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*CORRESPONDENCE

Christy Anderson Brekken
✉ christy.anderson.brekken@gmail.com

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Right-of-way licensing ordinances: renewing city authority over energy utilities to facilitate climate policy

Christy Anderson Brekken^{1*}, Roman Patchell² and Julia Mycek²

¹Department of Applied Economics, Oregon State University, Corvallis, OR, United States,

²Environmental Economics and Policy Undergraduate Program, Department of Applied Economics, Oregon State University, Corvallis, OR, United States

In the state of Oregon and across the United States, municipal governments have traditionally granted utilities the right to use the public right-of-way through negotiated franchise agreements which set contractual conditions of use for 10 or more years. However, franchise agreements typically have terms that create a barrier to implementation of climate policy in cities. For over 2 decades, Oregon cities have innovated a new regulatory approach by adopting utility right-of-way licensing ordinances. To investigate the performance of the new licensing ordinance governance structure, we interviewed 12 city employees engaged in right-of-way management. Four of these cities use franchise agreements, eight administer licensing ordinances; nearly all have experience with both structures. We compared city staffs' experiences and perceptions of each governance structure across three dimensions of institutional theory: legal relations, transaction costs, and social norms. We found that city staff overwhelmingly prefer licensing ordinances as a right-of-way governance structure and adoption seems to be growing. Primary motivations include reducing city expenses through efficient use of staff time, equitable treatment of utility providers, and the exercise of city authority over the right-of-way to achieve a variety of city goals. City climate goals are not explicitly articulated as a motivation for licensing ordinance adoption; however, city staff gave several examples of how the licensing ordinance facilitates climate policy implementation. This is the first study of licensing ordinances in the literature; future studies may more directly link municipal regulation of the right-of-way to city climate policy.

KEYWORDS

local governance, right-of-way, energy utility service, licensing ordinance, franchise agreement, climate policy, city staff, Oregon (USA)

1 Introduction

City governments across the US are setting climate mitigation and adaptation goals, encompassing decarbonization, electrification, and preparation for extreme weather (Cook et al., 2016). However, cities lack the power to directly regulate energy utility companies in their jurisdiction due to state and federal laws. One leverage point for cities is managing utility use of the public right-of-way (ROW). Franchise agreements (FA)—contracts granting each utility ROW access for 10 years or more in exchange for fees and conditions—are the status quo governance structure. Decarbonization terms can be negotiated when FAs are renewed (Cook et al., 2020, 2021); however, utility bargaining

power results in FA terms that can be a barrier to achieving climate goals (Caleb et al., 2023; Houston et al., in press). A utility ROW licensing ordinance (LO) is a regulatory innovation spreading across Oregon cities as an alternative to a FA (Houston et al., in press). While municipalization (public ownership) and deregulation are other governance options (Herreras Martinez et al., 2023; Kishimoto et al., 2020), Oregon cities served by investor-owned utilities face legal, financial, and political barriers that make them impracticable, leaving LOs as the only viable alternative to an FA.

In this study, we conduct the first investigation into LOs as an innovation in city regulation of energy utilities. We interviewed 12 professionals with responsibility for municipal ROW management from 11 Oregon cities, most of whom have experience with both governance structures: 4 primarily work with FAs, 7 now administer LOs that cover all utilities, plus one consultant who has worked with multiple cities under both structures. We explore two research questions:

- How is ROW governance different in cities that use FAs compared to those that have adopted LOs in terms of staff time and resources?
- How do city staff perceive the performance of LOs as a ROW governance tool?

We compare staff experience of each ROW governance structure through the three dimensions of institutional theory: legal relations, transaction costs, and social norms. LOs establish a fundamentally different legal relationship between cities and energy utility companies, shifting from negotiated long-term contracts to the exercise of city regulatory authority. The shift in legal relations changes the costs, benefits, and risks associated with a city's ROW management relationship with investor-owned energy utilities. While we find that city staff do not explicitly link ROW governance structure to municipal climate goals, our informants discussed topics such as clean energy goals, electrification, and preparation for severe weather events. Linking LOs with city climate goals explores how changing ROW governance structures creates a new institutional context for the relationship between city policy makers, city staff, residents, public places, and investor-owned energy utilities. Transitions to a regulatory LO as the ROW governance structure shifts perceptions of authority over public spaces and infrastructure, ultimately placing control of local climate policy in the hands of a city and its residents.

2 Background and theoretical framework

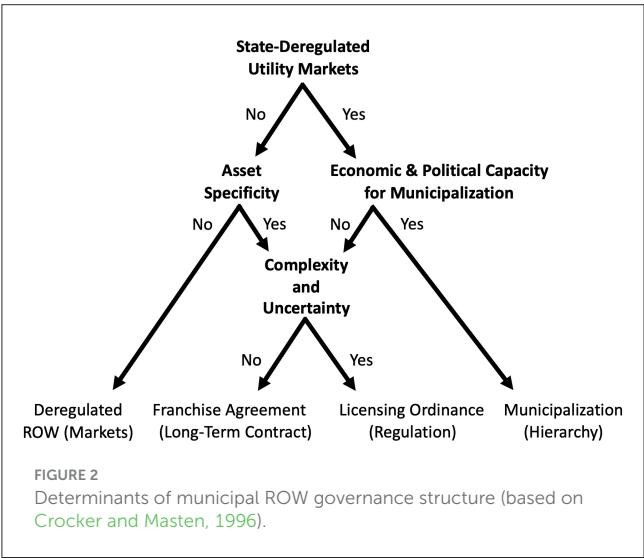
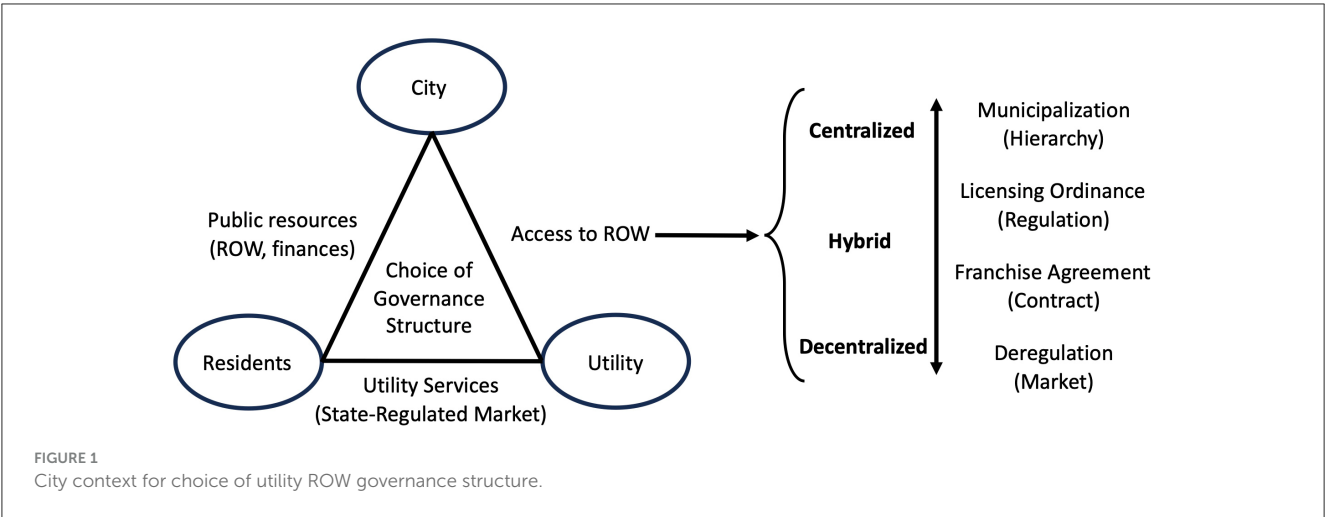
In Oregon, the City of Gresham was the first to adopt an LO in 2001 to apply to all utilities in the ROW, including energy utilities. Utility companies brought a lawsuit to challenge the LO fee structure, which was upheld by the Oregon Supreme Court as a valid use of the city's Home Rule authority (Northwest Natural Gas Co. v. City of Gresham, 2016). Since then, over a dozen—and possibly more—Oregon cities implemented LOs in varying degrees for ROW management. Cities are motivated to adopt LOs

to comply with state and federal law, raise revenue, reduce city costs, and exercise city authority over the ROW (Houston et al., in press). It appears that LOs are a growing trend as cities share information about this 'modern' approach to ROW management; however, cities with an LO still regularly use FAs under varying circumstances, such as when it is required by federal law (cable providers), when an existing FA has not reached the end of its term, or when the city council determines that an FA is in the public interest (Houston et al., in press). Because an FA allows for direct negotiation between the city and utility provider, details about the utility operations can be addressed for unique, dangerous, or other particular concerns that are not addressed in a general-purpose LO. Here, we focus on services provided by private investor-owned energy utilities (natural/methane gas, electricity) which occupy the ROW below-ground or over public roads, sidewalks, and other public property. These are the utilities most relevant to illustrate how "core aspects of governance structures may influence... the status of the environment," directly or indirectly enabling city actions to reach climate goals (Vatn, 2015, p. 171).

Both cities and utilities have an interest in delivering essential utility services to residents, but their interests are not necessarily aligned in other domains. As illustrated in Figure 1, cities, utilities, and residents have distinct interests and reciprocal relationships with one another. Cities have a public mandate to prudently manage the city's resources while protecting the health, safety, and welfare of residents, which increasingly includes climate mitigation and adaptation. Investor-owned utilities have a mandate to maximize shareholder returns through delivery and expansion of energy services, subject to regulation by city, state, and federal authority. Residents influence city policy through political engagement, while relying on utility service that depends on use of the city ROW. In this study, we evaluate the relative performance of governance structures from the city perspective, rather than from the utility company or total social welfare perspective. Municipalities have the authority and face well-defined conditions to choose between different ROW governance structures. Each choice balances their governance relationship with their residents and with the utilities that serve them (Figure 1).

The academic literature on choice of utility regulation has been traditionally grounded in transaction cost economics (TCE), a cornerstone of institutional economics (Demsetz, 1968; Williamson, 1976, 1979; Goldberg, 1976; Crocker and Masten, 1996). TCE characterizes governance structures along a continuum from decentralized to centralized. In our study of utility ROW context, we characterize the continuum of governance structure that authorize access to the city ROW as from deregulation (market) as the most decentralized, to FAs (long-term contracts), to LOs (regulation), and finally to municipalization (hierarchy) as the most centralized, where utilities would be owned and operated by the city or other public entity (Williamson, 1991, 2008; Vatn, 2015) (Figure 1).

To choose between ROW governance options, we take an institutional approach which combines analysis of the three dimensions of institutional theory: legal relations that characterize each governance option, which are associated with different transaction costs and social norms (Vatn, 2005, 2015; Crocker and Masten, 1996; Herreras Martinez et al., 2023). As Figure 2



illustrates, we begin the analysis with the legal relations between cities and utilities, which is determined by whether the state has deregulated energy utility markets. Oregon retains highly regulated utility markets in which investor-owned energy utilities are granted an exclusive service territory. As a result, a city within a utility service area faces high legal and economic barriers to municipalization, although it may be an option in the future if state utility regulation changes (Kishimoto et al., 2020; Ferrell, 2024). Thus, municipalization is not an option for many Oregon cities (Figure 2, right side).

Given that Oregon does not have a deregulated legal structure for energy utilities, we next examine city choice of ROW governance via the TCE theory of utility regulation (Figure 2, left side). If the transactional relationship between the city and utility is characterized by asset specificity, deregulation is not recommended. Thus, we focus on a comparison between FAs as the status quo governance structure and LOs as a regulatory mechanism. Finally, if the transactional circumstances are characterized by complexity and uncertainty, then a regulatory approach such as an LO is recommended. We enrich the analysis

by considering social dimensions of the institutional landscape because differences between governance structures “seem grossly underestimated and they go unnoticed if we look at policy from a ‘rational choice’ perspective” alone (Vatn, 2020, p. 8). While each dimension adds a unique perspective on choice of ROW governance structure, each one interacts with the others in any real institutional setting.

2.1 Legal relations: rights and responsibilities

Oregon cities have constitutional Home Rule authority over local issues that are not otherwise preempted by state or federal law (OR Constitution art. XI § 2 and art. IV § 1(5); (Oregon Revised Statutes, 221.410, 221.415; League of Oregon Cities, 2023a,b). At the state level, Oregon’s Public Utility Commission (PUC) sets investor-owned utility service territory, rates, and safety regulation (Oregon Public Utility Commission, n.d.). Federal law preempts local restrictions on new telecommunication utility ROW access and excessive fees (Federal Telecommunications Act of 1996; Federal Communications Commission (FCC), 2018a,b; League of Oregon Cities, 2023a,b). State and federal preemption of some aspects of city ROW authority prompted the development of “Master Utility Right-of-Way” licensing ordinances (LO) to avoid conflicts with state and federal law, but they are written broadly enough to cover all utility types (except cable companies which require a franchise under federal law) (see e.g., League of Oregon Cities, 2023a, p. 18 et seq.; League of Minnesota Cities, 2020; American Public Works Association, 2000).

While FAs have been the status quo ROW governance structure across the US since the late 1800s (Lazar, 2016; Boyd, 2018), Oregon statute also explicitly authorizes cities to “determine by contract or prescribe by ordinance” the terms, conditions, and fees for utility ROW use (Oregon Revised Statutes, 221.420(2)(a)) and placement of utility infrastructure (Oregon Revised Statutes, 221.420(2)(c)). The legal differences between FAs and LOs are nuanced but have led to Oregon cities broadening their use of LOs over time.

The fundamental difference between FAs and LOs as ROW governance structures is rooted in their legal status: FAs are a form of contract law, while LOs derive from a city's governmental regulatory authority over the public ROW. FAs are long term contracts in which a city confers the right to occupy and use public property to a utility in exchange for fees and conditions for a term of 10 or more years (Caleb et al., 2023; Priest, 1993). In contrast, LOs are an exercise of city regulatory authority over the public ROW in which the city gives permission—grants a “license”—to use city property under specified conditions. The utility gains no protected contract or property right to the ROW. This distinction impacts the legal rights and remedies over disputes over ROW issues. Under an FA, utilities—with greater economic resources—have a contractual right to sue regarding a city's interpretation and application of the contract, leading to delays and uncertainty given the difficulty in interpreting complex contract terms (Williamson, 1976). Under an LO, city administrators have the power to directly enforce LO terms in the event of utility violations with fewer avenues for utilities to sue cities over these terms.

Because an FA is a contractual relationship, city and utility staff privately negotiate terms, putting them on equal footing at the bargaining table. Investor-owned energy utilities in Oregon are in a strong strategic position as monopoly service providers, facing no competition and gaining advantage as “repeat players” that negotiate FA terms with many different cities within their service territory (Williamson, 1976). Experienced city staff with strong working relationships can reduce negotiation time but are also incentivized to maintain the status quo (Williamson, 1979, p. 244; Williamson, 1976). City and utility staff may work on repeated FA negotiations and intermittent ROW issues over decades, developing a strong working relationship. City councils have ultimate political power to approve or reject a negotiated FA but are politically constrained by the need to continue utility service to residents and lack input from the public regarding privately negotiated and technical FA terms, relying on experienced city staff who negotiate FAs and work with utility providers regularly.

In contrast, LOs are drafted by city staff and both utilities and city residents have, in principle, equal right to participate in public meetings. In practice, utilities have greater interest, expertise, relationships with city staff, and economic resources to sway LO deliberations, although they face a collective action problem because an LO applies to all utility types and their interests may not fully align. Meanwhile, city residents have fewer resources and face a greater collective action problem unless organized by local groups that understand the implications of LO terms (Alston and Mueller, 2008; Nee, 1998). While the terms may be technical, they also are framed as impacting public property, finances, and utility service that is more accessible to public participation than approval of a pre-negotiated FA. Nevertheless, public participation in adoption or amendment of an LO is challenging, where residents face a higher burden of participation than utilities.

The choice of ROW governance structure also impacts other city powers, such as restrictions on placement of utility infrastructure, zoning and land use, building codes, and public health regulations to reach climate policy goals (Caleb et al., 2023; Turner, 2021). FAs typically contain language that creates barriers to city regulation that interferes with FA terms; for

example, if a city wishes to limit expansion or change location of future utility infrastructure (e.g., limiting new natural gas lines or undergrounding electrical lines), the utility may argue that the terms of the FA supersede the new regulation until the FA expires. With a contractual term of 10 or more years, both parties must agree to re-open the FA to amendments during the term, giving equal power to the city and utility. The terms of long-term contracts such as FAs are general and procedural, allowing latitude to adapt to changes in technology, markets, regulation, local conditions, public sentiment, or other circumstances via private negotiation between the city and utility. However, general terms also create opportunities for avoiding or delaying obligations through protracted negotiation or the threat of litigation (Crocker and Masten, 1996; Williamson, 1976). In contrast, LOs can be amended by the city council at any time to respond to changing circumstances, often on the recommendation of city staff who do the day-to-day ROW administration. While amending an LO to facilitate climate policy can be a political challenge, it is easier to adopt and enforce from a legal perspective and both utilities and the public can participate in the public process on equal footing, as in the LO adoption process.

Thus, while the choice of FA or LO is not a direct climate policy, the use of an FA impacts the city's ability to adopt and enforce climate policies vis-à-vis energy utilities during the 10-year term of the FA. Furthermore, while the city and utility could negotiate for climate policy within a new FA negotiation, the utility has higher bargaining power than if the city were adopting new climate policy under an LO governance structure.

2.2 Transaction cost economics

Transaction cost economics (TCE) uses a comparative case study analysis to recommend a utility governance structure because there are indeed “no friction-free alternatives” (Williamson, 1976, p. 75). The legal difference between FAs as long-term contracts and LOs as a regulatory use of city authority result in different costs to “run the system” and distribution of risk as circumstances change. TCE identifies two key properties of the transactional relationship to predict which governance structure results in greater efficiency and “protection against opportunism”: asset specificity and the complexity and uncertainty of the transactional circumstances (Figure 2) (Crocker and Masten, 1996, p. 8; Williamson, 1991; Vatn, 2015).

Asset specificity refers to the degree to which the transaction is specific to these two parties. The city-utility ROW relationship has the hallmarks of high asset specificity: physical-asset specificity requiring investments particular equipment; location specificity where the facilities must be located in a particular place; human-capital specificity in which parties develop skills to facilitate the transaction; and dedicated assets in which investments are made for the delivery of utilities to the city's residents, resulting in “stranded assets” if the relationship ends (Crocker and Masten, 1996; Vatn, 2015; Williamson, 1991). While low asset specificity relationships can be governed through decentralized market exchanges because other trading partners are available, high asset specificity results

in a bilateral monopoly relationship “in which the parties to the transaction maintain autonomy but are bilaterally dependent to a non-trivial degree” (Williamson, 1991, p. 271; Williamson, 1976; Goldberg, 1976). Oregon energy utility regulations “lock in” the bilateral monopoly relationship between cities and investor-owned energy utilities by setting utility service territory, creating significant barriers to changing utility suppliers or forming new municipal energy utilities.

Given the high degree of asset specificity, the analysis turns to the complexity and uncertainty of conditions that impact the transaction, such as markets, regulations, technology, and the biophysical environment. Under FAs with a term of 10 or more years, uncertainty and complexity increases with the contract time horizon and creates opportunities for utilities to capture gains from changing conditions (Vatn, 2015; Crocker and Masten, 1996; Masten and Crocker, 1985; Williamson, 1976, 1979). The city-utility relationship is characterized by high uncertainty, which grows with each passing year as Oregon cities grapple with decarbonization goals, climate impacts, economic stresses, and socio-demographic change. In Oregon’s most populated areas, wildfire risks, increasing storm severity, drought, and the risks associated with the Cascadia Subduction Zone earthquake are motivating infrastructure updates. Cities and energy utilities face changing energy demands from residents and regulatory uncertainty from the city, state, and federal levels. Given the complex and uncertain nature of city ROW management needs in a changing climate, a more centralized regulatory approach such as an LO is recommended as it allows the city to adapt the terms via ordinance amendments, reducing transactional inefficiencies over time. Through other climate policy, cities can directly manage spillover effects to third parties, such as residents and businesses that rely on utility access (Williamson, 1991; Vatn, 2015). Enforcement and remedies are also easier, reducing a utility’s ability to take strategic advantage of changing circumstances. Recognizing the importance of climate adaptation, a more centralized regulatory LO governance structure is warranted when the attributes of transactions are likely to change over time.

2.3 Social norms: beliefs, perceptions, and networks

The choice between FAs and LOs is fundamentally a political one based on the “implicit or explicit rules of expected behavior that embody the interests and preferences of members of a close-knit group or a community” (Nee, 1998, p. 87; Vatn, 2015). The collective choice of governance structure enacted by city councilors, city staff, residents, and utility representatives is based in shared social norms, beliefs, and perceptions. Cities also engage in networks of municipal governments across different issues—from climate policy to city government associations—as they face demands to act on complex problems while their resources have declined (Coulombe et al., 2022; Nguyen Long and Krause, 2021). Repeated interaction in networks within and across cities shape shared beliefs and perceptions about how physical, social, economic, and governance worlds “work” in practice and influence trust in governance bodies and private utilities. Network effects

further stimulate innovation and uptake of new models for accomplishing city goals (Coulombe et al., 2022; Nguyen Long and Krause, 2021).

An individual’s role in an institution also shapes beliefs and perceptions, making it challenging to separate an individual’s primary socialization from their “institution-based sub-worlds” of competence arising from educational and occupational specialization (Vatn, 2015, p. 176). Networks of people from different institutional roles create alignment or conflict between people of different sub-fields. For example, city staff have an ongoing relationship to both utility representatives and residents in day-to-day administration of the ROW. City staff in leadership positions will also interact with the city council. Councilors rely on the recommendations from city staff on policy matters and hear the preferences of both residents and utility representatives. Residents experience the ROW as public space and interact with utilities as customers, whereas they interact with city council and staff as political constituents. These networks of relationships influence the narrative about the most “appropriate” form of ROW governance structure, expressed in terms of fairness, public interest, and the role of private investor-owned utilities.

When choosing a ROW governance structure, cities—through city staff and council roles—are balancing their responsibilities to manage public resources and ensure residential utility service while maintaining a city’s long-term relationship with utility providers. Some city staff may resist LO adoption because FAs are a functional ROW governance tool for “business as usual” and do not connect ROW governance to climate policy that is outside of their job description. Staff beliefs and trust in utilities also likely differ from a resident’s or city councilor’s perception of utility providers due to their long-term relationship with utility staff. They may also network with cities who also continue to use FAs. While there is a strong status quo bias in favor of continued use of FAs as the way cities have “always” managed the ROW (Alston and Mueller, 2008), the LO approach developed by “policy entrepreneurs” may be enhanced by the “bandwagon” effect when numerous peer cities adopt and implement LOs (Coulombe et al., 2022, p. 9; Nguyen Long and Krause, 2021). A city council’s decision to retain FAs or transition to LOs is strongly influenced by the beliefs and perceptions surrounding the appropriate allocation of rights to the public ROW, articulated by trusted messengers such as city staff, residents, and city-peer networks. Without the support of city staff, city councils may experience challenges in the adoption and effective implementation of LOs.

3 Methodology

Between April and September 2023, we conducted 12 interviews with city ROW management staff to assess their experience in administration of FAs and/or LOs. We first identified cities that have implemented a comprehensive LO policy through previous research, publicly available information, and knowledgeable informants. We then identified additional cities with similar geographic location and population, but with unknown ROW management structures. Within the list of candidate cities for the study, we used purposive sampling to identify city staff with ROW management experience through

publicly available data such as online city staff directories. In addition, we used snowball sampling in which we asked initial interviewees to recommend staff at other cities with similar expertise (Gill, 2020). At the conclusion of this process, we identified potential participants from nine LO cities, eight cities with unknown ROW governance structure, and one ROW consultant. Potential interviewees were initially contacted via email and phone. Once an interview was deemed appropriate, the interviewee was emailed an official invitation with attached supporting documents (i.e., IRB consent agreement and interview protocol).

Representatives from eight cities that use LOs and four that use FAs agreed to interviews. A majority of the participants had previous experience with both governance structures (one city with unknown ROW management status was found to use an LO). The duration of LO adoption and implementation varied between cities from a few years to 20 years. All but one of the FA cities explored the option of an LO transition, with some actively pursuing an LO.

Interviews began with brief, informal introductions and the verbal informed consent. Interviews were held via Zoom Web App (2023), lasting anywhere between 25–60 minutes, and followed the IRB-approved interview protocol. The protocol consisted of 12 contextual questions to gather more information about the interviewees’ expertise, experience and awareness of the two governance structures under investigation. Once the interviewee indicated which ROW governance structure was currently in use, we proceeded with 21 questions, customized based on the city’s FA/LO status. The interview process continued until saturation, a point in which we deemed that further interviews revealed no new or novel information.

All interviews were transcribed and analyzed using the qualitative analytical software Dedoose (2024). The first stage of coding introduced index codes to transcripts, which denote each question from the protocol and allows early data exploration, deidentification, and annotation. The second stage added analytic codes to the transcripts using open coding, where each team member first identified themes in a sample of the interview data. We proceeded to axial coding in which we compared codes across and within researcher coding to ensure intercoder agreement and interpretive convergence, distilling and defining common themes which we then applied to all transcripts. We then used selective coding to collect the themes into theoretically-grounded categories for institutional analysis (Robson, 2011; Saldaña, 2013). The coding process included several iterations in categorizing codes and themes that addressed the research questions, resulting in 11 analytic codes and 2 index codes for final analysis.

4 Results

Institutional theory points to LOs as the recommended ROW governance structure for Oregon cities, both because of Oregon’s legal regime for utility regulation, then theoretically on TCE grounds. However, choosing among governance structures requires “[a]ttention to transactional detail... especially by looking at actual cases” along the three institutional dimensions: legal relations, transaction costs, and social norms (Williamson, 1976, p. 101;

TABLE 1 City characteristics by population, region, and partisan leaning.

Population*	Region**	Partisan Ratio*** (Dem:Rep)	FA or LO
< 100,000	1	1:1	FA
		2:1	FA
		2:1	LO
	2	1:1.5	FA
		1.7:1	LO
		1.2:1	LO
> 100,000	1	1:1	FA
		2:1	LO
		2:1	LO
	2	5:1	LO
		1:1	LO

*Population Research Center (2023), Portland State University. 2023 Annual Oregon Population Report.
**Region 1 includes Congressional Districts 1, 3, and 6 (predominantly Portland-metro area). Region 2 includes Congressional Districts 2, 4, and 5 (predominantly non-Portland metro area).
***Blue indicates higher Democratic registration, Red indicates higher Republican registration, Purple indicates approximately equal registration. <https://sos.oregon.gov/elections/Documents/registration/2024-April.pdf>.

Vatn, 2015, 2005; Crocker and Masten, 1996). We interviewed city staff who use different ROW management approaches because they are at the nexus of all three institutional dimensions and the network of city council, residents, and utilities in ROW management.

The sample of cities represented in staff interviews is described in Table 1 (excluding the consultant), noting that population and region are defined quite generally to preserve interviewee confidentiality. Partisan leaning of the county where the city is predominantly located is reported as the ratio of registered Democrats to registered Republicans (municipal-level data on voter registration is not available and some cities straddle portions of two counties). In Oregon, the plurality of registered voters are non-party-affiliated (except two counties in our sample) due to Oregon’s “motor-voter” law which automatically registers every eligible voter who applies for a state identification card. Therefore, we deemed the ratio of party affiliation as the more reliable metric of partisan leaning because registered voters must then take the initiative to choose a party affiliation (Seljan et al., 2023).

In our sampling, we sought both similarity and diversity in city demographics to understand if there are underlying network effects that influence LO adoption, such as a tendency for cities in a similar geographic area, population size, or political leaning to adopt common policies (Nguyen Long and Krause, 2021). Looking at the overall data on city characteristics (Table 1), the larger cities in our sample adopt LOs at higher rates than smaller cities. It could be that larger cities have more resources to devote to exploring new ROW management, and that their ROW management needs are more complex, leading them to seek out new strategies. Region 1, which includes congressional districts in the Portland metro and outlying areas, tends to adopt LOs at a higher rate, possibly due to

TABLE 2 Code definition, ranked by frequency.

Code	Definition	Total
Expense	Impact on city expenses in time, effort, financial outlay	72
Relationship	Ongoing interaction with utility staff, residents	69
City Authority	Exercise of city legal power over ROW	59
Utility Interest	Impact on utility operation or economic interest	47
Public Interest	Impact on public ROW use, utility service, aesthetics	41
Efficiency	Maximizes benefits/minimizes cost	33
Unique	Policy addresses issues unique to utility type	33
State/Fed Authority	City authority preempted by state/federal law	29
Revenue	Raises revenue for city	28
Comprehensive	Policy covers many types of utilities and ROW needs	27
Fairness	Utilities treated equally/equitably	26
Position	Staff position in city administration or legal duties	Reported for each interview
Preference	Stated preference for using licensing ordinances	

network effects which spread the new innovation across the region. We see no discernable patterns in LO adoption by partisan leaning that is independent of region and population.

Ranking the selected 11 analytic codes and 2 index codes by frequency (Table 2), we see that themes regarding city expenses and staff relationships with the public and utilities top the list. The next three themes address the city's authority to regulate the ROW, impacts on utility companies, and impacts on the public.

City staff also brought up several themes in relation to one another when describing ROW management. Table 3 displays the frequency of pairwise code co-occurrence (green as highest, red lowest). Overall, "city authority" had the highest number of co-occurrences with other codes, followed closely by "relationship" and "utility interest." Many of these themes are logically connected, which will be explained in more detail with the analysis of each analytic code.

We now analyze the results of the city staff interviews through the three dimensions of institutional theory to answer our research questions about how LOs and FAs differ in allocation of staff time, resources, and perceptions of each governance structure. Table 4 displays how the codes are categorized into the three institutional dimensions, and average frequency of each code in each type of city based on its ROW structure. We present overall results comparing LO and FA cities, along with selected quotes to support and contextualize the findings. All quotes are anonymized to protect the privacy of the respondents, with citation to their assigned code to distinguish between respondents.

4.1 Differences in legal relations between ROW governance structures

Interviewees discussed differences in legal relations when a city uses an LO compared to an FA, emerging as themes related to the *position* held by the city employee, expressions of *city authority*, and preemption by *state and federal authority*.

We categorize *position* as legal staff (attorneys) or administrative staff (management, analyst, etc.). In reaching out to city staff, we were directed to the professionals most qualified to discuss ROW management in the city, demonstrating how the governance type orients the city toward utilities. FA cities referred us equally to their administrative staff and legal professionals who negotiate with utilities (2:2), while LO cities overwhelmingly referred us to their administrative professionals (7:1) (Table 4). Comparing the interviews of administrative staff and legal staff, we see that administrative staff spoke in greater detail about their ROW management experiences, generating almost twice as many coded excerpts per interview (Table 5). Administrative staff have more frequent interaction with utilities, while legal staff are sensitive to confidentiality and declined to answer some questions that could implicate specific utilities or city policy deliberations.

We see the greatest difference in discussion of the city staff's *relationship* to utilities and/or the public, likely due to the frequent contact between administrative staff and ROW issues. Administrative staff were also much more likely to talk about efficiency and comprehensiveness of policy implementation, as they have frequent repeated interactions as part of their work. *Expense* was the topic with the least difference between the position types, and is one of the most frequently mentioned topics as it addresses the time and effort required for ROW management, which is relevant for both policy structures.

The *city authority* code was the third-highest code applied to interview transcripts, referring to the beliefs or experience of a city's legal power over the ROW or utilities (Table 2). *City authority* also had the highest co-occurrence with other analytic codes, led by *relationship* (15), *public interest* (13), *expense* (10), and *utility interest* (8) (Table 3). Interestingly, *city authority* was mentioned equally by cities with an LO policy and those with an FA policy on average (Table 4), and more by administrative staff positions (Table 5). City staff spoke frequently about city authority in terms of discovery of utilities using the right of way and enforcement. While we did not directly ask about climate policy implementation, they also discussed working with utilities to accomplish city goals such as clean energy, efficiency, electric vehicle infrastructure, and several discussed undergrounding of overhead electric utilities and relocation of underground utilities for public works projects. This is revealing because staff may not directly connect ROW management and climate policy if asked explicitly, but we can see how impacts on climate policy emerged through their ROW management experience in practice. For example, one FA city staff described "our little drama here was requiring electric to go underground in the future..." (16-01), while in contrast, an LO city staff discussed the ease and uniformity of having an undergrounding requirement in the code: "Most of those utilities then fall into that [LO] structure, and so we all could point to the same rules and regulations about

TABLE 3 Co-occurrence of analytic codes in interview excerpts.

	City Auth	Relationship	Utility Interest	Expense	Public Interest	Efficiency	Fairness	Unique	Comprehensive	State/Fed Auth	Revenue
City Authority											
Relationship	15										
Utility Interest	8	14									
Expense	10	14	9								
Public Interest	13	11	7	2							
Efficiency	5	3	7	6	3						
Fairness	4	3	4	2	6	3					
Unique	2	4	7	5	4	1	4				
Comprehensive	6	1	1	2	0	11	3	2			
State/Fed Auth	5	4	3	1	1	1	2	0	2		
Revenue	4	1	2	3	3	1	2	1	0	7	
Totals	72	70	62	54	50	41	33	30	28	26	24
Rank	1	2	3	4	5	6	7	8	9	10	11

TABLE 4 Average code frequency by dimension of institutional theory and city policy, ranked by % difference LO to FA cities.

Dimension	Code	LO Cities	FA Cities	%Diff
Legal relations	Position (Admin: Legal)	7:1	2:2	86%
	State/Federal Authority	2.5	2.3	10%
	City Authority	4.9	5	−3%
Transaction costs	Efficiency	3.5	1.3	64%
	Comprehensive	2.8	1.3	55%
	Expense	6	6	0%
	Revenue	2.3	2.5	−11%
	Unique	2.5	3.3	−30%
Norms	Utility Interest	4.8	2.3	53%
	Relationship	6.8	3.8	44%
	Fairness	2.3	2	11%
	Public Interest	2.9	4.5	−57%
Total		41	34	17%

undergrounding when...the city is initiating a project” (01-02). Staff also referred to the city council’s authority to define policy, which can happen at any time under an LO but requires renegotiation of an FA.

TABLE 5 Average code count by position type, ranked by % difference.

Code	Admin	Legal	%Diff
Relationship	7.1	1.7	77%
Efficiency	3.3	1	70%
comprehensive	2.7	1	63%
Utility interest	4.6	2	56%
Fairness	2.4	1.3	45%
Public interest	3.8	2.3	38%
Revenue	2.6	1.7	35%
City authority	5.3	3.7	31%
State/Federal authority	2.6	2	22%
Unique	2.9	2.3	19%
Expense	6.2	5.3	14%
Total	43.4	24.3	44%

The *state/federal authority* code was the 8th-highest code applied to interview transcripts, referring to preemption by state or federal law that prohibits a city’s exercise of authority over the ROW (Table 2). *State/federal authority* was mentioned slightly more by cities with an LO policy on average (Table 4), and more by administrative staff positions (Table 5). State/federal authority had the second-lowest co-occurrence with other analytic codes, co-occurring most with *revenue* (7) regarding laws that limit the fees that cities can set for some types of utilities (mainly

telecommunications) (Table 3). *State/federal authority* also co-occurred with *city authority* (5), with several LO city staff explicitly discussing what was not preempted and explaining that LO city staff spend time “educating [utilities] on the fact that we have Home Rule authority” (17-01). LO staff also discussed updating their ordinances to comply with changes in state and federal law (02-01), while one FA city staff said that proposing an LO was on their “to-do” list, but explained “I keep waiting for some of the regulatory [change]... especially from the federal level drama to cool down... At some point, you just have to draw a line and move forward and then adjust from there” (10-02).

4.2 Differences in transaction costs between ROW governance structures

TCE compares the practical application of different governance structures to determine which minimizes administrative costs and protects against opportunism. The city-utility relationship is characterized by high asset-specificity and high uncertainty, suggesting that the LO regulatory structure should be more efficient than the FA contract model—a conclusion supported by the experience of city staff in interview excerpts for *expense*, *efficiency*, *unique*, *revenue*, and *comprehensive* (Tables 2, 4). We will discuss the related concepts of expense and revenue together, then unique and comprehensive together. We will conclude this section by discussing efficiency as it relates to the overall concepts of TCE.

The *expense* code was the most-applied code in interview transcripts, referring to the time, effort, or other financial outlay related to ROW management (Table 2). In contrast, *revenue* was ranked 9th out of 11 in code application. Because we were asking staff about their experience in ROW management, rather than speaking with city financial officers or city council, it is expected that descriptions of ROW expenses are more common for these interviewees than revenue concerns. *Expense* was mentioned equally by both types of cities, while FA cities mentioned *revenue* slightly more than LO cities on average (Table 4). Administrative staff mentioned both expense and revenue concerns more than legal staff by modest margins (Table 5).

Expense had highest co-occurrence with *relationship* (14), *city authority* (10), and *utility interest* (9), with interviewees explaining how their relationship with utilities impacts the amount of staff time and effort required to enforce city ROW policy vis-a-vis utility efforts to minimize their own costs (Table 3). Generally, LO staff discussed more frequent but less intense interactions with utilities, while FA staff discussed fewer but higher duration and intensity interactions, particularly among legal staff. One LO city staff stated: “It’s easier for staff time to not have to negotiate franchise agreements for every single user in the right-of-way. So that’s a big savings there” (08-01). FA city staff estimated that franchise negotiations could take anywhere from 2 months to 3 years, depending on the complexity, with 6 months as the most common response. While negotiations occur infrequently, staff also mentioned the iterative nature of working with any ROW issue under an FA, where administrative and legal staff work together with the utility to administer their particular FA terms; in addition, allocating ROW work to legal staff indicates higher pay rates. One

interviewee made this point explicitly when contrasting FAs with the LO application process: “But you know there’s not attorneys, providers, money... and [the application is] 12 freaking questions. It’s not hard” (17-01).

Revenue had relatively low co-occurrence with the other analytic codes. *State and federal authority* (7) and *city authority* (4) related to preemption of fees that cities can charge to some utility types (telecom), while cities have authority to impose a privilege tax on other utilities (energy). Staff also noted that cities can expand revenue under LOs by requiring a license for any utility operating in the city, including those leasing another utility’s physical infrastructure (“facilities”) in the ROW: “Typically franchises are only used for [utilities] that own facilities. So there’s 5 [utilities] that own facilities in your city, but there’s 90 providers that are using the right of way for free because they don’t own facilities. You don’t know they’re there... That just shouldn’t be allowed” (17-01).

The *unique* code was the 7th-highest code applied to interview transcripts, while *comprehensive* was ranked 10 out of 11 (Table 2). As expected, *unique* was mentioned more by cities with an FA policy where terms are negotiated to address the specific operation of each utility, and *comprehensive* was mentioned more by cities with an LO policy that covers all ROW management needs of the city, and by those in an administrative position (Tables 4, 5). *Unique* and *comprehensive* also have low co-occurrence with other analytic codes. *Unique* co-occurred with *utility interest* (7) and *expense* (5) where utilities argue for unique ROW terms but requires more time and effort from city staff (Table 3). In contrast, *comprehensive* co-occurred with *efficiency* (11) and *city authority* (6) (Table 3), where LOs were described as a more comprehensive policy that is more efficient to administer and exercise city authority: “...the ordinance is very, very straightforward. It’s these existing agreements that we have that fall outside of that ordinance that are a lot more time intensive than administering the ordinance” (06-01).

One comment from an LO staff spoke to protection against opportunism as a feature of comprehensive LOs: “[If] it’s not the same rules for everybody, and if the [utility] provider is a bigger provider and has more money and better attorneys, they get better conditions than the little guys who can’t afford that. ... [With] a code, everybody’s due on this day, everybody has [the] same rules, level playing field enforcement, [the] rules are published online” (17-01). On the other hand, several cities discussed balancing comprehensive codes with unique utility attributes. Some cities cater to these unique attributes through a supplemental limited-purpose FA to vary the terms of the LO, or continued use of an FA for highly unique utilities such as trash collection. Offering a supplemental FA to a utility is an opportunity for the city to incentivize cooperation with the city’s priorities, with words such as “specific,” “tailored,” “short,” “standards,” “our expectations,” and “relief valve” used to describe the supplemental limited-purpose FAs in maintaining consistency and city authority.

The *efficiency* code was ranked 6th out of the 11 analytic codes, referring to achieving the city’s ROW management goals at the minimum cost (Table 2). *Efficiency* also had the 6th-highest co-occurrence with other analytic codes, led by *comprehensive* (11), *utility interest* (7), and *expense* (6) (Table 3). *Efficiency* was mentioned nearly 3 times as often by cities with an LO policy than those with an FA policy (Table 4), and over 3 times more by

administrative staff (Table 5). All 8 LO professionals brought up efficiency unprompted, and by most, quite explicitly: “from staff administration time, the ordinance is much more efficient since the language is so similar for all of them, and we really haven’t had much issue with utilities needing additional agreements” (06-01). LO staff also spoke of efficiency as a matter of utility interests: “It allows us to be more responsive...if someone has all their information lined up, you can take care of it and get someone licensed and ready to be submitting permits in... under a week. In theory you could do it in a day if everything was ready to go...” (04-01). Three of the four FA city participants brought up the expected efficiency of LOs; one respondent said “I think efficiency is probably the biggest reason” for the city’s plans to adopt an LO in the future (13-03).

The interview data confirmed the TCE theory that recommends a regulatory approach to ROW management rather than a contractual approach. Staff experience LOs as an efficient use of city resources, reduces opportunism by applying a baseline set of rules for all utilities, and allows the city to adapt to changing conditions more readily than a contract approach such as an FA. However, it is important to acknowledge that LO drafting and adoption is a significant effort but is only done once for all utilities (then may be amended); alternatively, an FA is negotiated for each utility approximately every 10 years with intermediate effort in unique legal interpretation and application. Furthermore, supplementary FAs are used for some utilities even with a comprehensive LO. In both ROW management regimes, city staff time is a valuable resource required to manage public resources, which impacts residents’ quality of life and has complex interactions with city climate policy. A standalone TCE analysis of city climate policy implementation under a LO versus FA structure would provide further insights.

4.3 Differences in social norms, beliefs, perceptions and networks between ROW governance structures

The ROW governance structure is chosen collectively based on the social norms, beliefs, and perceptions of the purpose of the ROW, whose interests are valued, and future risks and aspirations. The city staff that we interviewed are deeply embedded in the network of actors impacted by ROW management and have significant influence on other actors and outcomes, emerging as the analytic codes: *relationship*, *utility interest*, *public interest*, and *fairness* (Tables 2, 4). These codes exemplify the city context for ROW management in Figure 1, where the city is managing its duties to residents and its relationship to utilities serving residents beliefs and perceptions about fairness in applying city authority. Importantly, city staff also experience these relationships as both personal and professional networks that are formed and maintained to provide essential public services in the city.

The *relationship* code was the second-highest code applied to interview transcripts, used when staff referred to their ongoing interactions with utility staff, utilities as entities, and residents (Table 2). *Relationship* also had the second-highest co-occurrence

with other expected analytic codes, led by *city authority* (15), *expense* (14), *utility interest* (14) and *public interest* (11) (Table 3). *Relationship* was mentioned much more by cities with an LO policy (Table 4), and more by administrative staff (Table 5). *Relationship* predominantly captures the dynamic between administrative staff (*city authority*) and utility personnel (*utility interest*). For FAs, this relationship emerges as the two parties engage in a transaction to negotiate FA terms, acknowledged as building a long-term relationship with the utility staff and not just between the city and utility as organizations: “...there’s more familiarity with some people... as I’ve worked with the same person over the last 10 years, we built a good professional working relationship” (10-02). In LO cities, administrative staff expressed the belief that more frequent but lower-stakes interactions was advantageous to building working relationships rather than the infrequent and legalistic nature of FA negotiation and administration (01-02, 17-01). “The challenges just come with turnover” (03-01, 03-02), a problem noted in multiple interviews, as this leads to repeated communications with different utility staff over the same issue. One interviewee referenced this phenomenon as “a breakdown of communication... not being familiar with the code or... the process of how...to work in the right way” (01-02). This communication breakdown is a source of some strain on the relations between a city and utility, draining staff time and thus city expenses.

The nature of LOs was described as shifting the relationship dynamic with utilities, from negotiation on terms to more frequent interactions on administration and enforcement (01-02): “[an LO is] pretty cut and dry [as to] what the requirements are, and there’s not any wiggle room” (08-01) and “[city-utility] relationships, just by nature of frequency are a little bit more strengthened or streamlined” (03-01, 03-02), resulting in a different distribution of staff time that will result in cost savings for the city over the long term. Much of the communication comes up-front in drafting the LO code and educating utilities as they move to an LO or new utilities come into the city (17-01, 08-01). Yet, adopting an LO is not a “take it or leave it” approach where utilities “don’t have much of a voice in that process,” because that is “damaging to a partnership if you were to take that approach” (04-01; also discussed by 02-01, 01-02). On an organizational level, all LO staff discussed factors that influence the relationship between a city and utility provider: length of the relationship, the level of responsiveness emphasized in a utility’s culture, length of time that they have been working in the city, whether utility staff is located locally rather than corporate headquarters in another part of the country, and the complexity of the type of ROW work in question.

The *public interest* code was the fifth-highest code applied and in co-occurrence with other codes, referring to impacts on the public’s access to and use of the ROW or utility services (Tables 2, 3). *Public interest* was mentioned more by cities with an FA policy and by those in an administrative position (Tables 4, 5). The majority of the *public interest* and *city authority* co-occurrence (13, Table 3) mentions city actions that are part of a clean energy transition or climate adaptation, such as requiring above-ground utilities to be relocated underground, facilitating electric vehicle infrastructure, and one discussed a program requiring the utility to provide a percent of the city’s electricity from clean energy sources (01-02, 03-01, 04-01, 10-02, 13-03, 14-01, 16-01, 17-01). *Public*

interest also co-occurs with *relationship* (11, Table 3) in referring to residents, such as complaints about utility service, ROW work that closes a street, tree trimming, billing, service issues, and access to telecommunications as essential in natural or climate disasters (10-02, 14-01, 17-01, 06-01). *Public interest*, *relationship*, and *utility interest* also co-occur in discussions of working with utilities to streamline public works or utility projects (02-01, 03-01). *Public interest* was also mentioned as cost issue for residents: “[Utility service] costs less [with an LO] because all those costs get passed on to... the end user. If it costs this company \$5,000 to negotiate a franchise, they’re gonna pass that on to that user.... So it’s in the public interest to do a code” (17-01). LO staff expressed some divergent opinions about when a supplemental FA is appropriate for some utilities. Some articulated the public interest as the guiding principle: “Even if you have a code, if the public interest is served, you can do a franchise agreement” (17-01), while another stated: “My approach is [utilities] have to move to the license unless there’s a compelling business case” from the utility’s perspective (03-01).

The *utility interest* code ranked fourth in overall frequency and third in co-occurrences with other codes, referring to the aspects of ROW policy that impact a utility’s operation or economic interests (Table 2). *Relationship* was the most frequent co-occurring code (14), and as discussed above it co-occurs with *city authority* (8) and *public interest* (7) (Table 3). Interestingly, *utility interest* also frequently co-occurred with *expense* (9), *efficiency* (7), and *unique* (7), as city staff frequently discussed how LOs are also beneficial for utilities because it reduces the time to approval for use of the ROW, and how FAs or LO structures can also be tailored to a utility’s unique interests (Table 3). Because of this focus on efficiency and expenses from the utility perspective, LO staff and administrative staff from both types of cities discussed utility interests twice as much, on average, compared to FA cities or legal staff, respectively (Tables 4, 5). For FA cities, *utility interest* and *expense* were discussed in examples of a utility pushing back on city requests or during FA negotiations (14-01), and unique ROW management issues when discussing “differences because of how a particular utility negotiated” their FA (13-03). Two aspects of uncertainty were raised in interviews: first, the threat of lawsuits over ROW governance (04-01), and the uncertainty over FA negotiations or changing city expectations over the 10- or 20-year term of an FA (17-01, 04-01, 01-02). The opportunity for utility interests to influence ROW management is perceived as increasing uncertainty for a city’s management of its public resource.

The *fairness* code was the least-frequent code applied to interview transcripts, but ranked seventh out of eleven in co-occurrence with other codes, most frequently with *public interest* (6) (Tables 2, 3). *Fairness* was mentioned slightly more by cities with an LO policy (Table 4) and administrative staff (Table 5). In both types of cities, *fairness* was framed as treating utilities equitably (10-02, 13-03, 17-01), articulated as a “level playing field” (17-01). One LO city pointed out the different aspects of fairness: “I think it also makes the utilities play the same way for fairness. Not only just fairness of costs, but also what our expectations are and we’re not necessarily saying, oh, because your [FA] was adopted 20 years ago you don’t have to follow along” (01-02). One FA city discussed fairness as the main motivation for “working toward trying to move off the [franchise] agreements and onto a [LO] code because the

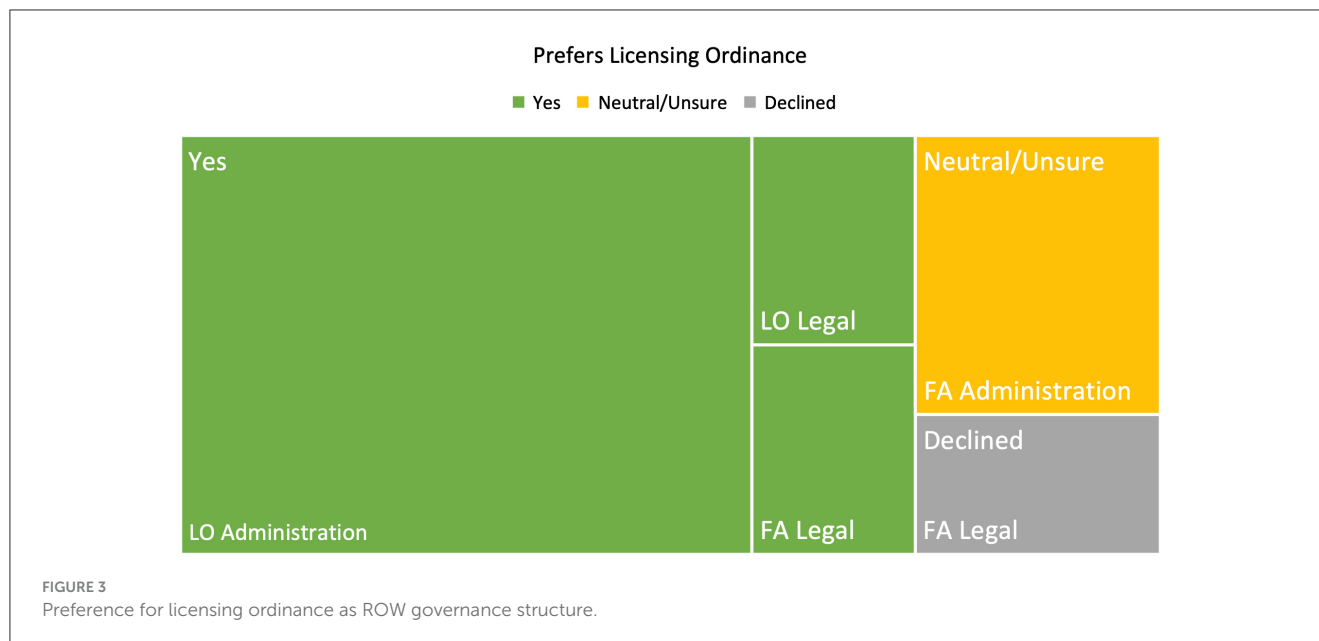
city council has directed staff that that’s a more equitable way to do things” (13-03), while another FA city uses a “template” as a starting point for new FA negotiations while passing an LO is on the “to-do” list (10-02).

5 Discussion: licensing ordinances facilitate climate policy implementation

After examining the perceptions of city staff who administer LO and FA governance structures across legal relations, TCE, and social norms, we look at the overall support for LOs to understand how the preference for adopting LOs arises, as “[h]uman motivation is influenced by the institutional contexts in which we operate” (Vatn, 2020, p. 8). City staff that administer both types of ROW governance structures overwhelmingly support the LO model, with support from both administrative and legal staff types (Figure 3). All LO cities prefer LOs; all but two were still in the process of administering unexpired FAs or they have supplemental FAs for some utilities. Three of the four FA cities had taken steps toward an LO model already; the FA legal staff that we interviewed stated a preference for an LO and was working on passing a code, two FA administration staff were neutral or unsure, and one FA legal staff declined to answer. We see a strong preference for LOs among city staff at different stages in LO adoption and implementation.

The move toward LOs is primarily justified by reducing city costs through efficient use of staff time, treating utility providers equitably, and increasing city revenue by regulating a greater number of utilities while charging a higher privilege tax when not preempted by state and federal law. Furthermore, by “understanding the relationship between the type of policy instruments used and the kind of motivation it fosters,” we see that motivation for a shift to LOs can have spillover effects on other domains of city governance (Vatn, 2020, p. 8). Staff were very clear that the regulatory LO approach enhanced city authority to deal with pressing issues as they arise, including the ability to change terms as needed by the city. We did not directly ask staff about how their ROW management influences city climate policy, and interviewees did not discuss adopting LOs as an explicit strategy to further a city’s climate goals. Nevertheless, we heard examples of climate mitigation and adaptation steps as examples of city management of the ROW facilitated by LO adoption, such as undergrounding electrical lines to reduce the risk of wildfire ignition and protect electrical service to residents in extreme weather events. Some staff also mentioned working with utilities to increase EV infrastructure, clean energy procurement, and other infrastructure projects. Enhanced revenue also gives the city more resources to deal with non-ROW related needs. Although city staff did not name climate policy explicitly, we heard numerous examples of cities wrestling with the uncertainty and complexity of work in the public ROW, demonstrating a key criterion in TCE that recommends the regulatory LO approach over FAs as long-term contracts (Figure 2).

City staff also elucidated the procedural differences between FA and LO adoption, showing how the legal relations between cities



and utilities impacts who participates in decision making, which can further shift the motivational context for city policy from the personal to the political. City staff derive their motivation through their role within city government and their relation to utilities and residents; the city government's motivation is further formed through the social norms and beliefs within the society (Vatn, 2020, 2015). The differences in the possibility for participation in FAs and LOs are stark. FA negotiations are a closed-process between the city and a single utility with specialized interests, conducted by legal staff from both sides who are focused on a narrow set of decision criteria motivated by self-interest and legalistic maneuvering; even though the city council ultimately approves the FA in an open public process there is little room for public participation. In contrast, an LO requires a more open participatory process; staff draft the code based on models from their city staff networks, utilities are notified and have the opportunity to provide input to staff and in public city council meetings, and residents have the opportunity to participate throughout the process of adopting the ordinance. Even though it may not garner wide public attention, the ordinance adoption process orients staff and council to their governance role rather than the contractual self-interest involved in FA negotiations. A shift from legal staff to administrative staff that oversee the LO keeps the public ROW issues on the agenda for more frequent attention. Even the ability to amend an LO keeps the conversation open, rather than closing the door on ROW management terms for each utility every 10 years. Participatory processes with input from diverse voices create a broader sense of criteria and accountability, opening to “we” rationalities that consider broad-based community interests (Vatn, 2015).

6 Conclusion

This study is the first to explore the licensing ordinance as an innovative alternative to traditional franchise agreements for

municipal ROW management, as experienced by city staff. While the primary purpose of model LOs was to avoid conflict with state and federal law, they were written broadly enough to cover all utilities in a local government's ROW. When applied to all utilities, we found that Oregon city staff report reduced city expenses through efficient use of staff time, equitable treatment of utilities by applying the same set of rules, and accomplishing a variety of city goals through the exercise of city authority over the ROW. While accomplishing city climate goals was not explicitly probed in interview questions, city staff gave several examples of how the LO governance structure facilitated the city's climate mitigation and adaptation efforts, revealing ways that stronger city authority over energy utility use of the public ROW advances city climate action policy.

We were also surprised that the LO concept had spread further than public data and early impressions had suggested. In addition to cities that were known to have adopted and implemented LOs, we sought out cities with unknown ROW governance structure with the assumption that they would still use FAs for energy utilities. On the contrary, one of those cities was already using an LO and 3 of the 4 cities still using FAs for energy utilities had begun the LO adoption process. The exploratory nature of this study uncovered more innovation and network effects than anticipated, demonstrating the innovative spirit of city staff to address the pressing issues in their jurisdictions within constrained resources. Because utility regulation and municipal ROW management is a matter of state law, we only explored LO adoption in Oregon cities. However model LOs have been published for other states in the U.S., warranting further research into how LOs are being used in other states and to what effect (e.g., [League of Minnesota Cities, 2020](#); [American Public Works Association, 2000](#)).

This study provides empirical evidence of how the interrelationship between the aspects of institutional theory—legal relations, transaction cost economics, and social norms—provides the institutional context for adopting a new governance structure

such as an LO, and how that in turn shapes the motivational context for other aspects of city governance, such as climate policy. The interview data supported the TCE theory that utility ROW regulation is characterized by both asset specificity and complexity and uncertainty, recommending the regulatory LO approach that was preferred by city staff. While questions of utility regulation were primarily explored using TCE in the literature, we broaden the lens to understand the human dimensions from the city staff level to the organizational and political context for city governance decisions. Adoption of LOs is a technical matter of ROW management that can be a part of a shift in culture to open public participation in city governance, redefining the relationship between cities and the investor-owned utilities that serve residents, and innovations by city government to address future challenges posed by climate change.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The requirement of ethical approval was waived by Oregon State University Institutional Review Board for the studies involving humans because of minimal risk to the interview participants and the data obtained was de-identified to protect confidentiality. The studies were conducted in accordance with the local legislation and institutional requirements. The ethics committee/institutional review board also waived the requirement of written informed consent for participation from the participants or the participants' legal guardians/next of kin because exempt studies allow verbal informed consent, which was obtained for all participants.

Author contributions

CB: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision, Visualization, Writing – original draft, Writing – review & editing. RP: Data curation, Formal analysis, Funding acquisition,

Investigation, Methodology, Writing – original draft, Writing – review & editing. JM: Data curation, Formal analysis, Funding acquisition, Investigation, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Gen AI was used in the creation of this manuscript.

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