

Energy and Water Utility Billing Rules, Standards, and Practices: A Survey of the State of the Art and Ideas about Future Directions

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- Tom Stanton and Kathryn Kline

Executive Summary

Utility bills are a universal form of regular communications between utilities and their customers. Bills are, of course, the primary means by which utilities report usage data to consumers and remind consumers of the essential information about how much is owed and when. In addition, though, depending on the many different interests held by utilities, their regulators, consumers of various stripes, and society in general, bills and bill inserts can and often do provide much more information. A few of the major examples include: utility rates and billing determinants; current usage compared to previous usage or sometimes compared to other similar consumers; progress reports toward meeting budgets or achieving greater efficiency in utility consumption; where to turn for answers to questions and education about the bills themselves or utility usage in general; and information about available financial assistance and other kinds of customer service programs.

The Indiana Utility Regulatory Commission (IURC) held a state-wide *Indiana Billing Symposium* in November 2015 for the purposes of examining billing practices and related issues for the state's electric, natural gas, water, and wastewater utilities. The *Indiana Billing Symposium* invited participation from all of these utilities in the state, whether or not regulated by the IURC (Kline and Stanton 2016).

In support of and informed by the Indiana project, the authors completed this report about state utility billing rules and practices and related customer communications. The major focus of this work is exploring possible linkages among the billing rules and practices, related customer communications and education materials provided by both utilities and commissions, and consumer inquiries and complaints that are directed towards both utilities and commissions. The major question addressed is whether and how the communications might be improved so that complaints might be avoided.

Utility billing systems and related communications were the subject of many studies in the past, both because of the potential for high-quality feedback to assist with efficiency and conservation goals and because some states restructured some utilities to allow competitive choice of providers for some services. In addition, several state legislatures have prescribed certain specific charges and directed how those charges shall be reflected on consumer bills. These factors are still affecting billing systems today, but so are new or emerging issues such as electronic billing and payment options, and new, more detailed cost and usage data available from advanced metering information (AMI) systems. And, of course AMI infrastructure is just one element of new possibilities arising from dozens of fast-emerging, enabling technologies related to sensing, monitoring, communicating, and controlling utility facilities and consumer usage of appliances and utility services that are in development, with some already starting to be offered by utilities and competitive suppliers. Much of the current focus is on electric utilities, but similar issues also apply to the natural gas, water, and wastewater industries. This report does not address telecommunications providers but does explore rules for all regulated energy and water utilities.

This research relies on a review of literature and information gathered from state utility regulatory commissions, consumer advocates, and utilities, to develop a picture of the current

status of and near-term goals and objectives for utility billing systems. It summarizes current thinking about utility bills from all over the country, identifying the many important goals and objectives for utility bills and related communications, from the perspectives of utilities, utility regulators, and consumer groups and their representatives. It reviews how current state billing rules reflect those goals and objectives. It identifies over a dozen major categories of information that are commonly covered by state utility billing rules and incorporated into billing and other related customer communications and provides readers with ready access to resources needed to review the approaches used by different states and utilities.

This work is descriptive, not prescriptive: The authors are not recommending any particular approaches towards billing rules and related communications; instead, the goal is to summarize current approaches and identify topics for consideration in the near future.

Part I reviews the genesis of this project and provides an introduction to the topic. Included are references to more than a half-dozen current state utility regulatory commission dockets that are investigating billing issues or complaints.

Part II reviews the methods used for this work, which include a literature review, a brief email survey of state public utility regulatory commissions, analysis of complaints data collected from almost half of the country's state commissions, a content review of billing rules from all states, a review of sample utility bills and related customer information from both utilities and commissions, and observations from the *Indiana Billing Symposium*.

Part III presents the findings from the information review. It includes a discussion of the purposes and objectives for billing and customer care systems held by all major interested parties: commissions, utilities, different types of consumers and consumer advocacy groups, and society as a whole. The goals and objectives overlap in important ways, but they are not identical. The content analysis of state utility billing rules identifies important similarities and differences among the states. The authors identify some topics that are practically universal, included in nearly all state rules, and other topics that are unique or covered in only a small number of state rules. Those are mentioned but not reviewed. Sixteen different topics that are included in many state rules are reviewed and discussed; the authors believe those topics are most relevant to the issues that might turn into consumer complaints. Those topics are listed in Table E-1, which lists the topics and shows how many state rules include and explain how some states are implementing that topic. The Appendix provides an index of state public utility regulatory commissions' administrative rules.

Part III also includes the findings from a review of complaints data obtained from 23 state utility regulatory commissions. The complaints data is analyzed to explore differences by utility industry (electric, natural gas, water and wastewater) and by topic areas such as billing, rates, service deposits, special payment arrangements, service disconnections or terminations, and quality of service. The available data shows electric industry complaints leading the other industries in all but one of 19 of the states where this data was available. For nine of 13 states with data available by complaint type, complaints related to billing and rates issues are a primary topic. Data analysis is made difficult because there is little consistency in the terms states use to

categorize complaints. For example, for what Table E-1 refers to as "Denial, disconnection," different states with complaints data analyzed for this report use categories such as cancellation, cancellation issue, disconnect issue, disconnection, discontinuance, and terminations.

Table E-1:	Summary of Major	Topics Addressed in Sta	ite Rules and Associated
	Practices for Utility	Billing	

State	Minimum contents	Service Deposits	Estimated bills	Master metering	Historical usage	Dispute resolution	Third-party agents	Levelized billing	Payment methods	Payment assistance	Partial payments	Special payment plans	Denial, disconnection	Weather-related shutoff	Electronic billing	Customer data privacy
Number of states with rule on topic:	46	47	45	39	26	44	30	34	13	30	21	41	46	43	15	18

Part IV provides some recommendations for future studies. Those recommendations focus on five subjects: (1) Coordinating and deepening content analysis research about commission and utility complaints, both informal and formal; (2) Researching consumer interests in a much more detailed way; (3) Identifying possible future roles for utilities and assessing which of those might best be served by competitive markets rather than monopoly providers; (4) Revisiting the chronic issue of low-income protections and assistance programs; and (5) Exploring crosscutting issues and the possibilities for coordinated improvements in billing and customer care communications for all energy and water utilities.

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I. Introduction and Statement of Purpose

Utility bills are a universal form of regular communications between public utility companies and their customers. Bills are, of course, the primary means by which utilities report usage data to consumers and provide them with the essential information, how much they owe and when. In addition, though, depending on the many different interests held by utilities, their regulators, society in general, and different types of consumers, bills and accompanying bill inserts can and often do provide much more information. In this study, the authors review billing rules, standards, and practices from utilities throughout the U.S. to explore and report on similarities and differences among the states in gas, electric, water and wastewater utility bills.

This survey report looks at the past, present, and future of utility bills. Looking to the past, the report reviews literature about utility bills, particularly electric utilities, but also to a lesser extent about natural gas and water utilities, to understand the genesis of today's utility bills and how different major trends, over time, have helped shape billing forms and contents. Essentially, this review shows that utility bills and associated communications have evolved gradually, in response to different events and pressures: a piecemeal progression occurred over time, resulting in bills that are agglomerations of information. Each new piece of content was added incrementally, to meet changing demands, with few if any of the preceding content elements ever being removed. The literature shows three major waves of changes:

- (1) In the 1970s and 1980s a prominent trend began, instigated in large part by oil crises and nuclear cost overruns. Utilities were asked to provide more and better information, to help consumers manage their use of utility services, and help them achieve greater conservation (Kempton and Layne 1994).
- (2) In the 1990s, another trend towards advanced product labeling was pursued for the electricity industry. This advance called for a new kind of product disclosure, about the sources of electric generation used to serve customers and sometimes associated air pollution. That effort was based on the concept that providing better information might cause beneficial changes in both energy production and consumption. The idea was based in part on the example of food labels, which researchers thought were helping broadly to change both consumer and producer behaviors towards food products and ingredients (NCCEI 1999).
- Now, another wave of major changes is underway, driven by trends in both:
 (a) increasing customer engagement, especially through the use of social media; and, (b) grid modernization, with its growing opportunities for two-way communications between utilities and consumers and increasing consumer choices for both regulated and competitive utility services.

For the present, the report considers the views of utilities, their regulators, and different groups of consumers and product and service suppliers. That information is gleaned from literature, from analysis of consumer-complaints data obtained from about half of all state utility regulatory commissions, and from the information shared by approximately 75 participants in the 2015 *Indiana Billing Symposium* held by the Indiana Utility Regulatory Commission (IURC).

Additional information is gathered from state public utility regulatory commissions, including recently decided and currently pending dockets and other communications.¹ These few highlights from state commissions, for example, point out why this subject is timely:

- Arizona Public Service Company has filed a case (Docket E-01345A-15-0386) seeking revisions to its tariffs and services "necessitated by new customer information and billing system." APS says (in its 10 November 2015 *Application*) that it is working to replace its current system, placed into service in the mid-1990s, with a new, web-based system designed by Oracle.
- The Connecticut Public Utilities Regulatory Authority (CT-PURA) has an ongoing Docket No. 14-07-19, regarding the "redesign of the residential electric billing format." A January 21, 2015 Decision in that Docket (p. 2) requires that electric distribution companies provide "specific information on the first page of each residential customer's electric bill." The purpose is to "redesign... residential electric billing formats to enable customers to easily compare pricing policies and charges among electric suppliers."
- The Public Utilities Commission of Ohio (PUCO 2015) is currently investigating "the proper regulatory framework that should be applied to submetering."
- The Pennsylvania Public Utilities Commission (PA-PUC) recently issued press releases (PA-PUC 2016 and 2015a) reminding consumers of their options for receiving financial assistance for winter heating bills and discussing PA-PUC efforts to coordinate heating-assistance outreach communications with the state's utilities. Another press release (PA-PUC 2015b) warns consumers of a telephone scam related to utility shut-off procedures, and a fourth (PA-PUC 2015c) was issued at the conclusion of two complaints dockets, where a competitive electricity supplier was fined \$1.8 million, and ordered to refund customers a total of over \$2 million, in cases involving "deceptive marketing and billing practices."
- Water service disconnections for non-payment in Detroit were rebuked by United Nations (UN) representatives as "a violation of the most basic human rights." A UN representative reported "testimonies" citing infrastructure deficiencies, including leakages, as well as the utility's "lack of competence in dealing with errors in billing or requests for assistance... [and] residents were not provided with advance warning before their water was shut off and were left without any possibility for administrative recourse" (UN News Centre 2014a, 2014b).
- Michigan Public Service Commission initiated a hearing (Docket No. U-18002) about Consumers Energy Company's estimated billing practices, citing problems that have "persisted for several years."

¹ Throughout this paper, references to rules and/or dockets include parenthetical citations to the corresponding case or rule.

• At the IURC, two recent cases include issues related to billing and communications. Docket No. 44610, pending resolution, presents a question about the roles and responsibilities of natural gas utilities and customers, for ensuring that the customer has complete information to determine the most advantageous rate available for service. And, a final Order has been issued in Docket No. 44462, which includes many billing and customer care issues, following one utility's acquisition by another company. Among the important issues are: (a) the frequency of meter readings and estimated billings; (b) start-up difficulties with a new billing system; (c) call-center operations and performance measures; and, (d) allocations of partial payments and low-income assistance payments between natural gas and water and wastewater utilities.

Another point of view important to understanding the present situation for utility billing is expressed in an Opower report (2015). Opower's customer survey finds that more than 60 percent of respondents are not fully satisfied with their current utility bill experience. That survey identifies large discrepancies between customer perceptions of what is important to know from their utility bill, versus how adequately their utility is currently addressing those needs. Writ large, Opower observes, those are the information gaps that result in higher utility costs for "operations, revenue collections, and truck rolls" (Opower 2015, p. 1). And, it is understandable that spillover effects from information gaps result in large numbers of calls to public utility and regulatory utility commission customer service centers, as well (see Part III.F). As Opower explains (2015, p. 3), the vitally important, forward-looking question for utility billing is, "How can utilities provide customers with great experiences that cut costs and boost satisfaction?"

Fishman (2011, p. 8) reviews billing communications for water utilities, and laments, "Our home water bills... provide almost no insight into how much water we use, or how we use it – even if we study them." In comparison, Fishman notes that modern cars give instantaneous feedback about gas mileage, helping drivers who care to better manage their habits to achieve savings. Even for drivers whose behavior does not change, Fishman notes, "It is nonetheless hugely valuable because you are educating people about this resource that they rely on and use every single day." Fishman proposes that bills should: (a) provide daily usage data; (b) provide comparisons to others' usage; and (c) present data that is "colorful and memorable." "If we want people to understand their utility bills, if we want them to use utilities more smartly," Fishman says, "then use the bill to communicate boldly, dramatically, and engagingly."²

Those touchstones could provide inspiration for all interested parties, in considering improvements in utility billing and customer care. By engaging customers through the billing process and providing pertinent information in a timely manner, commissions and utilities have the opportunity to enable customers to engage with their utility usage experience and resolve issues before they escalate into complaints. This approach has the added advantage of utilizing pre-existing billing systems to approach a challenging topic, instead of reinventing the wheel.

Looking towards the future, this research also sketches preliminary thoughts about some major, emerging trends that are influencing current thinking about the roles, forms, and contents

² Authors' personal communications with Charles Fishman, December 17, 2015.

of tomorrow's utility billing and customer communications systems, what is commonly referred to in published literature as "billing and customer care." To be sure, utility companies currently face a broad array of interrelated, potentially disruptive challenges, in the forms of aging infrastructure needing to be replaced soon, gradually tightening environmental regulations, flat or declining loads and load factors, rapidly growing distributed infrastructure alternatives, and changing consumer desires and interests (Stanton 2015, pp. 5-9). Among these important trends is the perceived need for extensive grid modernization, prominently including automated metering infrastructure (AMI), combined with possibilities for new time-differentiated rate designs, emerging two-way communications capabilities between utility-service providers and consumers, and electronic bill presentment. These advances are prompting all kinds of utility service providers, both state-regulated and not, to introduce systems for best managing consumer affairs and education and improving customer relations.

As Gustafson (2015) points out, increasing numbers of customers, particularly the millenials' generation, are comparing and relating their experiences with their utilities to their experiences with other, more "digitally savvy brands." These trends, Gustafson explains, point towards new, rapidly expanding expectations that a utility will simultaneously improve its "processes, systems, and practices" – what is essentially the utility's user interface – while reducing overall operating costs. Gustafson further provides a brief case study of the recent experience of Public Service of New Mexico (PNM), in implementing a round of wide-ranging improvements in its communications and customer care systems. PNM reportedly completed its transition in 18-months, resulting in a broad array of benefits to the company and its customers.

Dozens of companies are already working this general area, representing a broad and growing ecology of: appliance manufacturers; hardware and software companies; communications, controls, metering, sensors, and data analytics companies; and more. Bojanczyk (2013) identifies over 100 vendors engaged in various facets of the home energy management space, with many of those companies partnering directly with utilities to apply new ideas to utility/consumer interfaces (see also Crosby 2015; Smart Grid News 2016; Utility Analytics Institute 2016). An iFactor (2015) review cites major activities on the part of utility companies and partners, for offerings of self-service tools and improved notifications for residential customers including outage communications. In addition, other companies could be positioning themselves to bypass utility companies altogether, by providing their new service offerings directly to consumers (Bojanczyk 2013).

Presently, conspicuous attention to these forces is focused on electric utilities, but they are equally applicable to natural gas and water utilities, albeit not as prominently at this point in time. The major question this research begins to explore is, what are the appropriate roles that billing and related utility customer communications could or should serve, in helping to address these industry challenges? And, what role can customer complaints data analysis play in shaping utilities' understanding of best communication practices for customers?

This report is a preliminary response to these general concerns, prompted by the idea that dealing with any shortcomings in billing and communications through utility and regulatory commission customer service centers is both time consuming and expensive, and not wholly

satisfactory for participants. Thus, a major question this project explores is how to identify improvements that can increase customer understanding and thus reduce customer complaints.

Part II explains the methods used, including a literature review, a brief email survey of state public utility regulatory commissions, analysis of complaints data collected from almost half of the country's state commissions, a content review of billing rules from all states, a review of sample utility bills and related customer information from both utilities and commissions, and observations from a day-long *Indiana Billing Symposium*, convened by the IURC in November 2015 and attended by roughly 75 participants representing 25 organizations. The purpose was to bring together utility billing stakeholders to allow for a deeper understanding of billing practices across the utility industry and provide for open discourse. This *Symposium* was organized into four topical panels over the course of a one-day meeting, with each panel including three or more 10-minute presentations followed by a question-answer session and open discussion. Subjects of the four panels were: (1) consumer research; (2) paper billing; (3) eBilling; and (4) comprehensive customer engagement on billing (see Kline and Stanton 2016).

The literature review briefly covers past, present, and future topics. The future topics are related to grid modernization and capabilities becoming available through the introduction of automated metering infrastructure and two-way communications capabilities between utility service providers and consumers. That list includes remote service shutoffs and startups, electronic billing, and consumer data privacy, already addressed in some state rules, plus potential rules for prepaid utility services, in-home displays, and energy management services.

Part III presents the findings from these information sources. This includes a preliminary exploration of the purposes and objectives for billing and customer care systems held by all major interested parties: commissions, utilities, different types of consumers and consumer advocacy groups, and society as a whole. Next, a content analysis of state utility billing rules and related communications identifies important similarities and differences, based on topics often included in the rules, and an initial review of how different states approach those topics. That discussion includes reviews of some examples of how the different state rules translate into different billing formats and communications to customers from both commissions and utilities. The purpose is not to recommend any specific policies regarding the topics considered; rather, it is simply to observe the interrelationships between the topics and communications mechanisms employed to educate consumers and reduce complaints, with the goal of better understanding current and emerging practices in utility billing and customer care communications.

Part III also includes the findings from a survey of complaints data obtained from 23 state utility regulatory commissions. This includes analysis of common types of complaints, and an exploration of which industries receive the highest number of complaints. Examination of utility complaints data provides insight into similarities and differences in how data is collected and sorted. Finally, the concept of key events is introduced, and the effect of such events on complaints volume over time is considered.

Part IV includes conclusions, and provides some recommendations for future studies.

II. Methods

This report draws from five major sources: (1) published literature about billing systems and related consumer education and customer service issues; (2) state rules about billing and related communications; (3) complaints data and lists of related dockets collected from 23 state commissions; (4) sample utility bills and consumer education documents obtained from public utility and state commission websites; and (5) information from the *Indiana Billing Symposium*.

A. Literature Review

The literature review broadly includes studies and reports that are explicitly related to public utility company concerns, but also explores literature for all kinds of businesses that provide customer-focused billings, which raise similar issues about the provision of consumer education and customer service. Literature searches were completed using broad terms, such as "utility bill," and watching current industry publications and reports for any related information. Additional literature searching was conducted, looking for publications about more specific topics identified in the additional survey work.

B. Survey of Utility Regulatory Commissions

The authors employed a multi-step survey process to gather basic information from public utility commissions. First, a brief information request (see Figure 1) was emailed directly to the Chairperson or a Commissioner at each state utility commission.

Figure 1: Initial Survey Instrument
QUESTIONS
[1] Who is the best contact person in your agency who can provide information on utility billing practices in your state, for electric, natural gas, water, and wastewater utilities (as applicable)? Please provide their contact information.
[2] Does your Commission have rules/regulations for billing practices? If yes, please provide the formal citation to the rules and a link where the rules/regulations can be reviewed online.
[3] Are there any specific dockets in your agency that contain important issues related to billing? If yes, please list docket numbers for us and point us to where the docket files can be reviewed online.
[4] Does your agency collect data regarding consumer complaints and inquiries? If yes, do you count the numbers or percentage of incoming complaints and inquiries about billing issues? If there are publicly available reports about this information, please share the most recent report with us or give us the link where we can find it online.

Follow-up emails were sent 10 days after the initial email request, to state commission contacts who had not yet responded to the first email. Throughout the entire information-gathering process, the authors provided clarifications about the information requests, by phone or email or both, to all respondents who asked. The initial request and follow-up emails yielded 45 of 51 responses.³ Twenty-nine of the responses provided answers to all four of the survey questions, including 12 states that initially provided existing public reports of complaints data, and eight additional states that offered to retrieve complaints data in response to a more specific request. The other 14 states provided partial answers. For the six states that did not respond to either the initial request or follow-up email, the authors reviewed state commission websites to search for state rules and complaints data. The authors then reviewed relevant billing rules, eventually finding rules for all states, and developed Table 1, which lists 16 major topics that are frequently included in state rules.

Eight states said in their survey responses that although no public reports of complaints were readily available, data regarding complaints is collected regularly and the state would perform specific queries to generate a report upon receiving a specific request. The data from the dozen publicly available reports was reviewed, and then the eight other states were asked to provide similar data. The authors developed a specific information request, and re-contacted those eight states. Included with that request was a draft of the state's billing rule topics identified for Table 1. These states were asked to provide available complaints data to best match the research needs, review the draft of Table 1 for their state, and respond with any corrections, additions, or omissions, and provide citations for these corrections.

After collecting the responses from those eight states, the researchers requested from the other 43 states reviews of the information shown in Table 1. Twenty-six states responded to that request, and any corrections noted by respondents were verified by the authors and then incorporated into Table 1.

As shown in Figure 1, states were asked to identify pertinent dockets. Several, but by no means all, of those dockets were quickly assessed, to identify the topics being litigated. Information from that review is included in the Introduction, and by topic in Part III.C.

C. Sample Utility Bills

A previous report (Foster and Alschuler 2011) reviewed approximately 100 samples of different utility company bills, to study the contents and format. Those researchers reported finding sample bills on utility websites. In this project, that general technique was replicated, visiting utility websites to review sample bills, to check how specific state rules are being implemented, and incorporating information from those samples into the paper where relevant. In addition, several of the Indiana utility companies provided copies of sample bills prior to or during the *Indiana Billing Symposium*.

³ Throughout this paper, the word "state" is used to refer to the 50 states and the District of Columbia.

D. Indiana Billing Symposium Process

An NRRI team participated in the *Indiana Billing Symposium*. NRRI personnel played a role in facilitating the *Symposium*, in conjunction with IURC staff, then moderated the four panel discussions at the *Symposium*, and compiled a report on that process for the IURC (Kline and Stanton 2016).

The *Symposium* informed this NRRI research paper by helping to identify key issues of concern for utilities and consumer interest groups: The concerns and issues presented by Indiana participants helped guide the content review of state rules and literature review, and provided a guidepost for exploring the goals and objectives for billing and customer care communications that are held by utilities and consumer groups. This research paper, however, is an independent work product, informed by but separate from the *Indiana Billing Symposium*.

III. Findings

A. Introduction

Here, findings are presented from reviews of five major information sources: (1) published literature about billing systems and related consumer education and customer service issues; (2) state rules about billing and related communications; (3) complaints data collected from 23 state commissions and dockets about billing-related subjects from 15 states; (4) sample utility bills and consumer education documents obtained from public utility and state commission websites; and (5) information from the *Indiana Billing Symposium*.

The primary focus of these reviews was to identify opportunities for reducing or eliminating any of the potential problems that can lead to customer complaints and everyone's costs associated with complaints management.

B. Findings from Literature Review

1. Basic description and categorization of literature

Utility bills and related customer communications have been studied for several decades. This project reviewed a small sample of older literature (e.g. Dierdre, Kempton, et al. 1996; Kempton and Layne 1994; Jochen and Holt 2003; NCCEI 1999) and several newer publications.

Much of the earlier literature focuses on the role of billing information in supporting energy efficiency and conservation efforts (see Foster and Alschuler 2011, p. 1) and somewhat later helping consumers in their selection of preferred energy products, by providing disclosures of the types of power supplies used to serve them (NCCEI 1999).

Foster and Alschuler (2011) reviewed approximately 100 samples of different utility company bills, to study the contents and format. That study, and another one by Foster and Mazur-Stommen (2012), are the most extensive recent studies identified for this project that specifically focus on bill and customer comprehension of billing information. In addition, the National Association of State Utility Consumer Advocates (NASUCA) Resolutions (2012, 2011a, 2011b, 2011c, 2011d) and National Consumer Law Center (NCLC) guidebooks (2013, 2011, 2006) provide summaries of recent related topics of interest and a comprehensive look at consumer concerns.

More current research focuses on grid modernization and the new and near-term future kinds of two-way communications between utility providers and consumers. Primary examples include: Bojanczyk (2013); Buchanan et al. (2014); GTM Research (2015); Gustafson (2015); Haycock (2015); Mission:data Coalition (2015); and Utility Analytics Institute (2015). Much recent literature emphasizes behavioral and social-marketing approaches to achieving energy efficiency (e.g., Frantz, Flynn et al. 2016; SEE Action 2016; Sorrentino et al. 2015) and segmenting customers by different interests, to provide more customized communications (e.g., Content Marketing Institute 2016; Cordray 2015; Networked Insights 2015; Opower 2015).

2. Purposes and objectives for utility billing and customer care systems

Understanding all the various purposes and objectives for billing systems and related communications is not a simple task, because the interested parties have different points of view and there is surprisingly little publicly available information that explicitly reveals the parties' priorities. Although there is much overlap, and the parties' purposes and objectives reflect one another in important ways, utilities have one set of purposes and objectives; state regulatory commissions have theirs, often including some that have been imposed by state legislators; differently situated customers have theirs; and society as a whole can also have a different set. Even within utilities, different departments have their own goals and objectives. Foster and Alschuler (2011, p. 6) point out:

The bill pulls information from, and impacts the operations of, multiple departments within a utility. The customer service department wants to minimize calls from customers concerned about unusually high bills, the accounting department wants to get paid, the legal department wants to meet regulatory requirements and avoid triggering a utility commission hearing, and the IT department has to deal with collecting, analyzing, and disseminating the information that appears on bills within the bounds of existing systems.

Available literature scarcely itemizes all the various interested parties and their purposes and objectives for billing and customer care: There is no single repository of the views of utilities, consumers and consumer advocates, or commissioners. Plus, the parties' goals and objectives are frequently reflections of perceptions of each others' intent. For example, both commissions and utilities wish to avoid widespread customer dissatisfaction and any shortcomings that result in frequent consumer complaints, and utilities are seldom motivated to frustrate their regulators. And, even withstanding a utility's interest in earning returns on invested capital, all parties have some interest in keeping billing and customer care costs in check. Here, preliminary, generalized observations are drawn from the small number of dockets reviewed for this project, plus interest-group views identified from published literature, and the ideas expressed at the IURC *Indiana Billing Symposium*.

(a) Utility goals and objectives

Utilities are most likely to be interested in billing systems producing efficient and timely collection of revenue and providing for consistent cash flow. Utilities are striving for full cost recovery, including for all costs associated with their billing and customer care systems.

Like others, utilities are interested in holding operational costs to reasonable levels, meaning they prefer to prevent customer service needs from growing too much, and utilities strive to reduce or eliminate the kinds of misunderstandings that would otherwise lead to high volumes of consumer complaints. As a Northern Indiana Public Service Company (NIPSCO) representative reported to the *Indiana Billing Symposium*, the company's primary goal in its current bill-redesign effort is "to make bills easier to read and more understandable, so that customers can quickly find the information they need" (Kline and Stanton 2016, pg. 7-8). Another Indiana utility representative noted, it is costly for everyone if bill redesigns are poorly implemented. (Kline and Stanton 2016, p. 12).

Another important factor for utility consideration is the level of effort and costs associated with making changes in bill formats. As explained in Kline and Stanton (2016, p. 11) modest changes in utility bill formats can be made at little incremental cost, but more substantial changes require large expenditures.

The high cost of making big changes generally focuses attention on lower cost, near-term options for making incremental changes, while postponing major makeovers so they happen infrequently: From this point of view, the more flexibility billing systems have to accommodate incremental changes, the better. One recent example of increased flexibility is the use of "onserts" (as opposed to inserts) that enable utilities to target to different pre-identified customer groups specific brief messages, to be printed on bills (Kline and Stanton 2016, p. 15).

Utilities also desire customer communications that create and maintain a positive public image and goodwill, which is related to utility interests in positive brand identity, customer brand loyalty, and customer retention. That is true for vertically integrated utilities, who maintain the concern that customers might move loads out of their service territory or bypass their utility by engaging in self-generation. One common manifestation of that interest is using customer communications to convey what can be thought of as public service messages, such as information about utility safety (e.g., carbon monoxide, fire prevention, gas explosions, downed wires, proper and improper use of home heating equipment, etc.) and emergency preparedness (Lazrus, Morss, et al. 2015; Stanton 2012).

Plus, competitive utilities want to use their billing communications for maintaining and building closer relationships with customers. For example, Weber (2015) reports some competitive suppliers in Texas are offering consumers appliance-specific usage data and consumer alerts if data shows that devices might be "running abnormally."

Indiana utilities report engaging in serious, ongoing efforts to obtain feedback from representative groups of customers, to understand consumer wants and needs. Methods employed include internal research, review of complaints, customer surveys, and focus groups (Kline and Stanton 2016, pp. 7-9). One Indiana utility reports surveying specific customers who had recent interactions with the company's call center (Kline and Stanton 2016, p. 6).

Haycock (2015) points out one more important goal for utilities: Paper billing statements also have to satisfy all U.S. Postal Service requirements, and should comply with all standards necessary to make the statements machine-readable and facilitate automated payment processing.

(b) State regulatory commission goals and objectives

As agencies created by state legislatures, a primary objective for state commissions is to implement all legislative requirements. Many state laws prescribe particular billing practices, often with specific directions regarding commission rulemaking and oversight. One pertinent example is specifications about particular line items that must be presented on bills. For example, Michigan law requires separate line items on the bill for surcharges related to the state's renewable portfolio standard and energy efficiency program costs (MCL 460.1045(5). IURC reports there are many separate line items on utility bills in Indiana, totaling as many as 22

different rate adjustment mechanisms (i.e., trackers) for electric utilities, nine for natural gas, and four for water. Under Indiana law,⁴ if a utility bill references a tracker by use of a code or symbol, then the utility must provide "[a]n easily understood explanation."

Regulators expect utilities to develop and maintain billing systems at just and reasonable cost, and operate billing systems that are accurate in assigning charges and transparent, meaning customers can understand from their bills both what they are being charged and the basis for those charges.

State regulators are also intent on ensuring that utilities do not abuse their monopoly position as billing agent by engaging in tying arrangements or by charging ratepayers for self-promotion and brand aggrandizement. Thus, for regulated investor-owned utilities, regulators scrutinize billing and customer care expenditures in order to separate charges between those that are reasonable to pass on to customers versus those that should be the responsibility of shareholders. Wisconsin Statute 196.595, for example, prohibits charging customers for any utility expenditures for "advertising" unless it "produces a direct and substantial benefit for ratepayers." That means, for example, that prior to assigning costs to consumers a utility would have to demonstrate that the communications are providing information about energy conservation methods, convey safety information, demonstrate methods of reducing ratepayer costs, or are otherwise required by law.

Many state commissions have also taken a proactive role in encouraging energy and water use efficiency and conservation, and mechanisms for promoting the use of clean energy, which sometimes translates into customer communications requirements. Another prominent example is requirements for utilities to provide consumers with disclosures about the sources of energy used to serve them and the environmental attributes associated with those sources. Disclosure regulations from Nevada (NAC 704.2785 and 704.2787) are exemplary (see Boardman and Palmer 2007; Jochen and Holt 2003; NCCEI 1999.)

State commissions generally share the goal of reducing or minimizing consumer complaints. Therefore, state commissions often coordinate consumer communications with utilities, with commissions producing and delivering educational messages that align with utility communications (see Stanton 2012). Some examples include PUCO (2016), PA-PUC (2016, 2015a, 2015b), PUC of Texas (PUCT 2002, 2016a, 2016b), and WV-PSC (2015a, 2015b).

(c) Consumer groups and consumer advocates

Determining goals and objectives for billing and customer care held by consumers and consumer advocates is no simple matter. Utilities regularly engage in efforts to elicit information about consumer preferences, but it is important to understand that consumers are not homogenous, by any means: Different consumers have different needs and interests, so that everyone should be cautious about over-generalizing what constitutes consumer group objectives and goals for billing and customer care. Consumers can also be fickle: They want what they want, when they want it, and by whatever channel they most prefer at the particular time (e.g.

⁴ (170 IAC 4-1-13(a)(12) for electric; 170 IAC 5-1-13(A)(10) for gas; 170 IAC 6-1-13(A)(10) for water; and 170 IAC 8.5-2-1 (a)(10) for sewage disposal).

paper mail, email, text message, etc.). Many consumers spend minimal time thinking about their utility bill, pay minimal attention to any bill inserts, and give little if any thought to their preferences for utility communications.

Also, many of the preferences reported here are drawn from customer surveys and utility reports presented at the *Indiana Billing Symposium*. Readers should bear in mind that some of those surveys used informal, convenience samples of particular interest groups, which means the responses reported might not be representative of the entire population of Indiana consumers (see Kline and Stanton 2016, p. 3).

Consumers do generally report a preference for clear language explanations and uncluttered bills. They also want bill formats that prominently display the most important information, in a larger, bolder font, so that they can quickly focus on the amount due and due date (Kline and Stanton 2016, p. 5). Foster and Alschuler (2011, p. iv) report that "research show[s] that overly-specific rate information reduces bill comprehension." Therefore, they recommend that details be presented "on page 2 or after." Or, they suggest, "[P]ut it where users can find it as needed," for example, on the utility's website.

Consumer groups also express a preference for communications explaining any major changes in billing, and request those communications to be delivered through multiple channels including letters or other announcements that are separate from the bill or billing inserts. Arizona (R14-2-204) directs utilities to "transmit to affected customers... information required due to changes in tariffs... [including] a concise summary of any change in the utility's tariffs affecting those customers."

The *Indiana Billing Symposium* elicited many ideas about what consumers want in utility bills, but even in that limited context some of the ideas were contradictory. For example, Duke Energy in Indiana offers consumers a choice between condensed or detailed bills. In that company's experience, 87 percent of residential customers and over 70 percent of commercial customers are opting to receive the condensed bills (Kline and Stanton 2016, p. 10). Yet, at the same time, participants in the consumer groups' surveys conducted prior to the *Indiana Billing Symposium* indicated a strong preference for line-item bills that include definitions of terms used (Kline and Stanton 2016, p. 5).

A similar issue is the extent to which bills provide ample information for consumers to understand and take actions to manage their usage. Some customers report a particular interest in seeing historical usage data and in receiving information about how to lower their bills in the future. This interest extends to some larger commercial and industrial customers, too. As Parker, Boyd, et al. (2015, pp. 2-3–2-5, 3.11–3.12; Chapter 5) explain, some large, sophisticated customers want direct access to meter data they can use for cost containment, budget planning and control, and optimizing operations. One Indiana consumer group expressed a preference for utilities to provide on-bill financing for energy efficiency improvements, too (Kline and Stanton 2016, p. 6; See also Bird and Hernandez 2012; Teller-Elsberg, Sovacool, et al. 2016).

Also in the *Indiana Billing Symposium*, some of the consumer groups expressed "mixed feelings" about bill inserts, and concern that insert messages might be "overly self-promotional."

They call for billing inserts to include "fewer advertisements, fewer non-related topics, and more information about bills" and suggested that inserts could "provide educational information to customers each month on billing-related topics" (Kline and Stanton 2016, pg. 15-16).

Consumers surveyed for the *Indiana Billing Symposium* also express concern about forgetting to pay utility bills. That idea came up in the context of e-billing: consumers asked for reminders about due dates. Some of the Indiana utilities report they already have or are setting up mechanisms for providing reminders by emails or text messages, and plan to use the same system for reporting outages and service restoration times (Kline and Stanton 2016, p. 13)

The survey also revealed that consumers with a need to contact their utility want to talk with a person in their local area, not at a call center in some far-off place, and want to resolve their issues quickly and efficiently (Kline and Stanton 2016, p. 15).

Indiana consumer advocates also express a preference for billing options to be presented without any new fees being imposed for customers selecting any options. This is generally a concern for equity and fair treatment for all customers. For example, e-billing shows a potential to reduce utility costs compared to paper billing, but consumer advocates want the option of paper billing to remain available at no extra charge. Or, some customers want to be able to pay bills by credit or debit card and want on-line payment options, but they do not want any new "convenience" fees assigned to those options. And, surveyed customers reported wanting the option of making payments electronically, but said they were not necessarily interested in receiving their bills electronically. One Indiana utility reports 60% of its customers make payments electronically, but less than a third use e-billing. Also, they note, customers wanting to use on-line services want the registration process to be quick and uncomplicated (Kline and Stanton 2016, pp. 12-14).

After surveying millennial generation (18- to 24-year-old) customers, Cordray (2015) reported that nearly 1/3 of this population do not even look at their itemized bills, and they have no organized system for scheduling or making payments. This research suggests utilities might need to develop communications specifically targeting younger customers, whom Cordray characterizes as "digital natives... accustomed to living their lives online."

(d) Societal goals and objectives

In addition to the goals and objectives already discussed for utilities, commissions, and consumers, there can be societal goals and objectives that are not equivalent to any of the others. Examples may include interests in achieving efficiency and conservation, in helping all parties to avoid complaints where possible, and in helping customers to prepare for emergency situations.

Eventually, widely held societal goals and objectives are likely to be rendered into legislation, which then directs actions, particularly on the part of commissions and regulated utilities. But, there is often a long delay between the time when a particular goal or objective comes to the attention of a particular social faction and when that goal or objective ultimately gets adopted by a legislature. Furthermore, the nature of legislative decisionmaking is such that

different social factions often find that legislative translations involve multiple compromises and thus do not perfectly reflect the point of view of any one group.

For the purposes of this study, the important idea to bear in mind is simply that summing all the goals and objectives expressed by consumers, commissions, and utilities will not necessarily realize an all-inclusive picture of all important goals and objectives. Regulators, in particular, could play a leadership role in observing and reflecting embryonic societal goals.

3. Near-future topics for billing systems and communications

Much of the current literature also suggests that utility industry transformations associated with grid modernization, increased two-way communications flows between utilities and customers, expanding uses of utility websites and web-presentment of data, on-bill financing for energy efficiency, added on-bill line items for unregulated services, and the growing uses of social media by utilities and commissions are all plausibly poised to engender rulemaking changes that could affect utility billing. Subjects already in practice in certain jurisdictions or predicted in the near future include prepaid regulated utility services, AMI and smart-meter opt-out provisions, smart thermostats, in-home displays and energy management services, and remote shutoff capability. Some such topics, like electronic billing and customer data privacy, are already included in some state rules, as shown in Table 1 and discussed in Part III.C.

For example, Arizona Public Service Company (APS, in Docket No. E-01345A-15-0095) requested Commission approval of a limited prepaid electric service program, as a component of the Company's demand-side management plan (Arizona Corporation Commission, 25 November 2015 Order No. 75323, pp. 2-4, 13, 16). The Company was ordered to continue its Residential Prepaid Energy Conservation Program as a pilot program, to be discontinued by the end of 2016. In the meantime, the Commission (Order, p. 16) directs APS to:

[W]ork with stakeholders to collaborate on ways to enhance the education and communication offerings for potential future prepaid programs in order to increase program effectiveness to ensure that customers fully understand the program and their options for how to reduce their energy bills and also to ensure the energy savings due to the education and communication offerings are documented in a reliable manner.

On the other hand, Wyoming has rules for both electric utilities (§302(c)) and natural gas utilities (§403(d)) that explicitly prohibit prepaid utility metering, except in special circumstances when pre-approved by the Wyoming Public Service Commission. NASUCA (2011c) has a resolution expressing caution about how prepaid utility services might be implemented and the relationship, if any, between prepaid utility services and disconnection procedures, and Howat (2015), and O'Sullivan, Howden-Chapman, et al. (2011) also recommend caution in implementing pre-payment arrangements.

Foster and Alschuler (2011, pp. 6-8) explain:

Changes to the billing system will likely already take place as utilities proceed with their smart grid plans, so the marginal cost of incorporating additional changes to provide

customers with more informative bills is likely negligible. ... [T]here is an opportunity for utilities to use the roll-out of their smart grid plans to integrate the bill into their larger customer engagement strategy and to make changes to their systems that will likely be required to handle a larger volume of energy use data. ... [R]esearch suggests that the bill need not remain merely an accounting tool, but can serve to inform, engage, and motivate customers to reduce their energy use.

C. Findings from Content Analysis of State Billing Rules

The authors completed a basic content analysis of state utility billing rules and related customer relations and consumer education topics that are formally addressed in state rules. The structure and content of billing rules vary among the states, but this review identifies many similarities as depicted in Table 1. The rules were reviewed to identify many common topics that are both included in at least several states' rules and are most closely related to the issues of billing practices and customer information and education. The resulting data, presented in Table 1, identifies 16 salient topics that are included in many, but not all, state rules.

Coding in Table 1 simply indicates whether or not each topic is addressed in state rules: the coding does not convey anything specific about how each topic is addressed. For example, "master metering" is discussed in 36 state rules, but the rules vary widely in how restrictive the terms and conditions are under which master metering is allowed, and both Connecticut (in Docket No. 13-01-26) and Ohio (PUCO 2015) are currently reconsidering their existing master metering rules. The topic-by-topic discussion that follows Table 1 provides more details, including more description about how the topics are addressed in one or more specific states.

Additional topics are also included in many, if not all, state rules, but are not included in Table 1. Those include rules governing such topics as:

- Service and information provision to new customers;
- Unauthorized or fraudulent use and meter tampering;
- Meter testing and meter accuracy;
- Metering and billing errors, along with provisions for correcting or adjusting bills and for make-up bills to correct for billing errors (i.e., over- or under-collection);
- The time allowed between when a bill is rendered to the customer and when payment shall be due, which typically ranges from 14 to 21 business days;
- Late payments and returned checks; and,
- Disconnections due to health and safety concerns and states of emergency.

Almost all states address these topics in rules, but they are not included in Table 1 because the details are so similar in every case and because they are only tangentially related to the primary concerns addressed in this research, which are the content and presentment of utility bills and associated customer and consumer education related to billing.

In addition, some state rules are rare or even unique, and those topics are not included in Table 1, either. For example: Indiana rules (170 IAC 6-3) provide for utilities billing for hot water service, delivered to customers for use in providing radiant heat; New York has rules

requiring electric utilities to file emergency plans (NYCRR 16.105), which include "procedures and facilities for establishing and maintaining external communications" with customers, the media, and many other agencies; and, Utah rules (R746-300-2) govern load limiter devices that are capable of interrupting electric service at a residence when a preset demand, measured in kilowatts, is exceeded, after which service is restored when the customer decreases usage and then presses a reset button on the device.

Another feature that is present in some states but not addressed in Table 1, is commission documents that explain customer rights. The District of Columbia (DC-PSC 2009) has a *Consumer Bill of Rights*; Nevada created a Consumer's Bill of Rights (NAC 704.302-421); Pennsylvania (PA-PUC 2015d) has a *Responsible Utility Consumer Protection Act*, including provisions covering utility service deposits, disconnection, and dispute resolution procedures; and New York (NYCRR 16A-11.17) calls its version the *Annual Notification of Rights*.

Another topic not included in Table 1 is rules governing the provision of utility information in multiple languages. For example: Missouri (4 CSR 240-13.035(2.D)) requires certain information to be delivered in Spanish; New Hampshire (PUC 1203.02(k)) has translation requirements for any groups making up at least 1/4 of the general population; Oregon (OAR 860-021-0010) generally requires customer information to be available for non-English speakers; and Utah (citation) requires utilities with 10,000 or more customers to make information available in Spanish, upon request. California (CA-PUC 2016) collects and publicly reports data about telecommunications complaints from consumers with "limited English proficiency." Other states are providing consumer information in multiple languages, without any formal public utility rule that requires it. For example, Arkansas PSC consumer services information is available on the AR-PSC website in both English and Spanish language versions.

At least some of the blank cells in Table 1 represent topics that are addressed either through informal practices or through rules and regulations from entities other than state public utility regulatory commissions: Utilities might already be conducting their business so that the topic is addressed, without having procedures explicitly spelled out in state rules. One example is historical usage data. Many utilities regularly report that data to customers, without the subject being explicitly addressed in state rules.

Also, utility companies do have some leeway in designing and implementing their billing and communications systems, as long as they meet all of the minimum requirements and do not run counter to state rules. Or, a topic could be covered in rules other than billing rules. Other states likely have requirements in addition to what is explicitly covered in billing rules, but those provisions could be included in rules from other state agencies, such as a general consumerprotection agency or a state emergency management agency.

In Table 1, the second column denotes which industries are covered by each state's rules. "E," "G," "W," and "/W" represent, respectively, electric, natural gas, water, and wastewater utilities. This does not mean that all such utilities in the state are included, though: in almost all jurisdictions, the state regulatory authority covers investor-owned utilities, but often some or all municipal or cooperative utilities are not state regulated. Readers should consult the laws of each state to determine which utilities are state regulated.

State	Utility types	Minimum contents ¹	Service Deposits	Estimated bills	Master metering	Historical usage	Dispute resolution	Third-party agents	Levelized billing	Payment methods	Payment assistance	Partial payments	Special payment plans	Denial, disconnection	Weather-related shutoff	Electronic billing	Customer data privacy
Number of states with rules on this topic:	Varies	46	47	45	39	26	44	30	34	13	30	21	41	46	43	15	18
Alabama	EGW	Y	Y	Y	Y		Y						Y	Y	Y		
Alaska	E	Y		Y	Y				Y		В		L				
Arizona	EGW/W	В		Y	Y	Ι	Y		Y						Y		
Arkansas	EGW	Ι	В	Y	Y	R	Ι		Y		Ι				Y		
California	EGW		Y	Y				Y	Y			Y				Y	Y
Colorado	EGW/W	В	Y	Y	Ι	Ι	В	Ι	Y	Ι	Ι	Ι	Ι	Y		Y	Y
Connecticut	EGW	Y	Y	Y	Е	EG	Y				В	Y		Y	Y		Y
Delaware	EGW/W	В	Y	Y	Y		Y	Y					Y	Y	Y		Y
District of Columbia	EG	Y	L	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y
Florida		В	Y	Y	Y	Y	Y		Y					Y			
Georgia	EG		Y		Y									Y	Y		
Hawaii	EGW/W	В			Y	Y	Y						Y	Y			
Idaho	EGW	Y	Y		Y	В	Y	Ι	Р			Ι	Ι	Ι	Y		
Illinois	EGW/W	В	L	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	
Indiana	EGW/W	Y	Y	Y	Y				Y				Y	Y	Y		
¹ Table Notes are show	wn at the end	of Tal	ole 1.														

 Table 1: Major Topics Addressed in State Rules and Associated Practices for Utility Billing

State	Utility types	Minimum contents ¹	Service Deposits	Estimated bills	Master metering	Historical usage	Dispute resolution	Third-party agents	Levelized billing	Payment methods	Payment assistance	Partial payments	Special payment plans	Denial, disconnection	Weather-related shutoff	Electronic billing	Customer data privacy
Iowa	EGW	В	Y	Y	Y	EG	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y
Kansas	EGW	В	L	Y			Ι		Y		В	Y	Y	Y	Y		
Kentucky	EGW/W	Y	Ι	Y	Ι		Ι		Ι			L	L	Y	L		
Louisiana	EGW/W													Y	Y		
Maine	EGW	В	Y	Y	Y	Y	Y			Y	Ι	Y	Y	Y	Y	Y	Y
Maryland	EGW/W	Y	Y	Y	Y	Y	Y	Y			Y		Y	Y	Y		
Massachusetts	EGW		Y	Y	Y		Y	Y	Y				Y	Y	Y		
Michigan	EG	В	Y	Y		Y	Y	С	Ι	Y	Y	Y	Y	Y	Y	Y	Y
Minnesota	EG	В	В	Y	Y	R	Ι	Ι	Y	Ι	Ι	Y	Ι	Ι	Y	Y	Y
Mississippi	EGW/W	Y	L	Y	Y		Y	Y	Y		Y		Y	Y	Y		
Missouri	EGW/W	В	Y	Y			Y		Y	Y				Y	Y	Y	
Montana	EGW/W	Y	Y		Y		Y	Y					Y	Y	Y		
Nebraska	G	В	L	Y			Y	Y			Y		Y	Y	Y		
Nevada	General	В	L	Y	Y		Y	Y	Y	0	Y		Y	Y	Y		Y
New Hampshire	EGW/W	В	L	Y	Y	R	Y	Y			Y		Y	Y	Y	Y	
New Jersey	EGW/W	В	Y	Y			Y	Y	Ι				Y	Y	Y		
New Mexico	EG	В	L	Y			Y	Y						Y	Y		
New York	EGW	В	L	Y	Y	R	Ι	Ι	Ι	Y			Ι	Ι	Y		Y
¹ Table Notes are show	wn at the end	of Ta	ble 1.						-			-				-	

Table 1: State Rules and Associated Practices for Utility Billing (continued)

State	Utility types	Minimum contents ¹	Service Deposits	Estimated bills	Master metering	Historical usage	Dispute resolution	Third-party agents	Levelized billing	Payment methods	Payment assistance	Partial payments	Special payment plans	Denial, disconnection	Weather-related shutoff	Electronic billing	Customer data privacy
North Carolina	EGW/W	В	Y	Y	Y	Y	Y	Y					Y	Y	Y		
North Dakota	EG	В	L	Y	Y	R		Y	Y		Y		Y	Y			
Ohio	EGW/W	В	L	Y		Y	Y			Y	Y	Y	Y		Y	Y	Y
Oklahoma	EGW/W	В	L	Y	Y	EG	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y
Oregon	Е	В	L	Y	Y		Y	Y	Y		Y		Y	Y			Y
Pennsylvania	EGW/W	В	L	Y			Y		Y		Y	Y	Y	Y	Y	Y	Y
Rhode Island	EGW	Y	Y	Y	G	Y					Y		Y	Y	Y		
South Carolina	EGW/W	В	L	Y	Y	R	Y	Y	Y	Y	Y	Y	Y	Y	Y		
South Dakota	EG	В	L	Y	Y		Y		Y			Y	Y	Y	Y		
Tennessee	EGW/W	В	Y	Y	Е	R	EG	EG			EG			Y	Y		
Texas	EW	В	Y	Y	Y	Y	Y		Y		Y	Y	Y	Y	Y	Y	Y
Utah	EGW/W	В	Y	Y	Y		Y	Y	Y		Y		Y	Y	Y		
Vermont	EGW		L				Y		Y		Y	Y	Y	Y	Y		
Virginia	EGW	В	L	Y	Y		Y			Y	Y		Y	Y			
Washington	EGW	В	L	Y	Y	EG	Y	Y	EG			EG	Y	Y	Y	EG	EG
West Virginia	EGW/W	В	L	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y		
Wisconsin	EGW	В	L	Y		W	Ι	Y	В		Y	Y	Y	Y	Y		L
Wyoming	EGW	В	L	Y	Y		Y	Y	Y		Y		Y	Y	Y		
¹ Table Notes are show	wn at the end	of Tal	ble 1.														

Table 1: State Rules and Associated Practices for Utility Billing (continued)

Table 1: State Rules and Associated Practices for Utility Billing (continued)

Notes for Table 1:

- ¹ Codes used for "Minimum contents" include "Y" for states that describe the minimum contents for bills, but no additional content that must be available to consumers, or "B" or "I" as those codes, used in multiple columns, are described below.
- B means requirements exist both for information to be presented on utility bills, and also for additional information to be provided for customer education, not explicitly on the bill, for example in a specific document required for presentation to all new customers, or in brochures, newsletters, bill inserts, or other customer communications. Typically, a brief message appears on bills, referring customers to appropriate information sources for more details about this topic.
- C means there are special provisions that apply in a state with competitive choice programs, for customers who receive services from competitive electric service providers.
- E, G, W, and /W mean that a particular rule applies to that type of utility industry (electric, gas, water, and wastewater, respectively). For this purpose, "/W" means either wastewater or sewer service, depending on the term used in each state.
- I means requirements exist in regard to this topic, but there are no specific provisions for information about it to be included on utility bills.
- L designates a provision regarding low-income customers. For example, in several states service deposits are not required for all customers, but they are required for customers with a previous history of delinquent or unpaid utility bills, and in some states also for new customers with poor credit ratings. And, some states have provisions for other categories that apply specifically to low-income customers, as described in the text.
- O means at least one online payment option is required.
- P means this requirement is available only for customers entering into special payment plans with their utility.
- R means information should be provided to consumers, upon request
- W means historical weather-related data must be provided along with historical usage data, to help customers better understand how their consumption is affected by weather patterns. In many states, this provision applies to electric and natural gas utilities, but not water or wastewater utilities.
- Y means the topic is included on bills, but Y is also used when more specific information was not available when this table was being completed. Upon closer scrutiny, another code (e.g. B, I, L, P, or R) might apply.

1. Minimum contents

All but a handful of states have billing rules specifying data that must be included in utility bills. These requirements typically include at least the customer's name, address, utility account number, and identification of the particular utility rate under which that customer receives service, along with consumption data sufficient for confirming that the bill has been correctly calculated. As shown in Table 1, the code "Y" (meaning "yes") is used to indicate that a state has minimum content requirements for utility bills; "B" means there are minimum content requirements for additional content to be provided to customers by additional means, such as consumer information packages, brochures, or letters; and "I" means there are minimum content specifications, but they do not explicitly state that the information has to be presented on bills.

A closely related topic is rules governing minimum communications that must be either delivered or made available to customers on request, in addition to the content of the bills. Many state rules include these kinds of provisions. Several states, as indicated by "I" in this column, do require utilities to provide communications in addition to bills, such as consumer information packages, brochures, web pages, and scripts for call-center workers, some of which are directly relevant to other specific topics in Table 1, such as historical usage, dispute resolution, and payment assistance. For example, rules/regulations in Idaho (R701), New York (NYCRR 16A-11.17), and Utah (R746-200-1(E)) require that utilities provide a summary of billing rules for all new customers and, for existing customers, at least once each year. And, in a somewhat similar notification requirement, Missouri utilities are directed to provide customers with information, on the bill or in an accompanying notice, about the expected effects of upcoming changes in seasonal rates to customers' bills (4 CSR 240-13.020(12)). In addition, some state rules, like Montana (ARM 38.5.1404), direct each utility to post certain information where customers might see it in the utility's local business offices.

2. Service deposits

Almost all state billing rules include provisions about service deposits. These rules typically govern the circumstances that allow a utility to demand a deposit from customers, prior to initiating service and also sometimes for customers who are returning to service after a prior disconnection. Such rules frequently govern the utility's retention of service deposits and the transfer (to another account with the same utility company) or return of deposits to customers, usually with interest paid to the customer for the duration the deposit was held by the utility.

Some states require service deposits for all customers, like West Virginia (WVSCR §150-3-4.2). Typically, as in West Virginia, deposits are to be returned to the customer, with interest paid, once the customer has made timely monthly payments for a full year.

Other times, service deposits are integrated with topics related to utility financial assistance for low-income customers. Such topics include third-party agents, payment assistance, partial payments, special payment plans, denial of service and disconnection, and weather-related shutoff. Plus, there can be at least a remote relationship to levelized billing. Several states require deposits only for customers with low credit ratings or for those with

previous problems paying utility bills. Arizona, Colorado, Georgia, Maryland, Nevada, and Oregon have policies that in various ways integrate service deposit rules with low-income financial assistance programming (LIHEAP 2016c). New York (NYCRR 16A-11.12) waives deposits for customers who are receiving public assistance.

3. Estimated bills

State rules often include provisions for utilities to present customers with estimated bills, rather than always using actual meter reads to determine consumption. The rules typically allow a utility to base a bill on usage estimates that are based on the best readily available information about the customer's historical usage and weather data for the billing period. Such rules typically spell out the circumstances under which a utility is authorized to utilize an estimate of usage and how the estimate will be calculated. They do not give utilities carte blanche for delivering estimated bills: Most states specify conditions under which estimated bills can be rendered, such as the inability of the utility to gain access to the meter, or weather conditions that make meter reading especially difficult.

Arizona's estimated billing rule (R14-2-210.A) is exemplary, listing the conditions that allow estimated billing, limiting estimates to no more than three consecutive months, requiring Commission approval of the procedures for estimating, and requiring that the bill itself provide both: (1) "clear and conspicuous" indication on the bill that it is estimated; and (2) noting the reason for the estimate. And, since 2005 and most recently in 2015, Arizona Public Service Company is required to provide to the Commission a "Compliance Audit of Estimation, Meter reading and Billing Practices" (in Docket Nos. E-01345A-04-0657 and E-01345A-03-0775). The utility compliance audit filing is held as confidential, though.

In Montana, a rule (ARM 38.5.2511(2)) allows water utilities to use estimated meter reading. In addition, some gas and electric companies also have tariffs that include provisions for estimated bills.⁵

4. Master metering

The term "master metering" is typically used to describe situations where a landlord receives a single utility bill for service to a building that houses multiple tenants, which could be residential, commercial, or both, and then the landlord produces and delivers bills to each tenant. This situation might apply, for example, to apartment buildings, commercial rental properties, and mobile-home parks. This practice represents a particular kind of sale for resale of utility service, where the landlord or agent might buy utility service based on the aggregate usage of multiple end-use customers, at a lower large-customer rate, and then resell that service to the individual smaller customers. For example, the Illinois rules (Title 83, Section 280.20) define a master-metered customer as "a non-residential customer for a building where a single meter measures the utility service provided to three or more dwelling units in the building instead of separate meters for each residential unit in the building."

⁵ Authors' personal communications with Tina Shorten, Montana PSC, December 10, 2015.

Historically, there were multiple situations where master metering applied, but with the growing attention towards energy conservation that followed the two major oil crises in the late 1970s and early 1980s, many states implemented new master metering rules. Most often those rules were inspired by the idea that each consumer should be billed for their own consumption, in order to have the most direct, individual incentive for conservation. Pre-existing master metering relationships were allowed to continue indefinitely, but the practice was outlawed for future developments, especially for residential customers. For example, District of Columbia (DCMR 15-44) and New Hampshire (PUC 303.02 for electricity; PUC 502.15 for natural gas) rules allow master metering for commercial service, under certain circumstances, but not for residential. Master metering rules for natural gas can apply to defined geographical areas, like a "manufactured housing park, a housing project or an apartment complex" (PUC 502.15). Rules usually require the individual consumers to be charged rates that are no higher than the same customers would pay if individually metered by the utility and make the landlord or agent responsible for meter accuracy and testing. Rules also frequently define how bills for common areas in master-metered facilities are to be paid by the landlord or split among individual tenants.

Indiana (170 IAC 4-1.5-2 for electricity; 170 IAC 15 for water and sewer), New York (NYCRR 16A-PT96 for electric; NYCRR 16B-PT231 for natural gas), and Vermont (R4.800) call this "submetering" (sometimes hyphenated, "sub-metering"). In other contexts, submetering describes situations where an individual utility customer has more than one utility meter, because particular end uses are served under special utility rates, or because the customer or a customer's agent wishes to obtain data about usage for one or more portions of a facility or for particular end uses. For example, utilities offering special rates for certain loads (such as for service to particular eligible technologies, or to interruptible loads such as air conditioners or water heaters) might install separate meters for those loads, and then the customer bill combines consumption from both a main meter for all other uses and one or more submeters for other loads. The submetered equipment might also qualify for a discounted rate. The submetering term as used in Indiana, New York, and Vermont implies the use of both a master meter for a building or other facility, along with submeters for each individual consumer. New York also has specific rules (NYCRR 16A-11.30) that apply to shared meter accounts.

Other circumstances might involve service measured only by a master meter, with no submetering. In those cases, some commission-approved calculation method will be used to split the master bill among all the tenants. For example, bills might be divided based on the size of each tenant's occupied space. The Florida rule (25-6.049(6)(a)) states, "reasonable apportion-ment methods, including sub-metering may be used... for the purpose of allocating the cost of the electricity billed by the utility." The Florida rule includes a list of potential exemptions from the requirement for every customer to be individually metered, and the web page for this part of the Florida Administrative Code⁶ indexes Florida PSC dockets regarding variances and waivers.

The Public Utility Commission of Texas (PUCT 2016b) provides both basic explanations and more extensive fact sheets, separately covering both submetering and master metering.

⁶ <u>https://www.flrules.org/gateway/ruleNo.asp?id=25-6.049</u>

Illinois rules (Title 83, Section 280.150) cover "procedures for disconnection of service to accounts affecting master-metered apartment buildings when a landlord or property manager has not paid the utility bill."

AMI with inexpensive customizable short-distance data-communications capabilities could make submetering more common, enabling data from multiple meters to be easily aggregated for presentment in individual customer bills. AMI infrastructure could also present challenges for existing rules, as more options become available at low-cost to real estate developers, landlords, and customers.

This topic is also somewhat similar to rules about utility billing through third-party agents, which define circumstances where bills for multiple individual consumers get submitted to one third party, such as a corporate office or energy management company, rather than to each individual customer. The important distinction is that master metering applies when the central meter gets billed at a utility rate based on the aggregate usage of multiple individual consumers, and then that bill gets divided among the individual consumers, based on proportional usage or as a result of submetering. In those circumstances, the submeters are owned and operated by the master-metered customer, not by the utility, and the master-metered customer is responsible for meter testing and meter accuracy.

Connecticut (Docket No. 13-01-26), Ohio (PUCO 2015), and South Dakota (Docket No. AA14-002) cases demonstrate that the subject of master metering and submetering is not completely settled. In Connecticut, the commission (CT-PURA) is establishing rules in response to a new state law, Public Act No. 13-298, to provide for "master metering in conjunction with submetering" in situations where both landlord and tenant will be metered. Like many other states, Connecticut had restricted submetering in the past, because of the concern that tenants would not have an incentive to conserve energy if their utility charges were included in their rent, with no direct relationship to their actual usage. The law recognizes that new technologies are making it much easier for landlords to provide for both master metering and submetering. Therefore, CT-PURA is establishing new rules to reintroduce this approach where practical. Ohio, at least in part resulting from a complaint filed in 2015 (Case No. 15-697-EL-CSS), has opened a docket to investigate submetering. And, South Dakota PUC issued a 5 June 2014 Order in Case No. AA14-002, establishing procedures for considering requests for exception from that state's master metering prohibition.

5. Historical usage

States often have rules about providing customers with access to their usage data, typically for the past year and for the same month in the previous year. Rules typically spell out the length of time and whether the data shall be provided proactively or only upon customer request (encoded "R" in Table 1), plus whether some or all of this kind of data shall be presented on the customer's utility bill (encoded "Y"), presented but not specified whether to be delivered on or with the bill or in some other communication (encoded "I"), or presented both on the bill and via additional means (encoded "B").

Although many utility companies provide some weather related data along with historical usage information, only one state (Wisconsin, encoded "W"), has rules explicitly requiring that historical weather data must also be provided to customers. Still, in their survey of sample utility bills, Foster and Alschuler (2011, pp. 2-3) found that over 1/3 of the utility bills they reviewed provide average daily temperature data. Foster and Alschuler found that about 7/8 of utilities provide usage data for the previous year and previous month, about 2/3 report average daily usage and show graphs of historical usage, and about 1/4 provide data about the customer's average daily cost. For example, New York ended its requirement for utilities to provide consumers with a 12-month bar-graph of usage history, but some New York utilities still provide it.⁷ Xcel Energy (2016), which serves Wisconsin in addition to several other Midwestern and Rocky Mountain states, presents similar usage history information on its bills.

The impetus for rules about providing historical usage data is also related to interest in energy conservation and efficiency. The general idea is to enable consumers to readily understand how their usage might be changing over time, and the extent to which their consumption is affected by the weather. This information is relevant for understanding all heating and cooling loads, and also for water used seasonally for agricultural irrigation or residential lawn and garden watering. One state, Idaho (IDAPA 31.81.01.011-012), has a related rule that directs electric, gas, and water utilities, if requested by the Idaho Department of Water Resources, to report annually on the total consumption used for crop irrigation.

6. Dispute resolution

Many states have rules that govern the procedures for dispute handling between customers and utilities, and these rules often specify that basic information shall be printed on each bill, such as the phone numbers to call at the utility and sometimes also the state regulatory commission if customers have questions, need assistance, or wish to initiate a complaint. In Table 1, states with these kinds of rules are encoded "Y". The "I" code used for Arkansas and New York indicates that there are dispute resolution rules there, and utilities are required to notify customers of the procedures, but that notification does not have to be provided on utility bills. In New York (NYCRR 16A-11.17), it must be provided in the required *Annual Notification of Rights* publication.

In a couple of states, these rules also set standards for utility call center operations. For example, Arkansas (R2.05.D) has a rule governing utility call center performance, including such factors as speed in answering calls, percent of calls answered by a utility employee within 30 seconds, and response times for calls that report any "clear threat to public safety." Another Arkansas rule (2.07.04) requires utilities to retain customer complaints records for three years. Wisconsin (R113.0610) also requires recordkeeping for complaints received from customers, and for "all contacts and actions relative to deferred payment agreements and disputes," with a six-year retention time for these records (R113.0614).

⁷ Author's personal communications with Martin Insogna, New York DPS, November 24, 2015.

7. Third-party agents

Several states prescribe the terms and conditions for customers to specify that their utility bills should be presented to a third-party agent of the customer's choosing, on behalf of the customer, rather than the bill being sent directly to the customer. For example, a relative or other caregiver could be authorized to receive the bill for a family member who needs help paying bills, or a central office could receive bills for multiple satellite or subsidiary business locations.

Often a broader issue covered in rules is that customer data cannot be shared with third parties without the customer's explicit permission. Thus, rules for third-party agency billing are at least somewhat related to the topic of customer data privacy.

Maine rules (65-407 Chapter 322§3G) provide for "agency billing," upon customer request and with the consent of a transmission and distribution (T&D) utility, for non-residential customers, whereby the bill can be sent directly to the customer's "competitive electricity provider, including aggregators and brokers." In California, Pacific Gas & Electric (PG&E, in Electric Rule 9.K. and Gas Rule 9.K.) allows "summary billing... subject to approval by PG&E" for up to 100 accounts, but residential and non-residential accounts cannot be combined.

In closely related provisions, Idaho (R313.07), Montana (ARM 38.5.1414), and Pennsylvania (PA-PUC 2015d, p. 2) provide for third-party notifications of planned utility service terminations, meaning a customer can arrange ahead of time for a third party to receive any utility notice of termination, should that become necessary.

Another related topic, typical for states with competitive electricity and natural gas suppliers, is how regulated utility companies might provide billing services for competitive suppliers. For example, in Maine (65-407 Chapter 322§3H) each utility, in its service tariffs for service from competitive suppliers, has rules governing those relationships. The Maine rule directs regulated T&D utilities to "negotiate in good faith" with competitive service providers, to render bills for the competitive services.

8. Levelized billing

Levelized billing rules provide customers with the option of paying the same amount each month. The rules typically describe how the utility shall determine the monthly amount to charge, and provide for a true-up procedure to be used annually, or in a few cases more frequently, so that the bills can be adjusted over time to reflect changes in usage patterns. These options are variously labeled, for example: "budget-billing" in Utah (R746-200-2.C.); "budget payment plan" in Wisconsin (R113.0406(5)); "equalized billing" in Nevada (NAC 704.338); and, "level pay plans" in Idaho (IDAPA 31.313.06). In Maryland, one utility calls its program "budget billing" and another "budget plan."⁸ In New York (NYCRR 16A-11.11), levelized payment plans are described for customers in the state's required *Annual Notification of Rights*.

In a related policy, Maryland rules (COMAR 20.31.05.06) and the state's statutory low-income Electric Universal Service Program (EUSP), Maryland Department of Human

⁸ Author's personal communications with Odogwu Obi Linton, Maryland PSC, December 10, 2015.

Resources FIA/OHEP-14-003-S) offers low-income grants that can be disbursed through equal monthly payments and can also be coordinated with a utility's budget billing plan. Maine's levelized billing rules (8.15.9.9.f) apply to electricity and natural gas customers, but only as a special payment option for customers who are behind in their payments.

Alaska, in 2011 (R3-AAC-52.440), adopted billing rules that are flexible enough to accommodate both the pre-existing "levelized" billing and a new form of "rolling-average" billing. The distinction is that rolling-average bills can have multiple true-up corrections each year, as opposed to levelized billing mechanisms which typically allow only one or two.

Also, in states that have opened electricity and natural gas service to competitive suppliers, the suppliers might offer different kinds of levelized or standard monthly billing plans, but those offerings are governed by bilateral contracts that generally are not covered by the state's billing rules for regulated utilities.

9. Payment methods

This category is for any rules that explicitly describe the types of payment and locations where payments will be accepted, including for example payments by cash, check, credit or debit card, and money order, plus locations such as utility customer service offices plus sometimes also retail stores, banks, or other neighborhood locations. As Lieserson (2015) explains, increasing numbers of consumers are interested in options such as payment by debit card, options for making payments via smart-phone, making payments online without having to register a username and password, plus the ability to make an emergency "rush" payment to avoid late-payment fees. Lieserson also notes that these added complexities are making it more difficult for utilities to accurately estimate the costs associated with new and changing collection methods.

Nevada, , encoded "O" in Table 1, requires all utilities to provide at least one online bill payment option, but electronic billing is required only "[i]f requested by the customer and within the capability of the utility" (NAC 704.339). Maine rules (8.15.8f) require utilities to have inperson payment methods available for customers, and also specify (8.15.9j) that electronicpayments must be considered paid at the time a customer sends the payment. Montana rules (ARM 38.5.1413(3) and (4)) include provisions for a utility to accept payment in any reasonable form, including by personal check, and for a utility employee to accept a payment in person, if the employee is at a customer's premises for the purpose of disconnecting the customer. Maryland does not directly regulate payment methods for customers, but some Maryland utilities do include payment methods options in their approved tariffs.⁹ In Washington state, rules for gas (R480-90-188) and electric (R480-100-188) utilities specify payment locations that must be available for customers but do not specify payment types.

A NASUCA resolution (2012) touches on the issues of locations where payments are accepted and methods of payment, suggesting that monopoly utilities should "explore and implement cost-effective payment options that offer substantial benefits to… customers" and urging commissions "to survey the utilities within their jurisdictions to determine the options that

⁹ Ibid.

are available to consumers for paying utility bills without incurring additional charges."

10. Payment assistance

As shown in Table 1, more than half of all states have rules requiring utilities to provide information to customers about sources of non-utility financial assistance and also often about energy-efficiency programs available to qualifying customers. This category applies when a utility provides information about non-utility sources of financial assistance, and the "Special payment plans" category applies in states where financial assistance program rules direct the utilities themselves to provide opportunities for customers to pay back any overdue amounts. Many states and utilities have worked to integrate together utility-sponsored assistance, state-sponsored assistance, energy-efficiency programs, and special payment plans (LIHEAP 2016c).

Some states (encoded "B" in Table 1) direct utilities to print on the bill basic information about payment assistance programs, and then make supplemental information available upon request. For other states (encoded "I" in Table 1), the requirement is for the information to be available, but not explicitly on the bill. A Pennsylvania example (PA-PUC 2015a) shows a communication vehicle from the Commission that provides much basic information about that state's payment assistance options, supplementing information available from utilities.

In Alaska, for example, deferred payment rules have no provisions for trying to match customers with payment assistance or energy efficiency services, but if a customer is delinquent and facing shut-off of utility service, then (3 AAC 52.450.(c)) the utility is required to offer "a statement advising the customer to contact the utility for information regarding deferred payment and other procedures that the utility may offer to avoid disconnection of the customer's service; ... [and] a list of any governmental or social assistance agencies, of which the utility is aware, that may offer energy assistance to qualified needy customers...."

New York rules do not require that payment assistance information be provided, but that information is available at all utilities.¹⁰ A NASUCA resolution (2011a) touches on payment assistance and other related subjects.

11. Partial payments

This category is for rules that govern how payments will be divided between different kinds of charges, in those circumstances when a customer submits a payment to the utility which is less than the full amount owed. The rules frequently differentiate between charges for regulated versus non-regulated services, and direct the utility to apply payments first to the regulated charges. A similar distinction would be between charges where non-payment can result in service disconnection versus unpaid charges that are not authorized as a reason for disconnection. Again, partial payment rules will usually direct utilities to apply payments first to payments needed to prevent disconnections. These rules are different from installment billing options, which are a topic included in the category of special payment plans.

¹⁰ Authors' personal communications with Martin Insogna, New York DPS, November 24, 2015.

In addition, some states, including Arkansas (R5.15), have rules that prescribe how utilities shall handle advance payments or over-payments made by a customer. And, even though its electric industry remains vertically integrated, a Montana rule (ARM 38.5.6006(9)) directs how partial payments shall be applied to competitive gas and electric suppliers.

12. Special payment plans

This category refers to rules governing the circumstances under which a utility can offer special payment plans to a customer, and to the kinds of payment plans and options that are allowed. These most often apply to customers who are delinquent on bill payments, but they can also apply for other reasons, such as when a metering or billing error results in a consumer debt. Almost all states have rules, like Nebraska's for natural gas utilities (291.9.017.09), providing for adjustments needed in payments to correct metering or billing errors.

Such payment plans are also sometimes called deferred payments or catch-up payments. This category applies to states where the utilities themselves provide the payment plans and in some cases direct, utility-sponsored financial assistance. In contrast, the "Payment assistance" category applies when rules specify circumstances that obligate a utility to provide information about possible non-utility sources of financial assistance.

For example, New York (NYCRR 16A-143.10) directs utilities to have available "hardship procedures," which are described in the required *Annual Notification of Rights*. This includes provisions for customers receiving a termination notice to automatically receive an offer for a deferred payment plan. A related Georgia program (GA-PSC 2016) provides senior citizen discounts on gas, electric, and telecommunications bills.

13. Denial, disconnection

This category includes rules describing the conditions under which a utility is authorized to deny service to a new customer or terminate service to an existing customer. A related topic often discussed in the same rules governs conditions for restoration of service following a disconnection. These rules typically cover any circumstances where: (a) there is proof that a customer had previously engaged in meter tampering or utility theft; and (b) when customers had previously failed to pay bills on time. The latter rules are often explicitly related to the categories of "Payment assistance" and "Special payment plans." Also, with the advent of automated metering infrastructure, more states are adding rules to govern the circumstances under which a utility can utilize remote, as opposed to in-person, shut-off of service.

Maine rules (65.407-815.10.M.3) govern what is called "cycle disconnections," meaning a utility can interrupt service to a customer for short periods of time:

where a utility is unable to make contact with a customer and is not reasonably certain after [an] on-site inspection that the premises is vacant... until such time as the customer contacts the utility to make a payment arrangement or the utility determines that the premises is vacant.

In Utah (R746-200-7.L.), electric utilities are authorized to install load limiter devices, with the customer's consent, as an alternative to discontinuing service, and one way customers in Wisconsin may avoid disconnection (PSC 113.0301(7)(d)) is "by installing the required energy conservation measures in the property in question."

In many states, utilities are obliged to provide information to customers facing disconnection because of problems paying utility bills. Those provisions are included in Table 1 in the categories of payment assistance and special payment plans.

The National Consumer Law Center (NCLC 2006, Chapters 4 and 5) summarizes issues involved with both service terminations and restoration of service, along with a summary of each state's rules (NCLC 2006, Appendix A). Topics included in the NCLC summary include common protections against disconnection, including for customers with serious illnesses or disabilities and age-related protections for seniors and infants. In addition, the Low-Income Heating Energy Assistance Program Clearinghouse (LIHEAP 2016b) maintains a database of *State Disconnection Policies*, including weather-related shutoff policies. In addition, *State Snapshots* (LIHEAP 2016c) index all known sources of financial and other types of home-energy assistance programs, including special discounted utility rates where available.

14. Weather-related shutoff

As shown in Table 1 and Figure 2, 42 states and the District of Columbia have rules about weather-related shutoffs. The maps in Figure 2 present important variations in these policies, with coding for states with winter-weather rules in the first map and summer-weather rules in the second map. LIHEAP (2016a) and NCLC (2006, Appendix A.1) summarize state "seasonal termination protection regulations." This category includes rules about terminations of service during times when extreme weather conditions might be expected. As Figure 2 shows, many states have rules that apply during specific dates, others apply based one temperatures, and some cover both temperature extremes and dates. In the District of Columbia, utility rules (15 DCMR 310.3) cover cold-weather shutoffs, and a law covers hot-weather shutoffs¹¹. Similarly, New York's weather-related shutoff protections are addressed in state law (NY-PSC no date).

In West Virginia (WVSCR § 150-3-4-16 for electric; §150-4-4-15 for natural gas), these provisions also include a 20-percent discount "Special Reduced Rates Residential Service (SRRRS)," which is available to qualifying low-income electric and natural gas customers from December through April. Missouri's rule (Cold Weather Rule 4 CSR 240-13.055) is exemplary, covering utility notice requirements, dates and temperatures when shut-offs are prohibited, linkages to customer special payment plans and assistance services, service deposits, service reconnections, and utility cost recovery for uncollectible amounts. Most states also have provisions protecting customers from shut-off if there is evidence of a serious illness or medical emergency (NCLC 2006, Appendix A.2 and Appendix D).

¹¹ Authors' personal communication with Maurice Smith, District of Columbia PSC, December 9, 2015.



15. Electronic billing

So far, 15 states have adopted electronic billing rules for regulated utilities. These rules govern terms and conditions by which a utility can present bills to consumers via electronic means, usually only after customers have opted-in to receiving e-bills.

New York reports that all utilities offer electronic bills, and the utilities routinely provide information on bills promoting that offering to consumers, but e-billing is not required by rule.¹² Similarly, West Virginia reports that the larger utility companies active in that state do provide information to customers about e-billing options, but not in response to a state rule.¹³

16. Customer data privacy

Customer data privacy is another issue gaining importance as a result of automated metering infrastructure and the associated detailed interval metering data. As shown in Table 1, 18 states now have rules that govern customer data privacy, serve to prevent unauthorized disclosure of customer data, and describe the conditions under which a utility can be authorized to release customer data to third parties. Usually, these rules require the utility to receive the customer's affirmative, written approval prior to releasing any customer-specific data.

New York state has data privacy rules that apply to the state government (the *Personal Privacy Protection Law*, Public Officers Law, Article 6-A), but no explicit utility requirements, outside of a mention about telecommunications services (NYCRR 16C-602). In West Virginia customer data privacy is not included in rules, but is covered on a case-by-case basis in response to specific customer complaints.¹⁴ The Oregon rules (OAR 860-021-0009(6)-(7)) are limited in scope to restricting electric and large telecommunications companies from releasing account information "upon request," and from telecommunications companies releasing information in circumstances involving domestic abuse. In Wisconsin (R113.0505(2)), the only two exceptions to strict customer data privacy are that a utility may release identifying information: (1) to "a utility low-income assistance program;" or (2) with the customer's consent. A NASUCA resolution (2011d) also addresses this subject.

The recent augmentation of customer data privacy concerns is related to AMI infrastructure and some customers' concerns that personal energy use data could reveal a great deal of information about them and their uses of energy. One widely cited example is that accurate interval data about electricity use could theoretically be used to identify usage patterns in detail, revealing when customers are away from the premises and thus inviting burglary. (Nunez 2012). In 2015, the U.S. Department of Energy worked with the Federal Smart Grid Task Force to complete a multi-stakeholder process to develop a set of voluntary data privacy guidelines, now compiled in the *DataGuard Energy Data Privacy Platform* (SmartGrid.gov 2016). SEE Action (2016) is also addressing consumer data privacy in conjunction with smartmeter data and its use in promoting efficient residential energy use.

¹² Authors' personal communications with Martin Insogna, New York DPS, November 24, 2015.

¹³ Authors' personal communications, Leslie Anderson, West Virginia PSC, December 2, 2015.

¹⁴ *Ibid*.

D. Findings from Analysis of State Commission Complaints Data

This analysis is based on a review of complaints data from 23 state utility regulatory commissions. The purpose of this review was to explore the topics that become the subject of complaints, both by industry type, and in relation to the subjects of rulemakings about billing and related customer communications identified for Table 1.

The analysis presented here reviews data provided by state commissions, which is intended to include all complaints recorded by each state's commission office where the complaints are received, the customer service department in generic terms. The reported data counts all consumer contacts recorded, including contacts that are more like information inquiries rather than complaints. The data does not identify the number or percentage of complaints resolved through informal means, as compared to the much smaller fraction that result in formal hearings.

In response to the initial and follow-up surveys, 12 states provided complaints data. Six states responded to the initial survey that complaints data was available if more specific queries were provided; these states were provided with more specific queries and they provided complaints data. Additionally, the authors searched other commission web pages and found publicly available complaints data for five additional states. After gathering the complaints data using those methods, the authors reviewed the information from 23 commissions.

For the purposes of this report, complaints data is expressed in percentages, rather than by numbers of complaints. This approach is preferable because of the considerable differences in state populations. Percentages capture the relational differences between industries and among the different billing-rules topics, in a form that provides meaningful comparisons between states. Because of the small available sample size and inconsistencies in the raw data, the findings presented here are not tested for statistical validity, are not necessarily representative of all states, and should be considered as initial observations of trends in utility complaints as a possible prelude to more rigorous analysis in the future (see Part IV).

The review shows that the available complaints data differs widely in the level of detail available for analysis, time ranges reported, specificity by industry type, and how specific complaints are categorized. For example, one commission might have data available over multiple years, broken down by the number of complaints received by industry type, and further disaggregated by complaint topics, while another commission might provide only the number of complaints by industry type, by month.

Complaint counts by industry type were available for 19 of the 23 states, but complaint counts by topic were available for only 13 states, and the topics documented by each state both overlap and diverge: Some states categorize complaints broadly, using as few as four topics, while other states have defined over 50 different topics. Table 2 presents some of the many different words and phrases states use to categorize complaints.

Figure 3 shows the percentages of complaints recorded for each state, by industry type. Most complaints are about electric utilities at 18 of the 19 commissions with available data, with 13 of the states recording more than half of all complaints about electricity issues. Natural gas receives the second most complaints in ten states reviewed, and water/wastewater the second most in seven states. Gas and water tie for second place in Hawaii, and water ranks highest only in West Virginia.



Because of the diversity of complaint categories used by different states, the authors collected information on five common, broad complaints topics: billing/rates, deposits, unpaid bills, payment arrangements, and quality of service. Some states used different category names, but the five categories chosen were represented by various names used by most of the states. Individual state categories were combined into the broader categories represented in Figure 4. One example of this broad re-categorization is Virginia's quality of service complaints: Virginia categorizes them as "customer service complaints," but for Figure 4 they are termed "quality of service complaints."

Table 2 illustrates how states use different names for essentially similar kinds of consumer complaints. For example, among all the states reporting "termination/nonpayment" complaints, different states use: cancellation; cancellation issue; disconnect issue; disconnection; discontinuance; and terminations. Also, the states providing complaints data use a broad range of numbers of different categories, ranging from as few as only three top issues listed in Georgia's annual report to 101 categories available for use in Oklahoma. The idea of standardizing complaint categories among the states is addressed in Part IV.

1. Billing/ Rates	
Billing	
Billing dispute	
High bill5	
Billing Issues	
Rate5	
Billing Inquiry	
Disputed bills/payments	
Estimated bills2	
Final/initial bill	
Other names used by one state each: billing/rates, high bill (estimated), incorrect bill, over billing, received no bill, calculated bill policy, billing practices, bill adjustment.	
2. Deposits	
Deposit5	
Deposit Issues	
Other names used by one state each: deposit general, deposit refund, deposit requested, deposit practices, credit and deposits.	
3. Termination/Nonpayment	
Termination	
Disconnection	
Other names used by one state each: disconnect issue, disconnection/ nonpayment, disconnection of service, disconnection for nonpayment, disconnection/termination, unpobills.	aid
4. Payment Arrangements	
Payment Arrangements7	
Other names used by one state each: broken payment arrangement notice, other paymen issues, late payment charge, payment extension request, assistance for payment, deferred payment.	t d
5. Quality of Service	
Quality of Service	
Service Quality4	
Customer Service2	
Other names used by one state each: customer service complaints, service.	
Source: Authors' construct based on categories reported in state public utility regulatory commission complaints data reviewed for 23 states.	

Table 2: Numbers of States Using Different Namesfor Complaints in Five Broad Billing Categories

Data by state on the same five broad issues reported in Table 2 is presented in Figure 4. Of the five, billing/rates accounted for the greatest percentage of complaints in nine of the 13 states for which complaint category data was available. In states where billing/rate complaints were not the most common type, other topics closely related to that, either termination/ nonpayment or payment arrangements, accounted for the most complaints. Quality of service complaints frequently appear as a category, documented by 10 states and consistently accounting for approximately 20 percent or less of all complaints. This data shows little variation between states that have a vertically integrated electric utility industry structure, as compared to states with a restructured electric utility industry.



For seven states, complaints data can be parsed by topic, year, and utility industry type. Those results for complaints reported in 2015 about billing disputes are presented in Figure 5. Although there are more total electric-industry complaints compared to the other industries, fewer electric utility complaints are explicitly reported for billing disputes, compared to natural gas and water/waste water utilities. In fact, billing disputes represent the largest percentage of complaints for water/waste water utilities for six of the seven states with available data. In Oregon, natural gas receives the highest number of billing disputes.

In Figure 5, billing complaints account for a larger percentage of total complaints for Arkansas compared to other states. However, Arkansas' consumer services department uses only five broad categories: billing, service quality, service requests, non-jurisdictional, and miscellaneous. That compares to eight categories in Virginia and ten in Ohio, for example,



which makes the percentages appear higher in Arkansas. This is just one example of the differences in state approaches to categorizing complaints.

Using the detailed set of complaints data, the authors compared the percentage of electric complaints related to billing in 2014 to the average monthly bill for each state from that year. That relationship is shown in Figure 6 (next page). Arkansas data is excluded from Figure 6 because it uses only five broad categories, compared to the other states reporting this data, which each use an average of nine categories. Based on the data from the small set of available states, the scatter plot shows a positive correlation between average monthly electric bill and percentage of electric billing complaints. While the sample size available is not large enough to draw statistically significant evidence, nor is it fully geographically representative, this does suggest one possible avenue for future research.

Throughout this review of commission complaints, billing complaints are consistently among the most common, and most of those are about electric bills. Many commissions track complaints by industry and by topic, but not all states make that data readily accessible. Some commissions publish complaints data online, for example in annual reports, and a few states make complaints data even more accessible publishing report-card-style data on complaints filed against competitive service suppliers. These include, for example, the Public Utilities Regulatory Authority of Connecticut (CT-PURA 2016) and Public Utility Commission of Texas (PUCT 2016a).

When reviewing complaints data, key events in particular states are likely to result in particular kinds of complaints. For example, changes in bill format, extreme weather, and any

sudden changes in rates that are large enough to be noticed by many customers have the potential to affect customers' experiences with billing and cause additional complaints. The impact of key events of the volume of complaints utility commissions receive is a topic ripe for additional research, by carefully noting clusters of related complaints that come in response to specific events. Identifying and analyzing such complaint-initiating events could help commissions and utilities to better predict spikes in complaints, and all interested parties could prepare and disseminate information ahead of time, to try to head off large numbers of complaints.



Finally, this review of state complaints data reveals a lack of consistency in how complaints are categorized by each commission, which limits everyone's ability to compare the states and draw meaningful conclusions. While this review of complaints data did reveal some broad trends, focusing in on specific aspects of the data proved challenging. The independent nature of state utility commissions makes the different approaches adopted for coding complaints data understandable: Diverse complaints categories reflect the many different objectives, events, and available tools that shape each commission's approach to the collection of complaints data. Still, states might consider working together to see if utility and commission consumer services agencies could agree on at least some standardizing of category names.

IV. Conclusions

A. Summary of findings

The high level finding from all of these information sources is that utility billing and customer care is an expansive area of study, and one that continues to change in important ways, to meet important goals and objectives. Several newly emerging goals and objectives are rising in importance in conjunction with grid modernization efforts. Steady or increasing numbers of consumer complaints indicate that there is room for improvement. Important topics for consideration include:

- How can consumers best be informed and educated about utility bills, keeping in mind that different customer types will have different information needs and different preferences for information sources, channels, and qualities of messages?
- How can utilities and commissions most efficiently and effectively answer customer billing questions and concerns when they do arise? And,
- How can utilities, commissions, and other interest groups work together to coordinate communications and reinforce each others' messages to help reduce or alleviate future problems?

OPower (2015, pp. 8, 11) recommends that utilities try to head off consumer calls and complaints by proactively providing the information consumers might need to understand why high-bills happen. That includes any substantial changes in rates and tariffs; unusual and especially extreme weather events; and changes in usage that can be the result of lifestyle changes, equipment malfunctions, or simply wasteful behaviors. The first kinds of changes are outside of the customer's control, but it is still important that clear explanations be provided, ahead of time if possible, to help reduce the need for service center contacts.

And, to the extent that a utility or other service provider can help identify any equipment malfunction at the earliest practical time, customers will be empowered to take action to get equipment fixed, often even before a high bill is received. That is one of the promises of new, more sophisticated metering technology, possibly combined with more intelligent sensors and controls embedded in appliances: The same way users might now expect their car to notify them when maintenance is needed or a fault is discovered in one of their vehicle's subsystems, consumers can easily imagine a future where a water leak is readily discovered or an appliance somehow alerts them when maintenance or repairs are needed.

Utility roles are changing with the advent of grid modernization, and one important aspect of those changes is expected to be greatly increased two-way communications between consumers and utilities. A primary example is the introduction of in-home energy use monitors, smart thermostats, and ubiquitous energy management systems (Bojanczyk 2013; Buchanan, Russo, and Anderson 2015, 2014; Cappers and Scheer 2014; Farouqui, Sergici and Sharif 2010; Foster and Mazur-Stommen 2012; Ransbotham 2015; Todd, Perry, et al. 2015, 2014). Other primary examples include demand-response capabilities, both customer operated and automated,

and possible utility roles in distributed energy resources. (Crosby 2015; GTM Research 2015; Mission:data Coalition 2015; Smart Grid News 2016; Stanton 2015).

Each of these new technologies and possible new services that utilities might provide deserves critical analysis to determine which are best served by competitive markets rather than monopoly providers. Realistically, both approaches are likely to take root and grow in different places according to differences in industry structure and local preferences. In either case, the emerging consumer choices and changing utility service will necessitate new kinds of communications and education, and it is not too early to begin investigating how they will interface with utility billing and customer care systems.

Customer wants and needs are different for different kinds of customers and can vary widely based on consumer interests, life changes, age, income, education, primary language, and more. As Networked Insights (2015) reports, there is a need to disaggregate customers into what they call "high-definition detail." Content Marketing Institute (2016) points out there are literally thousands of characteristics that differentiate customers from one another. All parties have much to learn from recent research about behavioral aspects of consumer energy use (Craig 2016; Sorrentino et al. 2015), community-based social marketing (Frantz, Flynn et al. 2016), and educating children about energy as a mechanism to promote household efficiency (Kirby, Guin, and Chilcote 2015). Research points towards increasing customer engagement and refining the data accessible to and presented to different consumer groups, to help them best manage their use of utility services.

Utilities are already engaging in related research, using capable in-house personnel, hiring qualified consultants, or both. For example, at the *Indiana Billing Symposium*, utilities reported working on consumer surveys with J.D. Powers and Associates, Market Strategies International, Walker Research, and Qualtrics.

With changes in usage due to customer actions or inactions, customers are not likely to be happy if it turns out a high bill is essentially of their own making, but at least consumers can be educated about what has happened and why. And, perhaps utilities, commissions, and consumer groups should engage in more concerted efforts to teach consumers how to avoid the specific actions or inactions that result in high bills.

The review of complaints data completed for this project shows that there is much variation in how states categorize complaints and what data about complaints is made public. It could be helpful for states to coordinate on how to categorize complaints and to regularly share success stories about how particular communication techniques are helping to reduce complaints or resolve issues, topic by topic. And, a comprehensive review of formal complaints, to identify major issues, could help states to focus attention first on the issues where more detailed attention could provide the greatest benefits. A related subject is identified by NASUCA (2011b), which suggests having states gather uniform statistical data related to late payments, arrearages, and disconnections.

The review of billing issues and complaints also highlights the issue of utility service affordability and protections for the most vulnerable utility consumers. Taxpayer and ratepayer

funding for low-income financial assistance is a problem that has been festering for more than a generation, with less than stellar outcomes. For example:

- Vermont data shows that lower-income consumers spend less on energy compared to more well-to-do consumers but still pay a larger portion of total income, with percentages of total income as much as ten or more times greater than the most well-to-do. And, in recent years the Vermont data shows the problem getting worse, not better. Teller-Elsberg, Sovacool, et al. (2016) report on the problem and provide a series of policy recommendations.
- A study by the Pennsylvania Public Utilities Commission (PA-PUC 2015a) identifies thousands of households entering the coldest months of the year with either no heat or with unsafe heating equipment.
- A NASUCA resolution (2011a) talks about the "disconnection/reconnection cycle" for struggling customers, and "its associated harmful consequences."

Boardman (2012, pp. 143-44) talks about the need to "fuel-poverty-proof the home" by upgrading homes to meet much higher efficiency standards. She also notes that there are many non-energy benefits that are too often omitted from consideration during utility program design, including: "better health, less stress, greater comfort, the full use of the home and better maintenance of buildings." As Boardman explains, the sum of those benefits is sometimes greater than the direct energy-related benefits. Teller-Elsberg, Sovacool, et al. (2016 p. 88) report a positive benefit-cost ratio for Vermont's low-income weatherization program, with returns of \$1.80 in reduced energy bills plus \$0.71 in non-energy benefits for each dollar spent.

These are only a couple of examples pointing towards the possibility of program interventions that could achieve greater success in addressing utility affordability. Much progress has already been achieved in learning what policy interventions work best and how to implement them (see, for example: ACEEE 2016; Bird and Hernandez 2012; LIHEAP 2016a; O'Sullivan, Howden-Chapman, et al. 2015). Nevertheless, many billing concerns and complaints are closely related to the issue of affordability, and all interest groups will benefit from continuous improvement in low-income assistance program effectiveness.

B. Recommendations for future study

This study is by no means conclusive: It is a preliminary sketch of issues involved in utility billing and customer care.

One preliminary observation from this research is that much of the consumer research conducted by utility companies or by consulting firms hired by utilities is held as confidential and not shared publicly, which could be hindering better understanding on the part of commissions and other interested parties. Of course it is very important to protect the privacy of any customers who are participating in this kind of research, by protecting their identity and any personal information. But, to the extent that such research is ultimately paid for by ratepayers, commissions might consider whether there should be some obligation to share results publicly.

Looking towards the future, important emerging trends are influencing thinking about the roles, forms, and contents of tomorrow's billing systems. Among those trends are grid modernization, including automated metering infrastructure and possibilities for new time-differentiated rate designs, plus electronic bill presentment, and emerging principles that are guiding all kinds of service providers to introduce new systems for best managing consumer affairs and education and improving customer relations.

In addition, the regulatory community as a whole is now starting to examine crosscutting issues for all utilities, particularly for energy and water. The nexus between water and energy utilities is attracting a great deal of attention, in part because copious quantities of water are necessary for energy production systems and tremendous quantities of energy are used in transporting, heating, and cooling water. (Energy.gov 2016, 2014; Webber 2016). Interested parties can begin to think about what kinds of consumer information and education will be needed to address these linkages, which are in the early stages of understanding.

Future studies to expand on this research could focus on the following five subjects:

- (1) Coordinating and deepening content analysis research about commission and utility complaints, for both informal and formal complaints;
- (2) Researching consumer interests in a much more detailed way;
- (3) Identifying future roles for utilities and assessing which are best served by competitive markets rather than monopoly providers;
- (4) Revisiting the chronic issue of low-income protections and assistance programs; and,
- (5) Exploring crosscutting issues and the possibilities for coordinated improvements for all energy and water utilities.

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Appendix

Index of State Public Utility Regulatory Commission Administrative Rules

ALABAMA PUBLIC SERVICE COMMISSION

General Rules of the Alabama Public Service Commission Rules 4-16 http://www.psc.alabama.gov/Administrative/GenRules_01_10_05.pdf

ALASKA: REGULATORY COMMISSION OF ALASKA

3 Alaska Administrative Code (AAC), Chapter 52 https://rca.alaska.gov/RCAWeb/AboutRCA/RCAStatutesAndRegulations.aspx

ARIZONA CORPORATION COMMISSION

Arizona Administrative Code, Corporation Commission – Fixed Utilities, Title 14, Ch. 2, Articles 2, 3, 4 & 6 <u>http://www.azcc.gov/Divisions/Administration/laws_rules.asp</u>

ARKANSAS PUBLIC SERVICE COMMISSION

Arkansas General Service Rules, Chapter 5, Sections 2-6 http://www.apscservices.info/rules.asp

CALIFORNIA PUBLIC UTILITIES COMMISSION

California Public Utilities Code http://leginfo.legislature.ca.gov/faces/codesTOCSelected.xhtml?tocCode=PUC

In California, billing rules are included in each energy utility's tariffs. Pacific Gas & Electric: <u>http://www.pge.com/tariffs/ER.SHTML#ER</u> San Diego Gas & Electric: <u>http://www.sdge.com/rates-regulations/</u> Southern California Edision: <u>https://www.sce.com/wps/portal/home/regulatory/</u>

COLORADO PUBLIC UTILITIES COMMISSION

4 Code of Colorado Regulations (C.C.R.), 723 https://www.colorado.gov/pacific/dora/pucrules

CONNECTICUT PUBLIC UTILITIES REGULATORY AUTHORITY

Regulations of Connecticut State Agencies, Title 16. Public Service Companies <u>https://eregulations.ct.gov/eRegsPortal/Browse/RCSA/%7B097A6CC4-B8F2-446E-BB92-0445EAF88C3F%7D</u>

DELAWARE PUBLIC SERVICE COMMISSION

Delaware Administrative Code, Title 26 Public Utilities (26 DE Admin Code) <u>http://regulations.delaware.gov/AdminCode/title26/index.shtml</u>

DISTRICT OF COLUMBIA PUBLIC SERVICE COMMISSION

District of Columbia Municipal Regulations (DCMR), Title 15: Public Utilities and Cable Television, Chapter 15-31 <u>http://www.dcregs.dc.gov/Gateway/ChapterHome.aspx?ChapterNumber=15-31</u>

FLORIDA PUBLIC SERVICE COMMISSION

Florida Administrative Code (FAC) §25 Public Service Commission https://www.flrules.org/gateway/Division.asp?DivID=396

GEORGIA PUBLIC SERVICE COMMISSION

Georgia Rules and Regulations (GA R&R) Chapters 515-3 and 515-7 http://rules.sos.state.ga.us/gac/515

HAWAII PUBLIC UTILITIES COMMISSION

Hawaii Administrative Rules, Chapter 6-60 http://puc.hawaii.gov/about/statutes-rules-orders/

IDAHO PUBLIC UTILITIES COMMISSION

Idaho Administrative Procedures Act Chapter 31 (IDAPA 31 et seq.) http://www.puc.idaho.gov/laws/rules.html

ILLINOIS COMMERCE COMMISSION

Illinois Administrative Code Title 83: Public Utilities (83 Ill. Adm. Code) http://www.icc.illinois.gov/cc/authority.aspx

INDIANA UTILITY REGULATORY COMMISSION

Indiana Administrative Code Title 170 (170 IAC) http://www.in.gov/iurc/2657.htm

IOWA UTILITIES BOARD

Iowa Administrative Code Utilities Division [199] (IAC 199)) https://www.legis.iowa.gov/law/administrativeRules/chapters?agency=199

KANSAS CORPORATION COMMISSION

Statutes and Regulations: <u>http://www.kcc.state.ks.us/regs/index.htm</u> Billing Standards: <u>http://www.kcc.state.ks.us/pi/billing_payment.htm</u>

KENTUCKY PUBLIC SERVICE COMMISSION

Kentucky Administrative Regulations, Title 807 (807 KAR) http://psc.ky.gov/Home/About#Statutes

LOUISIANA PUBLIC SERVICE COMMISSION

General: <u>http://www.lpsc.louisiana.gov/regs1_general.aspx</u> Electric: <u>http://www.lpsc.louisiana.gov/regs5_electric.aspx</u> Natural Gas: <u>http://www.lpsc.louisiana.gov/regs7_water.aspx</u> Water & Sewer: <u>http://www.lpsc.louisiana.gov/regs7_water.aspx</u>

MAINE PUBLIC UTILITIES COMMISSION

Code of Maine Rules, Chapter 65-407 (CMR 65-407). http://www.maine.gov/mpuc/legislative/rules/

MARYLAND PUBLIC SERVICE COMMISSION

Code of Maryland Regulations (COMAR), Title 20 – Public Service Commission http://www.dsd.state.md.us/comar/subtitle_chapters/20_Chapters.aspx

MASSACHUSETTS DEPARTMENT OF PUBLIC UTILITIES

Code of Massachusetts Regulations, 220: Department of Public Utilities <u>http://www.mass.gov/eea/grants-and-tech-assistance/laws-and-regulations/utility-statues-and-regs/dpu-regulations/</u>

MICHIGAN PUBLIC SERVICE COMMISSION

Michigan Compiled Laws R 460. (MCL R 460. et seq.) http://www.michigan.gov/mpsc/0,4639,7-159-16370_52012---,00.html

MINNESOTA PUBLIC UTILITIES COMMISSION

Minnesota Administrative Rules (Minn. R.), Public Utilities Commission <u>http://mn.gov/puc/regulation/laws-statutes-and-rules.jsp</u>

MISSISSIPPI PUBLIC SERVICE COMMISSION

Mississippi Code of Regulations, Title 39(Miss. Code R. § 39) https://www.psc.state.ms.us/executive/rules.html

MISSOURI PUBLIC SERVICE COMMISSION

Missouri Code of State Regulations, Title 4, Division 240 (4 CSR 240) http://psc.mo.gov/General/Statutes_and_Rules

MONTANA PUBLIC SERVICE COMMISSION

Administrative Rules of Montana, Chapter No. 38: Public Service Regulation (ARM 38) <u>http://www.mtrules.org/gateway/Department.asp?DeptNo=38</u>

NEBRASKA PUBLIC SERVICE COMMISSION

Neb. Admin. Code, Title 291, Ch. 9 § 0017 (NAC 291-9, for natural gas utilities only) http://www.psc.nebraska.gov/rules/rules_natgas.pdf

NEVADA PUBLIC UTILITIES COMMISSION

NV Administrative Code (NAC) Chapters 703 – Public Utilities Commission of Nevada, and 704 – Regulation of Public Utilities Generally http://puc.nv.gov/About/Docs/Statutes_Regulations/

NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

New Hampshire Code of Administrative Rules, Part Puc (NH Admin. Rules, Puc) <u>http://www.puc.nh.gov/Regulatory/rules.htm</u>

NEW JERSEY BOARD OF PUBLIC UTILITIES

New Jersey Administrative Code, Title 14: Public Utilities (N.J.A.C. 14) http://www.lexisnexis.com/hottopics/njcode/

NEW MEXICO PUBLIC REGULATION COMMISSION

New Mexico Administrative Code , Title 17: Public Utilities and Utility Services (17 NMAC) http://164.64.110.239/nmac/_title17/title17.htm

NEW YORK DEPARTMENT OF PUBLIC SERVICE

New York Compilation of Rules and Regulations, Title 16: Department of Public Service (NYCRR 16) <u>http://www3.dps.ny.gov/W/PSCWeb.nsf/ArticlesByTitle/49775FD17CDEE7F285257C9</u> 10059DEED

NORTH CAROLINA UTILITIES COMMISSION

North Carolina Administrative Code, Title 4– Commerce, Chapter 11–Utilities Commission (04 NCAC 11) <u>http://www.ncuc.commerce.state.nc.us/ncrules/rulstoc.htm</u>

NORTH DAKOTA PUBLIC SERVICE COMMISSION

North Dakota Administrative Code, Title 69: Public Service Commission and Article 69-09: Public Utility Division (N.D. Admin. Code § 69 and -§ 69-09) http://www.legis.nd.gov/information/acdata/html/Title69.html

PUBLIC UTILITIES COMMISSION OF OHIO

Ohio Administrative Code, Public Utilities Commission of Ohio (O.A.C. 4901) http://www.puco.ohio.gov/puco/index.cfm/rules/#sthash.T4vztDoS.dpbs

OKLAHOMA CORPORATION COMMISSION

Oklahoma Administrative Code, Title 165: Corporation Commission (O.A.C. 165) <u>http://www.occeweb.com/rules/rulestxt.htm</u>

OREGON PUBLIC UTILITY COMMISSION

Oregon Administrative Rules, 860: Public Utility Commission (OAR 860) http://www.puc.state.or.us/Pages/admin_rules/index.aspx

PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Code, Title 52: Public Utilities (52 Pa. Code) http://www.pacode.com/secure/data/052/052toc.html

RHODE ISLAND PUBLIC UTILITIES COMMISSION

Commission Rules and Regulations: <u>http://www.ripuc.ri.gov/rulesregs/commrules.html</u> Division Rules and Regulations (e.g., electric, natural gas, water): <u>http://www.ripuc.org/rulesregs/divrules.html</u>

SOUTH CAROLINA PUBLIC SERVICE COMMISSION

South Carolina Code of Regulations, Chapter 103 (SCCR 103) http://www.puc.sd.gov/statutes-administrativelaw/

SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

South Dakota Administrative Rules 20:10 – Public Utilities Commission – Public Utilities (SDAR 20:10 or ARSD 20:10) http://www.puc.sd.gov/statutes-administrativelaw/

TENNESSEE REGULATORY AUTHORITY

Tennessee Compiled Rules & Regulations, Chapter 1220 (TCRR 1220) http://share.tn.gov/sos/rules/1220/1220-04/1220-04.htm

TEXAS PUBLIC UTILITIES COMMISSION

Texas Administrative Code, Title 16 (16 TAC) https://www.puc.texas.gov/agency/rulesnlaws/

UTAH PUBLIC SERVICE COMMISSION

Utah Administrative Code, Title R746 – Public Service Commission (R746) http://www.rules.utah.gov/publicat/code/r746/r746.htm

VERMONT PUBLIC SERVICE BOARD

Vermont Public Service Board Rules http://psb.vermont.gov/statutesrulesandguidelines/currentrules

VIRGINIA STATE CORPORATION COMMISSION

Virginia Administrative Code, Title 20, Agency 5 (20VAC5) http://www.scc.virginia.gov/pue/rules.aspx

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Washington Administrative Code, Title 480 (WAC 480) http://apps.leg.wa.gov/wac/default.aspx?cite=480

WEST VIRGINIA PUBLIC SERVICE COMMISSION

West Virginia Code of State Rules, Title 150 (WVCSR 150) http://www.psc.state.wv.us/rules.htm

WISCONSIN PUBLIC SERVICE COMMISSION

PSC Wisconsin Administrative Code http://psc.wi.gov/theLibrary/legal/admCode.htm

WYOMING PUBLIC SERVICE COMMISSION

Public Service Commission Rules http://psc.state.wy.us/pscdocs/rules.html