

## Essay

# Infrastructural Regulation and the New Utilities

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*From too-big-to-fail financial firms to net neutrality to internet platforms and the water crisis in Flint, Michigan, we now face a variety of legal and public policy problems which all share a common structure. While covering vastly different subject matter areas, these disputes are similar in that they all involve the same root problem: how should law and public policy operate to prevent the arbitrary and unaccountable control over basic infrastructure? Water, finance, internet access—these are examples of goods and services which are foundational and infrastructural. They are the basis upon which much economic and social activity is built. As a result, arbitrary, exclusionary, or unfair governance of these services poses a particularly troubling problem for individuals, businesses, and communities. This Essay draws on the historical and legal tradition of public utility regulation to develop a generalized framework for regulating these kinds of infrastructural goods and services. While the history of public utility regulation has at times been fraught with some controversy, this Essay (and this symposium as a whole) suggests that the public utility tradition offers some valuable normative, legal, and institutional design insights which can be adapted for a range of contexts in today's economy.*

*The Essay develops a portable method of analysis and regulation that can be applied to a wide range of contemporary contexts. This proposed, modernized framework of “infrastructural regulation” has three elements. First, I argue that infrastructural regulation should be applied to goods that are infrastructural, in that they are defined by the conditions of scale, necessity, and vulnerability. Second, such infrastructural goods should be subjected to a mix of regulatory*

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*oversight, “firewalls,” and public options, which together can assure fair and equal access to those infrastructural goods. Finally, the Essay suggests that the regulatory oversight of such infrastructural goods must itself be constituted in more democratically-accountable ways.*

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Introduction

Consider the following four regulatory policy debates of the last few years:

1. Years after the 2008 financial crisis and the implementation of major new financial regulations aimed at addressing the problem of “too-big-to-fail” (TBTF) financial firms,<sup>1</sup> the Trump Administration has indicated its intention to dismantle many of these regulatory limits on the financial sector, through legislative and administrative action.<sup>2</sup>
2. In December 2017, the Federal Communications Commission (FCC) under Chairman Ajit Pai, elevated to the chairmanship by President

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1. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. 111-203, 124 Stat. 1376 (2010) (codified as amended in scattered sections of 12 and 15 U.S.C.). For a good overview of the financial crisis and the major policy innovations of Dodd-Frank, see, for example, Michael S. Barr, *The Financial Crisis and the Path of Reform*, 29 YALE J. ON REG. 91 (2012).

2. See, e.g., Zachary Warmbrodt, *How the Banks Won over Washington Again*, POLITICO (Dec. 28, 2017), <http://www.politico.com/story/2017/12/28/banks-trump-administration-financial-crisis-319382> [<http://perma.cc/XF8H-8TMJ>].

Trump, voted to dismantle its 2015 Open Internet Order establishing “net neutrality” regulations on Internet service providers (ISPs).<sup>3</sup>

3. At the same time, Internet platforms like Google, Facebook, and Amazon have come to be viewed as increasingly dominant actors shaping the flows of information and commerce. This has sparked a growing debate about whether further regulations need to be extended to cover Internet platforms like Google, Facebook, and Amazon, either through expanded antitrust enforcement or some “net neutrality” equivalent to address issues of information manipulation and anti-competitive practices.<sup>4</sup>
4. In Flint, Michigan, mismanagement of the city’s water utility by state administrators led to the tragic spike in lead contamination, creating one of the worst lead poisoning crises in the country.<sup>5</sup> The crisis in Flint is part of a larger growing policy battle at the local level over the privatization and mismanagement of crucial urban infrastructure including water utilities.<sup>6</sup>

These vastly different policy areas express the same core problem: how to regulate and govern foundational *infrastructure*—those goods and services that are essential, upon which much of our economic and social life are built. While conventionally the idea of “infrastructure” might evoke images of roads and bridges, the concept is much broader. Infrastructure also describes a wider range of goods and services, which together operate at scale, enable widespread downstream uses, and thus serve as foundational necessities for economic and social life.<sup>7</sup> Viewed through this lens, economies depend on finance and access to credit; communities depend on water; modern business and communications increasingly depend on both ISPs and Internet platforms like Google.

Precisely because of their vital importance, infrastructure also raises particularly difficult challenges for public policy and regulation. We must ensure that the infrastructure is built and provided at scale. But we must also ensure that the actors that control and govern infrastructure, whether they be public or

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3. See *In re Restoring Internet Freedom, Declaratory Ruling, Report and Order, and Order*, WC Docket 17-108 (adopted Dec. 14, 2017), [http://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2018/db0104/FCC-17-166A1.pdf](http://transition.fcc.gov/Daily_Releases/Daily_Business/2018/db0104/FCC-17-166A1.pdf) [<http://perma.cc/XX8C-764A>]; see also *infra* Part III.

4. See, e.g., Peter Coy, *How to Tame Google, Facebook, Amazon, and Apple*, BLOOMBERG (Nov. 29, 2017), <http://www.bloomberg.com/news/features/2017-11-29/how-to-tame-google-facebook-amazon-and-apple> [<http://perma.cc/X2S6-5XC7>]; see also *infra* Part III.

5. See, e.g., Merrit Kennedy, *Lead-Laced Water in Flint: A Step-By-Step Look at the Makings of a Crisis*, NPR (Apr. 20, 2016), <http://www.npr.org/sections/thetwo-way/2016/04/20/465545378/lead-laced-water-in-flint-a-step-by-step-look-at-the-makings-of-a-crisis> [<http://perma.cc/64F7-KEG9>].

6. See Michelle Wilde Anderson, *The New Minimal Cities*, 123 YALE L.J. 1118 (2014); *How Privatization Increases Inequality*, PUB. INTEREST (Sept. 2016), [http://www.inthepublicinterest.org/wp-content/uploads/InthePublicInterest\\_InequalityReport\\_Sept2016.pdf](http://www.inthepublicinterest.org/wp-content/uploads/InthePublicInterest_InequalityReport_Sept2016.pdf) [<http://perma.cc/TQX3-QW4X>].

7. See *infra* Part II.

private, do so in ways that assure fair and equal access to all—and remain ultimately accountable to the public good. The importance of infrastructure enables potentially dangerous forms of exploitation, domination, and extraction; by virtue of their control over the terms of access to these necessities, private or public actors can exercise preferential treatment, impose high prices, or enact troubling forms of discrimination and exclusion. That these concerns about access and fairness in context of infrastructure—whether the infrastructure of the internet economy like ISPs or Google, or the infrastructure of the real economy from Amazon’s logistics and shipping empire to access to credit and finance, to the physical infrastructure of the city—are arising in a range of different contexts suggests the need to revisit questions about how infrastructure ought to be regulated.

There is a historical tradition of regulatory theory and practice that emerged to address precisely these concerns: the public utility tradition. Legal historians have recently revived interest in this tradition, documenting how late nineteenth century lawyers and reformers innovated new legal doctrines like common carriage, and new administrative institutions like public commissions and public utilities, to address concerns about fairness and access to the infrastructure of the industrial revolution: railroads, telecommunications, and the physical infrastructure of the rapidly-developing modern city.<sup>8</sup> In parallel to this historical literature, a growing number of legal scholars have converged on the idea of public utility as a way to diagnose and address the regulatory problems posed by modern-day infrastructure, in areas as diverse as finance, healthcare, and climate change.<sup>9</sup> These case-specific accounts suggest that the historical public utility tradition can have greater traction in today’s economy.

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8. See WILLIAM J. NOVAK, A NEW DEMOCRACY: LAW AND THE CREATION OF THE MODERN STATE (forthcoming 2018); William J. Novak, *The Public Utility Idea and the Origins of Modern Business Regulation*, in CORPORATIONS AND AMERICAN DEMOCRACY 139-76 (Naomi R. Lamoreaux & William J. Novak eds., 2017) [hereinafter Novak, *The Public Utility Idea*]; William J. Novak, *Law and the Social Control of American Capitalism*, 60 EMORY L.J. 377, 399 (2010) [hereinafter, Novak, *Law and the Social Control*]; see also BARBARA FRIED, THE PROGRESSIVE ASSAULT ON LAISSEZ FAIRE: ROBERT HALE AND THE FIRST LAW AND ECONOMICS MOVEMENT 160-204 (1998); RICHARD JOHN, NETWORK NATION (2010) (describing the rise of public utility style regulation in telecommunications in the late nineteenth century); GAIL RADFORD, THE RISE OF THE PUBLIC AUTHORITY: STATEBUILDING AND ECONOMIC DEVELOPMENT IN TWENTIETH-CENTURY AMERICA 71-87 (2013); DANIEL RODGERS, ATLANTIC CROSSINGS: SOCIAL POLITICS IN A PROGRESSIVE AGE (Cambridge University Press 1998) 112-58 (discussing the rise of municipal utilities); *infra* Part I.

9. See, e.g., MEHRSA BARADARAN, HOW THE OTHER HALF BANKS: EXCLUSION, EXPLOITATION, AND THE THREAT TO DEMOCRACY (Harvard University Press 2015) (arguing for a “public option” in consumer banking); William Boyd, *Public Utility and the Low-Carbon Future*, 61 UCLA L. REV. 1614 (2014) (applying public utility concepts to contemporary energy regulation); Robert C. Hockett & Saule T. Omarova, *The Finance Franchise* 102 CORNELL L. REV. 1143 (2017) (analyzing finance as a public franchise); Morgan Ricks, *Money as Infrastructure* (on file with author) (arguing for public utility-style regulation of finance); Nicholas Bagley, *Medicine as a Public Calling*, 114 MICH. L. REV. 57 (2015) (analyzing modern medicine as a kind of public calling subject to public utility-style restrictions); K. Sabeel Rahman, *The New Utilities: Private Power, Social Infrastructure, and the Revival of the Public Utility Tradition*, 39 CARDOZO L. REV. (forthcoming 2018) [hereinafter Rahman, *The New Utilities*] (suggesting that modern forms of economic power can be analyzed through a public utility lens); K. Sabeel Rahman, *Infrastructural Exclusion and the Fight for the City: Power, Democracy, and the Case of*

This Essay sketches a generalizable, portable framework for adapting historical public utility concepts across these different regulatory policy debates of the current moment. The goal of this Essay is not to provide an in-depth account of how public utility might inform any one policy debate, such as, say, TBTF finance or the problem of water governance or internet platforms. Rather, this Essay aims to distill a common toolkit of core questions and regulatory strategies that arise from the public utility tradition, and to show how these questions, tools, and strategies can inform our approach to these diverse policy debates today. Public utility, then, offers not a blueprint or model, but rather a flexible *method*, through which we can develop more precise legal and regulatory regimes posing this similar challenge of unaccountable or arbitrary control over access to basic infrastructure.

The Essay proceeds as follows. Part I provides a brief overview of the historical public utility tradition. This Part suggests that rather than focusing on specific public utility policies like rate regulation or judicial attempts to address industries “affected by the public interest,”<sup>10</sup> we need a broader perspective of the public utility history. The central lesson for us of this public utility history lies in three insights. First, that public utility regulation was at its core an attempt to address the problem of unaccountable power and control over infrastructure, and also to assure fair and equal access to those foundational goods and services that made social and economic life possible. Second, that the toolkit of public utility regulation was actually quite broad and adaptable, involving a range of interventions aimed at addressing the problem of power over infrastructure. Third, that the category of what goods needed to be regulated in this way was essentially fluid and changes with technology and economic conditions.

Part II then sketches an updated, modern-day framework for diagnosing and regulating “infrastructure,” inspired by this public utility tradition. This Part highlights three specific implications for a modern-day approach to infrastructural regulation, informed by the public utility tradition. First, we must diagnose modern-day forms of “infrastructure” that warrant greater scrutiny. Second, we can apply a flexible range of tools to these infrastructural contexts in order to assure fair and equal access. Third, we must develop a governance regime that assures that such utility-style regulation is itself administered in an accountable and public-interested manner. Part III then applies these concepts to a very brief discussion of some current-day policy debates as an example of how this approach to regulating infrastructure can be deployed today.

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*America's Water Crisis*, 53 HARV. C.R.-C.L. L. REV. (forthcoming 2018) [hereinafter Rahman, *Infrastructural Exclusion*] (applying public utility concepts to the contemporary water access crisis in American cities); see also *infra* Part III.

10. The “public interest test” emerged in the famous case of *Munn v. Illinois*, 94 U.S. 113 (1876), but was eventually abandoned by the Supreme Court in *Nebbia v. People of New York*, 291 U.S. 502 (1934). This is often (but wrongly) viewed as evidence of the failure of public utility ideas. See *infra* Part I.

## I. Infrastructure and the Public Utility Tradition

*A. Public Utility, Domination, and the Legacy of Progressive Era Thought*

In the late-nineteenth century, the dramatic upheavals of industrialization and the emergence of new technologies like railroads and electricity fueled an extraordinary wave of intellectual debate and legal innovation aimed at tackling these newfound threats to economic freedom and well-being.<sup>11</sup> These pressures informed what scholars have termed the “first law and economics movement,” a transformation of legal thought grappling with the tensions of the new economy.<sup>12</sup>

A central concern for legal thinkers and reformers in this period was the problem of private power—particularly, the problem of the modern corporation that had grown into more powerful actors exercising influence on workers, markets, and society at large. For these Progressive Era legal thinkers, the problem with such private power was that these firms increasingly exercised a kind of quasi-sovereign power, yet were not subject to the kinds of checks and balances that the law imposed on public state actors. Morris Cohen thus argued that private property had to be seen as a “form of sovereignty” which ought to be subjected to “all those considerations of social ethics and enlightened public policy which ought to be brought to the discussion of any just form of government.”<sup>13</sup> For Louis Jaffe, property and contract law represented “passing a certain domain of Sovereignty from the state to the private employer of labor”.<sup>14</sup> Louis Brandeis, a key legal thinker and later Supreme Court Justice, framed the problem of corporate power as equivalent to the problem of political tyranny. Large corporations represented a kind of “absolutism” that might at best be “benevolent” but nevertheless posed a threat to liberty. As Brandeis wrote, “there develops within the State a state so powerful that the ordinary social and industrial forces existing are insufficient to cope with it.”<sup>15</sup>

The most glaring examples of such quasi-sovereign private power in the late nineteenth century took the form of giant corporate monopolies and trusts like Standard Oil, the railroad barons, or the telecom monopolies. Such concentrated power enabled monopolists to subdue competitors, and charge

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11. See generally MORTON KELLER, *REGULATING A NEW SOCIETY* (1994) (discussing the Progressive Era and the ways in which reformers developed new approaches to regulation in response to economic upheaval); MORTON HORWITZ, *TRANSFORMATION OF AMERICAN LAW VOL. II: 1870-1960* (1992) (tracing the intellectual developments of legal realists and reformers during this period); DANIEL T. RODGERS, *ATLANTIC CROSSINGS* (1998) (describing the intellectual origins and dynamics of Progressive Era reform thought and activism).

12. See FRIED, *supra* note 8, at 15-28; HOVENKAMP, *supra* note 11, at 80.

13. Morris Cohen, *Property and Sovereignty*, 13 *CORNELL L. REV.* 8, 14 (1927).

14. Louis Jaffe, *Law Making by Private Groups* (1937), in *AMERICAN LEGAL REALISM* 116 (William W. Fisher III et al. eds., 1993).

15. Louis Brandeis, *On Industrial Relations*, in *CURSE OF BIGNESS* 73 (Osmond Fraenkel ed. 1935).

exploitative or extractive prices. It also troublingly enabled these firms to exercise undue political influence as a byproduct of their enormous wealth and economic influence.<sup>16</sup> The Progressive Era critique of private power is most famous for its creation of antitrust law, to address the problem of corporate concentration and corporate power through breaking up powerful firms and assuring competitive markets.<sup>17</sup> But this anti-monopoly tradition encompassed more than conventional antitrust law tools of restricting mergers or breaking up concentrated firms. Another key manifestation of the critique of private power lay in the emergence of public utility regulation. For a variety of reformers especially at the state and local level, private control over essential goods and services posed a particular threat above and beyond the ordinary dangers of unchecked corporate power; by virtue of their control over these necessities, these private actors had acquired a particularly threatening form of power. Left unchecked, such private control over basic necessities meant that these private firms could effectively subordinate, dominate, and exploit ordinary users. Where individuals and communities were so dependent on the benevolence and goodwill of other actors to access basic necessities of life, this constituted the essence of unfreedom.<sup>18</sup>

The result was the innovation of a range of new regulatory tools, from legal doctrines like common carriage to new administrative commissions to oversee the provision and governance of these critical goods and services.<sup>19</sup> These public utility regulations offered a way to diagnose these problematic concentrations of power, and a set of tools for assuring fair and equal access, and imposing checks and balances on those providers. While the public utility tradition is often dismissed as a failure of administrative rate-setting,<sup>20</sup> the emergence of public utility regulation represented a critical phase of state-building, as reformers and

16. See David K. Millon, *The Sherman Act and the Balance of Power*, 61 S. CAL. L. REV. 1219-20 (1987); Robert Pitofsky, *The Political Content of Antitrust*, 127 U. PENN. L. REV. 1051 (1979).

17. For a brief overview of antitrust politics in the early twentieth century, see *supra* note 16. See also Daniel Crane, *All I Really Need to Know About Antitrust I Learned in 1912*, 100 IOWA L. REV. 2025 (2014). On the Brandeis's concept of "regulated competition" as a way of understanding the goals of antitrust law, see, for example, GERALD BERK, LOUIS D. BRANDEIS AND THE MAKING OF REGULATED COMPETITION, 1900-1932 (2009). For a modern version of this concept, see, for example, Spencer Weber Waller & Matthew Sag, *Promoting Innovation*, 100 IOWA L. REV. 2223 (2014).

18. For a discussion of the philosophical dimensions of freedom and domination behind these critiques, see, for example, K. SABEEL RAHMAN, *DEMOCRACY AGAINST DOMINATION* 80-88 (2016).

19. Novak, *Law and the Social Control*, *supra* note 8, at 400. As Novak writes, "progressives viewed the law of public utilities as a vibrant and expansive arena for experimenting with unprecedented governmental control over business, industry, and market." *Id.* at 399-400; see also Novak, *The Public Utility Idea*, *supra* note 8, 140-41 (describing the history of the public utility idea and how it drove the innovation of modern administrative governance); Bagley, *supra* note 9, at 71-77 (describing the emergence of public callings doctrine as part of this public utility tradition); Boyd, *supra* note 9, at 1636-50 (describing the intellectual emergence of the public utility idea).

20. See, e.g., *Munn v. Illinois*, 94 U.S. 113 (1876) (defining the "affected by the public interest" test for public utility regulation); *Nebbia v. New York*, 291 U.S. 502 (1934) (abandoning that test as unworkable).

policymakers innovated the institutions, tools, and practices that would become the modern administrative state. The state and city chartering of public utilities had become a widespread practice developed in the Progressive Era to regulate the provision of various goods and services, extending far beyond contemporary usage limited to industries like water, electricity, and gas to encompass everything from transportation and telecommunications to milk, fuel, and banking.<sup>21</sup> Public utility reformers expressed an overarching moral and political concern with those instances where a vital necessity for social and economic inclusion and well-being was being provided in a way that was inequitable, unfair, and most troublingly, subject to the arbitrary whims of powerful actors.

Consider a very early example of the emerging public utility critique of private power over foundational goods and services: the 1858 Wisconsin case of *Shepard v. Milwaukee Gas Light Company*.<sup>22</sup> In this case, the plaintiff challenged the activities of a private gas company operating under city charter to provide lighting to the town. When he asked for gas for his store which was already connected to the main gas line, Milwaukee Gas Light Company refused. The Court found this refusal to be impermissible. According to the court, while the company “has full right to govern itself,” it had “no right to govern the people at large, whether their dwellings happen to be lighted with oil or gas.”<sup>23</sup> The private company was fully capable of making its own rules and regulations for conditions of service, it could not be “the sole judge of the propriety of these regulations.”<sup>24</sup> Furthermore, those rules and regulations “must be reasonable, just, lawful, not capricious, arbitrary, oppressive, or unreasonable. Were it not so, the whole network of pipes and machinery would be at the mercy of the careless, the fraudulent or the malignant.”<sup>25</sup>

The language of this decision is indicative. The central problem is that control over a foundational necessity for the social and economic life of the town, gas, is in the private hands of the gas company. This control, and the importance of the good itself, places the users, like the plaintiff here, in a unique position of vulnerability and potential subjugation. That the court evokes the language of governance and arbitrary rule highlights the degree to which this problem is viewed not just as a substantive matter of gas policy, but rather as a *political* problem of accountability. Nor is this dynamic unique to just gas. As the court notes, gas itself only recently became important enough to warrant this degree of public scrutiny. As the court notes:

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21. Novak, *Law and the Social Control*, *supra* note 8, at 400 (“For progressive legal and economic reformers, the legal concept of public utility was capable of justifying state economic controls ranging from statutory police regulation to administrative rate setting to outright public ownership of the means of production.”); *see also* Boyd, *supra* note 10, at 1619.

22. *Shepard v. The Milwaukee Gas Light Co.*, 6 Wis. 539 (1858).

23. *Id.* at 542.

24. *Id.* at 543.

25. *Id.* at 548.

## Infrastructure Regulation and the New Utilities

The successful operation of this gas company worked a radical change in the mode of lighting the streets, dwellings, and places of business in the city, and created thereby a sort of necessity for the article, to produce which, the exclusive privilege was conferred upon them, and hence they assumed the correlative duty of supplying this necessity.<sup>26</sup>

Gas works, electricity, and streetcars—these mainstays of modern urban infrastructure were in the late nineteenth century the forefront of public utility politics, motivating many of the leading Progressive Era actors from thinkers and lawyers like Louis Brandeis to politicians like Cleveland Mayor Tom Johnson, who saw municipalization and regulation infrastructure as central to achieving a more equitable balance of power between private and public actors.<sup>27</sup> The concern was not limited to gas and electric utilities; rather these were simply the most glaring examples of a wider concern over the potential for arbitrary power and abuse that arises when actors concentrate control over basic necessities upon which many depend, but lacking in alternative providers or other forms of checks and balances.

Take another example: the emergence of “common carriage” regulations for utilities like railroads, premised on the old common law tradition of “public callings” for innkeepers and the like. For Progressive Era public utility theorists, the issue in the innkeeper analogy was not that inns represented some kind of intrinsically invaluable good central to human flourishing. Rather, the issue was that under particular circumstances, the innkeeper possessed a problematic concentration of *power* in his or her capacity to deny shelter to a traveler who, at that particular moment, is rendered vulnerable by the sheer necessity of shelter while on the road. Thus, Bruce Wyman, one of the leading public utility theorists described the common carriage duty to serve all comers in the following terms:<sup>28</sup>

When the weary traveler reaches the wayside inn in the gathering dusk, if the host turn him away what shall he do? Go on to the next inn? It is miles away, and the roads are infested with robbers. The traveler would be at the mercy of the innkeeper, who might practice upon him any extortion, for the guest would submit to anything almost, rather than be put out into the night. Truly a special law is required to meet this situation, for the traveler is so in the hands of the innkeeper that only an affirmative law can protect him.<sup>29</sup>

By contrast, the traveler who seeks lodging in the heart of town is in an “altogether different” situation for “there are shops in plenty and he has time to choose”. The regulatory demand, then, arises not from some intrinsic meaning

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26. *Id.* at 547.

27. *See, e.g.*, DANIEL RODGERS, ATLANTIC CROSSINGS: SOCIAL POLITICS IN A PROGRESSIVE AGE 145 (1998); GAIL RADFORD, THE RISE OF THE PUBLIC AUTHORITY: STATEBUILDING AND ECONOMIC DEVELOPMENT IN TWENTIETH-CENTURY AMERICA 75 (2013).

28. Bruce Wyman, *The Law of The Public Callings as a Solution of the Trust Problem*, 17 HARV. L. REV. 156 (1903).

29. *Id.* at 159.

of “inns”, but rather from the context-specific configuration of power between service providers and end users. Market conditions and other external factors can thus move a good in and out of the category of “common calling”.<sup>30</sup>

These common law traditions of common carriage or public callings had played a large role in the regulation of highways, rivers, or inns. For Progressive Era thinkers, these concepts offered a way to ensure fair and equal access to the new modern-day forms of infrastructure, such as electricity and telecommunications.<sup>31</sup> Indeed, the public utility framework was surprisingly flexible and spread widely, deployed in context of goods and services ranging electricity and transport to goods and services like banking, milk, ice, water, and much more.<sup>32</sup> The category of public utility was an expansive one, encompassing a wide range of goods and services. For public utility thinkers and reformers, this fluidity of the concept was one of its strengths, for they recognized that as goods became more vital and as their modes of production and provision became more concentrated, they might warrant such stringent oversight where previously none had been required.<sup>33</sup>

However, in seeking to remedy the problem of private power, the public utility reform agenda at its core was not just a suite of specific substantive policies, but rather a broader ethos of innovating new systems of *democratic governance*. Across these different types of goods and specific policy regimes, the common thread is the need to create checks and balances that, not unlike the checks and balances of our public constitutional system, would enable the accountability and contestation of concentrated private control. This institutional and process oriented contribution of the public utility vision was at times obscured by the focus on substantive policies themselves, from utility rate setting to common carriage. But it is this spirit of institutional innovation, more so than the specific policy designs themselves, that represent the lasting and most revolutionary outcome of the public utility and Progressive Era view of domination and power.<sup>34</sup>

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30. *Id.* at 160.

31. *See, e.g., id.* (describing public callings and common carriage traditions around innkeepers as a template for addressing the problems of early twentieth century public utilities).

32. *See* Novak, *Law and the Social Control*, *supra* note 8, at 399-401.

33. *See, e.g.,* *New State Ice Co v. Leibmann*, 285 U.S. 262 (1932) (Brandeis, J., dissenting). In this case, the Supreme Court rejected an Oklahoma attempt to regulate ice production as a necessity. Brandeis’ dissent is indicative of the public utility tradition style of analysis that had been central in the decades prior. Brandeis argued that Oklahoma was justified in viewing ice as a necessity, for private individuals were capable of manufacturing their own ice, the structure of production lent itself to a monopoly. *Id.* at 287-95. As Brandeis argued in his dissent, “the conception of public utility is not static.” *Id.* at 285

34. *See* Boyd, *supra* note 9, at 1619 (noting that the public utility idea was a broader ethos rather than a specific set of policies); Novak, *The Public Utility Idea*, *supra* note 8, at 173-76 (emphasizing how public utility thinkers and bureaucrats lay the foundation for modern-day democratic governance); Rahman, *The New Utilities*, *supra* note 9 (drawing out the institutional implications of public utility thought for modern-day forms of monopoly power); RAHMAN, *supra* note 18 (interpreting the democratic theory implicit in Progressive Era critiques of economic power).

The importance of governance and checks and balances is underscored by the ways in which public utility thinkers calibrated the scope of their proposals. As Walton Hamilton, a Yale economist and lawyer, put it, only some goods and services would warrant more stringent public utility style oversight: when the goods and services themselves were essential necessities, and where the existing forms of market competition and public oversight on their own were insufficient to protect against abuses and assure accountability. Thus, Hamilton argued that industries that produce “non-essentials” and could safely be left to the regular checks and balances of market competition, while those like coal and steel that were characterized by “distinctive groups of customers”—clear segments of the population like workers, producers and consumers who could self-mobilize to provide countervailing checks and balances—were similarly untroubling. Instead, he was concerned about industries like railroads and electrical power that were “linked with all the activities of the economic order” and therefore “demand large social oversight,” whether by outright public ownership or by the stringent regulation of an administrative commission.<sup>35</sup> By creating new regulatory bodies, reformers made it more possible to act on these seemingly powerful and diffuse forces of economic power and inequality. By situating these bodies in a larger context of public-oriented, democratic politics, these agencies could fairly be seen as agents of the public good. As one contemporary reformer noted, “publicness” of the “public utility” concept is the result of both the “circumstances on the one hand and the response to them, in terms of law . . . on the other”.<sup>36</sup> In fact, the very idea of a “natural monopoly” to begin with emerged out of the efforts of Progressive Era thinkers like Richard Ely to justify *greater* government oversight for a fluid, shifting category of goods that posed particular dangers of concentrated control.<sup>37</sup>

Crucially, these common law concepts were adapted not just by courts, but more importantly by reformers creating new administrative and regulatory bodies. A key front-line lay in battles over the regulation of railroads, the new infrastructure of the industrial economy. While courts played a large role in the battles over the Interstate Commerce Act and the emergence of railroad regulation of fair rates and nondiscrimination,<sup>38</sup> states like Wisconsin created new regulatory commissions to enforce obligations for universal service, reasonable rates, and accounting standards.<sup>39</sup> City-level reformers similarly drove a wave of “municipalization”, converting private control over electricity, transportation, water, and more into public provision—or tightly regulated

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35. Walton Hamilton, *The Control of Big Business*, NATION, May 25, 1932.

36. Gustavus H. Robinson, *The Public Utility Concept in American Law*, 41 HARV. L. REV. 277, 279 (1928).

37. See JOHN, *supra* note 8, at 158, 165, 195-96.

38. See, e.g., *Interstate Commerce Comm’n v. Baltimore & O. R. Co.*, 145 U.S. 263 (1892).

39. Boyd, *Public Utility and the Low-Carbon Future*, *supra* note 9, at 1641-42.

private provision.<sup>40</sup> Thus, while the public utility concept as a judicial doctrine eventually faded from view with courts abandoning the “affected by the public interest” requirement for applying public utility regulations,<sup>41</sup> this is misleading, for the judicial *retreat* from public utility represented the flip side of a widespread *establishment* of administrative bodies that, starting with public utility regulations, had grown into the apparatus for what we now think of as ordinary business and market regulation.<sup>42</sup>

### *B. From Public Utility as Model to Public Utility as Method*

These glimpses are indicative of a larger normative theory implicit in the public utility tradition, and worth recovering to inform our current thinking on public goods and inequality.

First, note how these thinkers identified the problem not in terms of a set list of intrinsically valuable public utilities. Rather, the list of basic necessities demanding more stringent regulatory oversight is a context-specific judgment based on the problem of arbitrary, unchecked power. These goods were *already* being provided by real entities on the ground. The problem was that they were being provided on unequal and arbitrary terms, without sufficient checks and balances to assure equal access or fairness.

Second, these judgments are necessarily fluid ones that depend on mapping the empirical context of the good or service in question, paying particular attention to mapping the power disparities and relationships involved. As Brandeis put it in a particularly famous dissent in the case of *New State Ice v. Liebmann*,<sup>43</sup> “the conception of public utility is not static.”<sup>44</sup> In the opinion, Brandeis sought to defer to the Oklahoma legislature, which had chartered a state utility for the production of ice. The majority rejected Oklahoma (and Brandeis’) view that ice constituted a necessity warranting exclusive state licensing and chartering of production, precluding private competitors like Liebmann. In one sense, the case stands for the judicial move away from the public utility concept presaging cases like *Nebbia*.<sup>45</sup> Indeed, the dispute between Brandeis’ dissent and the majority can be read as an example of the difficulty of determining whether a good ought to be treated as a public utility or not. While the majority acknowledged the general police powers of states to protect consumers and to

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40. See, e.g., DANIEL RODGERS, ATLANTIC CROSSINGS: SOCIAL POLITICS IN A PROGRESSIVE AGE 145 (1998); GAIL RADFORD, THE RISE OF THE PUBLIC AUTHORITY: STATEBUILDING AND ECONOMIC DEVELOPMENT IN TWENTIETH-CENTURY AMERICA 75 (2013).

41. This trajectory is usually seen as animating the line of cases stretching from *Mum v. Illinois*, 94 U.S. 113 (1877) (defining the public interest test), to *Nebbia v. New York*, 29 U.S. 502 (1934) (abandoning the previous doctrinal frameworks for a deferential standard of review).

42. Novak, *The Public Utility Idea*, *supra* note 8, at 173-6.

43. 285 U.S. 262 (1932) (Brandeis, J., dissenting).

44. *Liebmann*, 285 U.S. at 285.

45. *Nebbia v. New York*, 291 U.S. 502 (1934) (abandoning that test as unworkable).

establish public utilities of this sort,<sup>46</sup> they disagreed that ice production was sufficiently affected by the public interest to warrant such extensive regulation. For the majority, ice may have been a necessity, but it was one that was increasingly made with ease by ordinary people with more widespread access to electricity.<sup>47</sup> For Brandeis, by contrast, ice qualified as a necessity, and though private individuals were capable of manufacturing their own ice, the structure of production lent itself to a monopoly.<sup>48</sup>

But in another sense, the entire opinion, majority and dissent, is indicative of the value of the public utility framework as a *methodology*. While the disagreement is phrased in the case in terms of economic distinctions around home versus monopoly production, both opinions share a common language around the problem of contestation and domination. For the majority, their emphasis on the viability of home production of ice and their de-emphasis of ice as a vital necessity function as ways to defuse the fear of domination—because individuals are no longer dependent on a single provider, nor do they need the good itself to be full members of the polity and economy. Brandeis, by contrast, offers a typically thoroughly empirical brief sharing the Oklahoma legislature’s concern that ice production continued to exhibit both a problematic disparity of power between producers and users, and a uniquely important necessity given the context of 1930s Oklahoma.<sup>49</sup> The deploying of public utility concepts is thus a highly context-specific enterprise, requiring a mapping of the empirical uses of the good, and the ecosystem of producers and power centers that might create potential problems of domination.<sup>50</sup> The focus on power and domination, then, is a method, not a slogan, a way of diagnosing the points of the modern economy most in need of regulatory intervention.

This historical, institution-building legacy of the public utility tradition is important. The ideas of public utility reformers also have relevance today. At its core, public utility thought suggests that not all forms of arbitrary control are equally dangerous; where unchecked power has concentrated over vital necessities, these instances pose a more critical threat to social welfare and well-being, and thus require more stringent regulatory oversight. The central question, as these reformers suggest, is not just whether a good is produced on

46. *Liebmann*, 285 U.S., at 277-78.

47. *Id.* at 278.

48. *Id.* at 287-95.

49. It is also worth noting that while this case is usually referenced for the proposition of judicial deference to federalist experimentation at the state level, a closer read of the case itself reveals that the central dispute is really a substantive one in the public utility vein: a battle over the problem of power and domination in context of a set of goods that might be seen as necessities.

50. Notably, Brandeis’ other famous interventions have a similar context-specificity to them. Pamphlets like his famous *Other People’s Money* are often referenced today as a mobilizing slogan. But the work itself is an exhaustively researched piece of muckraking journalism and empirical analysis, as Brandeis maps out the ways in which railroad and financial power operates and interconnects in the modern economy. The purpose of this is to surface the underlying nodes of private power, to motivate and inform the design of public policy targeted at these on-the-ground disparities of power. See LOUIS BRANDEIS, *OTHER PEOPLE’S MONEY—AND HOW THE BANKERS USE IT* (1913).

monopolistic terms, but rather whether it is a vital necessity—and whether the unchecked control over access to the good threatens values of equality and potential for economic and social vitality.<sup>51</sup> This regulatory oversight, in turn, could take a variety of forms, including administrative oversight, outright public ownership and provision, and more.

Yet it is also true that the specific legal and institutional forms that protections for access to basic necessities took in the Progressive Era have their limits. First, as even contemporary scholars noted, there is a risk that once public utility regulations are established, they might be leveraged by incumbent firms to prevent challenges from new entrants.<sup>52</sup> Second, public utility theorists placed a great deal of faith in new public institutions such as administrative agencies. Today, we lack such optimism, with very real concerns about the regulatory accountability, ineffectiveness, or the risk of capture. Third, the problem of access to necessities is not so easily solved by focus on common carriage of monopolistic providers. While public utility thinkers limited their concerns in particular to monopoly and concentrated private control over basic services like the railroads, their concern with necessity and access to basic goods implies the need to address more systemic and diffused forms of inequality and exclusion.<sup>53</sup>

Public utility does not offer an exact formula or blueprint, but it does suggest a *method*, of mapping the ecosystem of actors that mediate access to a key good. These actors together constitute a larger system of provision, which has to be administered and governed with the right kinds of oversight institutions and strategies to ensure its accountability and efficacy as a whole.<sup>54</sup> Public utility

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51. See, e.g., Joseph Singer, *No Right to Exclude: Public Accommodations and Private Property*, 90 NW. U. L. REV. 1283, 1292, 1404-12 (1996) (critiquing the conventional view of nondiscrimination and common carriage norms as applying only in context of monopoly providers, and arguing for a more generalized “anti-feudal” principle of nondiscrimination in all public accommodations).

52. See, e.g., Horace Gray, *Passing of the Public Utility Concept*, 16 J. LAND & PUB. UTILITY ECON. 8, 15 (194) (“The public utility concept “originated as a system of social restraint designed primarily, or at least ostensibly, to protect consumers from the aggressions of monopolists; it ended as a device to protect the property, i.e., the capitalized expectancy, of these monopolists from the just demands of society, and to obstruct the development of socially superior institutions.”).

53. See, e.g., Joseph Singer, *The Anti-Apartheid Principle in American Property Law*, 1 ALA. C.R. & C.L. L. REV. 91 (2011); Singer, *supra* note 51 (critiquing the conventional view of nondiscrimination and common carriage norms as applying only in context of monopoly providers, and arguing for a more generalized “anti-feudal” principle of nondiscrimination in all public accommodations). Indeed, as we will see in Part III, *infra*, the public utility idea has in some ways facilitated more subtle and sinister forms of exclusion, assuring public access to goods and services like parks and municipal utilities, but restricting the “public” that can access these goods in ways that fostered racial segregation and racial disparities.

54. This view of “systems” of provision has itself been the subject of recent legal theory and inquiry. In a recent Article, Sara Mayeux offers a critique over how such a “systemic” view in the criminal justice context can be misleading, evoking a mechanical metaphor that overstates the hydraulic connections between different actors. See Sara Mayeux, *The Idea of the Criminal Justice System*, 44 AM. J. CRIM. L. (forthcoming 2018). Nevertheless, the idea of a system can be helpful to define a domain of governance, politics, and contestation. Indeed, many of the advocacy groups and social movements engaging in these questions of infrastructure, basic necessities, and inequality in the city themselves take on a systemic lens as a way to contest the larger patterns of law and policy beyond individualized legal

as method suggests that we approach the problem of access to basic necessities by zeroing in on those goods and services marked by particularly troubling disparities of power, where the combination of the downstream uses and importance of the good and the concentration of arbitrary authority on the part of providers or gatekeepers to the good creates an undue risk of domination.

## II. Adapting the Public Utility Framework for Regulating Modern Infrastructure

The brief historical account of public utility in Part I above indicates that the public utility tradition does offer the beginnings of a more flexible conceptual framework. The example of railroad rate commissions represents but one manifestation of public utility concepts. The public utility tradition, at its heart, is animated by two central insights—which, as will be argued below, can in turn inform a more flexible modern day regulatory approach to a wider range of “infrastructural” goods and services.

First, the public utility tradition’s central concern is with goods and services that comprise “necessities”: the businesses that affected the public interest such that they warrant more stringent regulatory oversight are those that “met an important human need” and that “presented the risk of oppression.”<sup>55</sup> Necessity, on this view, involves not just “bare survival” but broader concerns of “dependence, expectation, and reliance.”<sup>56</sup> This broad view of necessity implies a flexible, and similarly broad, set of goods and services that might fall under the rubric of “necessity,” raising greater regulatory concern.

Second, where businesses had acquired control over the provision of and terms of access to basic necessities, this quasi-sovereign power over users had to be held accountable. If the idea of “necessity” opens up the domain of businesses potentially subject to public utility style oversight, this idea of contestability similarly opens up the kinds of approaches that such oversight could take. Indeed, contestability and accountability might well be assured by other means, in which case public utility regulation may not be as necessary. For example, if market competition is robust enough, that may be sufficient to assure protection for end users through competitive pressures between rival service providers. But where such checks and balances are lacking or insufficient, greater oversight might be required.

These broad ideas of necessity and contestability give us a starting point for imagining a more flexible and modern adaptation of public utility concepts for addressing a wide range of regulatory problems arising from infrastructural goods and services. Specifically, a modern-day version of public utility policy

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focus on ‘bad actors.’ See Amna Akbar, *Toward a Radical Imagination of Law*, 93 N.Y.U. L. REV. (forthcoming 2018).

55. Bagley, *supra* note 9, at 75.

56. *Id.* at 76.

strategies would have to address three questions: first, what goods and services warrant more stringent oversight; second, what kinds of tools and regulations would such stringent oversight consist of; and third, how would we ensure that such oversight is itself implemented in an accountable and responsive way?

The rest of this Part sketches out some generalizable responses to these questions to articulate a modern-day framework. Part III then applies this framework to explain some major current regulatory policy debates today.

#### *A. Defining “Infrastructural” Goods and Services*

As I have suggested elsewhere, the historical public utility tradition is best understood today as applying to *infrastructural* goods and services.<sup>57</sup> Like the railroads of a century ago, where goods and services came to play a critical role as the foundations of economic and social activity, control over these infrastructures today raises the same concerns about domination and arbitrary power that animated public utility reformers. We can identify infrastructural goods and services as those that are characterized by three related but distinct features.

First, infrastructure arises where there might be some form of economies of scale in production. This need not take the form of the classic economist’s notion of public goods that are non-rival and non-excludable, with high sunk costs and high barriers to entry. It might also arise in industries where there are increasing returns through the form of network effects.<sup>58</sup> Thus, the similar incentives towards monopoly production that might arise in a traditional utility context of, say, electricity, might also emerge in context of network effects shaping the rise of dominant information platforms like Google or Facebook.<sup>59</sup>

The second defining characteristic of social infrastructure is the degree to which the good or service unlocks a wide range of downstream uses. As Brett Frischmann argues, the value of infrastructure in general largely derives from the kinds of activities that the good itself enables. Infrastructural goods, on Frischmann’s account, are then input into a wide array of activities, goods, and services that actors relying on the infrastructure might develop. As Frischmann explains, infrastructure can be understood as those inputs that “enable, frame, and support a wide range of activities.”<sup>60</sup> This “demand-side” view of infrastructure shifts our orientation not towards the production of the good itself,

57. This Section draws on some of my previous work. See Rahman, *The New Utilities*, *supra* note 9 at 120-128.

58. See, e.g., YOCHAI BENKLER, *THE WEALTH OF NETWORKS* 35-41 (2006); FRISCHMANN, 37-42.

59. On the utility-ness of information platforms, see *infra* Part III. See also FRANK PASQUALE, *BLACK BOX SOCIETY* (2015); Rahman, *The New Utilities*, *supra* note 9, at 148-55.

60. BRETT FRISCHMANN, *INFRASTRUCTURE: THE SOCIAL VALUE OF SHARED RESOURCES* 4 (2013).

but instead towards the kinds of uses—and the kinds of dependencies—the good engenders.

This foundational nature of infrastructural goods points to the third characteristic of social infrastructure: the risk of vulnerability to private power or domination. As Progressive Era reformers rightly understood, where a good or service is foundational, constituting a vital input into a wide range of social and economic activities, unchecked control over that good places downstream users in a highly vulnerable position, at risk of exploitation, extractive pricing, or arbitrary exclusion. Precisely because of the importance of the good or service, control over the provision of or access to these goods or services create what Joseph Fishkin calls a “bottleneck,” a legal and social structure that restricts access to resources critical to enabling economic opportunity and freedom.<sup>61</sup> The capacity of the service provider to discriminate, exclude, or otherwise exploit users from accessing a necessity places those users in a position of subordination. This ability to exclude also can arise both in clear cases where a firm dominates the provision of a particular good, and in more subtle forms where some actors control the terms of access to a valuable networked good.<sup>62</sup>

This view of infrastructure is also, importantly, fluid. A good or service might acquire infrastructural qualities over time. Internet access in the battle over net neutrality (as we will see below) represents a good example of this: Thirty years ago, Internet access could be rightly considered a luxury good, but today it is increasingly understood to be a critical necessity for access to economic opportunity and the modern digital public sphere. Similarly, we can imagine infrastructural goods that by contrast lose their infrastructural nature over time. A good that required heavy investments and scale effects in its early emergence might well become a more normal competitive market good as production technologies change. Indeed, Progressive Era reformers saw a number of consumer goods as public utilities in the early twentieth century, where production technologies had not yet advanced very far. Today, we would not consider ice or milk to require public utility regulation (although we do subject consumer goods to the kinds of ordinary regulation that Progressive Era reforms made possible). But under a different economic and technological context, these goods might well be marked by more dangerous forms of concentrated control.

### *B. Regulatory Tools for Checking Infrastructural Power*

If a good or service is infrastructural, what then follows? Rather than cutting directly to a full-blown public utility model of rate regulation and oversight, the concerns about accountability of the providers of necessities can be met through a range of regulatory tools.

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61. JOSEPH FISHKIN, *BOTTLENECKS: A THEORY OF EQUAL OPPORTUNITY* 13-14 (2014).

62. See DAVID GREWAL, *NETWORK POWER* 20-43, 63-69 (2009).

## 1. Regulatory Oversight

First, regulatory agencies can exercise oversight of infrastructural goods and services. In particular, such oversight could take the form of affirmative obligations to provide services to marginalized or overlooked constituencies, or to comply with legal standards of nondiscrimination. This has been one of the central legacies of public utility thought and innovation. Take the example of telecommunications. In the early twentieth century, ideas of common carriage and public utility initially applied to telegraph services through judicial review,<sup>63</sup> and were later codified into the Communications Act of 1934. The Act institutionalized public obligations for telecommunications firms that held themselves out as serving the public at large—whether or not they were for-profit, and whether or not they actually serviced the entire public.<sup>64</sup> Courts argued that these businesses were thus quasi-public in character, owing a “stricter duty of care,” because they had “implicitly accepted a sort of public trust.”<sup>65</sup> Title II of the Telecommunications Act of 1996 adapted traditional concepts of public utility to the new telecom reality, seeking to ensure this balance between universal access and market competition by imposing common carrier requirements on telecom services—including the requirement of serving all customers,<sup>66</sup> having just and reasonable rates,<sup>67</sup> prohibiting unjust or unreasonable discrimination,<sup>68</sup> and requiring that each carrier establish physical connections with other carriers.<sup>69</sup> The act empowered the FCC with broad authority to oversee the industry, investigate complaints, and enforce these obligations.<sup>70</sup>

## 2. Firewalls and Structuralist Regulation

However, regulatory oversight raises some difficulties of its own. First, regulators might simply fail to detect or remedy problematic exercises of power over access to infrastructure. As a good becomes more vital and important, the social costs of such under-enforcement increase. Second, regulators themselves may lack the capacity to oversee complex infrastructural systems. Limited regulatory capacity, in the form of funding, resources, personnel, and technical skill, represents a chronic problem for agencies seeking to implement regulations effectively. It also makes regulators vulnerable to interest group influence, as the regulated industries themselves can limit regulatory oversight through their

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63. *W. Union Tel. Co. v. Call Publ'g Co.*, 181 U.S. 92 (1901)

64. *See Nat'l Ass'n of Regulatory Util. Comm'rs v. F.C.C.*, 525 F.2d 630 (D.C. Cir. 1976).

65. *Id.* at 641-42.

66. Telecommunications Act of 1996, 47 U.S.C. § 201(a) (2018).

67. *Id.*

68. *Id.*

69. *Id.*

70. *See id.* §§ 204, 205, 208, 215.

control of information that the regulators need to implement regulatory standards.<sup>71</sup> Third, firms premised on the provision of infrastructural goods and services may have stronger incentives to push back on such regulatory oversight, working more aggressively to prevent, dismantle, or coopt regulators.

Given these difficulties, infrastructural goods and services might be better regulated through a different form of oversight: what we might term *structuralist* regulations. In the public utility tradition, some of the key regulatory interventions involved attempts to transform the corporate structures of the firms themselves providing these infrastructural goods as a way to preempt exploitative or exclusionary treatment by reducing potential conflicts of interest. Thus, historically financial regulations have often imposed limits on the kinds of risk-taking investments that cash depositories can participate in, effectively “firewalling” riskier forms of finance away from the core banking system; this compartmentalization reduced the dangers of unstable and exploitative core banking services and limited the potential contagion of financial busts.<sup>72</sup> Similarly, antitrust reformers in the nineteenth century worried particularly about the ways in which railroad companies might fuse with financial interests or other producers creating a potential for self-dealing.<sup>73</sup> In the electric utility context, Congress passed the Public Utility Holding Company Act (PUHCA) in 1935, aimed at preventing financial interests from concentrating control over electrical utilities through hidden investment vehicles and corporate structuring arrangements.<sup>74</sup> The concern with Net Neutrality is a similar one, that the firms controlling the infrastructure of the internet might have the ability to self-deal, favoring their own content or paid content and blocking rival competitors.<sup>75</sup>

These various examples of regulation are structuralist in the sense that they target not the surface-level conduct of the infrastructural firm at the level of

71. See, e.g., Nolan McCarty, *Complexity, Capacity, and Capture, in* PREVENTING REGULATORY CAPTURE: SPECIAL INTEREST INFLUENCE AND HOW TO LIMIT IT 99-123 (Daniel Carpenter & David Moss eds. 2014) (describing how complexity creates an epistemic dependence of regulators on regulated parties themselves for information to ground regulatory policies, creating additional channels for special interest influence limiting regulatory effectiveness); see also Dan Awrey, *Complexity, Innovation, and the Regulation of Modern Financial Markets*, 2 HARV. BUS. L. REV. 277 (2012); K. Sabeel Rahman, *Envisioning the Regulatory State: Technocracy, Democracy, and Institutional Experimentation in the 2010 Financial Reform and Oil Spill Statutes*, 48 HARV. J. ON LEGIS. 555, 571 (2011) (“Indeed, even where agencies emphasize scientific knowledge, sophisticated interest groups are able to provide agencies with data and information more favorable to their interests.”); Wendy Wagner, *Administrative Law, Filter Failure, and Information Capture*, 59 DUKE L. J. 1326, 1332 (2010); Robert Weber, *Structural Regulation as Antidote to Complexity Capture*, 49 AM. BUS. L. J. 643, 645, 720 (2012).

72. GRETA KRIPPNER, CAPITALIZING ON CRISIS: THE POLITICAL ORIGINS OF THE RISE OF FINANCE 61 (2011).

73. This was a key concern in Louis Brandeis’s influential pamphlet on railroad and financial concentration. See LOUIS D. BRANDEIS, OTHER PEOPLE’S MONEY AND HOW THE BANKERS USE IT (Frederick A Stokes ed., 1913).

74. Public Utility Holding Company Act of 1935, Pub. L. No. 74-333, 49 Stat. 803, repealed by Public Utility Holding Company Act of 2005, Pub. L. No. 109-58, 119 Stat. 972 (codified at 42 U.S.C. § 16451 (2018)).

75. See *infra* Part III.

individual transactions; but instead seek to alter the corporate structure of the firm itself as a way to prophylactically reduce the propensity towards problematic transactions in the first place. These structural limits might take the form of “firewalls” that cordon off the basic and stable core service from riskier or more unstable alternatives—as in the case of the separation of investment or commercial banking.<sup>76</sup> The limits may take the form of conflict-of-interest requirements such as preventing the fusion of content producers and communications infrastructure firms. Or it might take the form of financial regulations that limit the kinds of funding and investment regimes that are permitted for infrastructural firms, as in the case of PUHCA.

Structuralist regulation of this sort is advantageous in the infrastructure context, because it allows regulators to focus their scarce regulatory capacities to the root drivers of exploitative, extractive, or exclusionary control over infrastructure. Moving regulatory focus “upstream” from specific transactions can thus help head off multiple instances of harmful transactions, reducing the overall likelihood of harm.

### 3. Public Options

Third, we might pursue a range of options through which public actors themselves directly provide the good or service in question. Certainly, this might include outright nationalization, municipalization, or public provision—but it need not. A public role in providing an infrastructural good might also take the form of a “public option” where a governmental provider competes alongside private providers, offering a simple, “plain vanilla” version of the service. Public options combine the virtues of both public provision and competitive provision: a plain vanilla public option would be controlled by non-profit public actors charged with obligations to serve all comers in a nondiscriminatory fashion, and to affirmatively provide its goods and services to under-served or marginalized constituencies. At the same time, private alternatives can still exist on the market—but would face competitive pressure from the baseline public option. Public options are already widespread in public policy, often hidden from view.<sup>77</sup> Where an infrastructural good or service is under the control of a private actor, public options could be used more widely to assure access and accountability.

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76. See, e.g., Prasad Krishnamurthy, *Reviving Glass-Steagall?* (forthcoming) (draft on file with the author).

77. Adam Levitin & Susan Wachter, *The Public Option in Housing Finance* (Geo. Pub. Law & Legal Theory Working Paper Series No. 1966550, 2012). See also Robert Hockett & Saule Omarova, *‘Private’ Means to ‘Public’ Ends: Governments as Market Actors* (UNC Legal Studies Research Paper No. 2222444, 2013), [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2222444](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2222444) [<http://perma.cc/6WEL-QXTJ>].

*C. Infrastructure and Governance*

But while Progressive Era reformers may have had a greater sense of optimism about the possibilities of government oversight, today's regulators operate in a vastly different environment, one of prevailing skepticism and unease about the efficacy and accountability of public actors.<sup>78</sup> Indeed, failures of access to infrastructure can just as easily arise in context of public actors that have imposed burdensome bureaucratic hurdles to access—a chronic concern long noted among poverty law scholars.<sup>79</sup> At the same time, the above regulatory strategies for assuring fair and equal access to infrastructural goods and services depend in large part on the effectiveness and accountability of public actors themselves. Regulatory capture and regulatory failure remain endemic concerns in public law scholarship and necessarily inform institutional and policy design questions around regulation.<sup>80</sup> A crucial dimension of modern-day infrastructure regulation, then, will have to address these questions of regulatory capacity and accountability.

At the local level, there had been a short-lived attempt to establish electoral accountability for regional utilities and special districts, such as state-chartered water utilities. But under constitutional doctrines, these utilities have limited powers and geographic scope, and are therefore not obligated to accord voting or participation rights to end users.<sup>81</sup> These holdings seem to run counter to a string of precedents extending the one-person-one-vote requirement to all affected residents of other state-chartered local bodies that exercised “public functions,” such as school boards.<sup>82</sup> As these cases indicate, courts have distinguished these different local entities in terms of the scope of their authority—special districts, according to the courts, exercise more limited

78. On this transition from a pre-New Deal optimism about regulation to a modern-day skepticism, see, for example, DANIEL RODGERS, *AGE OF FRACTURE* (Belknap Press 2011), and Daniel T. Rodgers, Book Review, *Moocher Class Warfare*, *DEMOCRACY J.* (2012), <http://democracyjournal.org/magazine/24/moocher-class-warfare> [<http://perma.cc/TJ6M-NV4M>].

79. See KATHRYN J. EDIN & H. LUKE SHAEFER, *\$2:00 A DAY: LIVING ON ALMOST NOTHING IN AMERICA* (2016); DANIEL L. HATCHER, *THE POVERTY INDUSTRY: THE EXPLOITATION OF AMERICA'S MOST VULNERABLE CITIZENS* (2016). For a classic statement of the problem, see Michael Lipsky, *Bureaucratic Disentitlement in Social Welfare Programs*, 58 *SOC. SERV. REV.* 3 (1984).

80. For a recent overview of regulatory capture concerns and remedies, see, for example, *PREVENTING REGULATORY CAPTURE: SPECIAL INTEREST INFLUENCE AND HOW TO LIMIT IT* 365 (Daniel Carpenter & David Moss eds., 2013).

81. See *Ball v. James*, 451 U.S. 355 (1981) (declining to extend one-person-one-vote to Arizona special district); *Salyer Land Co. v. Tulare Lake Basin Water Storage Dist.*, 410 U.S. 719 (1973) (declining to extend one-person, one-vote to a water storage district); *Kessler v. Grand Cent. Dist. Mgmt. Ass'n*, 158 F.3d 92 (2d Cir. 1998); Richard Briffault, *Who Rules at Home?: One Person/ One Vote and Local Governments*, 60 *U. CHI. L. REV.* 339 (1993).

82. See *Kramer v. Union Sch. Dist. No. 15*, 395 U.S. 621 (1969) (requiring extension of franchise to all residents of a school board area, including those without children); *Avery v. Midland Cty.*, 390 U.S. 474 (1968) (extending one-person-one-vote to Texas Commissioners Court); *Reynolds v. Sims*, 377 U.S. 533 (1964) (establishing the one-person-one-vote standard); *Fumaloro v. Chi. Bd. of Educ.*, 142 Ill. 2d 54 (1990) (requiring one-person-one-vote for all residents in a school system on grounds that all were affected by the authority of the school board).

functions and scope of authority and thus need not be saddled with the one-person-one-vote requirement.<sup>83</sup>

But legislatures can design these regulatory bodies and these public utility agencies in ways that institutionalize more systematic—and flexible—internal checks and balances. Public law scholars have proposed various forms of consumer, user, or stakeholder representation through advisory bodies, or through dedicated consumer representative offices; these measures could be easily incorporated into the design of administrative bodies charged with overseeing vital infrastructure.<sup>84</sup> Participatory governance scholars have also shown examples and suggested legal structures to enable the systematic participation of stakeholders in collaborative governance arrangements, which could similarly be adapted in these utility and infrastructure contexts.<sup>85</sup>

This Part has outlined a general framework for conceptualizing the regulation of infrastructure today. Where goods and services have acquired extensive scale, providing a necessity, and creating a potential for abuse, greater regulatory checks and balances are required to ensure that the public at large can access the benefits of these critical goods and services without being vulnerable to exploitation, exclusion, or mistreatment by those controlling the infrastructure itself. These protections can be achieved through a variety of tools: oversight, structuralist regulations, and public options. They also might require some degree of public accountability for regulators themselves. These considerations offer a more modern and flexible way of adapting public utility traditions to contemporary infrastructure. Table 1 below summarizes this modern approach to infrastructure regulation.

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83. See *infra* notes 96-97.

84. See, e.g., Daniel Schwarz, *Preventing Regulatory Capture Through Consumer Empowerment Programs: Some Evidence from Insurance Regulation*, in PREVENTING REGULATORY CAPTURE: SPECIAL INTEREST INFLUENCE AND HOW TO LIMIT IT 365 (Daniel Carpenter & David Moss eds., 2013).

85. See, e.g., Lisa B. Bingham, *The Next Generation of Administrative Law: Building the Legal Infrastructure for Collaborative Governance*, 2010 WISC. L. REV. 297, 350-56 (proposing language for a new Federal executive order that would prioritize management of collaborative and participatory processes).

Table 1: From Historical Public Utility Regulation to Modern Infrastructural Regulation

<i>Issue</i>	<i>Conventional public utility regulation</i>	<i>Modified “infrastructural regulation”</i>
<i>What goods and services should be covered?</i>	Natural monopolies with concentrated private control (e.g. railroads)	Goods exhibiting scale, necessity, vulnerability (e.g. ISPs, finance, information platforms)
<i>Regulatory tools</i>	Rate regulation, municipalization / nationalization	Oversight, firewalls, public options
<i>Regulatory institutions</i>	Public-interested administrators	Accountable agencies with stakeholder representation and more direct participation

But what would this look like concretely? The next Part outlines in brief some illustrative examples of these infrastructure regulatory regimes in action.

### III. Regulating Infrastructure: Some Examples

The discussion thus far has focused at a fairly abstract level, sketching out three questions that modern-day regulation of infrastructure, broadly construed, will have to answer: first diagnosing cases of problematic, unaccountable control over infrastructure; second choosing from a range of regulatory strategies including oversight, structuralist restraints, and public options to address these concerns; and third, addressing parallel questions about regulatory failure and capture. But how would these questions apply in practice? This Part sketches in brief some examples of modern-day public utility-style regulatory debates, which all revolve around the questions framed in Part II above. The purpose of these examples is not to outline a detailed blueprint for regulation in these different policy areas. Rather, the goal is to highlight the importance of approaching these questions through the lens of “infrastructure,” applying the kinds of public utility-style approaches outlined above.<sup>86</sup>

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86. The case studies below are drawn from, and explored in greater detail in, Rahman, *The New Utilities*, *supra* note 9, at 127-46, and Rahman, *Infrastructural Exclusion*, *supra* note 9 at 17-30.

*A. Regulating Economic Infrastructure: Net Neutrality and Broadband Access*

The public utility tradition and the modern-day framework for regulation of infrastructure help explain the already-existing legal and policy debates over broadband access and net neutrality. In this domain, scholars and policymakers have been developing proposals that in effect express the very public utility and infrastructural concerns outlined in Parts I and II above. Highlighting the utility-like nature of these debates is thus helpful both to explain the contours of these debates and to clarify the nature of the stakes involved.

As suggested in Part I above, telecom has long been a central application of public utility concepts going back to the nineteenth century. Under Title II of the 1934 Communications Act, the FCC maintains public utility style regulations including rate regulations and nondiscrimination provisions for “telecommunications services.” In the 1990s, the FCC initially classified high-speed Internet service providers (ISPs) as “broadband services” which were not subject to Title II obligations.<sup>87</sup> But as the Internet gradually became more widespread and commercialized, a growing number of advocacy organizations became increasingly concerned that powerful private corporations like Verizon or Comcast would be able to exploit their control over end-user access to Internet content in order to block some types of content while accelerating others. Furthermore, these firms could charge excessively high prices as a result of their monopoly control over access to the Internet.<sup>88</sup> These dangers are even more troubling given our modern context where access to the Internet is increasingly essential for access to the digital public sphere of information and political debate, and for accessing economic opportunities.<sup>89</sup>

Broadband internet services thus exemplify a modern-day form of infrastructure as defined in Section II.A above: they operate at scale, are increasingly an economic and social necessity, and place end users in a problematic position of vulnerability to the whims of private service providers, particularly the ISPs. This growing importance of internet access raised the stakes for the policy debates over internet regulation. Many of the policy battles effectively turn over utility-style proposals to assure the accountability of ISPs and the need to ensure fair and equal access to the internet.

First, the net neutrality debate is essentially a battle over expanding utility-style regulatory oversight by the FCC over ISPs in an attempt to prevent discriminatory treatment of content. The concern here is that ISPs will engage in

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87. Nat'l Cable & Telecomm. Ass'n v. Brand X Internet Serv., 545 U.S. 967, 987-9, 1000-1(2005).

88. See, e.g., SUSAN P. CRAWFORD, CAPTIVE AUDIENCE (2013).

89. See Nat'l Econ. Council & Council of Econ. Advisors, *Community-Based Broadband Solutions: The Benefits of Competition and Choice for Community Development and High-speed Internet Access*, EXEC. OFF. PRESIDENT (Jan. 2015), [http://muninetworks.org/sites/www.muninetworks.org/files/White-House-community-based-broadband-report-by-executive-office-of-the-president\\_1.pdf](http://muninetworks.org/sites/www.muninetworks.org/files/White-House-community-based-broadband-report-by-executive-office-of-the-president_1.pdf) [<http://perma.cc/2Z7J-Z37Q>].

“paid prioritization”—the more rapid and preferential transmission of data for higher-paying content producers—or “blocking” and “throttling”—the subtle degradation of data transmission to limit access to disfavored content.<sup>90</sup>

First, the FCC described the problem of net neutrality as one of private power that created problematic vulnerabilities for end-users. ISPs like Verizon and Comcast already had the ability and the incentive to slow down user access to competing services like VOIP companies such as Vonage, or to speed up access to services which entered into lucrative contracts with the ISPs themselves in exchange for faster service as Netflix attempted to do—so-called “paid prioritization.” As the FCC moved to implement net neutrality regulations preventing these practices through its Open Internet Orders of 2011 and 2015, it framed its proposals in these very terms of assuring access to vital infrastructure, and preventing the exploitation and exclusion of content users and producers.<sup>91</sup> Repeated litigation by ISPs like Verizon and Comcast aimed to stop these regulatory requirements, claiming they were an overreach of FCC authority beyond the scope of its statutory powers; these arguments carried some sway with the courts until eventually the FCC formally reclassified ISPs as “telecommunications” service subject to the common carrier requirements under Title II of the Communications Act.<sup>92</sup> Once this reclassification was accomplished, the courts upheld the FCC’s imposition of net neutrality regulations, a modern-day common carriage requirement for internet infrastructure.<sup>93</sup>

Second, a growing chorus of anti-monopoly activists, consumer advocacy groups, and scholars have raised concerns about media mergers that might create greater potential for conflicts of interest, leading to more discriminatory, prioritizing, and extractive practices on the part of cable and ISP companies to favor their own co-owned content producers. Thus, critics of the recent Comcast-NBC merger have continued to raise concerns, while the proposed Time Warner-AT&T merger is raising similar worries.<sup>94</sup> Should these mergers be blocked, this would represent a return to the kinds of structuralist firewalling discussed above,

90. See, e.g., Michael Powell, *Preserving Internet Freedom: Guiding Principles for the Industry*, 3 J. ON TELECOMM. & HIGH TECH. L. 5 (2004); Tim Wu, *Network Neutrality, Broadband Discrimination*, 2 J. ON TELECOMM. & HIGH TECH. L. 141 (2003).

91. See, e.g., Preserving the Open Internet (“Open Internet Order”), 76 Fed. Reg. 59,192, 59194-95 (Sept. 23, 2011); *id.* at 59,198.

92. See *Verizon v FCC*, 740 F.3d 623 (DC Cir 2014) (halting the 2011 Open Internet Order, not on substantive grounds, but as outside the FCC’s authority so long as ISPs were not subject to Title II); *Comcast Corp. v. FCC*, 600 F.3d 642 (D.C. Cir. 2010) (invalidating an initial FCC rule banning the practice of blocking and throttling).

93. See *U.S. Telecom Ass’n v. FCC*, 825 F.3d 674 (D.C. Cir. 2016).

94. See, e.g., Joe Flint, *Comcast-NBC Universal Merger Draws Criticism*, L.A. TIMES (June 22, 2010), <http://articles.latimes.com/2010/jun/22/business/la-fi-ct-fcc-20100622> [<http://perma.cc/V4JB-6WTP>]; Jim Zarroli, *AT&T-Time Warner Proposed Merger Is Compared to Comcast Deal*, NPR (Oct. 24, 2016), <http://www.npr.org/2016/10/24/499121029/at-t-time-warner-proposed-merger-is-compared-to-comcast-deal> [<http://perma.cc/3CYR-PDAZ>].

a prophylactic limiting of problematic incentives by restricting the corporate structures of internet and media infrastructure companies.

Third, state and city officials have sought to affirmatively expand access to the internet by employing another public utility-style regulatory strategy: creating a public option ISP through municipal broadband. Cities like Chattanooga, Tennessee sought to provide its own public broadband service on an affordable basis, affirmatively focused on reaching under-invested communities.<sup>95</sup>

### *B. Regulating Privatized Infrastructure: The Case of Water Utilities*

If the net neutrality and internet access debate represent an extension of public utility style concerns to develop new regulations to address the problem of *private control* over internet infrastructure, the growing crisis over water access in cities like Flint, Michigan, represents an example of how these infrastructural regulation considerations can also inform efforts to revamp failures of *public control* over urban infrastructure.

In April 2013, the city of Flint, which was already placed under Michigan's emergency management regime after years of budget crises and impending municipal bankruptcy, switched from its long-standing arrangement with the Detroit Water and Sewerage Department (DWSD) to a regional water authority. While waiting for the new authority and its water infrastructure was up and running, the city temporarily began drawing water from the Flint River. But, to contain costs, the city did not treat the Flint River water source with anti-corrosion agents. Like many midcentury industrial towns, Flint's underlying pipe infrastructure included many lead-based materials. Without the anti-corrosion agents, the new water corroded the lining of the pipes themselves, leading to a dramatic increase in lead levels within the city's drinking water. The resultant humanitarian, environmental, and health crisis has already led to criminal charges for former Flint public officials.<sup>96</sup>

Water seems to be a clear example of an infrastructural good, exhibiting the characteristics of scale, downstream use, and vulnerability. The large investments required to maintain, upgrade, and expand water systems and types suggest the kind of scale effects and sunk costs that characterize utilities. Water is an essential requirement for healthy families and communities, without which other types of social and economic well-being are impossible. Furthermore, as the experience of Flint residents indicates, our dependence on water—and on the water service providers—places us in a unique position of vulnerability to the

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95. See Micah Singleton, *Tennessee City that Fought Comcast and Won Announces 10Gbps Internet*, VERGE (Oct. 15, 2015), <http://www.theverge.com/2015/10/15/9543839/chattanooga-tennessee-just-found-out-its-getting-the-fastest-internet> [<http://perma.cc/7YWH-ATFH>].

96. Kennedy, *supra* note 5.

decisions of the providers themselves, whether they are privatized entities or governmental agencies.

But the problem in the water context is just one of private control over infrastructure; it is also one of failures of *public* authorities: The Flint city administration, the water utility, the Michigan Department of Environmental Quality, to name a few. Here, the other public utility regulatory considerations sketched above can help inform these debates.

First, the regulatory bodies here could be reformed to be more accountable and responsive. Courts have rejected constitutional challenges to require one-person-one-vote electoral accountability for special districts and water utilities.<sup>97</sup> However, scholars have suggested alternative electoral arrangements that could be established through statutory and administrative means going beyond property-based voting as currently required for such quasi-governmental bodies.<sup>98</sup> In addition to electoral accountability, greater forms of stakeholder representation could facilitate more responsive administration of water utilities. Flint itself has created a new position for a dedicated city “health officer,” responsible for negotiating with other state-level authorities to ensure safety of the water and public health infrastructure.<sup>99</sup> More generally, such “proxy advocacy” could be incorporated more widely through the design of water utilities to incorporate consumer and community representatives more systematically.<sup>100</sup>

Second, “structuralist” regulatory policies could help address the potential conflicts of interest arising from the increasingly frequent privatization of water facilities in many cities outside of the Flint context. Given the realities of privatization and “government by contract,”<sup>101</sup> scholars have suggested the implementation of public law standards of accountability through procurement offices and outsourcing contracts. These contracts could include requirements to meet benchmarks of service provision and safety, while also requiring transparency, public participation, third-party monitoring, and other accountability mechanisms.<sup>102</sup>

97. See *supra* note 81 and accompanying text.

98. See Thomas Merrill, *Direct Voting by Property Owners*, 77 U. CHI. L. REV. 275 (2010); see also Camille Pannu, *Drinking Water and Exclusion: A Case Study from California's Central Valley*, 100 CALIF. L. REV. 223 (2012) (critiquing the fragmentation and insulation of water districts). For a similar critique of municipal utility districts in Texas, see Sara C. Galvan, *Wrestling with MUDs to Pin Down the Truth About Special Districts*, 75 FORDHAM L. REV. 3041 (2007).

99. Interviews with Ford Foundation Staff (Nov. 2017). The health officer position was created last year drawing resources from philanthropic donors like the Ford Foundation to cover staff salary and administrative costs. This remains an early experiment in direct government capacity-building.

100. See, e.g., Schwarz, *supra* note 84.

101. On the larger pattern of privatization and possible solutions to it, see, for example, GOVERNMENT BY CONTRACT: OUTSOURCING AND AMERICAN DEMOCRACY (Jody Freeman & Martha Minow eds., 2009), 1-22.

102. See Alfred C. Aman, Jr. & Joseph C. Dugan, *The Human Side of Public-Private Partnerships: From New Deal Regulation to Administrative Law Management*, 102 IOWA L. REV. 883 (2017); Laura Dickinson, *Public Values/Private Contract*, in GOVERNMENT BY CONTRACT: OUTSOURCING AND AMERICAN DEMOCRACY, *supra* note 101, at 335-62.

## Conclusion: A Generalizable Approach to Regulating Infrastructure

There are many kinds of infrastructural goods and services that together make possible much of our modern economic, social, and political life. As new forms of infrastructure emerge, public policy has to keep up to assure fair and equal access to these infrastructural goods—and to prevent those controlling the terms of access to these goods—from leveraging that control to extract greater rents, discriminate in access, or exclude unfairly.

The history of public utility regulation offers a set of ideas that, properly adapted and updated, can inform a wide range of regulatory challenges arising from different types of infrastructure. Where historically we might be used to thinking of public utility regulation narrowly as exemplified by rate regulation and railroad commissions of the late nineteenth century, a fuller appreciation of the public utility tradition reveals that reformers of the industrializing economy had a much more fluid and flexible conception of public utility. The central problem for them was the need to constrain unaccountable power—which, when exercised through the control of vital infrastructure upon which society depends for economic and social well-being, posed an especially dangerous threat to opportunity, inclusion, and economic freedom.

Modern day policymakers must ask three questions. First, which goods are so critical that they constitute modern day “infrastructure,” and thus warrant greater regulatory scrutiny? Second, what regulatory strategies and tools do we have to assure fair and equal access to these vital goods and services? Third, what institutional and policy designs might we employ to ensure that the administrators of these policies operate in an accountable and responsive manner? The framework in Part II above offers a way to approach these questions, through a modernized adaptation of historical public utility concepts. The examples in Part III illustrate how this approach can provide a flexible and adaptable approach that can elucidate real on-the-ground policy debates concerning infrastructural goods today, from internet access to water. As this Essay indicates, these questions can help identify a wider range of infrastructural goods and services where unaccountable control raises public policy concerns. This approach also provides a more flexible set of policies and institutional tools through which these concerns can be met (see Table 1 above).

The applications of this infrastructural regulatory frameworks extend even further. As scholars in this very symposium and in parallel literatures highlight, public utility concepts are useful in a range of contexts: electricity and carbon change;<sup>103</sup> healthcare and the social safety net;<sup>104</sup> finance and the problem of too-big-to-fail finance;<sup>105</sup> and the new informational platforms of the internet

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103. Boyd, *supra* note 9.

104. Bagley, *supra* note 9.

105. Rahman, *The New Utilities*, *supra* note 9, at 136-47 (describing recent debates over financial regulation and too-big-to-fail banking as a modern-day application of public utility concepts). As I suggested in this earlier Article, a number of financial regulation scholars have framed the challenge

economy like Google and Facebook.<sup>106</sup> As our economy continues to transform, creating new forms of infrastructure—and also new forms of power, instability, and inequality—these flexible tools will be increasingly vital to assuring fair and equal access to foundational goods and services. As the industrial revolution created new economic opportunities but also new economic threats that had to be tamed and channeled into equitable and productive uses, so too is our modern twenty-first century economy creating an urgent need for policymakers to adapt their tools to ensure productive and inclusive access to modern social and economic infrastructure.

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of systemic risk and TBTF finance as essentially a problem of public utility style regulation of the modern financial infrastructure. See e.g., MEHRSA BARADARAN, *HOW THE OTHER HALF BANKS: EXCLUSION, EXPLOITATION, AND THE THREAT TO DEMOCRACY* (2015); Anna Gelpern & Erik Gerding, *Inside Safe Assets*, 33 *YALE J. ON REG.* 363 (2016); Robert Hockett & Saule Omarova, *Public Actor in Private Markets: Toward a Developmental Finance State*, 93 *WASH. U. L. REV.* 103, 160-74 (2015); Robert Hockett & Saule Omarova, 'Special,' Vestigial, or Visionary? What Bank Regulation Tells US About the Corporation—and Vice Versa, 39 *SEATTLE U. L. REV.* 453, 461 (2016) (describing the chartered public-private nature of corporations in general, and banking in particular); Roberta Karmel, *Is the Public Utility Holding Company Act a Model for Breaking Up the Banks that Are Too-Big-To-Fail?* 62 *HASTINGS L. J.* 821 (2010); Adam Levitin, *Safe Banking*, 83 *U. CHI. L. REV.* 357 (2016); Jonathan Macey & James Holdcroft, Jr., *Failure Is an Option: An Ersatz-Antitrust Approach to Financial Regulation*, 120 *YALE L. J.* 1368 (2011); Saule Omarova, *License to Deal: Mandatory Approval of Complex Financial Products*, 90 *WASH. U. L. REV.* 63 (2012); Eric Posner & E. Glen Weyl, *An FDA for Financial Innovation: Applying the Insurable Interest Doctrine to 21<sup>st</sup> Century Financial Markets*, 107 *NW. L. REV.* 1307 (2017); Rahman, *The New Utilities*, *supra* note 9; Ricks, *supra* note 9; *supra* Section III.B.; Alan White, *Banks as Utilities*, 90 *TUL. L. REV.* 1241 (2016).

106. Rahman, *The New Utilities*, *supra* note 9, at 147-160. The idea of information platforms as new forms of tech utilities or tech infrastructure is also an increasingly common framework that scholars in internet law and related fields have begun to employ. See, e.g., FRANKLIN FOER, *WORLD WITHOUT MIND* (2017); PASQUALE, *supra* note 59; JONATHAN TAPLIN, *MOVE FAST AND BREAK THINGS* (2017); Jack Balkin, *Free Speech in an Algorithmic Society: Big Data, Private Governance, and New School Speech Regulation*, *U.C. DAVIS L. REV.* (forthcoming 2018); Lina Khan, Note, *Amazon's Antitrust Paradox*, 126 *YALE L.J.* 564 (2017); Kate Klonick, *The New Governors*, 131 *HARV. L. REV.* (forthcoming 2018); Frank A. Pasquale, *Internet Nondiscrimination Principles: Commercial Ethics for Carriers and Search Engines*, 2008 *U. CHI. L. F.* 264; Rahman, *The New Utilities*, *supra* note 9; Frank A. Pasquale, *Platform Neutrality: Enhancing Freedom of Expression in Spheres of Private Power* (U. of Md. Legal Studies Research Paper No. 2016-24, 2016), [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2779270](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2779270) [<http://perma.cc/6UPC-QQNR>; *supra* Part IV.