# State Utility-Style Regulation of Wireless and Broadband Services?

## A Cautionary Tale from the Electric and Water Industries

Timothy J. Tardiff • Advanced Analytical Consulting Group • 112 Water Street Boston, MA 02109 • November 2022

## Executive Summary

The benefits of a national, light-touch regulatory framework for an inherently mobile, competitive, and interstate service like wireless has long been established. However, some legislators in some states are considering imposing significant new regulations—often bearing the hallmarks of utility-style regulatory regimes—on fixed and mobile wireless broadband services.

This paper examines the recent performance of wireless industry and two utility industries (water and electricity providers), the regulatory frameworks that have governed these industries, and the prices that consumers of these sectors have experienced. Consumers have experienced rising prices for water and electricity service—governed by utility-style, rate-setting regulation at the state or local level—in nearly every state examined.

Nationally, while the price of wireless service decreased by 43 percent between 2010 and 2019, water prices increased by 63 percent and electricity prices increased by 13 percent.[1] In the specific states/localities examined, water price increases ranged from 26 percent to 93 percent, while electricity price increases ranged from 1 percent to 30 percent, with just two out of the thirteen states experiencing any decline in electricity prices.

This paper serves as a cautionary tale for those states considering applying a regulatory framework similar to that of electric and water utilities to the competitive wireless industry. If past is prologue, then this paper suggests that such an approach by states will likely constrain wireless broadband innovation, deter investment, and lead to rising prices—and ultimately harm consumers.

## A National, Light-Touch Regulatory Framework for Wireless Services Has Fostered Competition and Delivered Consumer Benefits

Nearly 30 years ago, recognizing the wireless industry would grow with multiple service providers vying for customers and competing on price, coverage, and networks, Congress adopted a light-touch, federal regulatory regime with a limited state regulatory role.[2] Two bipartisan laws serve as the bedrock for the light-touch, federally-focused regulatory framework governing wireless services.

First, the 1993 Omnibus Budget Reconciliation Act preempted state regulation of rates and entry for mobile services, while preserving some state authority over "other terms and conditions."[3] It also expanded the FCC's "forbearance" authority, pursuant to which the Commission has declined to apply many common carrier statutory provisions to wireless providers to enhance competition.[4] Second, the Telecommunications Act of 1996 sought to "promote competition and reduce regulation,"[5] finding that "[t]he Internet and other interactive computer services have flourished, to the benefit of all Americans, with a minimum of government regulation."[6]

In other words, for decades, wireless policy has successfully relied on competition—and not utility-style rate and entry regulation—to drive consumer benefits from innovative wireless services, including broadband.

Light-touch regulation means prudent regulation to protect consumers and public safety where needed—and not heavy-handed rate and entry regulation. Consistent with that goal, wireless providers are regulated in targeted ways at both the federal and state levels, just not in utility-style ways.

While wireless services are primarily regulated at the federal level, states do have authority over certain aspects of wireless service.[7] [8] These include consumer protection,[9] contract disputes,[10] state universal service funds,[11] zoning and land use decisions for wireless network facilities,[12] and more. Notwithstanding these federal and state requirements, wireless providers are *not* regulated as utilities subject to price regulation—either explicit or *de facto*—at either the federal or state level.[13]

Indeed, policymakers have, for decades and on a bipartisan basis, recognized that wireless service is inherently a nationwide service for which a nationwide regulatory regime should be a priority. The reason is straightforward, as noted almost twenty years ago:

> The economics of wireless telephony suggest that …. nationally integrated network operators will choose to conform to those regulations that allow them the best opportunity to offer nationwide service. This undermines incentives for states to create efficient rules. Either such rules will have little practical impact, or they will create large *external* effects, meaning that they impact consumers and suppliers outside the political jurisdiction where policies are crafted.[14]

## State Utility-Style Regulation of Wireless/Broadband Services Would Harm Consumers

Light-touch regulation of wireless has delivered substantial consumer benefits—growing demand for better products at lower prices, facilitated by steady investment. For example, during the 2010s decade, mobile wireless providers (1) served growing volumes of consumers with higher performance services, e.g., mobile data traffic in 2020 was 108 times 2010 data traffic, at an average annual rate of 60 percent;[15] (2) with download speeds 31 times faster; [16] (3) prices 43 percent lower; [17] and (4) facilitated by annual investment in network capabilities totaling about one-third trillion dollars over the period.[18]

Nonetheless, some states are considering imposing significant utility-style regulation on broadband services, including wireless broadband. Doing so would be a mistake, and the heavy-handed regulatory framework governing electric and water utilities—which has led to constrained innovation, deterred investment and aging infrastructure, and rising prices—serves as a cautionary tale.

A number of states and interest groups have proposed state utility-style regulation of wireless and broadband services. Some state legislators have proposed state utility-style regulation of wireless and broadband services.:

- **New York (S5117):** Would authorize the public service commission to promulgate rules including, but not limited to, resiliency, post-emergency network restoration, pricing, and "anything else" the commission deems relevant to facilitating resiliency, quality, and affordability.[19]
- **Tennessee (HB 2474):** Would declare that state regulators require unambiguous authority over broadband VoIP and that the commission would have authority to implement rules related to resiliency, emergency preparedness, reporting on deployment, availability, and pricing.[20]
- **Michigan (HB 4918):** Would give the Michigan Public Service Commission authority to regulate fixed and mobile broadband service providers, including ruling on whether challenged broadband rates are lawful and in the public interest and promulgating rules related to network resiliency, public safety, billing transparency, service quality, dispute resolution, nondiscriminatory treatment, service for vulnerable populations, and discontinuance of service.[21]

These proposals to impose stricter state oversight over broadband and wireless providers would serve as a significant departure from U.S. wireless policy,[22] and mark a turn toward the heavily-regulated utility-style regimes that apply to industries like electricity and water services. Furthermore, as shown in greater detail below, state-based rate regulation does not guarantee rates will not go up—in fact, as the data illustrate, prices for rate-regulated services have generally increased.

These proposals are also at odds with established principles for when regulation is needed to replace competition. Decades ago, Professor Alfred Kahn provided the bedrock principle: "the single most widely accepted rule for the governance of regulated industries is regulate them in such a way as to produce the same results as would be produced by effective competition, *if it were feasible*."[23] He also laid out the conditions that typically occur when services are subject to economic regulation: (1) the service (or industry) in question is large, both in its own right and as a supplier of essential inputs into other sectors of the economy, (2) the industries tend to be natural monopolies, i.e., the cost of producing the product or service at issue is lower with a single supplier, and (3) competition does not work well.[24]

This is manifestly not the case for the wireless industry, which is driven by competition and, in the absence of heavy-handed regulation, has produced robust benefits for consumers.

## Electricity and Water Utilities Highlight Risk from Heavy State Regulation of Wireless

Unlike wireless, electricity and water are generally considered monopoly service providers in the U.S.[25] While the generation of electricity is competitive in much of the country,[26] the wires that deliver electricity to customers (distribution) and connect to the electricity-generating facilities (transmission) are provided exclusively by the electric utility at rates regulated by the Federal Energy Commission and state public utility commissions.[27] Similarly, the provision of water is heavily regulated, primarily by municipal governments controlling the prices water monopolies can charge local residents.[28]

Because of their monopoly status, the electric and water industries are heavily regulated, which can have real impacts on innovation, investment, and prices.

*Heavy oversight of regulated industries can deter innovation.* The electric and water industries exhibit natural monopoly characteristics in producing output and often have modest (or even declining) growth in output, because they benefit less from cost-reducing innovation that can facilitate technological progress. Indeed, because output tends to grow relatively slowly,[29] the rate of technological progress in electricity distribution and transmission has been much slower than telecommunications, as evidenced by (1) substantially lower productivity gains[30] and (2) limited opportunities to introduce innovative services.[31]

*Heavy oversight of regulated industries can deter investment.* Under traditional ratemaking, where rates are designed to cover operation and capital expenses, with a reasonable return on the latter, a utility's investments are often subject to a prudence review that ascertains whether facilities are deployed economically.[32] The time and expense of such reviews, as well as the potential for regulatory second-guessing, can reduce incentives to invest in new facilities.

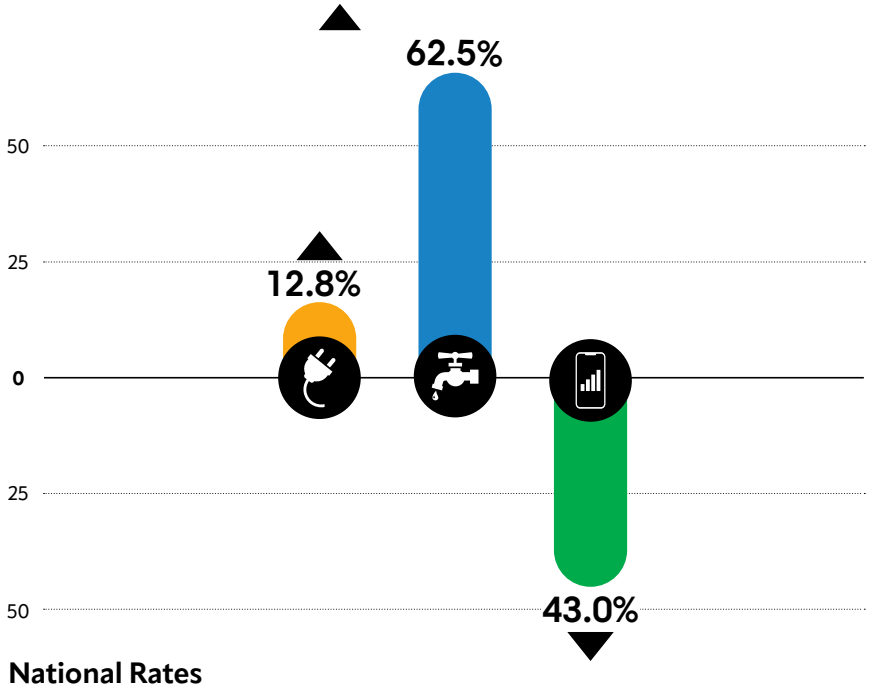
In fact, the electric and water infrastructure in the U.S. face significant investment challenges today. Regulated electric and water utilities operate with increasingly aging facilities: the average age of electric transmission infrastructure is 40 years.[33] Indeed, even in states that have embraced competition-based water or electric utility models, regulators have encountered unforeseen problems--for instance, the reliability challenges that have faced Texas' energy grid have unfortunately garnered national headlines.[34]

U.S. water infrastructure is confronting similar issues. The average age of water infrastructure has increased from 25 years in 1970 to 45 years today.[35] Each year, 250,000 to 300,000 main breaks occur in the U.S., disrupting supply and risking contamination of drinking water.[36]

Wireless providers meanwhile have invested over $121 billion since 2018, when the first 5G networks were deployed, including an all-time high at $35 billion in 2021, which also was the fourth consecutive year of increased investment."[37]

*Heavy oversight of regulated industries can impact prices.* The following charts comparing the price performance of wireless service to that of electricity and water—industries subject to significant state or local utility-style regulation as discussed above—illustrate the effect of utility-style regulation on prices. While electricity and water prices have generally increased over the past decade, prices for wireless service, which are not regulated, declined by 43 percent over the same time period.[38]

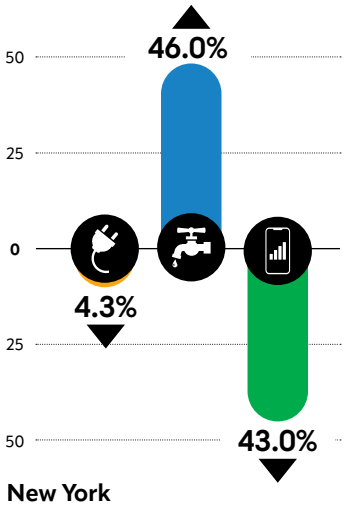





**National Rates**

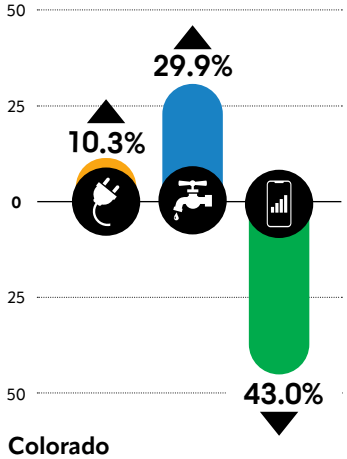
National Electricity, Water, and Wireless Price Changes (2010-2018/19)
(water rates are population weighted average of rates in 30 cities nationwide)

# Utility Rates by State



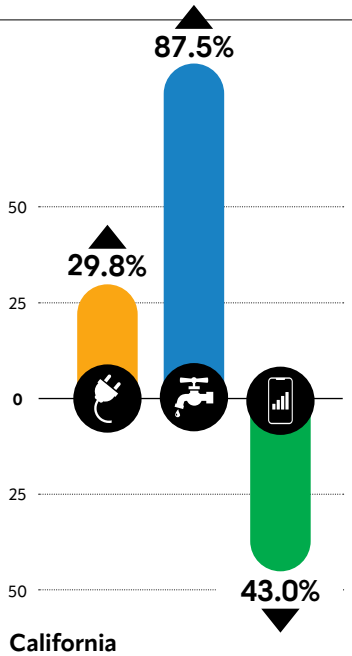

**New York**

New York Electricity, Water (NYC), and Wireless Price Changes (2010-2018/19)



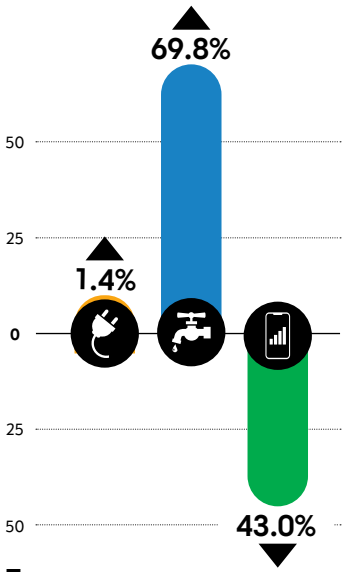

**Colorado**

Colorado Electricity, Water (Denver), and Wireless Price Changes (2010-2018/19)



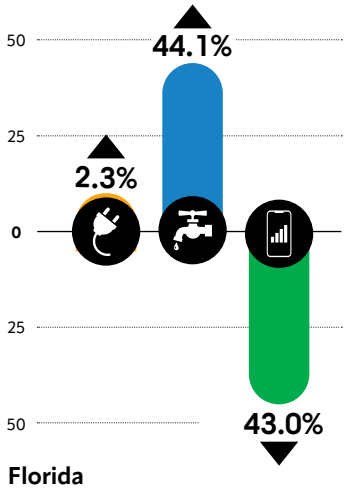

**California**

California Electricity, Water (Five Cities*), and Wireless Price Changes (2010-2018/19) *Fresno, Los Angeles, San Diego, San Francisco, San Jose population weighted rates



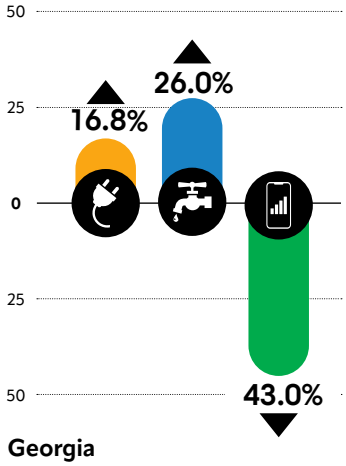

**Texas**

Texas Electricity, Water (Five Cities*), and Wireless Price Changes (2010-2018/19) *Austin, Dallas, Fort Worth, Houston, San Antonio population weighted rates



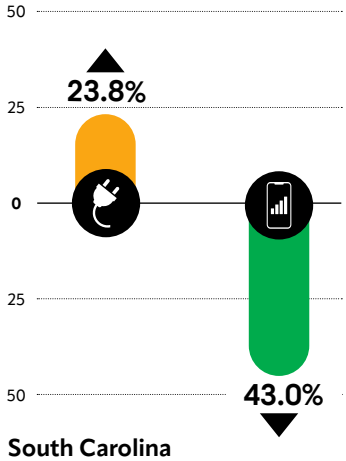

**Florida**

Florida Electricity, Water (Jacksonville), and Wireless Price Changes (2010-2018/19)



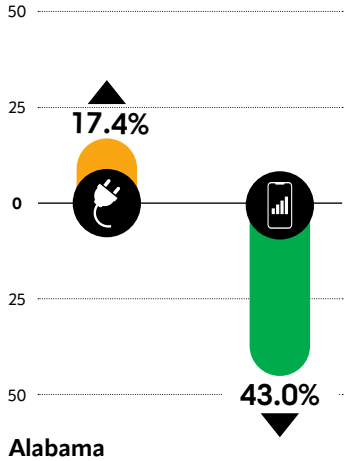

**Georgia**

Georgia Electricity, Water (Atlanta), and Wireless Price Changes (2010-2018/19)




**South Carolina**

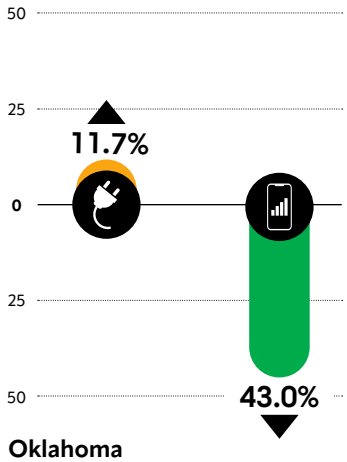
South Carolina Electricity and Wireless Price Changes (2010-2019)




**Alabama**

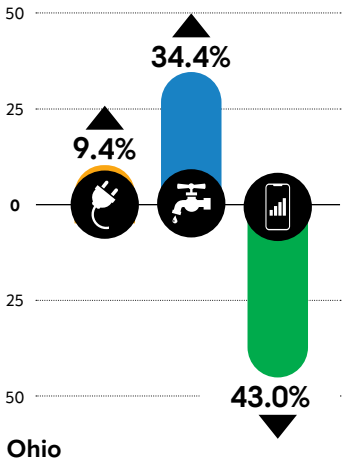
Alabama Electricity and Wireless Price Changes (2010-2019)

# Utility Rates by State



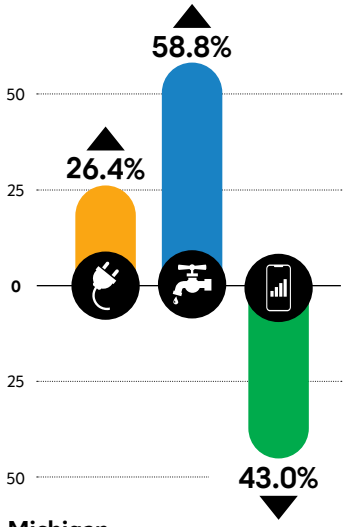

**Oklahoma**

Oklahoma Electricity and Wireless Price Changes (2010-2019



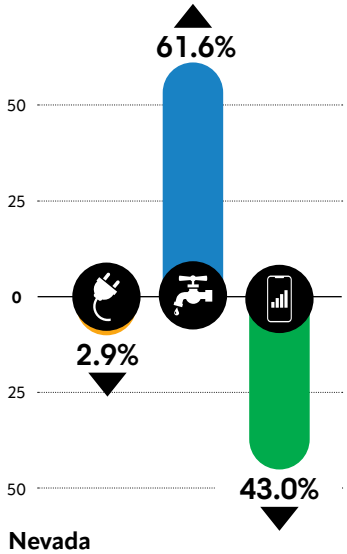

**Ohio**

Ohio Electricity, Water (Columbus), and Wireless Price Changes (2010-2018/19)



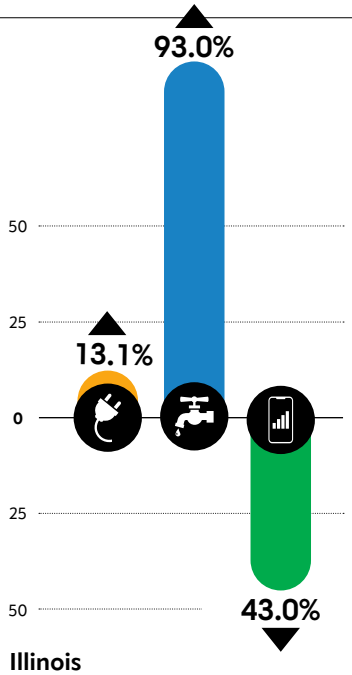

**Michigan**

Michigan Electricity, Water (Detroit), and Wireless Price Changes (2010-2018/19)




**Nevada**

Nevada Electricity, Water (Las Vegas), and Wireless Price Changes (2010-2018/19)




**Illinois**

Illinois Electricity, Water (Chicago), and Wireless Price Changes (2010-2018/19)

In contrast, while wireless prices decreased by 43 percent:

- Across the U.S., electricity rates increased by 13 percent and water prices increased by 63 percent.[39]
- In Alabama, residential electricity rates increased by 17 percent.
- In California, residential electricity rates increased by 30 percent and water prices increased by 88 percent.
- In Colorado, residential electricity rates increased by 10 percent and water prices increased by 30 percent.
- In Florida, electricity rates increased by 2 percent and water prices increased by 44 percent.
- In Georgia, electricity rates increased by 17 percent and water prices increased by 26 percent.
- In Illinois, electricity rates increased by 13 percent and water prices increased by 93 percent.
- In Michigan, electricity rates increased by 26 percent and water rates increased by 59 percent.
- In Nevada, electricity rates decreased by 3 percent and water rates increased by 62 percent.
- In New York, electricity rates decreased by 4 percent and water rates increased by 46 percent.
- In Ohio, electricity rates increased by 9 percent and water rates increased by 34 percent.
- In Oklahoma, electricity rates increased by 12 percent.
- In South Carolina, electricity rates increased by 24 percent.
- In Texas, electricity rates stayed increased by 1 percent and water rates increased by 70 percent.

The following assumptions, rationales, and datasets were used to generate these figures:

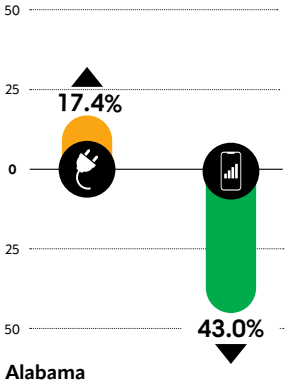
- The U.S. Energy Information Administration reports residential electricity prices in dollars per million BTU.[40]
- Circle of Blue—a nonprofit affiliate of the Pacific Institute (a water, climate and policy think tank)—reports average water prices per month for three usage levels for 30 major cities from 2010 through 2018.[41] The percentages in this paper are based on the middle usage level, i.e., a family of four using 100 gallons per person per day. Because water prices are generally set by the local water utility, there does not appear to be a data source similar to EIA's state-level electricity price data. Accordingly, Circle of Blue's city data, where available, are used as a general proxy for water rates in the states described below.[42]
- The wireless price change is based on Recon Analytics' finding that "a personal unlimited voice, text, and data plan cost an average of $113.87 for one line in 2010," while in 2019 "the same plans cost $64.95, a decline of 43 percent."[43]

The case studies below illustrate the dichotomy between the different industries and regulatory approaches.

## State Case Vignettes

As previously described, investor-owned electric utilities are subject to regulation by state public utility commissions and the FERC, which have responsibility for setting goals, managing investments, and overseeing ratemaking. In addition, local city councils or elected commissions typically regulate municipally-owned utilities, while member-owned/cooperative utilities are normally governed by a member-elected board.[44]

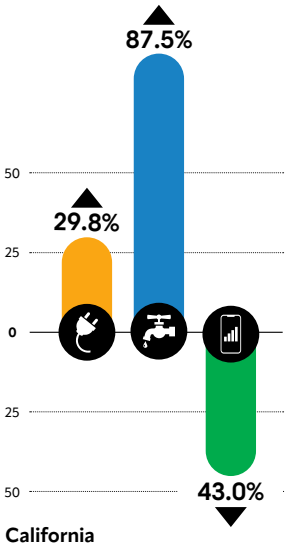
Below are 13 state case vignettes that provide a brief background on the regulatory framework for water and electricity as well as the post-2010 changes in water, electricity, and wireless prices. The case studies demonstrate that water and electric services are generally heavily regulated at the state or local level, including rate-setting authority.




**Alabama**
Alabama Electricity and Wireless Price Changes (2010-2019)

### Alabama.

*Regulatory Backdrop.* The Alabama Power Company is regulated by the Alabama PSC, while the state's nearly 50 municipally-owned, publicly-owned, or electric cooperatives are governed at the local level or by governed by a member-elected board.[45] The Alabama PSC "is a state agency charged with regulating the rates charged and services provided by public utilities in Alabama, including Alabama Power Company, the state's largest investor-owned monopoly utility, which serves some 1.45 million customers in Alabama."[46]

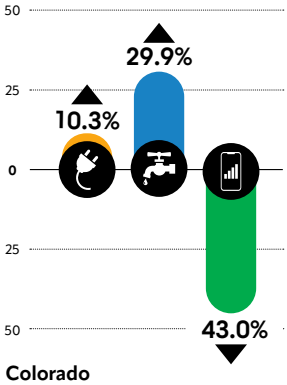



**California**
California Electricity, Water (Five Cities*), and Wireless Price Changes (2010-2018/19) *Fresno, Los Angeles, San Diego, San Francisco, San Jose population weighted rates

### California.

*Regulatory Backdrop.* California's energy and water utilities are overseen by the California Energy Commission, the California Public Utilities Commission (CPUC), and the California Independent System Operator. The CPUC establishes policies and rules for electricity and natural gas rates and services provided by private utilities in California. Three investor-owned utilities serve three-quarters of the state. California has 44 public-owned institutions that are operated by local governments that serve approximately a quarter of the state's electricity demand.[47]

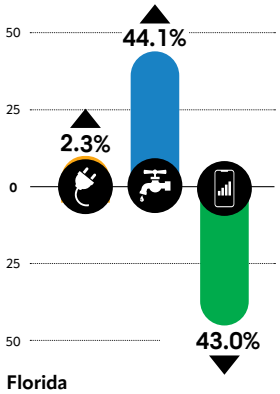
The Los Angeles Department of Water and Power (LADWP) regulates the rates of water via "a four-tiered pricing structure tied to a customer's water use."[48] Water rates are set by the five-member Board of Water and Power Commissioners, who are appointed by the Mayor and confirmed by the City Council.[49] Water rates for three of the four other Circle of Blue cities (Fresno, San Diego, and San Francisco) are also set by the city governments,[50] while rates for San Jose are determined by the CPUC.[51]




**Colorado**
Colorado Electricity, Water (Denver), and Wireless Price Changes (2010-2018/19)

## Colorado.

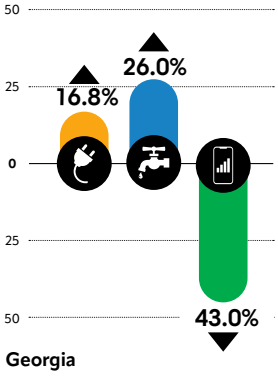
*Regulatory Backdrop.* The Colorado Public Utilities Commission has complete regulatory authority over the two investor-owned electric and gas utilities.[52] These utilities provide 57 percent (with the largest—Xcel Energy providing 53 percent) of Colorado's electricity. Municipally-owned utilities (16 percent) and rural electric cooperatives (28 percent) provide the rest.[53] Water rates in Denver are set by the five-member Denver Board of Water Commissioners, who are appointed by the Denver Mayor.[54]




**Florida**
Florida Electricity, Water (Jacksonville), and Wireless Price Changes (2010-2018/19)

## Florida.

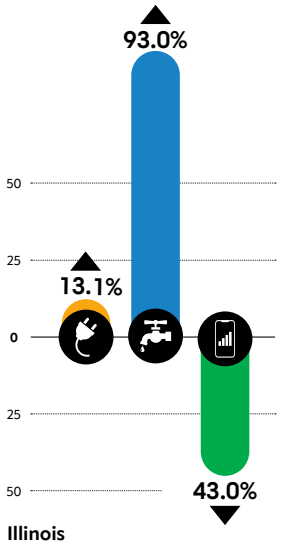
*Regulatory Backdrop.* The Florida Public Service Commission regulates rates and oversees goals and investments for the five investor-owned utilities operating in the state, while the state's 25 municipally- and publicly-owned utilities are governed at the local level and its 16 electric cooperatives are governed by a member-elected board.[55] Water rates in Jacksonville are set by the JEA (formerly known as the Jacksonville Electric Authority), a community-owned utility.[56]




**Georgia**
Georgia Electricity, Water (Atlanta), and Wireless Price Changes (2010-2018/19)

## Georgia.

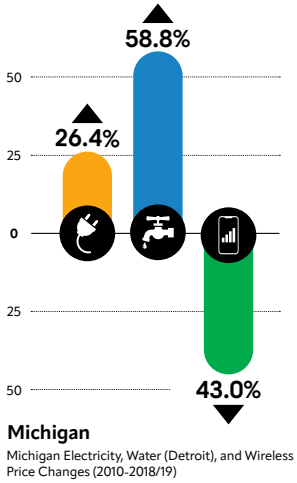
*Regulatory Backdrop.* The Georgia Power Company (GPC), an investor-owned electric utility, is fully regulated by the Georgia's Public Service Commission. "GPC serves approximately 2.4 million customers in 155 of Georgia's 159 counties."[57] Water rates in Atlanta are set by the city's Department of Watershed Management, and the city has "independent rate-setting authority."[58]




**Illinois**
Illinois Electricity, Water (Chicago), and Wireless Price Changes (2010-2018/19)

## Illinois.

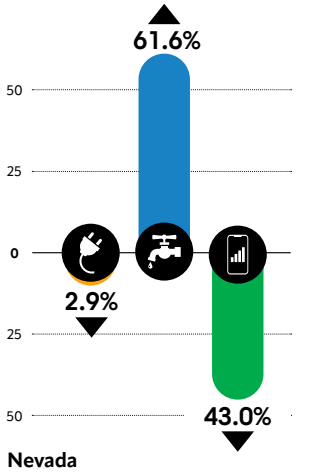
*Regulatory Backdrop.* Illinois has four investor-owned electric utilities that are overseen by the Illinois Commerce Commission (ICC). Municipal systems and electric cooperatives are not subject to ICC regulation.[59] The ICC also regulates five water, one sewer, and five combined water and sewer investor-owned utilities, which serve about eight percent of the persons in Illinois receiving water service from community public water supplies.[60] Water rates in Chicago are "voted on and approved by the Mayor and Chicago City Council" and are adjusted annually "upwards … by applying the previous year's rate of inflation."[61]




**Michigan**
Michigan Electricity, Water (Detroit), and Wireless Price Changes (2010-2018/19)

## Michigan.

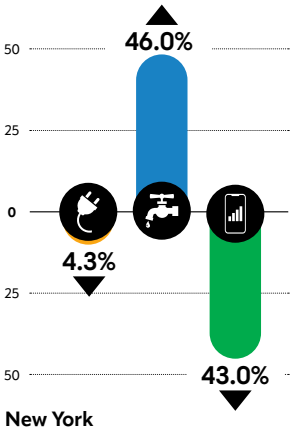
*Regulatory Backdrop.* The Michigan Public Service Commission oversees Michigan's eight privately owned electric utilities (investor-owned), nine rural electric distribution cooperatives, and one privately-owned steam utility.[62] Water rates and fees "are established by the Detroit Board of Water Commissioners."[63]




**Nevada**
Nevada Electricity, Water (Las Vegas), and Wireless Price Changes (2010-2018/19)

## Nevada.

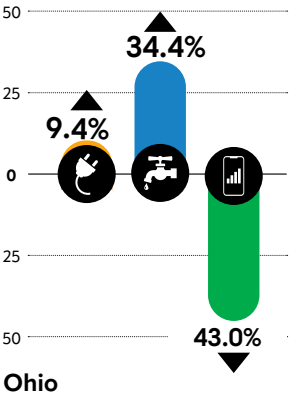
*Regulatory Backdrop.* Nevada's two investor-owned monopoly utilities, which together operate under the name NV Energy, supply 88 percent of the state's electrical power.[64] They are subject to the broad regulatory authority (including rates) of the Public Utilities Commission of Nevada.[65] Water rates and fees in Las Vegas are set by the Las Vegas Water District and the Southern Nevada Water Authority and are adjusted annually for inflation.[66]




**New York**
New York Electricity, Water (NYC), and Wireless Price Changes (2010-2018/19)

## New York.

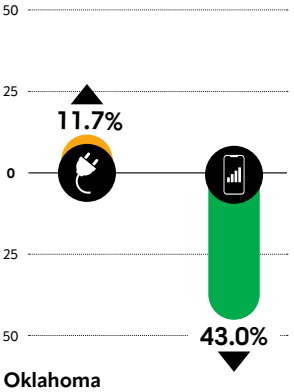
*Regulatory Backdrop.* The New York Public Service Commission regulates the rates of seven investor-owned electric utilities.[67] Water rates in New York City are set by the New York City Water Board, a seven-member board appointed by the Mayor.[68]




**Ohio**
Ohio Electricity, Water (Columbus), and Wireless Price Changes (2010-2018/19)

## Ohio.

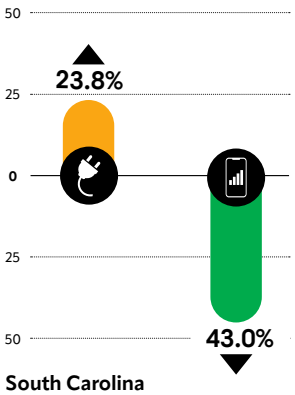
*Regulatory Backdrop.* The Public Utilities Commission of Ohio set the rules for the four electric distribution companies to transmit and distribute electricity to all of Ohio's energy customers.[69] There are also 25 Rural Electric Cooperatives not regulated by the Public Utilities Commission. Water rates in Columbus, Ohio are proposed by the City's Sewer and Water Advisory Board, a six-member board appointed by the Mayor, and then approved by the Columbus City Council.[70]




**Oklahoma**
Oklahoma Electricity and Wireless Price Changes (2010-2019

## Oklahoma.

*Regulatory Backdrop.* The Oklahoma Corporation Commission is responsible for licensing and regulating electric power utilities, natural gas utilities, and drinking water utilities. All rates, charges and terms of service for the three investor-owned electric utilities must first be approved. The Commission does not regulate the rates of municipal utilities or most of the electric cooperatives. [71]

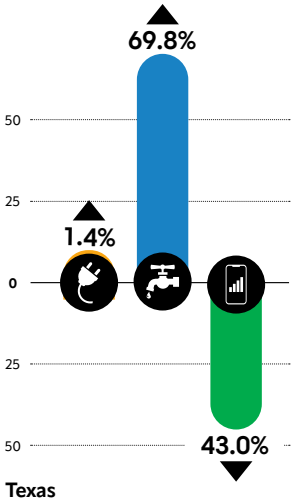



**South Carolina**

South Carolina Electricity and Wireless Price Changes (2010-2019)

## South Carolina.

*Regulatory Backdrop.* The South Carolina Public Service Commission oversees four investor-owned electric utilities that are the "largest utilities in the state in terms of customers served, amount of electricity sold, and revenue." They represent 56 percent of electricity customers in the state.[72]




**Texas**

Texas Electricity, Water (Five Cities*), and Wireless Price Changes (2010-2018/19)
*Austin, Dallas, Fort Worth, Houston, San Antonio population weighted rates

## Texas.

*Regulatory Backdrop.* The Texas Public Utility Commission (TPUC) regulates the monopoly rates of investor-owned utilities.[73] In addition to the eight investor-owned utilities identified by the TPUC, there are 25 municipally- and publicly-owned utilities that are governed at the local level and 76 electric cooperatives that are governed by a member-elected board.[74] Water rates are regulated at the municipal level (Austin, Dallas, Fort Worth, and Houston)[75] or by the TPUC (San Antonio).[76]

# ENDNOTES

**1** As explained on page 7 and in note 39, the water price percentage increase occurred between 2010 and 2018.

**2** As the Congressional Research Service recently noted, the Communications Act of 1934 gives the FCC "broad authority to regulate wired and wireless telephony" while preserving "some state authority." Congressional Research Service, *Stepping In: The FCC's Authority to Preempt State Laws Under the Communications Act*, at 1 (Sept. 20, 2021), https://sgp.fas.org/crs/misc/R46736.pdf.

**3** Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, § 6002(b)(2)(A)(iii), 107 Stat. 394 (1993), codified at 47 U.S.C. § 332(c)(3). This law also authorized licensed spectrum auctions, which have been instrumental in spurring competition and innovative wireless services. 47 U.S.C. § 309(j). In addition, the law required the Federal Communications Commission (FCC) to report annually on the state of competition for mobile wireless services. 47 U.S.C. § 322(c)(1)(C). In the first annual report required by this provision, the FCC reported that it did not regulate mobile wireless prices. *Implementation of Section 6002(B) of the Omnibus Budget Reconciliation Act of 1993 Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, First Report, 1995, ¶ 22, 10 FCC Rcd 8844, 8851 (1995).

**4** 47 U.S.C. § 160(a).

**5** Preamble to the Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 71 (1996).

**6** Telecommunications Act of 1996, Pub. L. 104–104, § 509, 110 Stat. 137 (1996), codified at 47 U.S.C § 230(a)(4).

**7** 47 U.S.C. § 332(c)(3) (preserving state authority over "other terms and conditions" of commercial mobile services).

**8** For instance, wireless providers are subject to (1) privacy rules, which require maintaining systems to protect customers' proprietary network information (47 C.F.R. Part 64, Subpart U); (2) 911 obligations, which require improving wireless 911 call reliability and providing location information to public safety and emergency response personnel (47 C.F.R. Part 9); (3) network resiliency duties, which require providers to file outage reports and support a voluntary framework for increased disaster awareness (47 C.F.R. Part 4 and *Improving the Resiliency of Mobile Wireless Communications Networks*, 31 FCC Rcd 13745 (2016)); (4) accessibility rules, which require services and equipment such as mobile phones to be accessible and usable by individuals with disabilities (47 C.F.R. Part 14 and 47 U.S.C. § 255); (5) robocall prevention rules, which allow carriers to block unwanted robocalls and require that certain providers take steps to keep illegal robocalls off their networks (*Advanced Methods to Target and Eliminate Unlawful Robocalls*, Report and Order, 32 FCC Rcd 9706 (2017) and Declaratory Ruling, 34 FCC Rcd 4876 (2019)); (6) billing rules, which require that customer bills be organized, contain full and non-misleading descriptions of charges, and disclose information to make billing inquiries (47 C.F.R. Part 64, Subpart Y); (7) network buildout requirements, which require building out authorized systems or meeting specific coverage requirements in licensed areas (47 C.F.R. § 1.946); (8) infrastructure siting requirements, which mandate compliance with FCC environmental and air safety rules when deploying certain wireless infrastructure (47 C.F.R. Part 1, Subpart I; 47 C.F.R. Part 17); and (9) and roaming obligations, which require facilities-based providers to extend roaming to other providers on reasonable terms, subject to certain limitations (47 C.F.R. § 20.12).

**9** H.R. Rep. No.111, 103d Cong., 1st Sess., at 261 (1993) ("1993 House Report").

**10** *Southwestern Bell Mobile Systems Inc.*, 14 FCC Rcd 19898, 19908 (1999).

**11** *Pittencrieff Communications, Inc.*, 13 F.C.C.R. 1735, 1742-43 (1997), *aff'd sub nom. Cellular Telecomms. Indus. Ass'n v. FCC*, 168 F.3d 1332 (D.C. Cir. 1999).

**12** 47 U.S.C. § 332(c)(7) (preserving state and local authority over zoning and land use decisions for personal wireless service facilities, subject to specified limitations); 1993 House Report at 261.

**13** In 2015, the FCC departed from its light-touch regulatory approach and reclassified broadband Internet access service, including wireless broadband, as a telecommunications service subject to myriad regulatory obligations under Title II of the Communications Act. *Protecting and Promoting the Open Internet*, 30 FCC Rcd 5601 (2015). While the net neutrality rules that were adopted (no blocking, no throttling, no paid prioritization) are beyond the scope of this paper, we note that the 2015 Order did forbear from rate regulation and preempted state net neutrality regulations. See *id*. at 5803-04, 5809. In 2018, the FCC reversed the Title II framework and returned to the light-touch approach. *Restoring Internet Freedom*, 33 FCC Rcd 311 (2017), *pets. for review granted in part,*

*denied in part, Mozilla Corp. v. FCC*, 940 F.3d 1 (D.C. Cir. 2019) (per curiam).

**14** Thomas W. Hazlett, *Is Federal Preemption Efficient in Cellular Phone Regulation*, 56 FED. COMMC'NS L.J. 155, 160 (2003). Professor Hazlett also notes that "state controls demonstrably failed to lower rates for [wireless] customers" when states experimented with cellular rate regulation in the early 1990s. *id*.

**15** Robert F. Roche and Sean McNicholas, CTIA's *WIRELESS INDUSTRY INDICES REPORT: YEAR-END 2020 RESULTS*, at 62 (Chart 23).

**16** Recon Analytics, THE 4G DECADE: QUANTIFYING THE BENEFITS," Prepared for CTIA, Jul. 29, 2020, at 10, https://api.ctia.org/wp-content/uploads/2020/07/The-4G-Decade.pdf.

**17** *Id.*, at 13.

**18** Roche and McNicholas, *supra* note 14 at 52 (Table 16).

**19** NY broadband resiliency, public safety and quality act, 2021 Bill Text NY S.B. 5117, https://legislation.nysenate.gov/pdf/bills/2021/S5117.

**20** 2022 Bill Tracking TN H.B. 2474, https://www.capitol.tn.gov/Bills/112/Bill/HB2474.pdf.

**21** 2021 Bill Text MI H.B. 4918, https://www.legislature.mi.gov/documents/2021-2022/billintroduced/House/pdf/2021-HIB-4918.pdf.

**22** Apart from the policy-based arguments against the utility-style regulatory frameworks of such state bills, we note that federal law prohibits state and local governments from regulating "the entry of or the rates charged by any commercial mobile service or any private mobile service." 47 U.S.C. § 332(c)(3)(A). And some states explicitly prohibit state oversight of broadband, including wireless broadband. For instance, Nevada state law prohibits the Public Utilities Commission from regulating "any broadband service, including imposing any requirements relating to the terms, conditions, rates or availability of broadband service." NV REV. STAT. ANN. § 704.684. Similarly, Illinois state law prohibits the Commerce Commission from regulating "the rates, terms, conditions, quality of service, availability, classification, or any other aspect of service" of broadband, interconnected VoIP, and wireless services. 220 ILCS 5/13-804, available at https://www.ilga.gov/legislation/ilcs/ilcs4.asp?DocName=022000050HArt%2E+XIII&ActID=1277&ChapterID=23&SeqStart=22500000&SeqEnd=32900000. The preamble to this section observes that "Increased investment into broadband infrastructure is critical to the economic development of this State and a key component to the retention of existing jobs and the creation of new jobs. The removal of regulatory uncertainty will attract greater private-sector investment in broadband infrastructure."

**23** Alfred E. Kahn, THE ECONOMICS OF REGULATION, Volume I, at 17 (MIT Press, 1988) (emphasis added).

**24** *Id.* at 11.

**25** "Regulated monopoly remains the dominant paradigm for electricity retailing in the United States." Jerry Ellig, *Retail Electric Competition and Natural Monopoly: The Shocking Truth*, in Adam Hoffer and Todd Nesbit, eds. REGULATION AND ECONOMIC OPPORTUNITY: BLUEPRINTS FOR REFORM 277 (Utah State University, Center for Growth and Opportunity, 2020). As the Government Accountability Office has noted, "States regulate water utility rates, in part, to curb monopoly power over water rates … Drinking water utilities have features of a natural monopoly …." U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-21-291, PRIVATE WATER UTILITIES: ACTIONS NEEDED TO ENHANCE OWNERSHIP DATA (Mar. 2021), https://www.gao.gov/assets/gao-21-291.pdf.

**26** Facilities that generate electricity such as natural gas, coal, nuclear, solar, and wind plants, are not exclusively owned by electric utilities. In addition, Ellig (*supra* note 24 at 277) reported that 13 states allow retail customers to choose among alternative providers, e.g., in addition to the electric utility, customers can obtain electricity from companies that purchase competitively generated power and deliver it over the utility's transmission and distribution wires.

**27** *See, e.g.*, Jim Lazar, ELECTRICITY REGULATION IN THE US: A GUIDE (Regulatory Assistance Project ed., 2d ed. 2016) ("Lazar"), https://www.raponline.org/knowledge-center/electricity-regulation-in-the-us-a-guide-2/.

**28** Janice A. Breecher and Jason A. Kalmbach, *Structure, Regulation, and Pricing of Water in the United States: A Study of the Great Lakes Region*, 24 UTILS. POLICY, 2013, at 32. Publicly-owned systems serve 88 percent of the U.S. population. Andrea Kopaskie, *Public vs Private: A National Overview of Water Systems*, UNIV. OF N.C. ENVTL.

FIN. BLOG (Oct. 19, 2016) at 12, https://efc.web.unc.edu/2016/10/19/public-vs-private-a-national-overview-of-water-systems/.

**29** For example, "total annual retail sales of electricity in the U.S…declined by almost 2 percent between January 2010 and January 2015." David E.M. Sappington and Dennis L. Weisman, *The Price Cap Paradox in the Electricity Sector*, 29 ELEC. J., Issue 3, 2016, at 2.

**30** Mark E. Meitzen, Philip E. Schoech, and Dennis L. Weisman, *The Alphabet of PBR in Electric Power: Why X Does Not Tell the Whole Story*, 30 ELEC. J., Issue 8, 2016, at 32.

**31** Although there have been innovations in rate "design," e.g., rates that differ by time-of-day, the product remains an undifferentiated commodity—electricity.

**32** Lazar at 91. Even regulatory regimes that allow for somewhat greater pricing flexibility than traditional ratemaking can include explicit oversight and accounting for investment. Meitzen, et al., *supra* note 29, at 31, 34.

**33** Bob Martin, *America's Need to Modernize the Electric Grid*, CHRISTIE 55 SOLUTIONS, Aug. 27, 2021, https://christie55.com/news/2021/08/americas-need-to-modernize-the-electric-transmission-grid/.

**34** See, for example, Mitchell Schnurman, *Texas' Big Payoff: How a Competitive Market Made the State a Runaway Leader in Electricity*, THE DALLAS MORNING NEWS, Feb. 9. 2022, https://www.dallasnews.com/business/energy/2022/02/09/texas-big-payoff-how-a-competitive-market-made-the-state-a-runaway-leader-in-electricity/.

**35** Center for Sustainable Systems, University of Michigan, U.S. WATER SUPPLY AND DISTRIBUTION FACTSHEET (Sept. 2021) ("CSS FACT SHEET"), https://css.umich.edu/factsheets/us-water-supply-and-distribution-factsheet.

**36** CSS FACT SHEET (citing Am. Soc'y of Civil Eng'rs, 2021 REPORT CARD FOR AMERICA'S INFRASTRUCTURE (2021)).

**37** Robert F. Roche and Sean McNicholas, CTIA's *WIRELESS INDUSTRY INDICES REPORT: YEAR-END 2021 RESULTS*.

**38** While there may be other factors beyond differences in regulation, e.g., technological change affecting capital and operating costs, consumer perceptions, and other supply and demand variables that explain some of the differences in the pricing trends, the dynamic nature of wireless services make it highly unlikely that economic regulation of mobile wireless and broadband services would improve on the results that minimal regulation has produced.

**39** This percentage is the 2010 population-weighted average for change in water prices for the 30 cities from 2010 through 2018 in the Circle of Blue data. Circle of Blue, 2010-2018 WATER RATES DATA FROM 30 MAJOR U.S. CITIES, https://www.circleofblue.org/waterpricing/. Population data are available at https://worldpopulationreview.com/us-cities.

**40** U.S. Energy Information Administration, TABLE ET3. RESIDENTIAL SECTOR ENERGY PRICE AND EXPENDITURE ESTIMATES, 1970-2019, https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_prices/res/pr_res_CA.html&sid=CA. One cent per kilowatt hour equals about $2.93 per million BTU, e.g., the average 2019 residential electricity price of $38.14 per million BTU reported by EIA is equivalent to about 13 cents per kilowatt hour.

**41** Circle of Blue, *supra*, note 38.

**42** Circle of Blue does not include cities in Alabama, Oklahoma, or South Carolina.

**43** Recon Analytics, *supra* note 15, at 13. The percentage to one decimal place is 43.0 percent.

**44** United States Environmental Protection Agency, ENERGY EFFICIENCY AND ELECTRIC INFRASTRUCTURE IN THE STATE OF ALABAMA, https://www.energystar.gov/ia/partners/downloads/mou/state_resources/State_Profiles_Alabama_508.pdf.

**45** *Id*.

**46** First Amended Complaint, *Bankston v. Alabama Pub. Serv. Comm'n*, No. 2:21-cv-00469-SMD, at 6 (M.D. Ala. Filed Aug. 2, 2021), https://saportakinsta.s3.amazonaws.com/wp-content/uploads/2021/08/alabama-psc-lawsuit.pdf.

**47** The California Energy Commission, CALIFORNIA'S ENERGY GOVERNING INSTITUTIONS (2015), https://www.energy.ca.gov/sites/default/files/2019-06/Fact_Sheet_California_Energy_Governing_Institutions.pdf.

**48** LADWP, LADWP Water Rate Changes Now in Effect (Jan. 5, 2021), https://www.ladwpnews.com/ladwp-water-rate-changes-now-in-effect/.

**49** LADWP, Who We Are, https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-whoweare?_afrLoop=658847729372185&_afrWindowMode=0&_afrWindowId=null#%40%3F_afrWindowId%3Dnull%26_afrLoop%3D658847729372185%26_afrWindowMode%3D0%26_adf.ctrl-state%3D2es5doesn_38.

**50** Fresno Department of Public Utilities, About DPU, (https://www.fresno.gov/publicutilities/about-dpu/) and Master Fee Schedule (https://www.fresno.gov/finance/wp-content/uploads/sites/11/2020/07/FY22-MFS_PUBLIC-UTILITIES-560-JulCPIv2.pdf); City of San Diego Public Utilities, Water Billing Rates (https://www.sandiego.gov/public-utilities/customer-service/water-and-sewer-rates/water); and San Francisco Public Utilities Commission, About Us (https://sfpuc.org/about-us).

**51** San Jose Water, Rates & Regulations (https://www.sjwater.com/customer-care/help-information/rates-regulations).

**52** Colorado Energy Office, Regulatory Information, (https://energyoffice.colorado.gov/climate-energy/energy-policy/regulatory-information).

**53** Southwest Energy Efficiency Project, Colorado Utility Energy Efficiency Programs (2018), https://www.swenergy.org/utilities/states/colorado.

**54** Denver Water, Board of Water Commissioners, https://www.denverwater.org/about-us/board-and-organization/board-of-water-commissioners.

**55** United States Environmental Protection Agency, Energy Efficiency and Electric Infrastructure in the State of Florida, https://www.energystar.gov/ia/partners/downloads/mou/state_resources/State_Profiles_Florida_508.pdf.

**56** See Jacksonville Ordinance Code, §§ 21.01 and 21.04(f), https://library.municode.com/fl/jacksonville/codes/code_of_ordinances?nodeId=CHRELA_PTACHLACHJAFL_ART21JE; JEA, Rates, Water, Electric and Sewer Rates, https://www.jea.com/my_account/rates/.

**57** State of Georgia Public Service Commission, Electric, https://psc.ga.gov/utilities/electric/.

**58** Fitch Ratings, Fitch Upgrades Atlanta, GA's Water and Wastewater Revs to 'AA'; Outlook Revised to Stable, https://www.fitchratings.com/research/us-public-finance/fitch-upgrades-atlanta-ga-water-wastewater-revs-to-aa-outlook-revised-to-stable-17-11-2021.

**59** Illinois Commerce Commission, 2019 Annual Report on Electricity, Gas, Water and Sewer Utilities, at 16 (Jan. 2020), https://www.ilga.gov/reports/ReportsSubmitted/778RSGAEmail1657RSGAAttach2019%20Annual%20Report%20Electricity%20Gas%20Water%20Sewer.pdf.

**60** *Id.* at 20.

**61** City of Chicago, Water and Sewer Rates, https://www.chicago.gov/city/en/depts/fin/supp_info/utility-billing/water-and-sewer-rates.html.

**62** Michigan Public Service Commission, Electricity, https://www.michigan.gov/mpsc/regulatory/electricity. Municipally-owned utilities are not subject to Commission rate regulation.

**63** City of Detroit, Detroit Water Rates, https://detroitmi.gov/sites/detroitmi.localhost/files/2021-06/Water%20and%20Sewer%20Rates%202021-2022%20Detroit%20-%20Final.pdf.

**64** State of Nevada Governor's Office of Energy, 2020 Status of Energy Report, at 4 (2020), https://energy.nv.gov/uploadedFiles/energynvgov/content/Media/2020%20Status%20of%20Energy%20Report.pdf.

**65** State of Nevada Public Utilities Commission, https://puc.nv.gov/Utilities/Electric/.

**66** Las Vegas Valley Water District, Water Rates (https://www.lvvwd.com/customer-service/pay-bill/water-rates.html) and Appendix I (https://www.lvvwd.com/assets/pdf/service-rules-appendixI.pdf).

**67** State of New York, Department of Public Utilities, Electric-Home, https://www3.dps.ny.gov/W/PSCWeb.nsf/All/B9EF3150F991B61485257687006F3888?OpenDocument.

**68** New York City Water Board, https://www1.nyc.gov/site/nycwaterboard/index.page; https://www1.nyc.gov/site/

nycwaterboard/about/water-board-members.page.

**68** DirectEnergy, THE PLAYERS IN THE OHIO ENERGY MARKET, https://www.directenergy.com/learning-center/ohio-players-electric-market.

**70** City of Columbus, SEWER AND WATER ADVISORY BOARD, https://www.columbus.gov/Templates/Detail.aspx?id=42607.

**71** Oklahoma Corporation Commission, ELECTRIC UTILITY, https://oklahoma.gov/occ/divisions/public-utility/electric-utility.html.

**72** Southeast Energy Efficiency Alliance, South Carolina, STATE GUIDE TO UTILITY ENERGY EFFICIENCY PLANNING, at 1 (2020), https://www.seealliance.org/wp-content/uploads/Profiles_SouthCarolina_Final_2020_03_25_SB.pdf.

**73** In most of the state (the territory of the Electric Reliability Council of Texas (ERCOT)), the Commission regulates rates for distribution and transmission wires, which are used to deliver power from competitive generation companies to retail customers. Texas Public Utility Commission, TRANSMISSION AND DISTRIBUTION RATES FOR INVESTOR OWNED UTILITIES, https://www.puc.texas.gov/industry/electric/rates/tdr.aspx. Rates for the vertically-integrated utilities in the rest of Texas are fully regulated. Texas Public Utility Commission, RATES FOR NON-ERCOT INVESTOR OWNED UTILITIES, https://www.puc.texas.gov/industry/electric/rates/RetailRates.aspx.

**74** United States Environmental Protection Agency, ENERGY EFFICIENCY AND ELECTRIC INFRASTRUCTURE IN THE STATE OF TEXAS, https://www.energystar.gov/ia/partners/downloads/mou/state_resources/State_Profiles_Texas_508.pdf.

**75** "[T]he governing body of each municipality has exclusive original jurisdiction over all water and sewer utility rates, operations, and services provided by a water and sewer utility within its corporate limits." Texas Water Code, Chapter 13, § 13.042, https://statutes.capitol.texas.gov/Docs/WA/htm/WA.13.htm.

**76** Texas Public Utility Commission, WATER AND SEWER UTILITIES, https://www.puc.texas.gov/industry/water/utilities/utilities.aspx.