with the Independence Energy Connection - East and West Projects in portions of York and Franklin Counties, Pennsylvania*, Pennsylvania Public Utility Commission, Docket Nos. A-2017-2640195, et al. 2018. Concerning regulatory policy and benefit-cost analysis for a proposed high-voltage electric transmission line, on behalf of the Pennsylvania Office of Consumer Advocate.
191. *Pa. Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Pennsylvania Public Utility Commission, Docket Nos. R-2018-3002645, et al. 2018. Concerning cost-of-service study and rate design for a water and wastewater utility, on behalf of the Pennsylvania Office of Consumer Advocate.
192. *West Virginia-American Water Company Rule 42T Tariff Filing to Increase Rates and Charges*, West Virginia Public Service Commission, Case No. 18-0573-W-42T, et al. 2018. Concerning revenue decoupling, on behalf of the Consumer Advocate Division.
193. *Philadelphia Gas Works and Philadelphia Facilities Management Corporation Petition for Approval and Recommendation for Approval of Certain Transactions and Contracts for the Purchase, Storage, Distribution and/or Transmission of Natural and Other Gas, and also Certain Transactions and Contracts Respecting Real Property Owned by the City of Philadelphia and Operated by the Philadelphia*

Gas Works, Philadelphia Gas Commission. 2018. Concerning regulatory policy and cost-benefit analysis for a proposed public-private partnership, on behalf of the Philadelphia Public Advocate.

194. *Pa. Public Utility Commission v. Aqua Pennsylvania, Inc., and Aqua Pennsylvania Wastewater, Inc.*, Pennsylvania Public Utility Commission, Docket Nos. R-2018-3003558, et al. 2018. Concerning rate design, class revenue allocation, and automatic rate adjustment mechanism, on behalf of the Pennsylvania Office of Consumer Advocate.
195. *In the Matter of Commission Initiated Investigation into Rates and Revenue Requirements and Customer Service and Communication Issues Pertaining to Central Maine Power Company*, Maine Public Utilities Commission, Docket No. 2018-00194. 2019. Concerning cost-of-service studies and rate design, on behalf of the Maine Office of Public Advocate.
196. *Northern Illinois Gas Company d/b/a Nicor Gas Company: Proposed general increase in gas rates*, Illinois Commerce Commission, Docket No. 18-1775. 2019. Concerning rate design, cost-of-service study, class revenue allocation, and automatic rate adjustment mechanisms, on behalf of the Illinois Office of the Attorney General.
197. *Massachusetts Electric Co. and Nantucket Electric Co., d/b/a/ National Grid*, Massachusetts Department of Public Utilities, D.P.U. 18-150. 2019. Concerning rate design, cost-of-service study, class revenue allocation, and time-of-use rates, on behalf of the Massachusetts Office of Attorney General.
198. *Implementation of Chapter 32 of the Public Utility Code Regarding Pittsburgh Water and Sewer Authority – Stage 1*, Pennsylvania Public Utility Commission, Docket Nos. M-2018-2640802 and M-2018-2640803. 2019. Concerning billing, metering, rate design, and other compliance issues for a municipal water authority, on behalf of the Pennsylvania Office of Consumer Advocate.
199. *Commonwealth Edison Company Petition for approval of a Revision to Integrated Distribution Company Implementation Plan. Creation of Rate Residential Time of Use Pricing Pilot (“Rate RTOUPP”)*. Illinois Commerce Commission, Docket Nos. 18-1725/18-1824 (Cons.). Concerning time-of-use rates, on behalf of the Illinois Office of Attorney General.
200. *Washington Utilities and Transportation Commission v. Northwest Natural Gas Co.*, Washington Utilities and Transportation Commission, Docket UG-181053. 2019. Concerning a proposed revenue decoupling automatic rate adjustment mechanism, on behalf of the Washington Office of Attorney General, Public Counsel Unit.
201. *In the Matter of the Application of Washington Gas Light Company for Authority to Increase Existing Rates and Charges and to Revise its Terms and Conditions for Gas Service*, Maryland Public Service Commission, Case No. 9605. 2019. Concerning cost-of-service study on behalf of the Staff of the Maryland Public Service Commission.
202. *Public Service Company of New Hampshire, d/b/a Eversource Energy*, New Hampshire Public Utilities Commission, Docket No. DE 19-057. 2019. Concerning class revenue allocation, rate design, revenue decoupling, other automatic rate adjustment mechanisms, and miscellaneous tariff issues on behalf of AARP.
203. *In the Matter of the Application of Southwest Gas Corporation for the Establishment of Just and Reasonable Rates and Charges Designed to Realize a Reasonable Rate of Return on the Fair Value of the*

Properties of Southwest Gas Corporation Devoted to its Arizona Operations, Arizona Public Service Commission, Docket No. G-01551A-19-0055. 2020. Concerning certain relationships with affiliates, premature pipe replacement, revenue decoupling, automatic rate adjustment mechanisms, and rate design on behalf of Arizona Grain, Inc.

204. *Petition of NSTAR Gas Company d/b/a Eversource Energy for Approval of an Increase in Base Distribution Rates*, Massachusetts Department of Public Utilities, Docket No. D.P.U. 19-120. 2020. Concerning cost-of-service study, class revenue allocation, surcharges, and miscellaneous tariff provisions, on behalf of the Massachusetts Office of Attorney General.

205. *In the Matter of an Application of the Halifax Regional Water Commission for Approval of a Schedule of Rates and Charges*, Nova Scotia Utility and Review Board, Matter M09589. 2020. Concerning regulatory policy, cost-of-service study, and rate design, on behalf of the Nova Scotia Consumer Advocate.

206. *Pa. Public Utility Commission v. UGI Utilities Inc. - Gas Division*, Pennsylvania Public Utility Commission, Docket No. R-2019-3015162. 2020. Concerning regulatory policy, on behalf of the Pennsylvania Office of Consumer Advocate.



Report on the Economic Well-Being of U.S. Households in 2019, Featuring Supplemental Data from April 2020

May 2020

Financial Repercussions from COVID-19

For many families, financial circumstances in 2020 look very different than they did in late 2019 when the SHED was fielded. In order to gain further information about these changing circumstances, the Federal Reserve Board fielded a supplemental survey in April 2020. From the start of March through early April 2020, 19 percent of adults reported losing a job, being furloughed, or having their hours reduced. Among those experiencing these employment disruptions, over one-third expected to have difficulty with their bills in April. Yet, for those not experiencing an employment disruption, financial outcomes at the time of the supplemental survey were largely similar to those observed in the fourth quarter of 2019.

Employment and Work from Home

Thirteen percent of adults, representing 20 percent of people who had been working in February, reported that they lost a job or were furloughed in March or the beginning of April 2020 ([figure 39](#)).⁵⁰ These job losses were most severe among workers with lower incomes. Thirty-nine percent of people

working in February with a household income below \$40,000 reported a job loss in March. Another 6 percent of all adults had their hours reduced or took unpaid leave. Taken together, 19 percent of all adults reported either losing a job or experiencing a reduction in work hours in March.

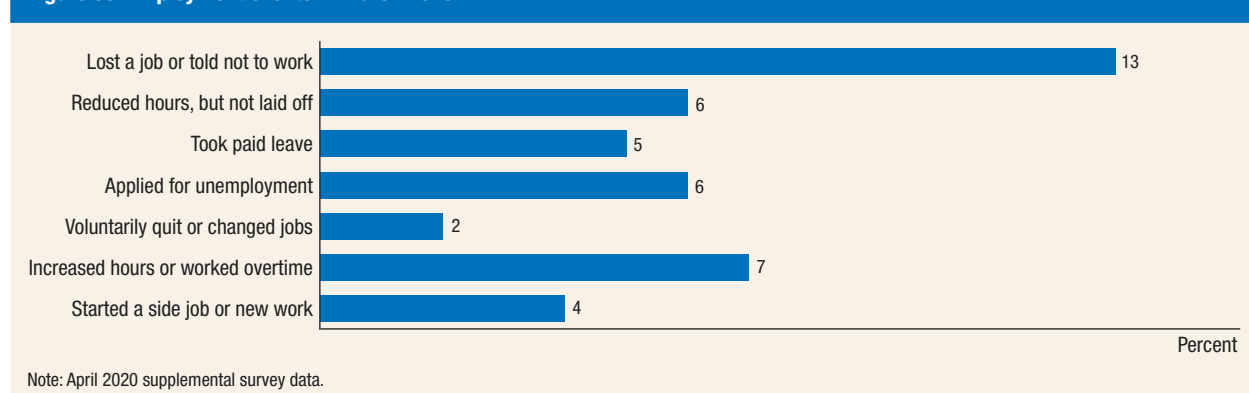
Despite these widespread employment losses, some people took on new or additional employment in March. Seven percent of adults reported that they increased their hours worked or worked overtime. Four percent of adults, including 8 percent of those who experienced a job loss, took on a side job to supplement their income. Some people who lost jobs may also have started other full-time employment or already had second jobs.

Many people who lost a job remained connected to their employer and expected to return to the same job eventually. Nine in 10 people who lost a job said that their employer indicated that they would return to their job at some point. In general, however, people were not told specifically when to expect to return to work. Seventy-seven percent said that their

⁵⁰ Respondents were asked about employment events between March 1 and when they took the survey. The survey was in the field from April 3 through April 6. Subsequent references in this section to events in March include the beginning of April

prior to the respondent taking the survey; 1,030 adults responded to the supplemental survey, and results were weighted to be nationally representative. Additional details can be found in the “[Description of the Survey](#)” section of this report.

Figure 39. Employment events in March 2020



employer told them to expect to return, but did not give them a return date. A smaller 14 percent were given a specific return date or had already returned to work. It is difficult to predict, however, how long layoffs will ultimately last.

Many of those who were still working worked from home. More than half of workers (53 percent) did at least some work from home in the last week of March, and 41 percent did all their work from home. For comparison, in October 2019, 7 percent of people working for someone else usually worked from home (see the “[Employment](#)” section of this report).

Workers with higher levels of education, particularly bachelor’s degrees, were more likely to work from home. Sixty-three percent of workers with at least a bachelor’s degree worked entirely from home. Among workers with a high school degree or less, 20 percent worked entirely from home, as did 27 percent of workers who have completed some college or an associate degree ([figure 40](#)).

Some people also said that childcare, family obligations, or health concerns contributed to them working less in March. Including those taking paid leave or who had their hours reduced but who were not laid off, 9 percent of adults worked fewer hours in March. Among this group, 21 percent said they worked fewer hours because of family responsibilities or childcare. Seventeen percent said that illness or health limitations had contributed to their reduction in hours. Nevertheless, 47 percent of those

working fewer hours said it was due to fewer hours offered by their employer.

Effects on Family Finances

For the majority of adults, income, ability to pay current bills, and their approach to covering a hypothetical \$400 unexpected expense appear to be generally stable during the initial period of the COVID-19 pandemic. Yet among those who experienced employment losses, financial well-being is substantially lower.

Consistent with the employment declines in March, many people experienced declines in their incomes. Overall, 23 percent of adults said their income in March was lower than in February, while 5 percent said their income increased and the rest indicated it was about the same ([figure 41](#)). Among those who lost a job or had their hours reduced, 70 percent reported that their income declined. Most people who did not report a job loss or reduced hours said that their income was about the same, although 12 percent said their month-to-month income declined between February and March.

A loss of income can affect people’s ability to pay regular monthly bills. Eighty-one percent of adults said they could pay all the current month’s bills in full in April, which was essentially unchanged from the fourth quarter of 2019 ([table 32](#)). Yet, the survey found far greater rates of difficulty among those experiencing employment disruptions. Sixty-

Figure 40. Amount of work performed remotely in week ending April 4, 2020 (by education)

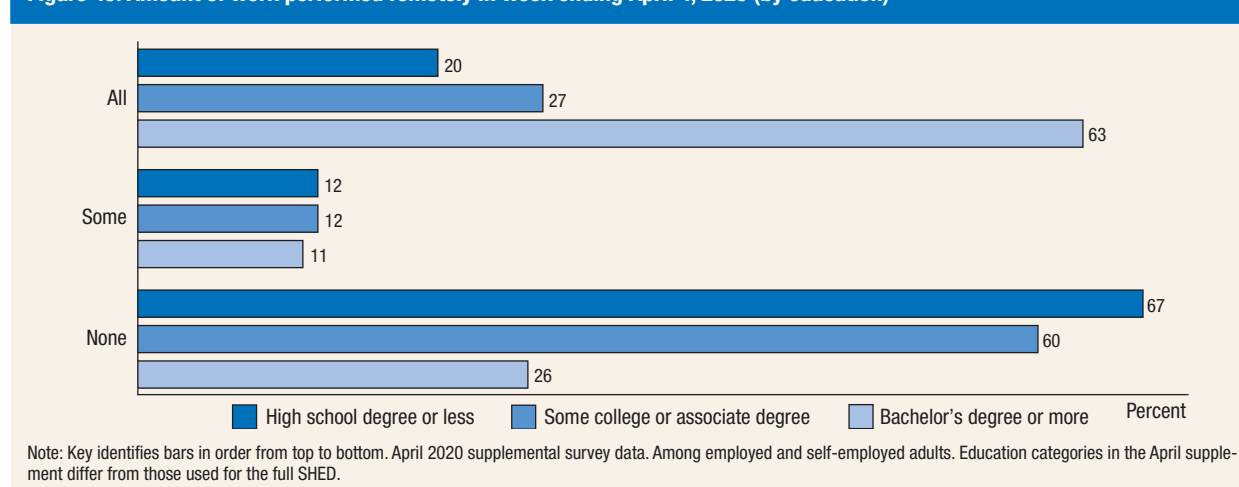
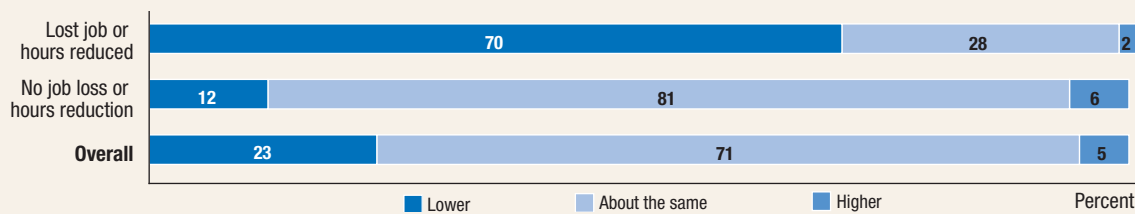


Figure 41. Income in March 2020 relative to February (by employment disruptions since March 1)

Note: Key identifies bars in order from left to right. April 2020 supplemental survey data.

Table 32. Financial resiliency measures (by year and employment disruptions since March 1)

Percent

Year and employment disruption	Able to pay all current month's bills in full	Would pay \$400 expense with cash or equivalent
2019 SHED		
Overall	84	63
2020 April supplement		
Lost job or hours reduced	64	46
No job loss or hours reduction	85	68
Overall	81	64

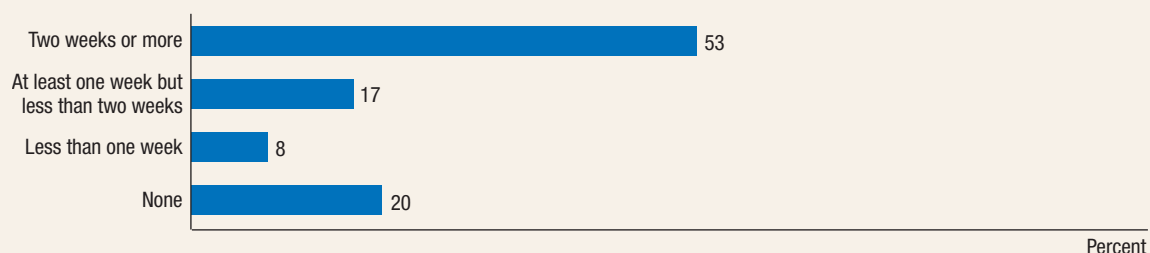
Note: Data from both the 2019 SHED and April 2020 supplemental survey.

four percent of adults who reported a job loss or reduction in hours expected to be able to pay all their bills in full in April, compared to 85 percent of those without an employment disruption.⁵¹

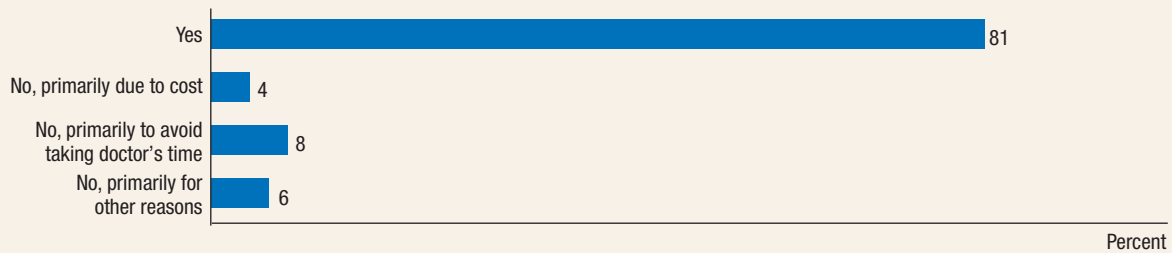
⁵¹ The April supplement was conducted after the passage of the Families First Coronavirus Response Act and the CARES Act, which provided financial relief to many families and expanded the availability of paid leave for some workers who contract COVID-19. However, the survey was conducted before most benefits were received, so it is unclear how many respondents considered these new policies when responding to the survey.

Similarly, for adults overall in April, the share who reported they would pay an unexpected \$400 emergency expense entirely using cash, savings, or a credit card paid off at the next statement was essentially unchanged from the fall of 2019. Yet those who experienced the loss of a job or work hours were less likely to report they would pay an unexpected \$400 expense in these ways.

In addition to the economic effects from the broader employment disruptions related to COVID-19, individuals may experience additional financial challenges if they, or someone close to them, gets sick. Workers who lack paid leave are more likely to face financial hardships or deplete financial resources if they become sick with coronavirus symptoms. Fifty-three percent of employed adults, including those who are self-employed, indicated that could take two or more weeks of paid leave if they got sick with coronavirus symptoms (figure 42). Nonetheless, one-fifth of employed adults reported that they could not take any time off without a reduction in income under these circumstances. On average, those with more education had more leave available. Sixty-four percent of adults with a bachelor's degree or more said that they had at least two weeks of leave, while 42 percent of adults with a high school

Figure 42. Amount of leave available to use if sick with coronavirus symptoms without a reduction in pay

Note: April 2020 supplemental survey data. Among employed and self-employed adults.

Figure 43. Would you try to contact a doctor if sick with symptoms of the coronavirus?

Note: April 2020 supplemental survey data.

degree or less said that they could take off at least two weeks without a reduction in income.

Financial circumstances can also affect decisions to seek medical care. Most adults (81 percent) said they would try to contact a doctor if they were to get sick with coronavirus symptoms, although a small share (4 percent) indicated that concerns about cost would deter them (figure 43). Those who experienced a job loss or reduced hours were more likely not to contact a doctor because of costs (8 percent), relative to those who had not (3 percent). However, this is well below the share who reported in the fall that they

skipped any medical care due to an inability to pay (see the “[Dealing with Unexpected Expenses](#)” section of this report). This lower rate of expecting to skip medical care for COVID-19 likely reflects its serious nature.

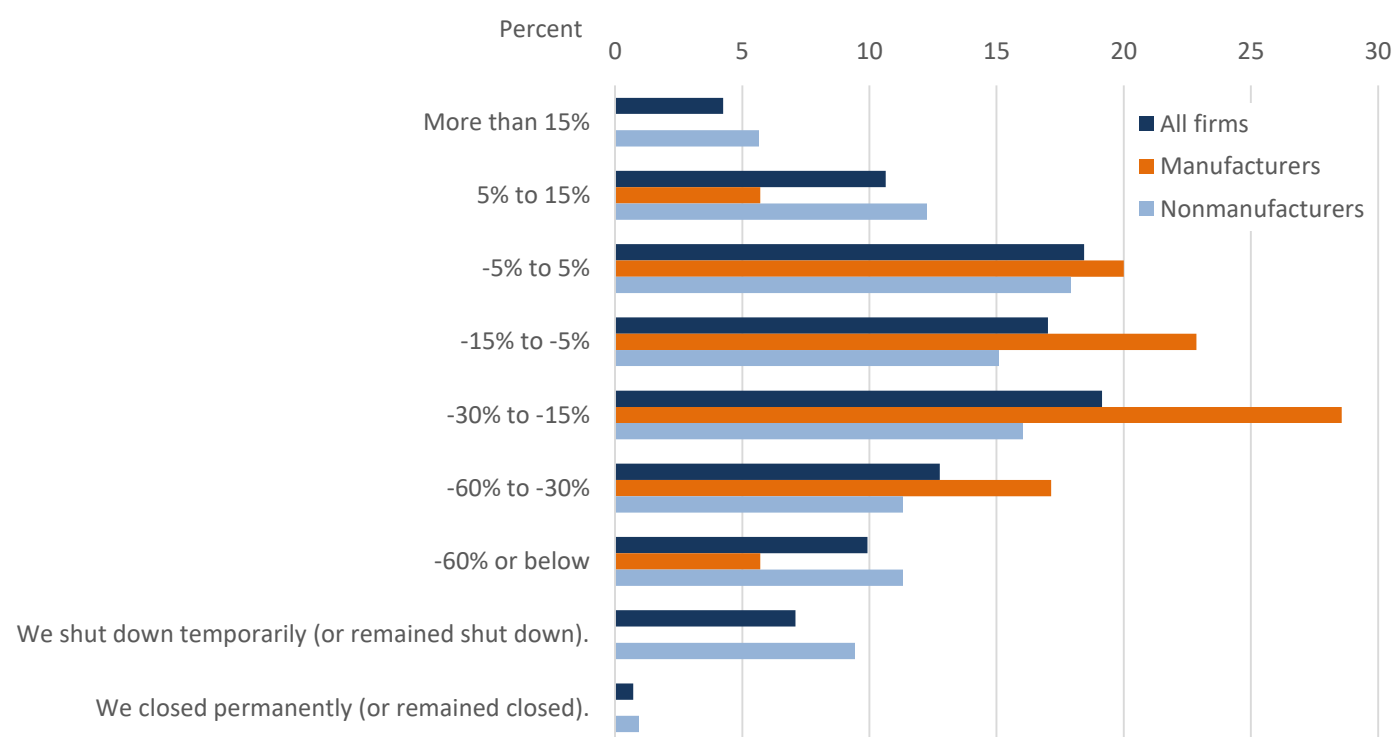
Results from the supplemental survey reflect financial conditions at the beginning of April 2020 and indicate the nature of families’ experiences of financial conditions at that time. However, the financial repercussions from COVID-19 continue to evolve, and the Federal Reserve Board will continue to monitor the financial conditions of households.

Week ending May 31, 2020

Note: We received input from a total of 143 firms. Of those 143 respondents, 141 answered question 1.

1. Considering what you had expected before the COVID-19 outbreak, what would you say has been the impact of the COVID-19 pandemic and its associated effects on the past week's new orders or sales?

Nearly 59 percent of all responding firms reported decreases of more than 5 percent in new orders or sales (mostly unchanged from last week), while 15 percent reported increases of more than 5 percent (up from 8 percent). More than 18 percent reported changes between -5 percent and 5 percent (down from 24 percent). A larger share of manufacturers reported overall decreases (74 percent vs. 54 percent) relative to nonmanufacturers, while a larger share of nonmanufacturers reported overall increases (18 percent vs. 6 percent). Nearly 8 percent of the firms reported a temporary or permanent shutdown.

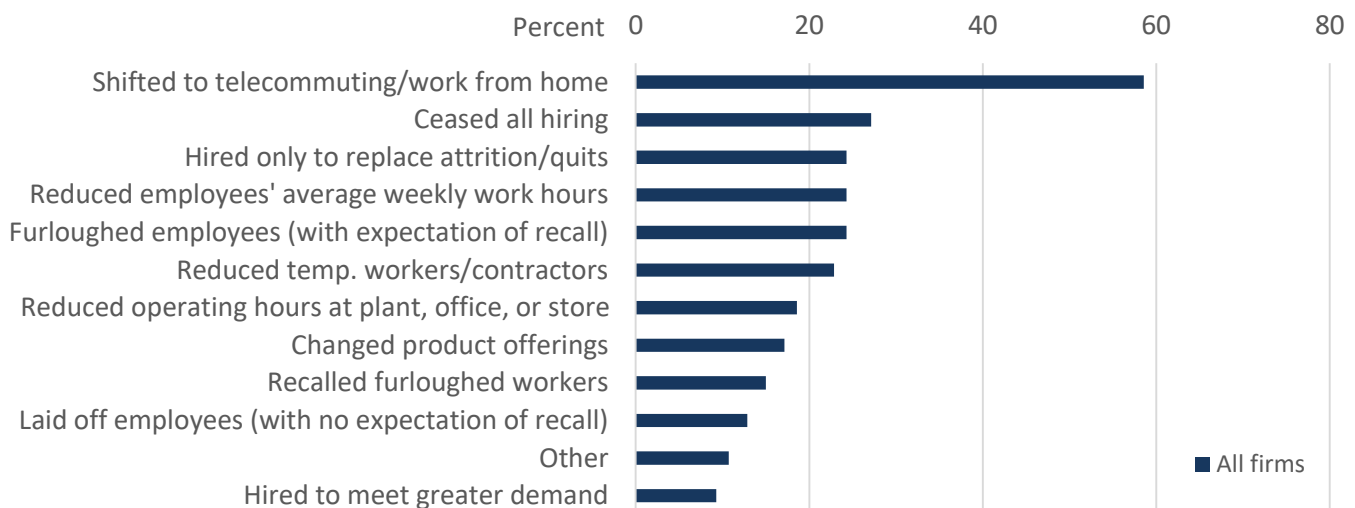


Week ending May 31, 2020

Note: Of the 143 respondents, 140 answered question 2. Respondents were able to choose as many options as applied.

2. As of now, how has your firm responded to the outbreak and its associated effects?

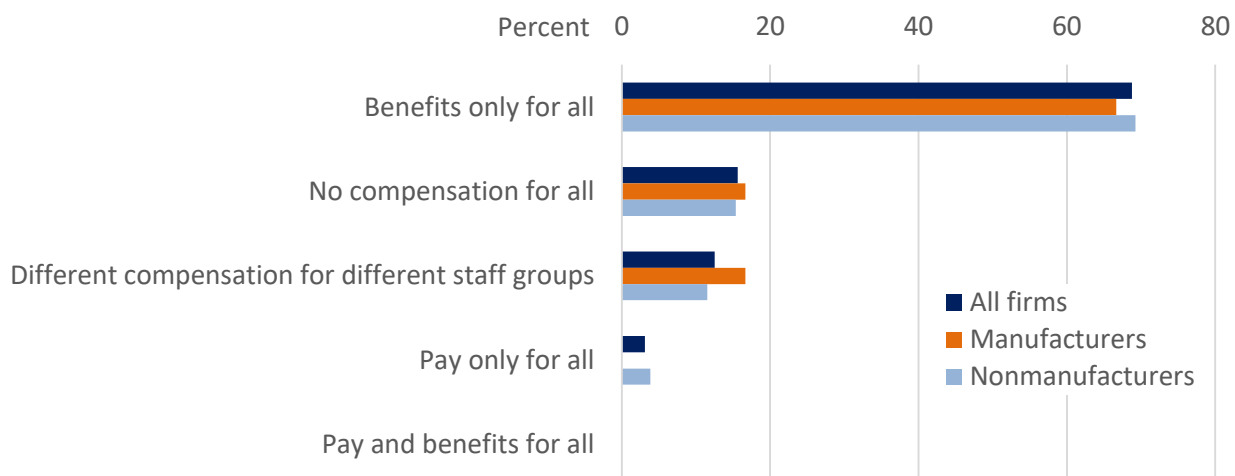
Nearly 59 percent of the firms reported shifting to telecommuting/work from home in response to COVID-19 impacts (little changed from last week), and 27 percent reported ceasing all hiring (down from 39 percent last week). Equal shares of firms (24 percent) noted hiring to replace attrition, reducing employee workweek hours, and furloughing employees. Larger shares of manufacturers reported reducing employee workweek hours and hiring only to replace attrition, while a larger share of nonmanufacturers reported changing product offerings and furloughing employees.



Note: Of the 143 total respondents, 34 answered the following question.

3. As of now, are you providing pay and benefits, pay only, benefits only, or no compensation for furloughed employees?

Of the 34 firms above that noted having furloughed employees, 69 percent reported providing benefits only for all affected employees, 16 percent reported providing no compensation, and 13 percent reported providing different compensation for different groups of affected employees. Slightly more than 3 percent of the firms reported providing pay only, and none of the firms noted providing pay and benefits for all. A larger share of manufacturers reported providing different compensation for different groups of furloughed employees, and only nonmanufacturers noted providing pay only.

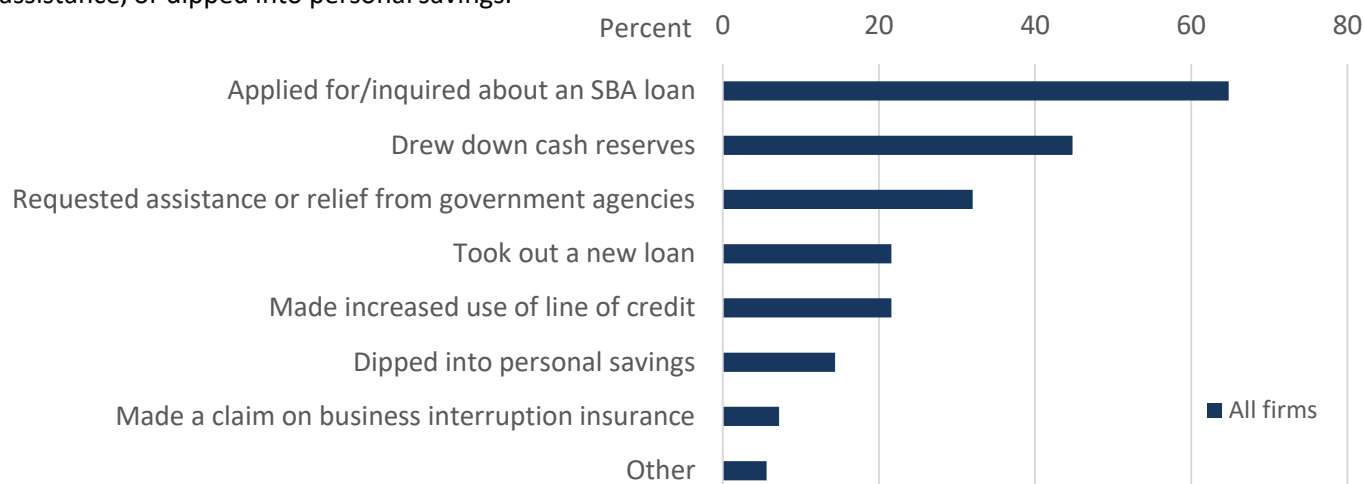


Week ending May 31, 2020

Note: Of the 143 total respondents, 125 answered question 4. Respondents were able to choose as many options as applied.

4. What measures have you taken to cover shortfalls in revenues experienced as a result of the COVID-19 outbreak?

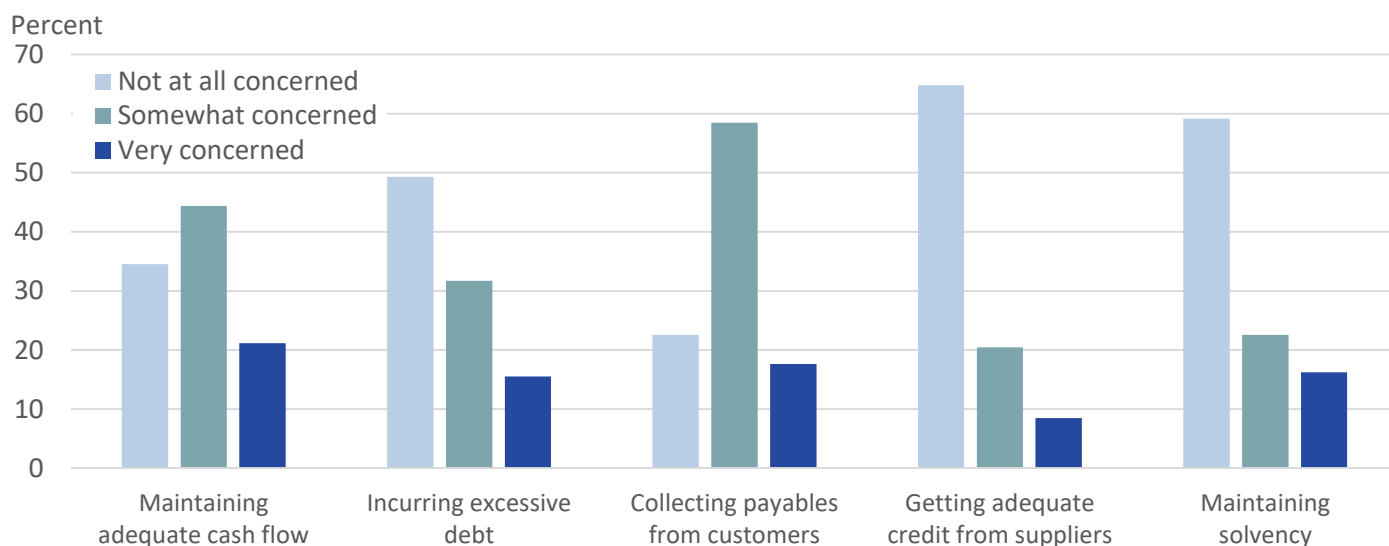
Nearly 65 percent of the firms reported applying for or inquiring about a Small Business Administration (SBA) loan to cover shortfalls in revenues, 45 percent drew down cash reserves, and 32 percent requested assistance from government agencies. Equal shares of firms (22 percent) noted taking out a new loan or making increased use of a line of credit. Larger shares of nonmanufacturing firms reported they drew down cash reserves, requested government assistance, or dipped into personal savings.



Note: Of the 143 total respondents, 142 responded to question 5.

5. How concerned are you about your ability to deal with each of the following over the next month?

Overall, the share of firms indicating being somewhat or very concerned about various credit issues declined relative to when we asked the same question last month. However, most of the firms indicated being somewhat or very concerned about collecting payables from customers (76 percent vs. 79 percent last month) and maintaining adequate cash flow (66 percent vs. 80 percent last month). Nearly 39 percent of the firms noted concern about maintaining solvency, down from 50 percent last month. Larger shares of nonmanufacturers noted concerns about maintaining solvency and getting adequate credit from suppliers.



May 2020

Note: Survey responses were collected from May 11 to May 18.

Manufacturing firms reported continued weakness in regional manufacturing activity this month, according to results from the *Manufacturing Business Outlook Survey*. Despite remaining well below zero, the survey's current indicators for general activity, new orders, shipments, and employment rose this month after reaching long-term low readings in April. The firms expect the current slump in manufacturing activity to last less than six months, as the broadest indicator of future activity strengthened further from last month's reading; furthermore, the firms continue to expect overall growth in new orders, shipments, and employment over the next six months.

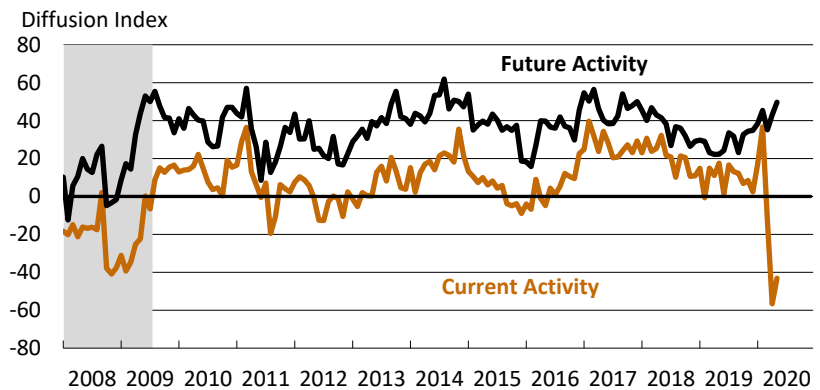
Current Indicators Remain Negative but Climb from Long-Term Lows

After reaching a 40-year low in April, the diffusion index for current general activity rose 13 points to -43.1, its third consecutive negative reading (see Chart). The percentage of firms reporting decreases this month (58 percent) far exceeded the percentage reporting increases (15 percent). The index for new orders rose 45 points out of an all-time low for the series last month, from -70.9 to -25.7. Over 25 percent of the firms reported an increase in new orders, up from none in April, while 51 percent reported decreases, down from 71 percent last month. The current shipments index increased 44 points out of an all-time low last month, from -74.1 to -30.3. Unfilled orders held steady at -13.7, while delivery times fell 11 points to -6.7, suggesting shorter delivery times.

The firms continued to report overall decreases in manufacturing employment this month, but the current employment index increased 31 points to -15.3. Nearly 9 percent of the firms reported higher employment, compared with none last month, while 24 percent reported decreases, down from 47 percent last month. The average workweek index increased 47 points to -7.1.

Current and Future General Activity Indexes

January 2008 to May 2020



Note: The diffusion index is computed as the percentage of respondents indicating an increase minus the percentage indicating a decrease; the data are seasonally adjusted.

Firms Report Increases in Prices of Their Inputs

The prices paid diffusion index increased 13 points to 3.2. The percentage of firms reporting increases in input prices (16 percent) was higher than the percentage reporting decreases (13 percent). The current prices received index rose 8 points to a reading of -3.1, its second consecutive negative reading.

Firms Expect Own Prices to Rise Slower Than Inflation

In this month's special questions, the firms were asked to forecast the changes in the prices of their own products and for U.S. consumers over the next four quarters. Regarding their own prices, the firms' median forecast was for an increase of 1.0 percent, lower than the 2.5 percent that was forecast when the same question was last asked in February. The firms' actual price change over the past year was 0.0 percent, down from 2.0 percent in the prior quarter. The firms expect their employee compensation costs (wages plus benefits on a per employee basis) to rise 2.5 percent over the next four quarters, a decrease from 3.0 percent in the previous quarter. When asked about the rate of inflation for U.S. consumers over the next year, the firms' median

Released: May 21, 2020, 8:30 a.m. ET.

The June 2020 *Manufacturing Business Outlook Survey* will be released on June 18, 2020, at 8:30 a.m. ET.



[illegible]



NONMANUFACTURING BUSINESS OUTLOOK SURVEY

Note: Survey responses were collected from May 7 to May 21.

May 2020

Responses to the May *Nonmanufacturing Business Outlook Survey* suggest continued weakness in nonmanufacturing activity in the region. Despite remaining well below zero, the survey's current indicators for general activity at the firm level, new orders, sales/revenues, and full-time employment all increased this month after reaching all-time low readings in April. The firms continued to report overall decreases in prices of both their inputs and their own goods and services for the second consecutive month. The survey's index for firm-level future activity returned to positive territory and suggests optimism about growth over the next six months.

Current Indicators Remain Negative

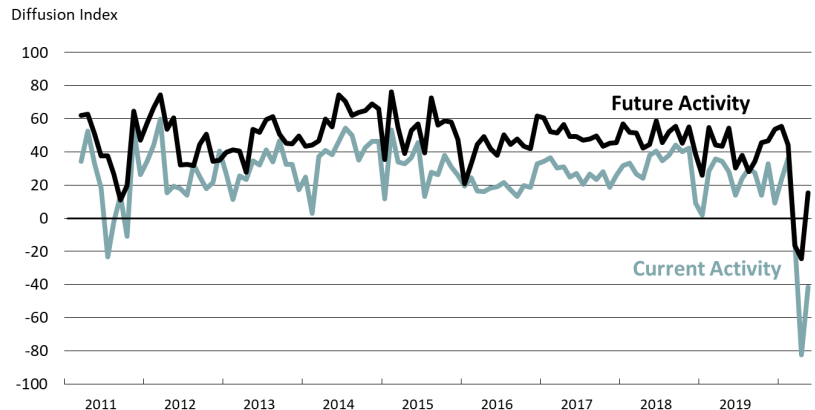
After reaching an all-time low in April, the indicator for firm-level general activity rose 41 points to -41.4, its third consecutive negative reading (see Chart). Although a smaller share of firms reported decreases this month compared with last month, the percentage of firms reporting decreases this month (57 percent) far exceeded the percentage reporting increases (16 percent). The new orders index remains negative but rose 35 points out of an all-time low for the series last month, from -67.2 to -32.4. Over 13 percent of the firms reported an increase in new orders, up from none in April, while 46 percent reported decreases, down from 68 percent last month. The sales/revenues index increased 37 points out of an all-time low last month, from -87.9 to -50.8. Over 11 percent of the firms reported an increase in sales/revenues, up from none in April, while 62 percent reported decreases, down from 88 percent last month. The index measuring firms' perception of regional activity rose 28 points to -68.6.

Employment Indicators Suggest Continued Declines

Responding firms continued to report overall decreases in both full- and part-time employment. The full-time employment index rose 24 points to -23.4 in May. The share of firms reporting decreases in full-time employment (31 percent) exceeded the share reporting increases (7 percent); the majority (59 percent) reported no change. The part-time employment index rose 22 points to -37.3, while the average work-week index increased 14 points to -36.9. The wages and benefits indicator rose 21 points to -14.9.

Chart. Current and Future General Activity Indexes for Firms

March 2011 to May 2020



Note: The diffusion index is computed as the percentage of respondents indicating an increase minus the percentage indicating a decrease; the data are seasonally adjusted.

Firms Report Overall Price Decreases

The indexes for prices paid for inputs and prices received for the firms' own products and services both remained in negative territory for the second consecutive month. The prices paid index fell 6 points to -6.2. Seventeen percent of the respondents reported decreases in input prices, while 11 percent reported increases. The prices received index edged up 4 points to -11.2 in May. Over 17 percent of the firms reported decreases in prices received, while 6 percent reported increases. A majority of the firms (53 percent) reported no change in their own prices.

Firms Expect Own Prices to Rise Slower Than Inflation

In this month's special questions, the firms were asked to forecast the changes in the prices of their own products and services and for U.S. consumers over the next four quarters (see Special Questions). Regarding their own prices, the firms' median forecast was for an increase of 1.0 percent, down from 2.0 percent when the question was last asked in February. Regarding the firms' historical own price change over the previous year, the median response was 1.0 percent, up from

Released May 26, 2020 at 8:30 a.m. ET.

The next *Nonmanufacturing Business Outlook Survey* will be released on June 23, 2020.



the previous report of zero percent. When asked about the rate of inflation for U.S. consumers over the next year, the firms' median forecast was unchanged at 2.0 percent. The firms expect their employee compensation costs (wages plus benefits per employee) to rise 2.0 percent over the next four quarters, lower than the 3.0 percent that was forecast when the same question was last asked in February. The firms' forecast for the long-run (10-year) inflation rate remained at 3.0 percent.

Firms Regain Optimism About Their Own Future Growth

Readings from both future activity indexes increased from all-time lows last month. The diffusion index for future activity at the firm level rose 40 points to 15.4, its first positive reading since February (see Chart). Nearly 50 percent of the firms expect a rise in activity at their firms over the next six months, compared with 34 percent that expect a decline. The future regional activity index increased 36 points to -10.0 in May.

Summary

Results from this month's *Nonmanufacturing Business Outlook Survey* suggest continued weakness in regional non-manufacturing activity. The indicators for firm-level general activity, new orders, sales/revenues, and full-time employment increased from their all-time low readings in April but remained negative. However, respondents expect growth at the firm level over the next six months. ■

Special Questions (May 2020)		
Please list the annual percent change with respect to the following:		
	Current	Previous (February 2020)
For your firm:		
<i>Forecast for next year (2020Q2–2021Q2)</i>		
1. Prices your firm will receive (for its own goods and services sold).	1.0	2.0
2. Compensation your firm will pay per employee (for wages and benefits).	2.0	3.0
<i>Last year's price change (2019Q2–2020Q2)</i>		
3. Prices your firm did receive (for its own goods and services sold) over the last year.	1.0	0.0
For U.S. consumers:		
4. Prices consumers will pay for goods and services over the next year.	2.0	2.0
5. Prices U.S. consumers will pay for goods and services over the next 10 years (2020–2029).	3.0	3.0
The numbers represent medians of the individual forecasts (percent changes). For question 5, firms reported a 10-year annual-average change.		

NONMANUFACTURING BUSINESS OUTLOOK SURVEY May 2020	May vs. April					Six Months from Now vs. May				
	Previous Diffusion Index	Increase	No Change	Decrease	Diffusion Index	Previous Diffusion Index	Increase	No Change	Decrease	Diffusion Index
What is your assessment of general business activity for the region?	-96.4	3.0	23.6	71.6	-68.6	-45.8	38.7	9.2	48.7	-10.0
What is your assessment of general business activity for your firm?	-82.5	15.5	27.5	57.0	-41.4	-24.5	49.4	15.9	33.9	15.4
Company Business Indicators										
New Orders	-67.2	13.1	15.1	45.5	-32.4	NOTES: (1) Diffusion indexes represent the percentage indicating an increase minus the percentage indicating a decrease. (2) All data are seasonally adjusted. (3) Percentages may not sum to 100 percent because of rounding, omission by respondents, or both. (4) Survey results reflect data received through May 21, 2020.				
Sales or Revenues	-87.9	11.3	21.9	62.1	-50.8					
Unfilled Orders	-18.8	8.0	10.4	14.3	-6.3					
Inventories	1.9	3.3	11.6	11.9	-8.5					
Prices Paid	-0.4	10.8	51.2	17.0	-6.2					
Prices Received	-15.4	6.1	52.8	17.3	-11.2					
Number of Employees – Full-Time Permanent	-47.5	7.4	58.5	30.8	-23.4					
Number of Employees – Part-Time, Temporary, and Contract	-58.9	5.0	38.7	42.3	-37.3					
Average Employee Workweek	-50.7	10.2	39.4	47.2	-36.9					
Wage and Benefit Costs	-35.7	9.4	62.8	24.3	-14.9					
Capital Expenditures – Physical Plant	-41.3	7.0	20.8	35.2	-28.2					
Capital Expenditures – Equipment & Software	-40.5	13.7	27.0	35.4	-21.7					

Impact of COVID-19 on Consumer Energy Use & Outlook

Results of EPRI National Survey

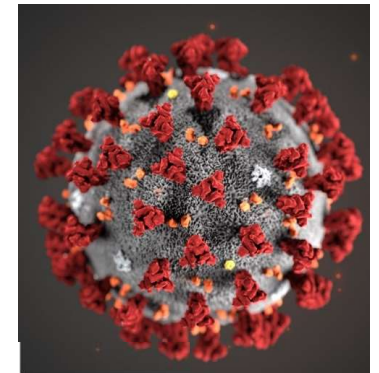
Omar Siddiqui
Min Long

April 29, 2020



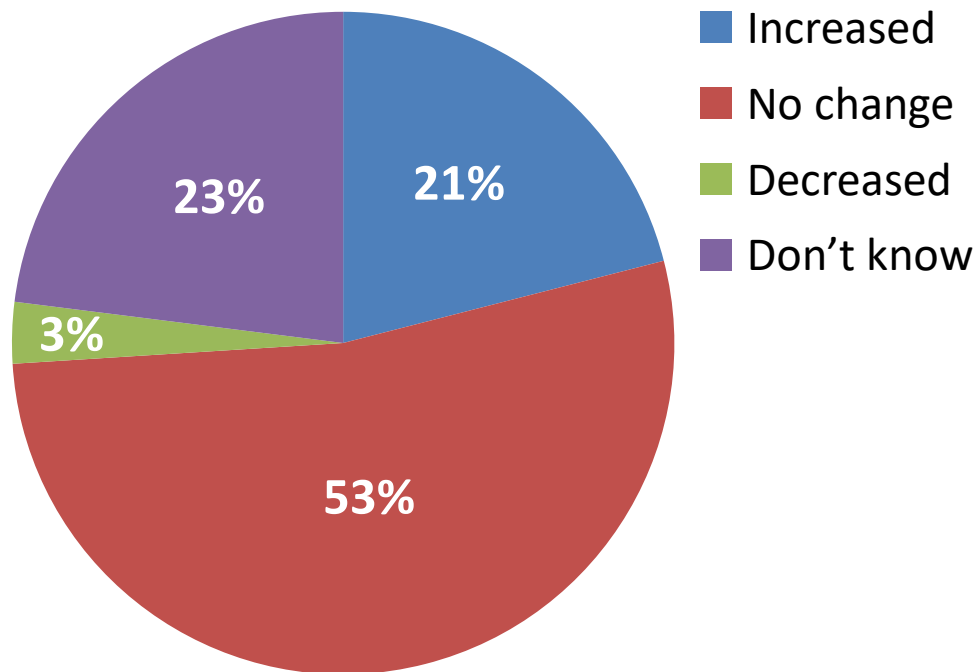
Introduction

- National EPRI survey on COVID-19 impact on consumer energy use and outlook
- Online panel through YouGov
- Nationally representative sample
 - 2,000 respondents
 - Geographic (census regions and divisions)
 - Demographic (household size, age, education, rent vs. own home, income, etc.)
 - Margin of error +/- 2.3%
- Administered week of April 13

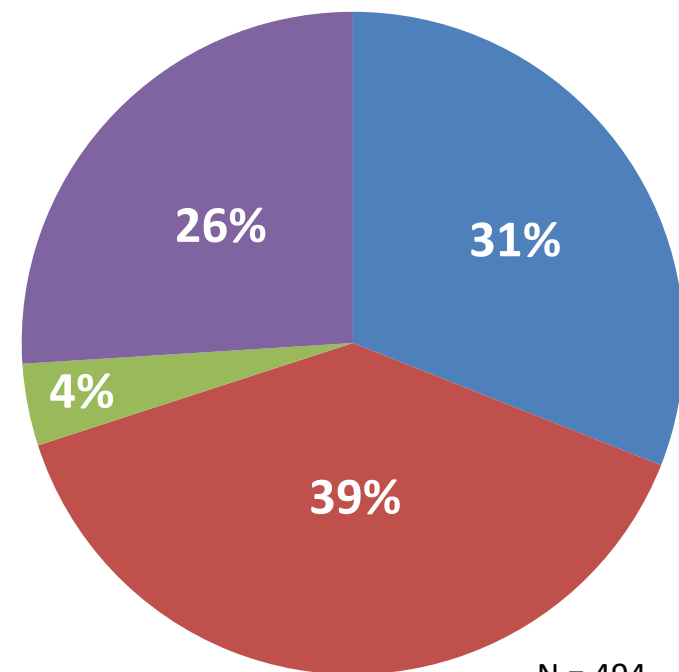


How has the current situation affected your energy bills?

Overall Results



Those with Kids Schooling at Home



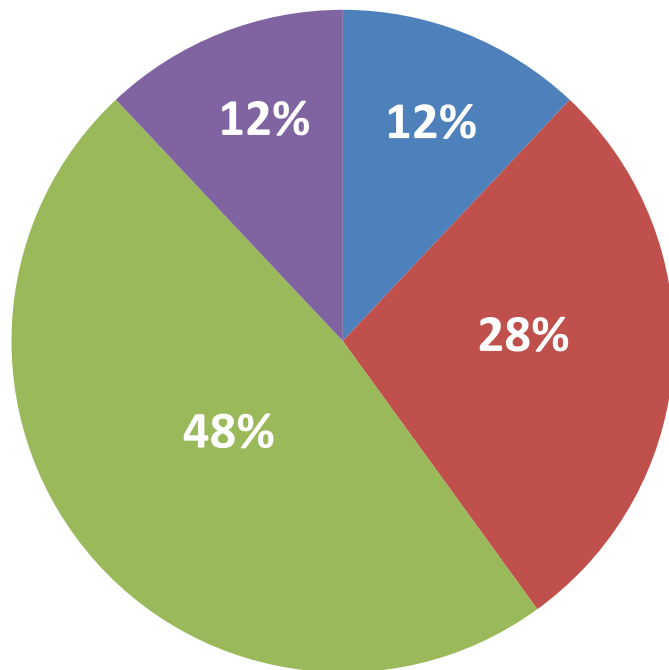
N = 494

Statistical margin of error +/- 2.3%

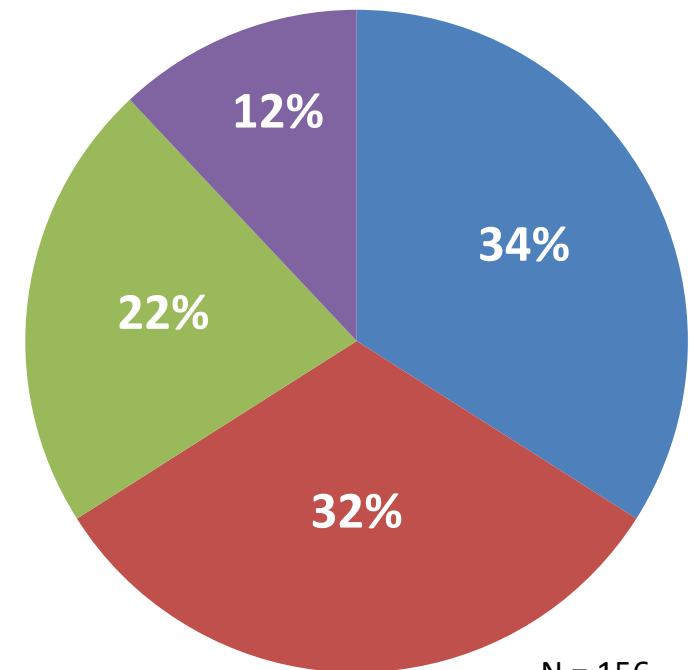
How do you feel about your energy bills as a result of the current situation?

Overall Results

- Very concerned
- Somewhat concerned
- Not concerned
- Don't know/
don't pay attention



Those Who Have Lost Their Job

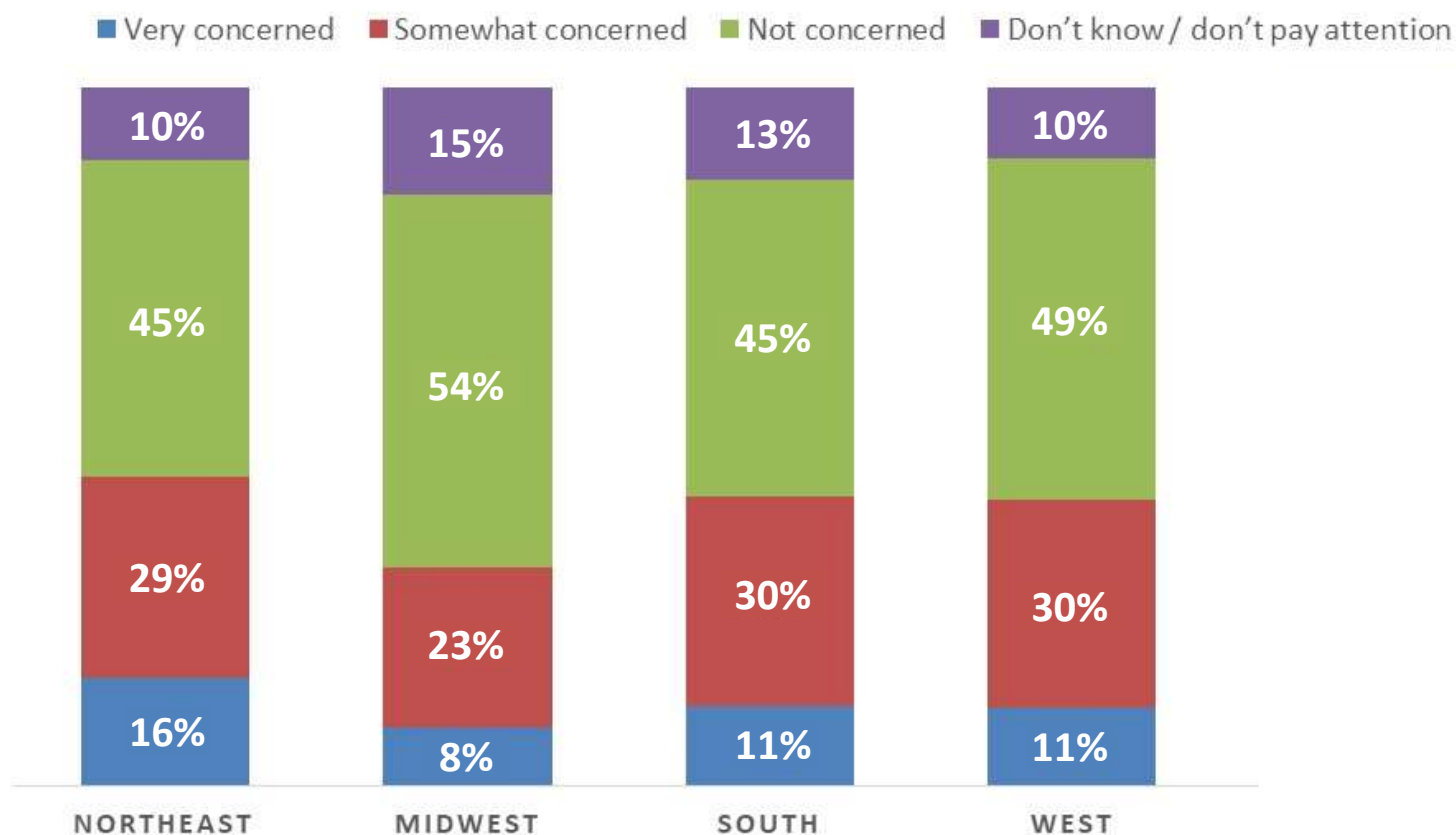


N = 156

Statistical margin of error +/- 2.3%

How do you feel about your energy bills as a result of the current situation?

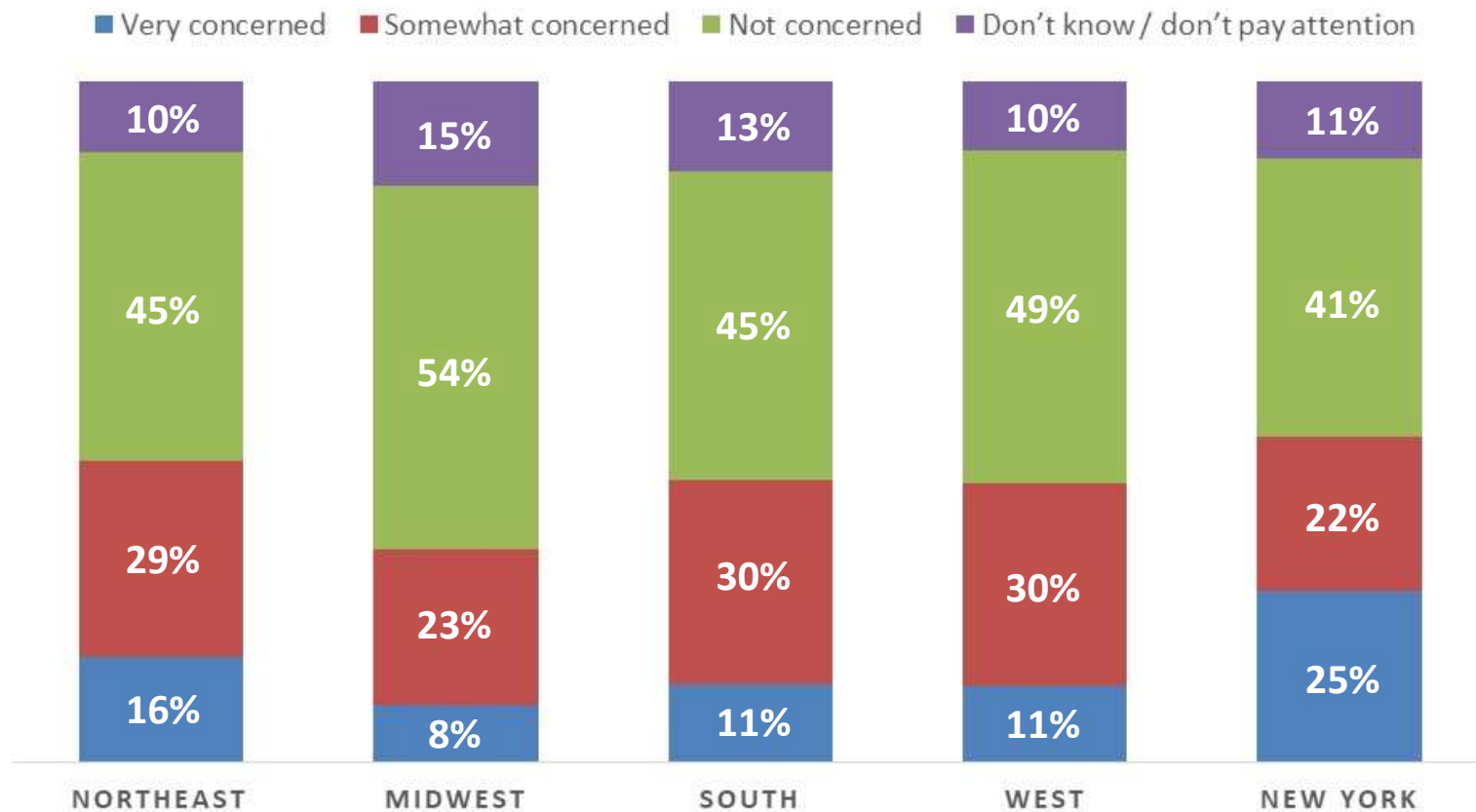
HIGHER CONCERN IN NORTHEAST



Statistical margin
of error +/- 2.3%

How do you feel about your energy bills as a result of the current situation?

HIGHER CONCERN IN NORTHEAST, ESPECIALLY NEW YORK

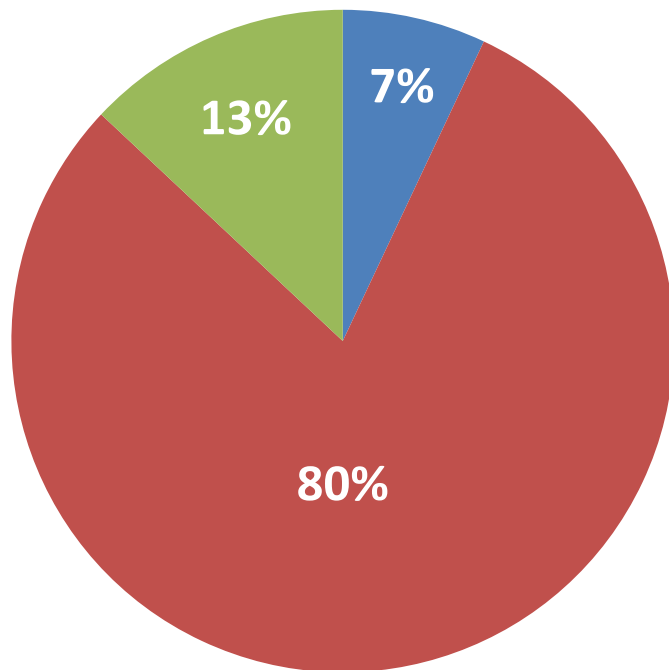


Statistical margin
of error +/- 2.3%

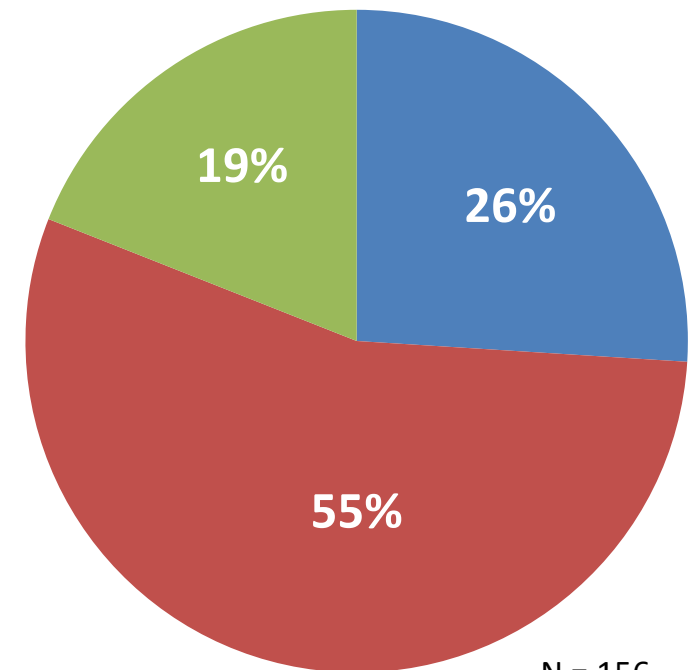
Have you skipped, or do you intend to skip, an electric or gas bill payment during this crisis?

Overall Results

■ Yes
■ No
■ I don't know



Those Who Have Lost Their Job



N = 156

Statistical margin of error +/- 2.3%

What changes have you noticed in your home energy use as a result of COVID-19?

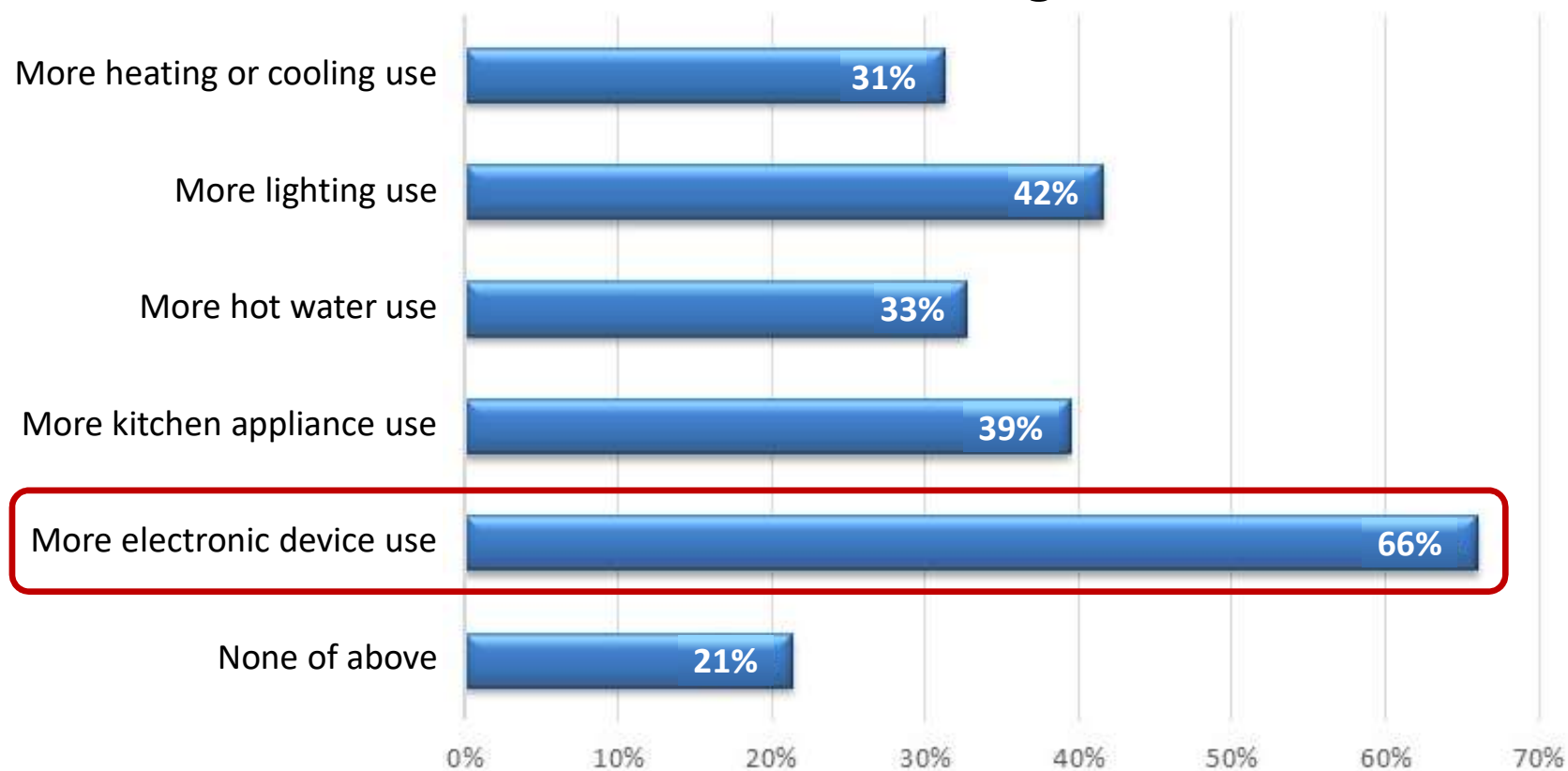
Overall Results



Statistical margin of error +/- 2.3%

What changes have you noticed in your home energy use as a result of COVID-19?

Those with Kids Schooling at Home

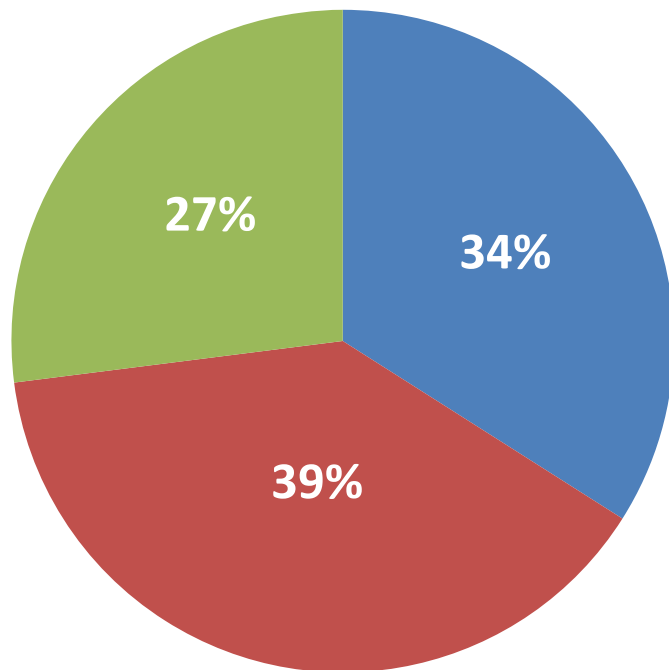


N = 494

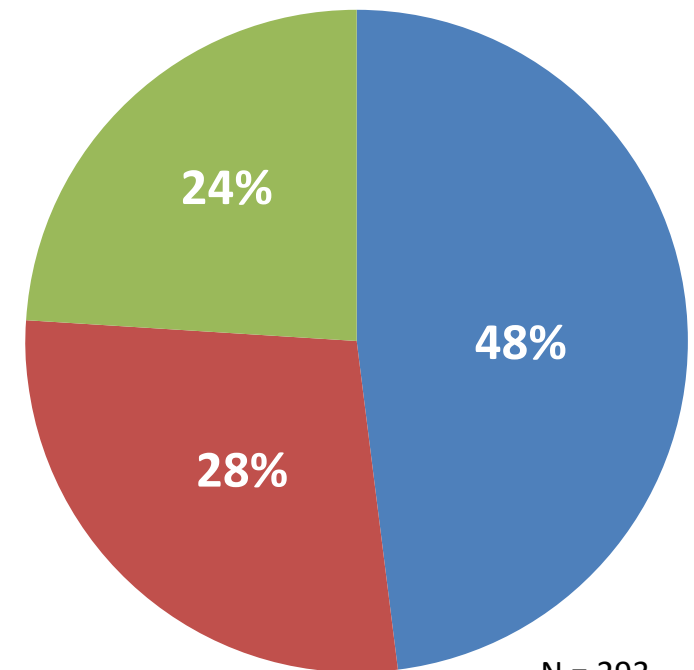
Are savings from other expenses offsetting any increases in your energy bills?

Overall Results

■ Yes
■ No
■ I'm not sure



Those Who Now Work from Home

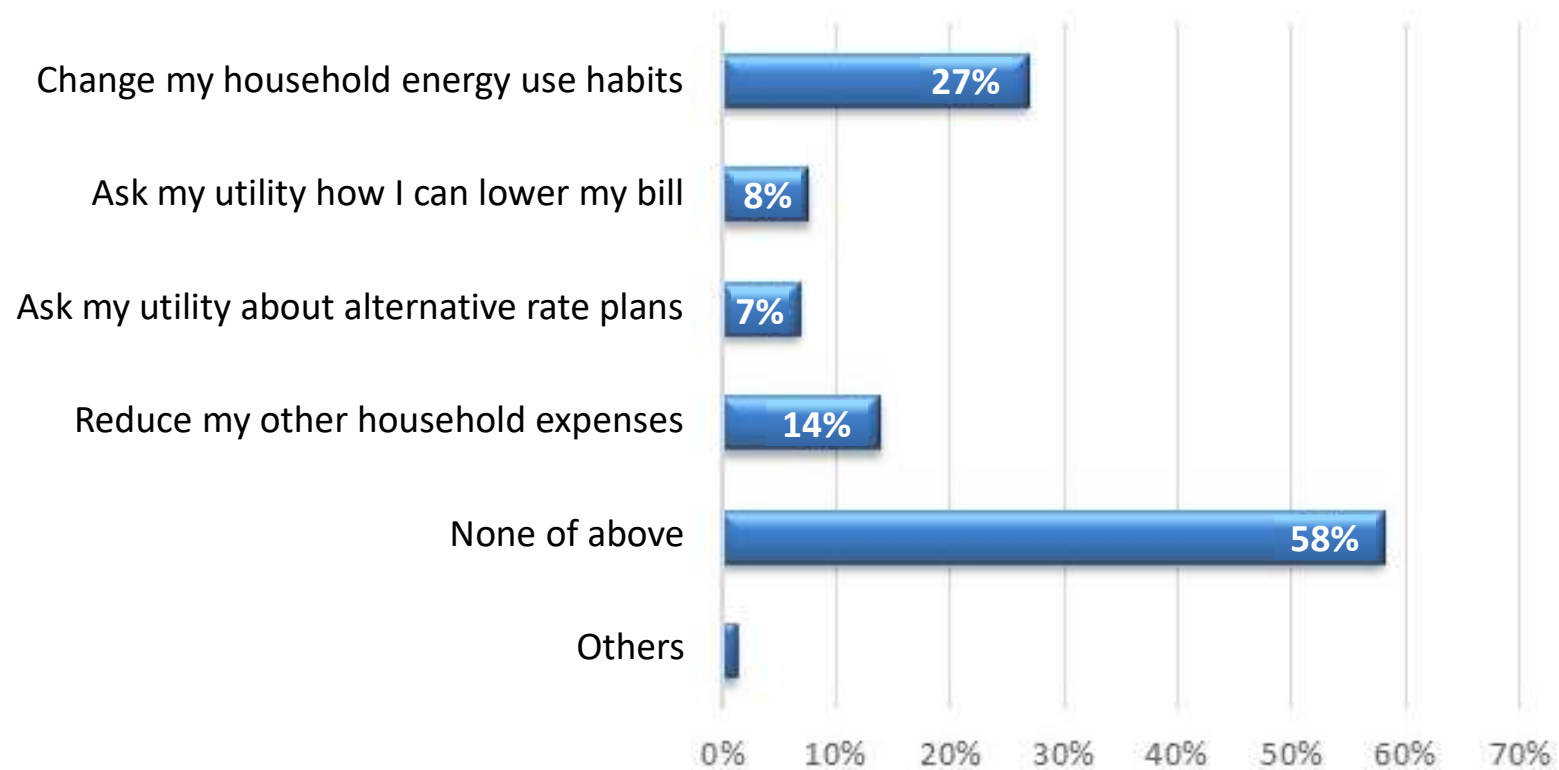


N = 293

Statistical margin of error +/- 2.3%

Does the current crisis make you more likely to take the following actions related to your energy use?

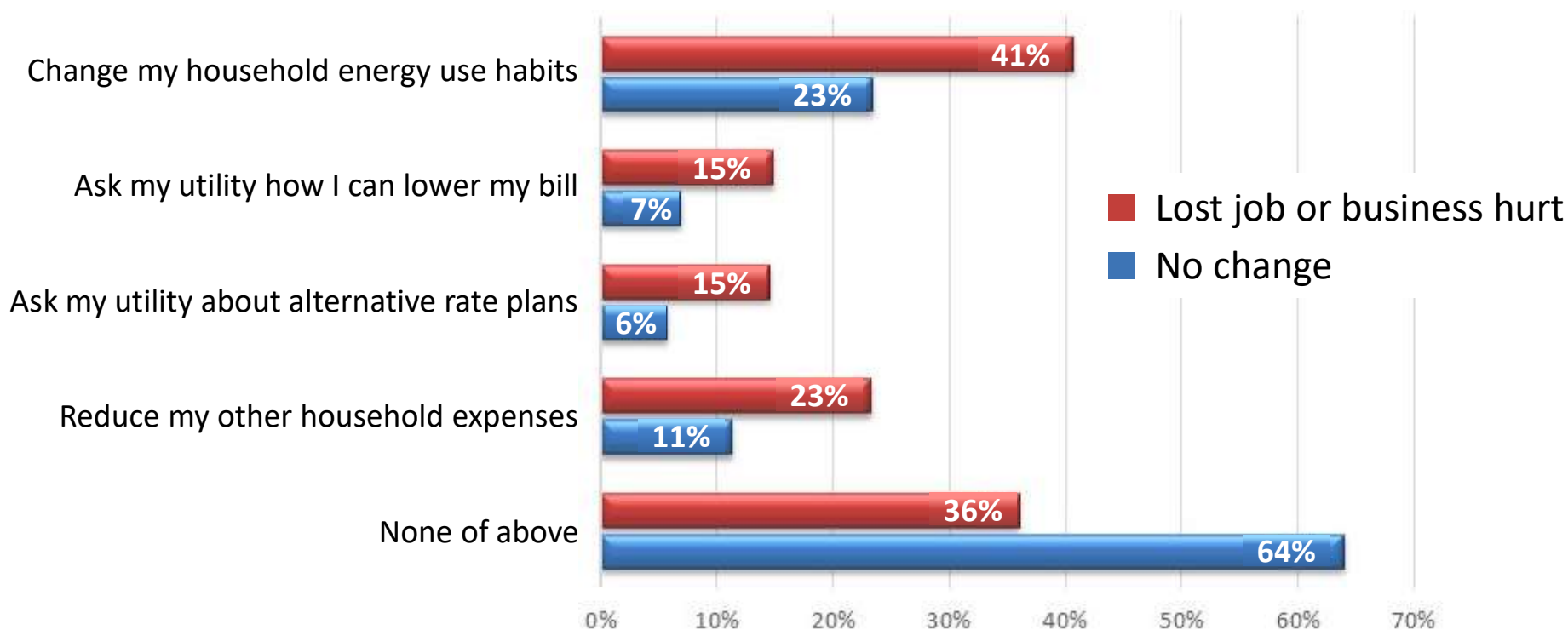
Overall Results



Statistical margin of error +/- 2.3%

Does the current crisis make you more likely to take the following actions related to your energy use?

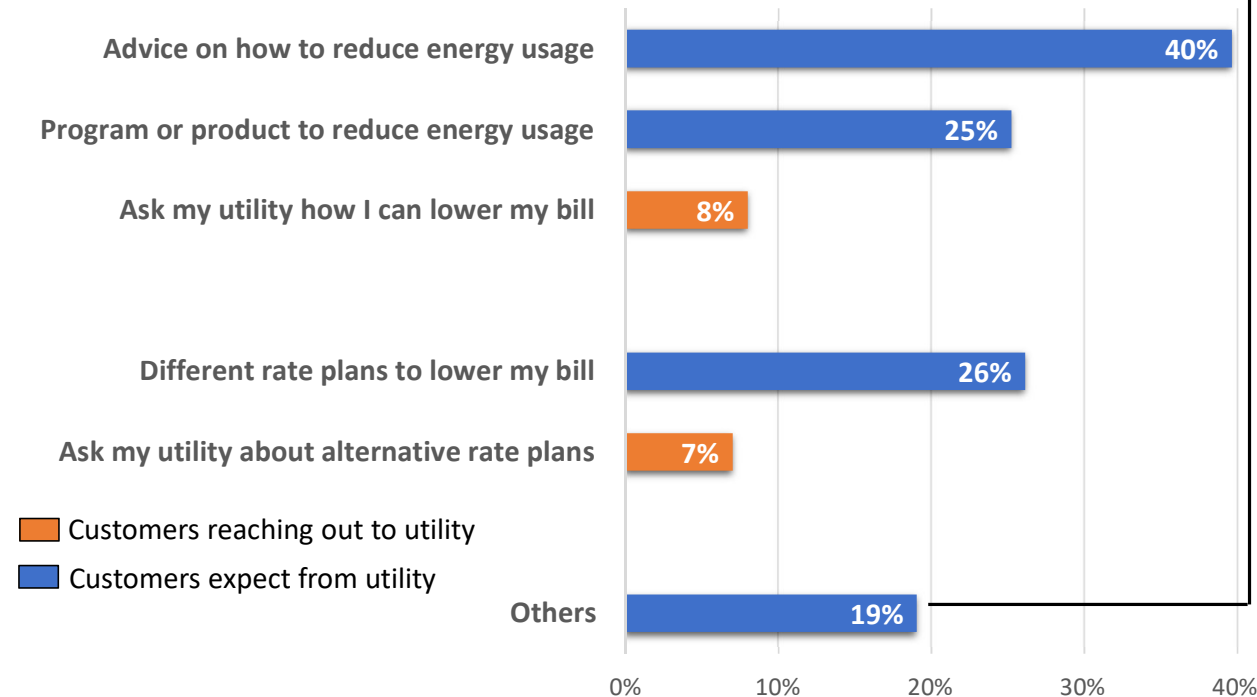
Results Segmented by Impact of COVID-19 on Employment Status



Statistical margin of error +/- 2.3%

What actions do you expect your electric utility to take?

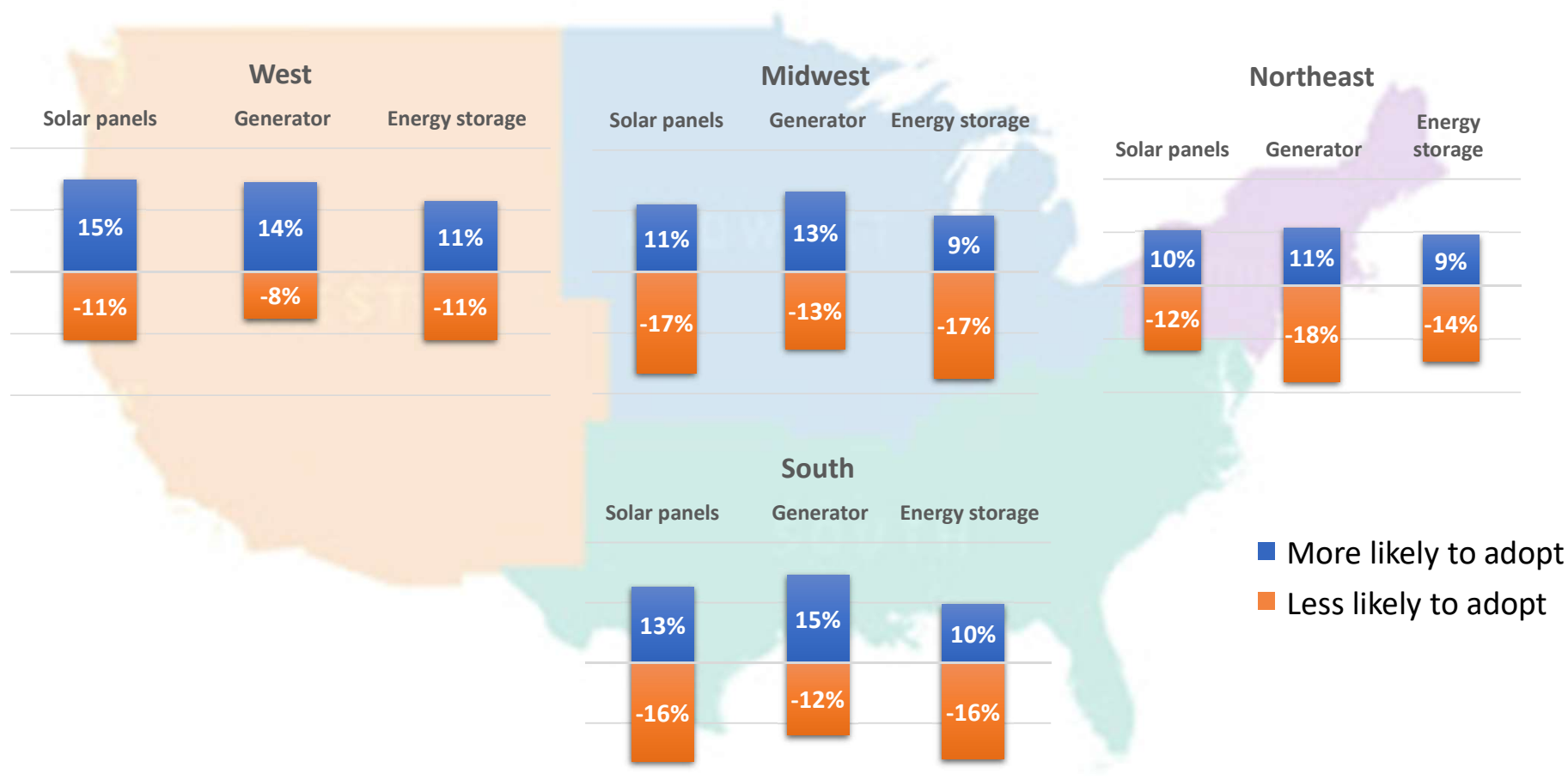
- **Few customers are proactively asking their utility for help** to reduce their energy use and bills; however
- **More customers still expect their utility to help** by providing advice, programs, or rate plans to reduce their energy bills



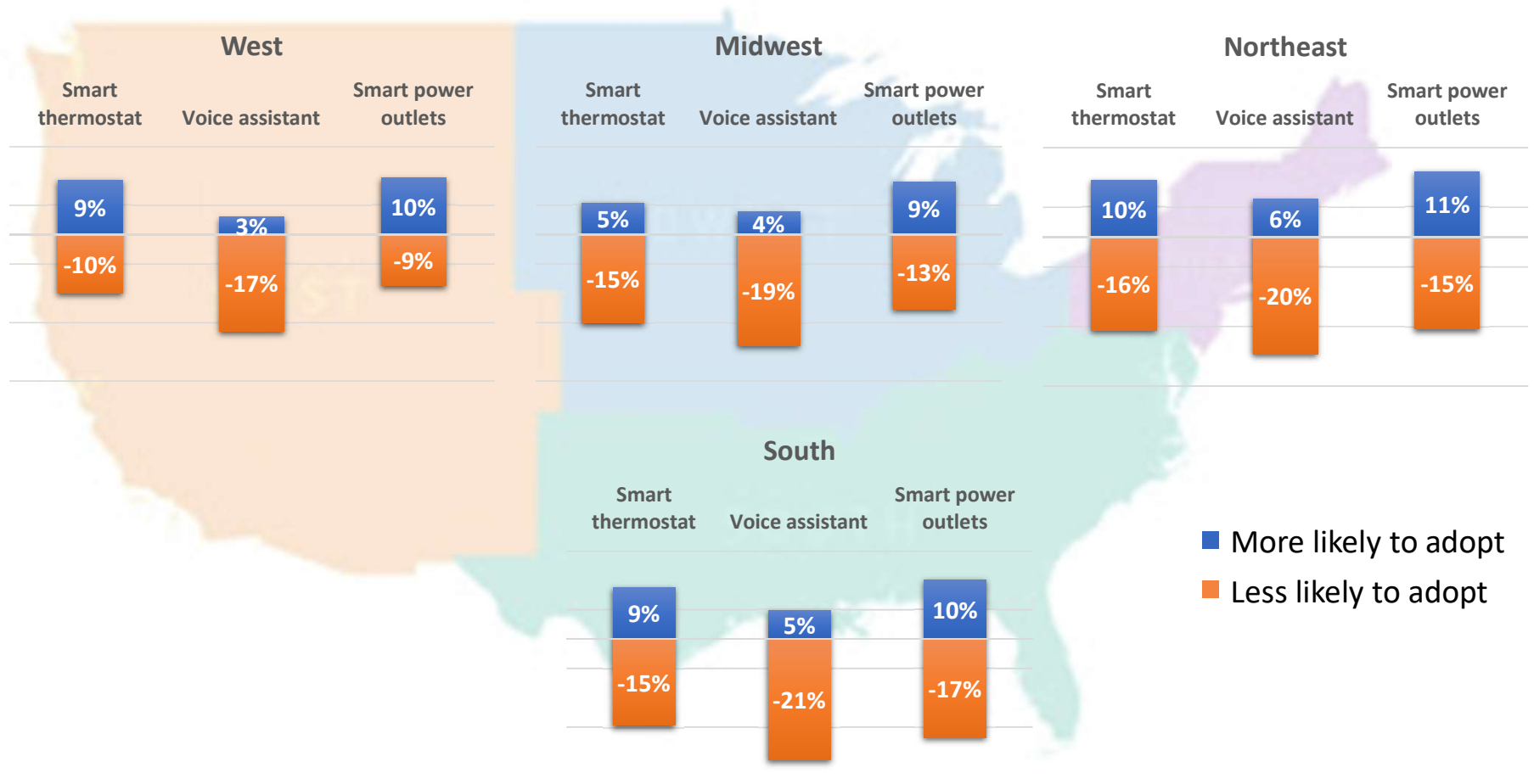
“Other” Explained	
No Need	None “Nothing now... might change if my job status changes” Utilities included in my rent
Actions Expected	Keep the electricity flowing Reduce rates for those in need “Waive late fees” Give me extra time to pay bill Provide a credit on my bill
Negatives	Expect utility to raise prices “Utility won’t do anything” Utility hasn’t contacted me

***“Does the current crisis make you more likely or less likely
to purchase any of the following within this year?”***
Results by U.S. census regions

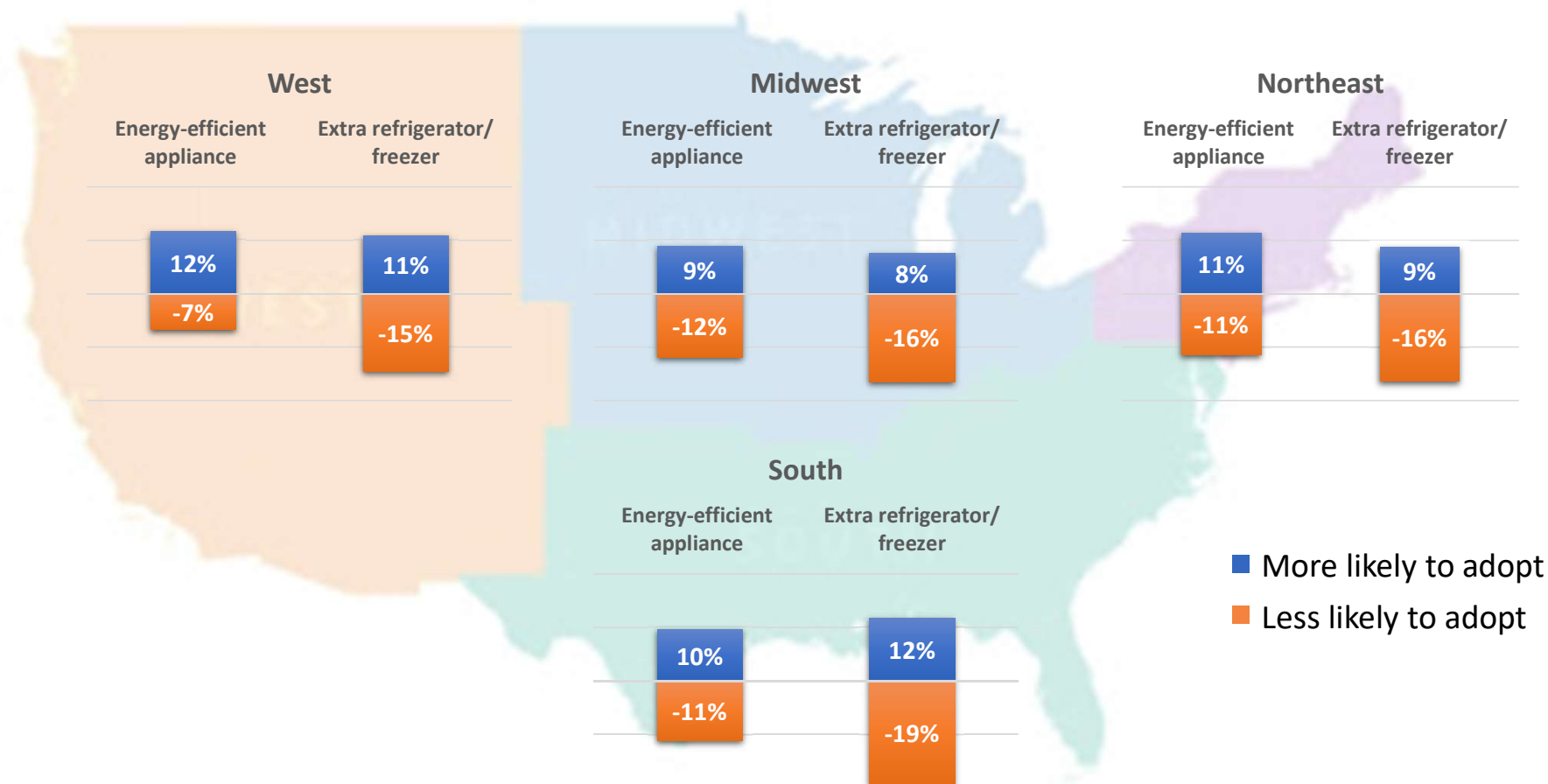
Power Generation & Storage



Smart Devices

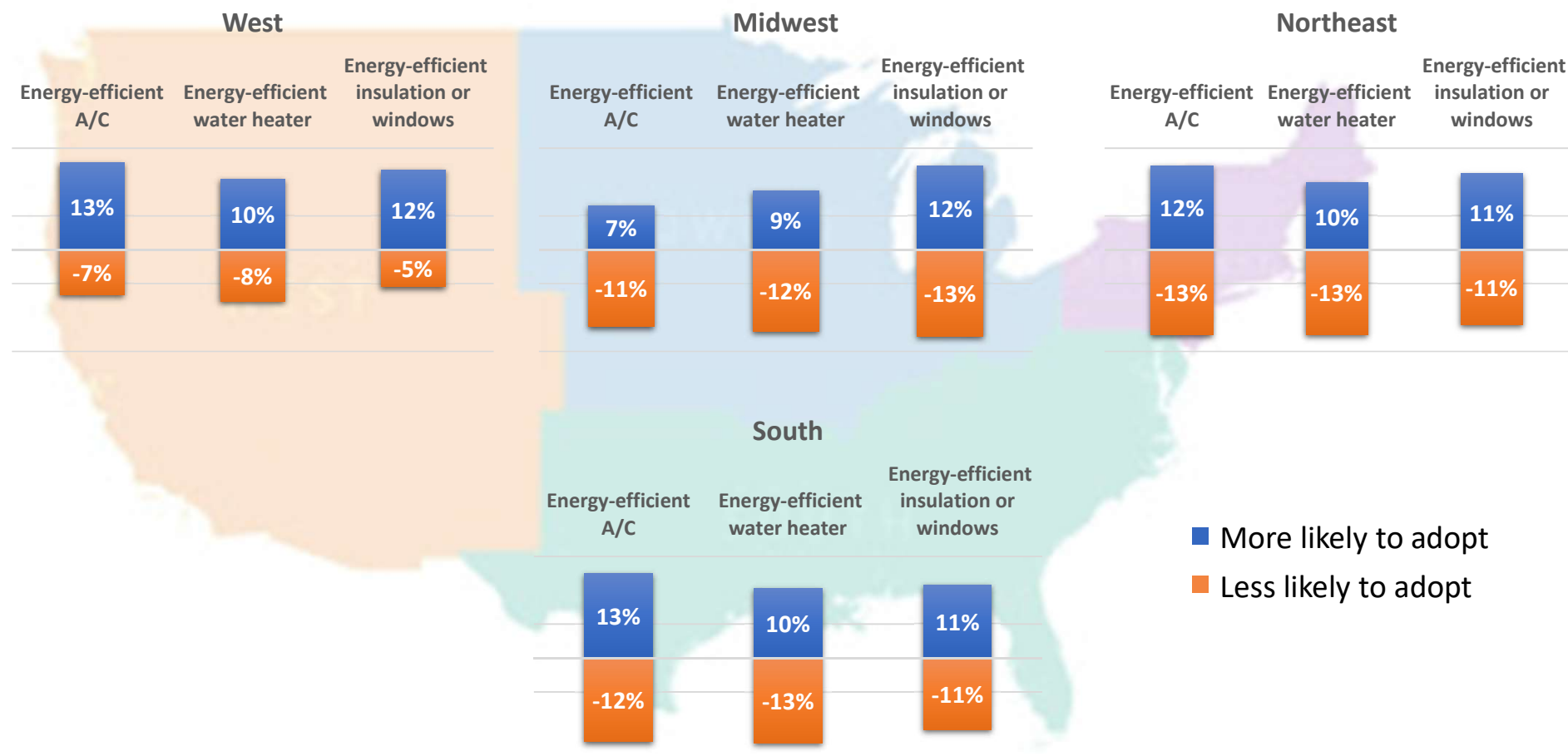


Home Appliances

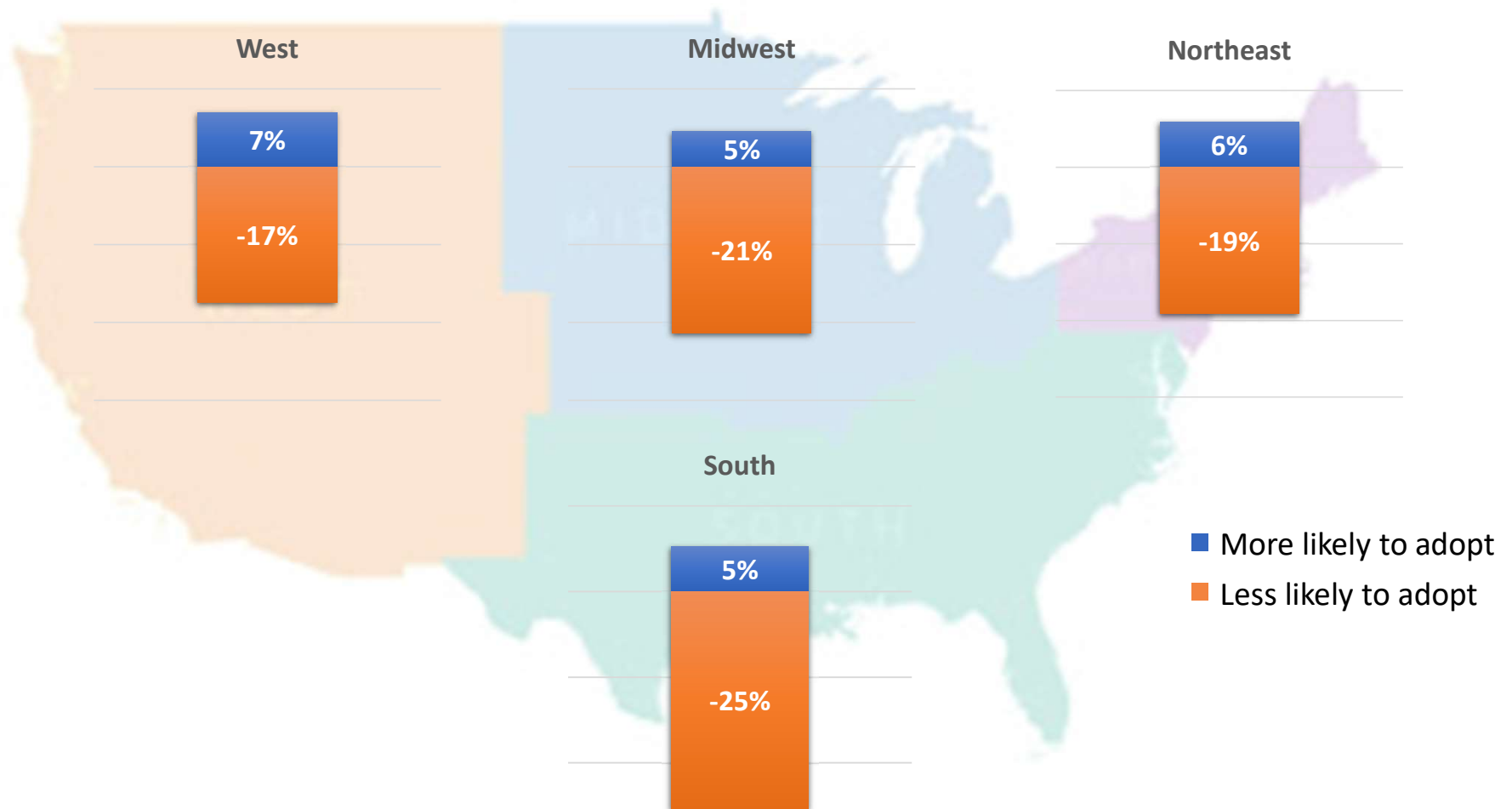


■ More likely to adopt
■ Less likely to adopt

Energy-efficient Upgrades

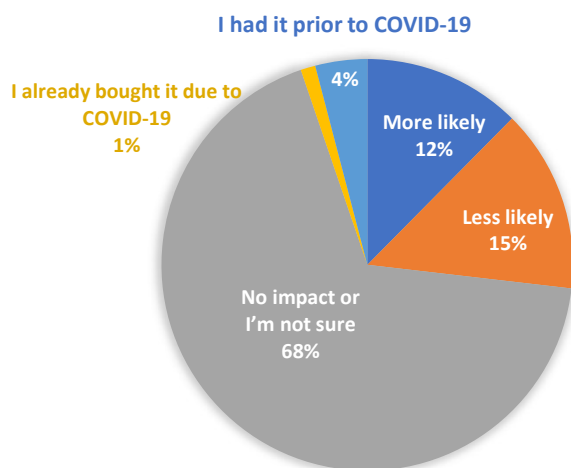


Electric Vehicles

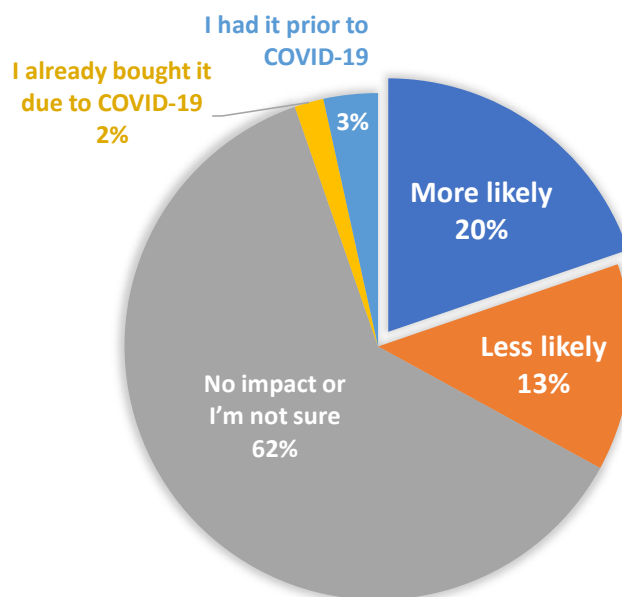


COVID-19 spurs greatest uptick in solar panel interest among 30-44 age bracket; least among 65+ age bracket

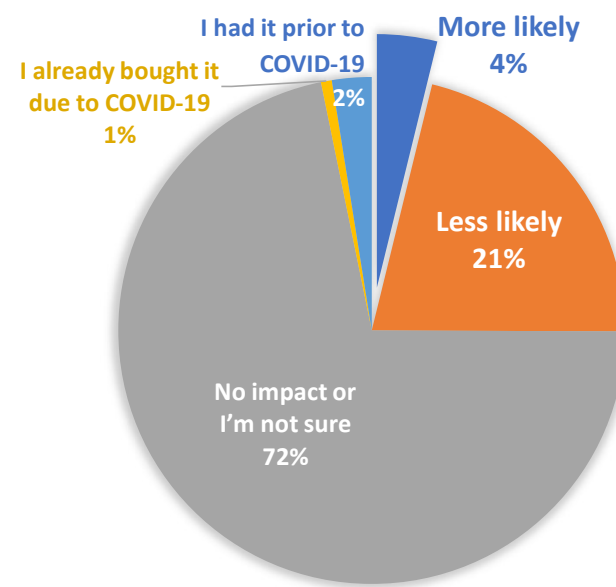
All Respondents



30-44 Age Bracket



65+ Age Bracket



Similar age-segment trend for COVID-19 impact on interest in other technologies

Together...Shaping the Future of Electricity



Announcement of Periodic Review: Moody's announces completion of a periodic review of ratings of Philadelphia (City of) PA Gas Works

13 Feb 2020

New York, February 13, 2020 -- Moody's Investors Service ("Moody's") has completed a periodic review of the ratings of Philadelphia (City of) PA Gas Works and other ratings that are associated with the same analytical unit. The review was conducted through a portfolio review in which Moody's reassessed the appropriateness of the ratings in the context of the relevant principal methodology(ies), recent developments, and a comparison of the financial and operating profile to similarly rated peers. The review did not involve a rating committee. Since 1 January 2019, Moody's practice has been to issue a press release following each periodic review to announce its completion.

This publication does not announce a credit rating action and is not an indication of whether or not a credit rating action is likely in the near future. Credit ratings and outlook/review status cannot be changed in a portfolio review and hence are not impacted by this announcement. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moodys.com for the most updated credit rating action information and rating history.

Key rating considerations are summarized below.

Philadelphia (City of) Gas Works' ("PGW") A3 senior lien revenue bond rating reflects a history of credit supportive rate decisions and sound operational and cost management that supports a more predictable and strengthened financial and operating profile. The stabilized financial profile stems from PGW's state-regulated rate increases along with the utility's decision not to finance, construct or take any volume risk exposure related to the LNG expansion project. Current rates are sufficient to not only adequately cover annual debt service but also provide excess cash flow to continue to increase the cash funded share of capital expenditures.

This document summarizes Moody's view as of the publication date and will not be updated until the next periodic review announcement, which will incorporate material changes in credit circumstances (if any) during the intervening period.

The principal methodology used for this review was US Municipal Utility Revenue Debt published in October 2017. Please see the Rating Methodologies page on www.moodys.com for a copy of this methodology.

This announcement applies only to EU rated and EU endorsed ratings. Non EU rated and non EU endorsed ratings may be referenced above to the extent necessary, if they are part of the same analytical unit.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moodys.com for the most updated credit rating action information and rating history.

John Medina
Lead Analyst
Project Finance
Moody's Investors Service, Inc.
7 World Trade Center
250 Greenwich Street
New York 10007
US
JOURNALISTS: 1 212 553 0376
Client Service: 1 212 553 1653

Kurt Krummenacker
MANAGING DIRECTOR
Project Finance
JOURNALISTS: 1 212 553 0376
Client Service: 1 212 553 1653

Releasing Office:
Moody's Investors Service, Inc.
250 Greenwich Street
New York, NY 10007
U.S.A
JOURNALISTS: 1 212 553 0376
Client Service: 1 212 553 1653



© 2020 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND/OR ITS CREDIT RATINGS AFFILIATES ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MATERIALS, PRODUCTS, SERVICES AND INFORMATION PUBLISHED BY MOODY'S (COLLECTIVELY, "PUBLICATIONS") MAY INCLUDE SUCH CURRENT OPINIONS. MOODY'S INVESTORS SERVICE DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT OR IMPAIRMENT. SEE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S INVESTORS SERVICE CREDIT RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS, NON-CREDIT ASSESSMENTS ("ASSESSMENTS"), AND OTHER OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. AND/OR ITS AFFILIATES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS, ASSESSMENTS AND OTHER OPINIONS AND PUBLISHES ITS PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS, AND PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS OR PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM

BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing its Publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY CREDIT RATING, ASSESSMENT, OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any credit rating, agreed to pay to Moody's Investors Service, Inc. for credit ratings opinions and services rendered by it fees ranging from \$1,000 to approximately \$2,700,000. MCO and Moody's investors Service also maintain policies and procedures to address the independence of Moody's Investors Service credit ratings and credit rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold credit ratings from Moody's Investors Service and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moodys.com under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors.

Additional terms for Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJKK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment

under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any credit rating, agreed to pay to MJKK or MSFJ (as applicable) for credit ratings opinions and services rendered by it fees ranging from JPY125,000 to approximately JPY250,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission

v.

Philadelphia Gas Works

:
:
:
:
:

Docket No. R-2020-3017206

VERIFICATION

I, Scott J. Rubin, hereby state that the facts above set forth in my Direct Testimony, OCA Statement No. 1, are true and correct and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).

DATED: June 15, 2020
*289878

Signature:



Scott J. Rubin

Consultant Address: 333 Oak Lane
Bloomsburg, PA 17815