

Community Concerns and Utility Responses During Data Center Development: Insights from a Qualitative Pilot Study of Utility Professionals

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Abstract: The rapid expansion of data centers and other large-load customers is creating new challenges for electric utilities, regulators, and communities. As utilities work to meet growing electricity demand, community concerns regarding affordability, infrastructure development, environmental impacts, and public participation have become increasingly important. This qualitative pilot study explored how utility professionals perceive and respond to community concerns during data center development and related large-load infrastructure projects. Data were collected through semi-structured interviews with three utility professionals representing regulatory, communications, and customer-focused roles within the electric utility industry. Interview transcripts were analyzed using thematic analysis and open coding techniques. Four primary themes emerged from the analysis: (a) communication and transparency as foundations of trust, (b) concerns regarding customer costs and rate impacts, (c) perceived information gaps and misinformation challenges, and (d) balancing local concerns with broader economic and infrastructure objectives. Participants emphasized the importance of early engagement, honest communication, stakeholder participation, and responsiveness in addressing community concerns. Findings also suggest that public concerns extend beyond technical issues and frequently involve questions of fairness, trust, and the distribution of project benefits and burdens. Although limited by its small sample size, this pilot study provides preliminary insights into utility perspectives on stakeholder engagement and community acceptance during data center development. The findings may help inform future research examining the relationships among transparency, trust, perceived fairness, and infrastructure project acceptance.

Keywords: Data Center Development, Stakeholder Engagement, Community Acceptance, Electric Utilities, Social License to Operate

Introduction

The rapid expansion of data centers has emerged as one of the most consequential developments affecting the U.S. electric power sector. Driven by growth in cloud computing, artificial intelligence (AI), digital commerce, and data-intensive technologies, data centers are creating unprecedented increases in electricity demand that are reshaping utility planning and infrastructure investment decisions. According to the U.S. Department of Energy (DOE), data centers consumed approximately 4.4% of total U.S. electricity in 2023, and that share is projected to increase to between 6.7% and 12% by 2028 (U.S. Department of Energy, 2024). Data center electricity consumption increased from 58 terawatt-hours (TWh) in 2014 to approximately 176 TWh in 2023, and DOE forecasts indicate continued acceleration as AI-related computing demands increase (U.S. Department of Energy, 2024). More recent projections estimate that data centers could account for approximately 11.8% of total U.S. electricity consumption by 2030, with annual electricity demand potentially reaching between 521 and 843 TWh under various growth scenarios (Smith et al., 2026).

These increases in demand have significant implications for electric utilities and the communities they serve. Accommodating large-load customers often requires substantial investments in generation resources, substations, transmission facilities, distribution infrastructure, and interconnection upgrades. The DOE reported that data center load growth has tripled over the past decade and could double or triple again by 2028 (U.S. Department of Energy, 2024). As a result, utilities face increasing pressure to balance reliability, affordability, resource adequacy, regulatory compliance, and economic development objectives while simultaneously planning for long-term infrastructure needs.

The growth of data centers has also generated increasing public scrutiny and stakeholder concern. While governments and economic development organizations frequently highlight the economic benefits associated with data center investment, communities have raised questions regarding electricity affordability, water consumption, environmental impacts, land use, transmission siting, noise, visual impacts, and the distribution of project benefits and burdens. For example, concerns regarding data center water use have become particularly prominent in Virginia, the largest data center market in the world, where state officials recently commissioned studies examining the potential effects of industrial water withdrawals on groundwater resources and whether additional regulatory oversight may be necessary as data center development continues to expand (Rankin, 2026). Concerns regarding transparency and public access to information related to data center resource consumption have similarly emerged in multiple jurisdictions, contributing to broader debates regarding environmental sustainability and infrastructure planning (Rankin, 2026).

These concerns have increasingly translated into organized opposition, permitting disputes, litigation, and project delays. Recent legal analyses have documented a growing number of lawsuits challenging data center projects on environmental, zoning, procedural, transparency, nuisance, and land-use grounds (Pujari et al., 2026). Community groups have challenged projects over concerns involving water consumption, electricity demand, noise, property values, environmental impacts, and the perceived lack of meaningful public participation in decision-making processes (Pujari et al., 2026). Financial institutions are increasingly recognizing community opposition as a material project risk, with lenders and investors scrutinizing permitting approvals and community support when evaluating data center investments (Azhar & Bautzer, 2026).

For utilities and developers, these issues create more than a public relations challenge. Infrastructure projects that encounter significant community resistance may experience permitting delays, redesign costs, regulatory disputes, litigation expenses, reputational damage, and reduced stakeholder trust. In some cases, projects can be scaled back, delayed, or abandoned entirely due to unresolved conflicts among stakeholders (Azhar & Bautzer, 2026; Pujari et al., 2026). Consequently, technically feasible and economically beneficial projects do not always achieve community acceptance. Questions regarding transparency, participation, fairness, and trust have become increasingly important as utilities seek to balance local concerns with broader infrastructure and economic development objectives.

Previous research has established the importance of stakeholder engagement, communication, and trust in infrastructure development initiatives. However, less is known about how utility professionals themselves identify, interpret, and respond to community concerns within the rapidly evolving context of data center development and large-load growth. Utility professionals frequently serve as the primary interface between complex technical planning processes and affected communities, placing them in a unique position to understand both organizational objectives and stakeholder concerns.

Despite growing attention to data center expansion and stakeholder engagement, important questions remain regarding how utility professionals identify, interpret, prioritize, and respond to community concerns associated with large-load development. As utilities seek to accommodate unprecedented demand growth while maintaining reliability, affordability, and public trust, understanding these perspectives becomes increasingly important. These unresolved questions point to a practical and scholarly problem that warrants further examination.

Problem Statement

The rapid growth of data centers and other large-load customers is creating significant new demands on the U.S. electric power system while simultaneously increasing public scrutiny of utility infrastructure development. Forecasts indicate that data center electricity consumption will continue growing substantially over the coming decade, increasing the need for generation,

transmission, substation, and distribution investments (Smith et al., 2026; U.S. Department of Energy, 2024). At the same time, communities and stakeholders have raised concerns regarding electricity affordability, infrastructure siting, water consumption, environmental impacts, transparency, and the distribution of project benefits and burdens.. Recent litigation, permitting disputes, and organized opposition to data center projects demonstrate that these concerns are not merely theoretical but are increasingly influencing infrastructure development outcomes (Azhar & Bautzer, 2026; Pujari et al., 2026).

This problem has important operational, managerial, and social implications. Utilities are expected to accommodate growing electricity demand while maintaining reliable service, affordable rates, regulatory compliance, and public trust. Failure to effectively address stakeholder concerns can contribute to project delays, redesign costs, increased regulatory scrutiny, litigation, reputational harm, and diminished community acceptance. Public concerns regarding the potential impact of data centers on electricity rates, water resources, and local infrastructure have become increasingly visible in both regulatory proceedings and public discourse (Rankin, 2026). As a result, utilities face the challenge of balancing long-term infrastructure and economic development objectives with the concerns of residents, local governments, ratepayers, and other community stakeholders who may experience the direct impacts of infrastructure expansion.

Although existing research has established that stakeholder engagement, communication, and trust are important components of infrastructure development, less is known about how utility professionals identify, interpret, prioritize, and respond to community concerns in the specific context of data center development and large-load growth. Utility professionals often serve as the primary connection between technical planning processes and affected communities, yet limited research has examined how these professionals perceive stakeholder concerns or how they approach trust building, transparency, and community engagement during project development. Insufficient understanding of these processes may limit the ability of utilities, regulators, policymakers, and other decision makers to develop engagement practices that are perceived as transparent, equitable, responsive, and trustworthy. Consequently, a systematic examination of utility professionals' perspectives is warranted to better understand how community concerns are addressed during data center development and related large-load infrastructure projects.

Purpose Statement

The purpose of this qualitative pilot study was to examine how utility professionals perceive, interpret, and respond to community concerns associated with data center development and related large-load infrastructure projects. The study focused specifically on the perspectives of utility professionals whose responsibilities included regulatory affairs, stakeholder engagement, communications, and large-customer management. As data centers are projected to consume an increasingly significant share of U.S. electricity demand, utilities are facing growing pressure to expand infrastructure while maintaining affordability, reliability, and public trust (Smith et al., 2026; U.S. Department of Energy, 2024). This study sought to better understand the experiences and practices of utility professionals operating within this evolving environment.

More specifically, the study examined the types of community concerns utility professionals encounter during project development, how they become aware of those concerns, and the strategies used to address them. The inquiry also explored participants' perspectives regarding electricity affordability, stakeholder engagement, communication and transparency practices, perceived information gaps, trust-building efforts, and the challenges associated with balancing local community concerns against broader infrastructure and economic development objectives. By focusing on the experiences and reported practices of utility professionals, this study sought to provide insight into how community concerns are interpreted and managed within utility organizations.

Conceptually, the study was intended to identify preliminary patterns that may help explain the relationships among stakeholder engagement, transparency, perceived fairness, trust, and

infrastructure project acceptance. The findings are not intended to represent the perspectives of community members directly; rather, they provide insight into how utility professionals understand and navigate community concerns during data center development. As a pilot study, the findings are intended to inform future research and contribute to a deeper understanding of community engagement practices within the context of rapidly expanding large-load development.

Originality, Rationale, and Significance

The originality of this study lies not in demonstrating that stakeholder engagement, communication, and trust are important, as those relationships have been established in prior infrastructure and organizational research, but in examining how utility professionals navigate these issues within the rapidly evolving context of data center development and large-load growth. Data centers are projected to consume an increasingly significant share of U.S. electricity demand, creating pressure on utilities to expand infrastructure while addressing concerns related to affordability, reliability, environmental resources, and public acceptance (Smith et al., 2026; U.S. Department of Energy, 2024). Unlike many traditional infrastructure projects, data center development simultaneously involves questions of economic development, electricity cost allocation, environmental stewardship, technological advancement, and community impacts. This combination creates a unique stakeholder environment in which infrastructure decisions may be technically necessary and economically beneficial while still generating concerns regarding fairness, transparency, and local consequences. As a result, conventional stakeholder engagement research does not fully explain how utility professionals interpret and respond to competing community concerns arising from this emerging form of large-load development.

From a scholarly perspective, this study contributes to a growing body of research examining stakeholder engagement, infrastructure governance, organizational trust, and community acceptance. The findings provide preliminary insight into how utility professionals understand and manage tensions between local concerns and broader regional objectives, including economic growth, infrastructure expansion, and service reliability. The study also offers an opportunity to examine relationships among transparency, stakeholder participation, perceptions of fairness, trust, and project acceptance. These relationships are relevant to multiple areas of scholarship, including Stakeholder Theory, Environmental Justice Theory, Social License to Operate, infrastructure governance, sustainability, and organizational trust. By focusing on utility professionals' perspectives during a period of unprecedented electricity demand growth, the study contributes to a better understanding of how stakeholder engagement functions when perceived benefits and burdens are distributed across multiple stakeholder groups.

The practical and policy significance of this study is equally important. Accommodating future data center demand may require substantial investments in generation, transmission, substations, and distribution infrastructure, with implications for utilities, regulators, local governments, developers, and ratepayers. The U.S. Department of Energy (2024) has projected that data center electricity demand could more than double within the next several years, while Lawrence Berkeley National Laboratory has estimated that data centers could account for nearly 12% of total U.S. electricity consumption by 2030 (Smith et al., 2026). These developments suggest that decisions regarding infrastructure planning, cost allocation, and stakeholder engagement may affect millions of customers and numerous communities. Utility leaders may benefit from a better understanding of engagement practices that strengthen legitimacy and trust, while regulators may benefit from greater insight into public concerns surrounding affordability, infrastructure investment, and perceived fairness. Local governments and developers may likewise benefit from recognizing that formal approval of a project does not necessarily result in community acceptance. By improving understanding of how utility professionals respond to community concerns, this study may help inform engagement practices that are more transparent,

responsive, equitable, and effective as utilities confront the challenges associated with accelerating data center development.

Literature Review

The rapid growth of data centers has introduced new challenges for electric utilities, regulators, policymakers, and communities. Existing research suggests that increasing electricity demand associated with artificial intelligence (AI), cloud computing, and digital infrastructure will require substantial utility investment while creating new pressures related to affordability, reliability, environmental stewardship, and community acceptance (Smith et al., 2026; U.S. Department of Energy, 2024). As utilities seek to accommodate this growth, they must address issues related to transmission expansion, resource planning, stakeholder engagement, and public trust. The following review examines the literature related to utility infrastructure development, stakeholder engagement, community acceptance, trust, and change management in the context of large-load growth.

Prior research has demonstrated that communication, stakeholder engagement, transparency, and trust are important factors influencing infrastructure development outcomes. However, large-load development projects such as data centers introduce additional complexities because their benefits and burdens may not be distributed equally among stakeholder groups. While some stakeholders may emphasize economic development, tax revenue, employment opportunities, and technological advancement, others may focus on electricity affordability, environmental effects, water consumption, land use, or infrastructure siting concerns (Rankin, 2026; Pujari et al., 2026). These competing priorities create tensions that cannot be fully explained through communication practices alone and raise broader questions regarding fairness, legitimacy, and stakeholder influence.

Several recent developments further illustrate the importance of these issues. Data center projects across the United States have increasingly become the subject of permitting disputes, litigation, public opposition, and environmental reviews related to concerns about resource consumption, infrastructure impacts, and public participation in decision-making processes (Azhar & Bautzer, 2026; Pujari et al., 2026). As a result, utilities and developers are operating in an environment where stakeholder concerns may influence project timelines, regulatory proceedings, financing decisions, and community acceptance. Understanding how utility professionals interpret and respond to these concerns therefore requires consideration of both organizational objectives and the perspectives of affected stakeholders.

Three theoretical perspectives provide a useful foundation for understanding these dynamics: Stakeholder Theory, Environmental Justice Theory, and Social License to Operate. Together, these frameworks offer complementary explanations regarding how stakeholder interests are identified and prioritized, how benefits and burdens are distributed, how communities evaluate decision-making processes, and how organizations establish legitimacy and trust. Stakeholder Theory focuses on the identification and management of parties affected by organizational decisions (Freeman, 1984). Environmental Justice Theory examines the fairness of both decision-making processes and the distribution of benefits and burdens associated with development activities (Schlosberg, 2007). Social License to Operate explains how organizations acquire and maintain community acceptance beyond formal legal or regulatory approvals (Moffat & Zhang, 2014). Collectively, these perspectives provide a conceptual foundation for understanding how utility professionals respond to community concerns during data center development and related large-load infrastructure projects.

Stakeholder Theory

Stakeholder Theory provides a foundational management and social science framework for understanding how organizations identify, prioritize, and respond to individuals and groups that can affect or are affected by organizational activities. First introduced by Freeman (1984), the

theory challenged traditional views that organizations exist primarily to serve shareholders by arguing that successful organizational decision-making requires consideration of a broader network of stakeholders. These stakeholders may include customers, employees, regulators, community members, suppliers, governments, advocacy groups, and others whose interests are connected to organizational actions (Freeman, 1984). Within the context of electric utility operations and data center development, Stakeholder Theory is particularly relevant because infrastructure projects often involve multiple stakeholder groups whose interests, expectations, and priorities may differ substantially.

Data center development creates a complex stakeholder environment involving electric utilities, data center developers, residential and commercial customers, regulators, local governments, landowners, economic development agencies, environmental organizations, elected officials, and community residents. While some stakeholders may emphasize economic development opportunities, employment growth, tax revenue, technological innovation, or improved infrastructure, others may focus on issues such as electricity affordability, environmental impacts, water consumption, land use, and quality-of-life concerns. Because these interests may not always align, utility decision makers must often navigate competing expectations while balancing long-term infrastructure needs with community priorities.

A key principle of Stakeholder Theory is stakeholder identification, which focuses on determining which groups possess legitimate interests in organizational decisions (Freeman, 1984). However, organizations often face situations in which multiple stakeholders assert competing claims. To address this challenge, Mitchell et al. (1997) expanded Stakeholder Theory by introducing the concept of stakeholder salience. Stakeholder salience refers to the degree of attention decision makers give to particular stakeholder groups based on three characteristics: power, legitimacy, and urgency. Power refers to a stakeholder's ability to influence decisions or outcomes. Legitimacy refers to the perceived appropriateness or validity of a stakeholder's claim. Urgency refers to the extent to which a stakeholder's concerns require immediate attention (Mitchell et al., 1997). Together, these characteristics help explain why certain stakeholder groups may receive greater consideration than others during infrastructure planning and development processes.

Stakeholder engagement is another important component of the theory. Engagement can take many forms, ranging from one-way communication and information sharing to consultation, collaboration, and direct participation in decision-making processes. Effective stakeholder engagement requires organizations not only to identify affected groups but also to understand their concerns and incorporate relevant feedback into planning and implementation activities. Within utility infrastructure projects, engagement mechanisms frequently include public meetings, open houses, community forums, regulatory proceedings, stakeholder workshops, and ongoing communication efforts. Stakeholder Theory suggests that engagement can improve organizational decision-making by increasing awareness of stakeholder concerns, reducing conflict, and strengthening relationships among affected parties.

The theory is also useful for understanding how infrastructure projects create different forms of value and different forms of burden for various stakeholder groups. Projects that provide regional benefits such as economic development, increased reliability, or technological advancement may simultaneously impose local costs related to land use, environmental impacts, visual effects, or perceived affordability concerns. Consequently, disagreements surrounding infrastructure projects may not simply reflect communication challenges but may instead stem from differing stakeholder interests and priorities. Stakeholder Theory therefore provides a framework for examining how organizations balance competing claims and determine whose interests receive greater consideration during decision-making processes.

This perspective is particularly relevant to the findings of the present study. Participants frequently described tensions between local concerns and broader infrastructure or economic development objectives, a pattern that aligns closely with Stakeholder Theory. Rather than

viewing these tensions solely as communication challenges, the theory suggests they may represent stakeholder prioritization challenges involving competing perceptions of costs, benefits, risks, and responsibilities. Stakeholder Theory therefore provides a useful framework for examining how utility professionals identify community concerns, determine which concerns require action, and balance the interests of diverse stakeholder groups during data center development and related large-load infrastructure projects.

Environmental Justice Theory

Environmental Justice Theory provides an important framework for understanding how infrastructure development affects different communities and stakeholder groups. Although environmental justice is often associated with pollution and environmental protection, the theory extends beyond environmental impacts to examine questions of fairness, equity, participation, and recognition in decision-making processes (Schlosberg, 2007; Walker, 2009). Environmental Justice Theory is particularly relevant to data center and utility infrastructure development because these projects frequently involve the distribution of both benefits and burdens across multiple stakeholder groups. As utilities plan and develop infrastructure to serve growing electricity demands, questions emerge regarding who benefits from development, who bears the associated costs and impacts, and whether affected stakeholders have meaningful opportunities to influence decisions.

A central component of Environmental Justice Theory is distributive justice, which concerns the allocation of benefits and burdens resulting from policies, projects, and organizational decisions (Jenkins et al., 2016; Schlosberg, 2007). Within the context of data center development, distributive justice raises important questions regarding who receives economic development benefits, tax revenues, employment opportunities, and system improvements, and who experiences potential burdens such as transmission infrastructure, increased electricity demand, environmental impacts, land-use changes, or concerns regarding affordability. Questions regarding cost allocation are especially relevant to electric utilities because community stakeholders may be concerned that investments necessary to serve large-load customers could result in higher costs for existing residential and commercial customers. Consequently, public concerns regarding electricity rates may reflect not only economic considerations but also perceptions of fairness regarding how infrastructure costs and benefits are distributed among stakeholder groups.

A second important element of Environmental Justice Theory is procedural justice, which focuses on the fairness of decision-making processes (Walker, 2009). Procedural justice examines whether stakeholders have meaningful opportunities to participate in decisions that affect them and whether decision-making processes are transparent, accessible, responsive, and inclusive. These concepts are highly relevant to infrastructure development because communities often evaluate projects not only on their outcomes but also on whether they believe their concerns were genuinely considered during planning processes. Public meetings, open houses, regulatory proceedings, stakeholder consultations, and other engagement activities may contribute to procedural justice when stakeholders perceive that participation opportunities are meaningful and that decision makers are responsive to feedback. Within utility infrastructure projects, procedural justice is closely related to communication, transparency, and trust-building efforts, which emerged as recurring themes in the present study.

Environmental Justice Theory also emphasizes recognition justice, which concerns whether institutions acknowledge and respect the experiences, values, identities, knowledge, and concerns of affected stakeholders (Schlosberg, 2007). Recognition justice extends beyond simply providing opportunities for participation. It asks whether stakeholder concerns are treated as legitimate and worthy of consideration. This distinction is particularly important when evaluating community opposition to infrastructure projects. Communities may oppose a project not because they misunderstand technical information, but because they perceive that their interests, priorities, or

concerns are not being adequately recognized. Consequently, disagreement should not automatically be interpreted as evidence of misinformation or insufficient knowledge. Stakeholders may fully understand a proposed project yet still oppose it because they believe its benefits and burdens are distributed inequitably or because they disagree with the underlying decisions.

Related scholarship in energy justice further expands these concepts by examining fairness within energy systems, including issues related to affordability, access, decision-making authority, and the distribution of energy-related costs and benefits (Jenkins et al., 2016). Energy justice scholars argue that energy infrastructure decisions should be evaluated not only in terms of technical performance and economic efficiency but also in terms of their social and ethical implications. These perspectives are highly applicable to data center development because the substantial electricity demands associated with large-load customers create questions regarding affordability, infrastructure investment, resource allocation, and community acceptance.

Environmental Justice Theory provides an especially useful lens for interpreting the findings of this study. Several themes identified by participants involved concerns regarding electricity costs, fairness, community participation, transparency, and the balancing of local burdens against broader economic and infrastructure objectives. The theory suggests that some forms of stakeholder opposition may reflect legitimate concerns regarding distributive justice, procedural justice, or recognition justice rather than simply a lack of information. As a result, Environmental Justice Theory helps distinguish between communication challenges and broader questions of fairness, providing a deeper understanding of how utility professionals encounter and respond to community concerns during data center development and related large-load infrastructure projects.

Social License to Operate

Social License to Operate (SLO) provides a valuable theoretical framework for understanding how organizations gain and maintain acceptance from communities and stakeholders affected by their activities. Unlike formal legal, regulatory, or contractual approval, a social license refers to the ongoing legitimacy, credibility, trust, and acceptance granted by stakeholders who are affected by a project or organization (Moffat & Zhang, 2014). Under this perspective, an organization may obtain all required permits and regulatory approvals while still facing community resistance, opposition, or a lack of public trust. This distinction is particularly relevant to utility infrastructure and data center development because regulatory authorization alone does not guarantee that communities perceive a project as beneficial, fair, or legitimate.

A core concept within Social License to Operate is legitimacy. Legitimacy refers to the extent to which stakeholders perceive an organization's actions as appropriate, justified, and consistent with social values and expectations (Moffat & Zhang, 2014). For utility infrastructure projects, legitimacy may be influenced by how well organizations explain project needs, whether community concerns are acknowledged, and whether decision-making processes are perceived as fair. Infrastructure development projects often require communities to accept short-term disruptions or localized impacts in exchange for broader economic, technological, or reliability benefits. Consequently, legitimacy becomes an important factor influencing whether affected stakeholders view such tradeoffs as reasonable and acceptable.

Closely related to legitimacy is the concept of credibility. Credibility concerns whether stakeholders believe the information and commitments provided by an organization. Communities are more likely to accept project-related information when they perceive it as accurate, transparent, and trustworthy. Conversely, credibility may be weakened when stakeholders believe information is incomplete, inconsistent, delayed, or presented in a way that minimizes concerns. Within infrastructure development, credibility can be influenced not only by the content of communication but also by the timing, consistency, and transparency of engagement efforts. As a result, organizations that communicate openly about potential project

benefits, risks, uncertainties, and limitations may be more likely to establish positive relationships with stakeholders.

Trust represents another central component of Social License to Operate. Trust involves confidence that an organization will act competently, honestly, responsibly, and in good faith (Moffat & Zhang, 2014). Unlike regulatory compliance, trust is developed over time through repeated interactions and demonstrated responsiveness to stakeholder concerns. Research suggests that trust is closely linked to both organizational legitimacy and community acceptance because stakeholders are more likely to support projects when they believe the organization will honor commitments, consider community interests, and act transparently (Moffat & Zhang, 2014). In contrast, trust can erode when stakeholders perceive that their concerns are ignored, commitments are not fulfilled, or participation opportunities are merely symbolic.

Social License to Operate also emphasizes that community acceptance exists on a continuum rather than as a simple approval-or-rejection decision. Acceptance can strengthen through meaningful engagement, responsiveness, transparency, and demonstrated accountability. Conversely, acceptance can deteriorate when stakeholders perceive that decisions have already been made, information has been withheld, or opportunities for participation lack meaningful influence. From this perspective, effective stakeholder engagement involves more than disseminating information. It requires building relationships that foster legitimacy, credibility, and trust over time.

This theoretical perspective aligns closely with the findings of the present study. Participants consistently emphasized communication, transparency, honesty, responsiveness, and stakeholder engagement as important factors in addressing community concerns. Social License to Operate provides a useful explanation for why these practices may influence project outcomes. The value of early communication is not simply that information is shared; rather, transparent and responsive engagement may contribute to legitimacy, credibility, and trust, which in turn influence community acceptance of infrastructure development. The theory also helps explain why opposition may persist even when projects receive regulatory approval. Community acceptance is shaped not only by technical or legal considerations but also by stakeholder perceptions regarding fairness, trustworthiness, and organizational legitimacy. Consequently, Social License to Operate offers a valuable framework for understanding how utility professionals navigate community concerns during data center development and related large-load infrastructure projects.

Growth of Data Centers and Electricity Demand

The growth of data centers has emerged as one of the most significant drivers of electricity demand growth in the United States. Advances in cloud computing, artificial intelligence (AI), machine learning, digital commerce, and data-intensive applications have increased the need for large-scale computing infrastructure capable of processing and storing vast amounts of information. As businesses, governments, and individuals become increasingly dependent on digital technologies, data centers have evolved from a relatively specialized component of the economy into a critical element of national infrastructure. This transformation has resulted in substantial increases in electricity consumption and has elevated data center development as a major strategic consideration for electric utilities and policymakers (U.S. Department of Energy, 2024).

Recent studies indicate that electricity demand associated with data centers is growing at a pace not observed in many decades. According to the U.S. Department of Energy (2024), data centers consumed approximately 176 TWh of electricity in 2023, representing about 4.4% of total U.S. electricity consumption. The same report projects that data center electricity use could increase to between 325 and 580 TWh annually by 2028, accounting for between 6.7% and 12% of total U.S. electricity consumption (U.S. Department of Energy, 2024). These projections reflect not only continued growth in digital services but also the rapid expansion of AI-related

computing, which requires significantly greater processing capacity and electrical power than many traditional computing applications.

Lawrence Berkeley National Laboratory similarly reported that data center electricity demand could reach approximately 649 TWh annually by 2030 under its reference scenario, with total demand potentially ranging from 521 to 843 TWh depending on future technology deployment and industry growth patterns (Smith et al., 2026). The researchers estimated that data centers could account for approximately 11.8% of total U.S. electricity consumption by 2030, representing a substantial increase from historical levels (Smith et al., 2026). These projections suggest that data centers will play a central role in shaping future electricity demand trajectories and infrastructure planning decisions across the United States.

The implications of this growth extend beyond increased electricity consumption. Utilities may be required to expand generation capacity, construct new transmission facilities, develop substations, upgrade distribution infrastructure, and modify long-term planning processes to accommodate large-load customers. Data center projects can require substantial amounts of electricity concentrated within relatively small geographic areas, creating localized infrastructure needs that may differ from traditional patterns of load growth. Consequently, utilities are increasingly confronted with decisions regarding resource adequacy, interconnection planning, infrastructure investment, reliability, and long-term system expansion. These challenges are further complicated by uncertainty regarding the pace of future development and the evolving energy requirements of AI technologies.

As data center development continues to accelerate, questions regarding how the costs of infrastructure expansion should be allocated have become increasingly important. While data centers may contribute to economic development, technological innovation, and increased utility revenues, infrastructure investments associated with serving large-load customers may raise concerns regarding affordability and potential impacts on existing ratepayers. Consequently, the rapid growth of data centers has intensified discussions regarding utility investment, cost allocation, stakeholder engagement, and the equitable distribution of benefits and burdens associated with infrastructure development. These issues have become an important area of focus for utilities, regulators, policymakers, and communities and provide a foundation for examining infrastructure and cost allocation concerns associated with large-load development.

Infrastructure and Cost Allocation

The rapid growth of data centers has intensified discussions regarding how the costs of accommodating large-load customers should be allocated within electric utility systems. Although data centers can provide economic development benefits, tax revenue, and increased electricity sales, serving large-load customers often requires significant investments in generation resources, transmission facilities, substations, distribution infrastructure, and interconnection upgrades. As utilities plan for projected increases in electricity demand, questions frequently arise regarding who should bear the costs of these investments and whether existing residential and commercial customers may be affected by infrastructure expenditures associated with new development (U.S. Department of Energy, 2024; Smith et al., 2026).

Cost allocation has long been an important issue in utility regulation because it directly affects perceptions of fairness among stakeholders. Regulatory frameworks generally seek to ensure that customers pay rates that are just, reasonable, and reflective of the costs incurred in providing service. However, the scale and concentration of electricity demand associated with data centers have raised renewed questions regarding whether infrastructure costs should be borne primarily by large-load customers, shared among multiple customer classes, or distributed across a broader customer base. These concerns extend beyond technical ratemaking considerations and often become public discussions regarding fairness, accountability, and the equitable distribution of economic benefits and infrastructure burdens.

Existing research on energy justice and distributive fairness suggests that stakeholders frequently evaluate infrastructure projects through the lens of cost-benefit distribution rather than solely through economic efficiency measures (Jenkins et al., 2016; Walker, 2009). Community members may ask whether local residents will experience higher electricity costs, increased infrastructure impacts, or environmental consequences while the primary economic benefits accrue to developers, technology companies, or distant stakeholders. In this context, public concerns regarding electricity affordability may reflect broader perceptions of distributive justice rather than simple questions regarding future utility bills. Consequently, understanding stakeholder concerns requires consideration of both actual cost-allocation mechanisms and stakeholder perceptions regarding whether those mechanisms are fair.

Studies of energy justice and infrastructure governance suggest that affordability concerns are often intertwined with broader perceptions of fairness and accountability. Jenkins et al. (2016) observed that stakeholders frequently evaluate energy-related decisions according to whether benefits and burdens are distributed equitably among affected groups rather than solely according to economic efficiency. Within infrastructure development contexts, concerns regarding electricity costs may therefore reflect broader questions about who benefits from new development, who bears associated financial or environmental burdens, and whether decision-making processes are perceived as fair. These findings suggest that stakeholder concerns regarding data center-related infrastructure investments may involve both practical affordability considerations and underlying perceptions of distributive justice.

The expansion of utility infrastructure associated with data center development may also create tensions between short-term affordability concerns and long-term system planning objectives. Utilities are often tasked with investing in infrastructure that supports economic development, maintains reliability, and accommodates future growth. While these investments may provide long-term benefits to the electric system, stakeholders may remain concerned about who pays for new infrastructure and whether projected benefits justify associated costs. Such concerns can become particularly pronounced when large infrastructure projects require public regulatory approval or when affected communities are asked to accommodate transmission facilities, substations, or other utility assets necessary to support data center operations.

Research examining infrastructure development has demonstrated that perceptions of fairness can influence stakeholder trust, project acceptance, and public support for development initiatives (Jenkins et al., 2016; Moffat & Zhang, 2014). Even when regulatory mechanisms are designed to protect existing customers from cost shifting, stakeholders may remain skeptical if they do not understand how costs are allocated or if they believe potential risks are being minimized. Transparency regarding infrastructure investments, rate impacts, and cost-recovery mechanisms therefore becomes an important component of stakeholder engagement. These considerations suggest that discussions regarding affordability and cost allocation are not solely financial issues but are also closely connected to broader questions of trust, legitimacy, and community acceptance.

The literature on infrastructure development further suggests that disputes regarding cost allocation often intersect with questions of stakeholder participation and public engagement. When communities believe they have been insufficiently informed about infrastructure costs or excluded from decision-making processes, concerns regarding affordability may evolve into broader challenges involving institutional trust and project legitimacy. As a result, effective stakeholder engagement may require not only explaining technical cost-recovery mechanisms but also addressing underlying concerns regarding fairness, transparency, and accountability. These issues provide an important foundation for understanding how utilities engage with communities during large-load development projects and lead naturally to a broader examination of community engagement and infrastructure acceptance.

Community Engagement and Infrastructure Acceptance

Community engagement has become an increasingly important component of infrastructure planning and development, particularly for projects that involve substantial community impacts or require public support. Research has consistently demonstrated that stakeholders are more likely to view infrastructure projects favorably when they believe decision-making processes are transparent, inclusive, and responsive to their concerns. Stakeholder engagement extends beyond providing information to affected communities; it also encompasses opportunities for consultation, participation, collaboration, and dialogue among project developers, utilities, regulators, and community members (Freeman, 1984; Mitchell et al., 1997). As infrastructure projects become more complex and visible, meaningful engagement has emerged as a critical factor influencing public acceptance and organizational legitimacy.

Scholars have increasingly recognized that formal regulatory approval does not necessarily translate into community acceptance. Social License to Operate research suggests that communities often evaluate projects based not only on technical merits or legal compliance but also on perceptions of fairness, trustworthiness, responsiveness, and procedural legitimacy (Moffat & Zhang, 2014). Consequently, infrastructure projects that satisfy regulatory requirements may still face opposition if stakeholders believe their concerns were not adequately heard or considered. This distinction is particularly relevant to data center development because projects may generate both regional benefits and localized impacts, creating circumstances in which communities and project sponsors evaluate success using different criteria.

Research has also shown that the timing and quality of engagement can significantly influence stakeholder perceptions. Early engagement allows organizations to identify concerns before positions become entrenched and provides opportunities to incorporate stakeholder input into project planning and design. In contrast, engagement efforts initiated after major project decisions have already been made may be perceived as symbolic or performative rather than substantive (Sovacool et al., 2022). Procedural justice literature further suggests that stakeholders are often more willing to accept outcomes, including outcomes with which they disagree, when they believe decision-making processes were transparent, respectful, and inclusive (Schlosberg, 2007; Walker, 2009). These findings indicate that stakeholder engagement may influence acceptance not only through information sharing but also through perceptions of procedural fairness.

Empirical studies of energy infrastructure projects have similarly found that public acceptance is influenced by perceptions of procedural fairness and stakeholder influence. For example, Sovacool et al. (2022) examined existing and proposed data center projects in Greenland, Iceland, and Norway using corporate data, expert interviews, focus groups, site visits, and stakeholder analysis. The researchers found that community acceptance was influenced by concerns regarding environmental impacts, resource consumption, governance practices, and the balance between local interests and broader economic objectives. These findings suggest that stakeholder acceptance is not determined solely by project characteristics but also by whether affected individuals perceive opportunities for meaningful participation in decision-making processes. However, existing research has focused primarily on infrastructure development broadly, leaving questions regarding how utility professionals interpret and respond to these concerns in the context of rapidly expanding data center development.

The infrastructure development literature further highlights the importance of meaningful participation. Communities frequently seek evidence that engagement efforts extend beyond one-way communication and that stakeholder feedback has the potential to influence project outcomes. When community members perceive that participation opportunities are genuine, organizations may strengthen trust and legitimacy. Conversely, when engagement is viewed as a mechanism to justify predetermined decisions, stakeholder skepticism and resistance may increase. These dynamics suggest that engagement effectiveness depends not only on the quantity of communication but also on stakeholders' perceptions regarding whether their concerns are

taken seriously and whether their participation can meaningfully shape decision-making processes. Community acceptance is also influenced by how stakeholders evaluate the distribution of project benefits and burdens. Infrastructure projects that generate perceived inequities may encounter resistance even when engagement efforts are extensive. Stakeholders may support economic development, reliability improvements, or technological advancement while simultaneously questioning whether local communities bear disproportionate costs or impacts. As a result, project acceptance often reflects a combination of procedural considerations, distributive concerns, trust, legitimacy, and stakeholder relationships rather than a single factor. This perspective aligns closely with Environmental Justice Theory and Social License to Operate, both of which emphasize that acceptance is shaped by stakeholder perceptions of fairness as well as project outcomes.

Within the context of data center development, community engagement and infrastructure acceptance are becoming increasingly important as utilities and developers seek to accommodate rapidly growing electricity demand while maintaining public trust. Existing research provides substantial evidence that stakeholder engagement influences perceptions of legitimacy and project acceptance. However, less is known about how utility professionals themselves interpret these dynamics, identify stakeholder concerns, and adapt engagement strategies in response to community feedback. Understanding these perspectives may provide valuable insight into the role of engagement practices in shaping community responses to data center development and related large-load infrastructure projects.

Trust, Transparency, and Risk Communication

Trust, transparency, and effective communication are widely recognized as essential components of successful stakeholder engagement and infrastructure development. Infrastructure projects often involve technical complexity, uncertainty, long planning horizons, and competing stakeholder interests, all of which can create challenges for organizations seeking to maintain public confidence and support. Research has consistently shown that stakeholders are more likely to trust organizations when communication is timely, transparent, accurate, and responsive to community concerns (Moffat & Zhang, 2014). Conversely, perceptions that information is incomplete, delayed, inconsistent, or misleading can undermine credibility and contribute to stakeholder skepticism.

Empirical research has also demonstrated the importance of trust, transparency, and community acceptance in infrastructure development contexts. For example, Sovacool et al. (2022) examined existing and proposed data center projects in Greenland, Iceland, and Norway using interviews, focus groups, stakeholder analysis, corporate data, and site visits. The researchers found that stakeholder acceptance was strongly influenced by perceptions of governance, transparency, sustainability practices, and the extent to which organizations addressed competing community interests. Their findings suggest that technical project performance alone may be insufficient to secure public support when stakeholders have concerns regarding resource use, environmental impacts, or decision-making processes.

Transparency is commonly viewed as a foundational element of trust-building because it influences how stakeholders evaluate organizational intentions and decision-making processes. Transparent communication involves more than simply providing information. It includes openly discussing project objectives, potential impacts, uncertainties, alternatives, timelines, and decision-making procedures. Procedural justice research suggests that stakeholders are more likely to perceive organizations as trustworthy when they believe information is shared honestly and when engagement processes are transparent and inclusive (Schlosberg, 2007; Walker, 2009). As a result, transparency can strengthen organizational legitimacy even when stakeholders do not fully support a proposed project.

Trust is particularly important in situations involving technical complexity, where stakeholders may have limited ability to independently evaluate specialized information. In these

circumstances, public acceptance often depends not only on the information provided but also on the perceived credibility of the information source. Social License to Operate literature emphasizes that stakeholders frequently make judgments based on whether they believe an organization is competent, honest, responsive, and committed to acting in the public interest (Moffat & Zhang, 2014). Trust therefore functions as a mechanism that can facilitate constructive dialogue, reduce conflict, and improve stakeholder willingness to engage with project developers and decision makers.

Risk communication represents another important dimension of stakeholder engagement. Risk communication refers to the processes through which organizations explain potential hazards, uncertainties, impacts, and tradeoffs associated with projects or activities. Effective risk communication seeks not only to communicate technical information but also to address stakeholder concerns, values, and perceptions. Research suggests that communication efforts are often less effective when organizations assume that stakeholder opposition results solely from information deficits. Stakeholders may fully understand technical information yet continue to have concerns regarding fairness, impacts, or project outcomes. Consequently, effective communication requires recognizing that disagreement and misunderstanding are not necessarily the same phenomenon. The distinction between misinformation, information gaps, and stakeholder disagreement is particularly important in infrastructure development. Organizations may encounter situations in which inaccurate information circulates among stakeholders, but they may also encounter legitimate concerns regarding project impacts, cost allocation, environmental consequences, or decision-making processes. Environmental Justice Theory suggests that framing stakeholder resistance primarily as a knowledge problem may overlook underlying concerns related to fairness, recognition, and participation (Schlosberg, 2007; Jenkins et al., 2016). As a result, effective engagement often requires addressing both informational and relational dimensions of stakeholder concerns.

Within the context of data center development, trust, transparency, and risk communication have become increasingly important as utilities and communities navigate unfamiliar infrastructure challenges. Data centers introduce complex issues involving electricity demand, infrastructure investment, affordability, environmental resources, and long-term planning. These topics are often difficult for stakeholders to evaluate, increasing the importance of credible communication and trust-building efforts. Existing literature suggests that stakeholder acceptance is influenced not only by the quality of information provided but also by perceptions of organizational honesty, responsiveness, fairness, and accountability. These insights are particularly relevant to the present study because participants repeatedly emphasized communication, transparency, public understanding, and trust as central considerations when responding to community concerns associated with data center development and related large-load infrastructure projects.

Environmental and Distributional Concerns

The rapid expansion of data centers has generated increasing attention to the environmental and distributional implications of large-load development. While data centers support economic growth, technological innovation, and digital infrastructure, they also require substantial amounts of electricity, land, water, and supporting utility infrastructure. As demand for these facilities continues to increase, stakeholders have raised questions regarding the environmental impacts associated with resource consumption and the extent to which the benefits and burdens of development are distributed equitably across communities (Jenkins et al., 2016; Schlosberg, 2007). These concerns are particularly relevant for electric utilities because infrastructure investments necessary to support data center growth often intersect with issues of sustainability, affordability, and community acceptance.

Water consumption has emerged as one of the most visible environmental concerns associated with data center development. Many facilities rely on water-intensive cooling systems

to maintain the operating conditions necessary for large-scale computing operations. As a result, communities in regions experiencing significant data center growth have increasingly questioned whether expanding industrial water demand could place pressure on local water supplies or compete with other community needs (Rankin, 2026). These concerns may become particularly pronounced in areas facing resource constraints, population growth, or environmental management challenges. Consequently, discussions regarding data center development frequently extend beyond electricity demand and encompass broader questions regarding long-term resource sustainability. Land use and infrastructure siting represent additional areas of concern. Data centers, substations, transmission facilities, and other supporting infrastructure can alter the physical landscape of communities and generate concerns regarding aesthetics, noise, traffic, environmental impacts, and property values. While stakeholders may recognize potential economic benefits associated with development, they may also question whether local communities disproportionately experience infrastructure-related burdens while broader regional or corporate entities receive a larger share of the resulting benefits (Schlosberg, 2007; Walker, 2009). Such concerns align closely with Environmental Justice Theory, which emphasizes the importance of evaluating who benefits from development and who bears its associated costs.

Distributional concerns also extend to the allocation of economic and energy-related impacts. Stakeholders may evaluate projects based on whether they perceive costs and benefits to be distributed fairly among different groups. Questions regarding electricity rates, infrastructure investments, environmental impacts, and economic development incentives frequently raise concerns regarding whether certain stakeholder groups receive disproportionate benefits while others absorb disproportionate burdens (Jenkins et al., 2016). In the context of data center development, these perceptions may influence community acceptance even when projects comply with regulatory requirements or provide broader economic advantages. Consequently, stakeholder responses may be shaped as much by perceptions of fairness as by the technical characteristics of a project itself.

Research in environmental justice and infrastructure governance suggests that environmental and distributional concerns are often closely linked to stakeholder trust and project legitimacy (Jenkins et al., 2016; Schlosberg, 2007). Communities may be more willing to support development when they believe potential impacts have been adequately considered, mitigation measures are appropriate, and benefits and burdens are distributed fairly. Conversely, opposition may emerge when stakeholders perceive that environmental risks, infrastructure impacts, or affordability concerns have not been fully addressed. These dynamics suggest that environmental issues cannot be examined independently of broader questions regarding procedural fairness, transparency, and stakeholder participation.

Within the context of data center development, environmental and distributional concerns provide an important lens for understanding community responses to infrastructure expansion. Existing literature indicates that stakeholders frequently evaluate projects not only according to their economic or technical merits but also according to their perceived environmental consequences and fairness. These concerns may influence public perceptions of legitimacy, trust, and acceptance and, therefore, have important implications for utilities and developers seeking to accommodate rapidly growing electricity demand. Understanding how utility professionals encounter and interpret these concerns is particularly important because they often serve as intermediaries between technical infrastructure planning processes and the communities affected by development decisions.

Literature Synthesis

The literature reviewed in this study demonstrates that data center development is creating significant challenges for electric utilities, policymakers, regulators, and communities. Research indicates that rapidly increasing electricity demand associated with artificial intelligence, cloud computing, and digital infrastructure is requiring utilities to evaluate generation expansion,

transmission investments, distribution upgrades, and long-term system planning strategies (Smith et al., 2026; U.S. Department of Energy, 2024). At the same time, growing public attention to issues such as affordability, environmental impacts, water consumption, infrastructure siting, and cost allocation has increased the importance of stakeholder engagement and community acceptance during infrastructure development.

Stakeholder Theory, Environmental Justice Theory, and Social License to Operate provide complementary frameworks for understanding these challenges. Stakeholder Theory explains how organizations identify, prioritize, and engage competing stakeholder groups (Freeman, 1984; Mitchell et al., 1997). Environmental Justice Theory highlights the importance of distributive justice, procedural justice, and recognition justice when evaluating the fairness of infrastructure decisions (Jenkins et al., 2016; Schlosberg, 2007; Walker, 2009). Social License to Operate emphasizes the roles of legitimacy, credibility, trust, and community acceptance in shaping stakeholder responses to development projects (Moffat & Zhang, 2014). Collectively, these theories suggest that stakeholder concerns cannot be understood solely as communication challenges. Rather, community responses may be influenced by perceptions of fairness, transparency, participation, trust, and the distribution of project benefits and burdens.

The empirical literature further demonstrates that effective stakeholder engagement can influence public acceptance of infrastructure projects and that trust and transparency play important roles in shaping stakeholder perceptions. Research also suggests that communities may evaluate infrastructure projects according to both procedural considerations, such as whether they were meaningfully included in decision-making processes, and distributive considerations, such as whether benefits and burdens are allocated fairly among stakeholder groups. Furthermore, studies of environmental justice and infrastructure governance indicate that opposition to development projects may reflect legitimate concerns regarding fairness, accountability, and local impacts rather than simply a lack of information or technical understanding.

Despite these insights, an important gap remains in the existing literature. Previous research has established the importance of communication, stakeholder engagement, trust, legitimacy, and fairness in infrastructure development generally. Research has also documented the growing electricity demands associated with data center expansion and the resulting infrastructure challenges facing electric utilities. However, less is known about how utility professionals themselves identify, interpret, prioritize, and respond to community concerns in the specific context of data center development and related large-load infrastructure projects. In particular, limited research has examined how utility professionals navigate simultaneous questions of affordability, infrastructure investment, stakeholder engagement, technical complexity, fairness, trust, and community acceptance.

Addressing this gap is important because utility professionals frequently serve as the primary interface between complex infrastructure planning processes and affected communities. Their perspectives may provide valuable insight into how stakeholder concerns are understood within utility organizations, how engagement strategies are developed, and how competing interests are balanced during project development. Accordingly, the present study seeks to contribute to the literature by examining how utility professionals describe, interpret, and respond to community concerns associated with data center development and related large-load infrastructure projects. This focus provides the foundation for the research question and methodological approach presented in the following sections.

Research Question

The preceding literature review demonstrates that data center development is creating unprecedented demands on electric utility systems while simultaneously increasing stakeholder concerns regarding affordability, infrastructure expansion, environmental impacts, fairness, transparency, and community acceptance. Existing research has established the importance of stakeholder engagement, trust, procedural fairness, distributive fairness, and organizational

legitimacy in infrastructure development. However, less is known about how utility professionals experience and navigate these issues within the specific context of rapidly expanding data center development and related large-load infrastructure projects.

A key consideration in this study is maintaining alignment between the research question and the available evidence. Because the study is based on interviews with utility professionals, the findings reflect participants' perceptions, experiences, interpretations, and reported practices rather than the direct perspectives of community members or the actions of utility organizations as a whole. Consequently, the study focuses specifically on utility professionals' perspectives and responses to community concerns.

Guided by Stakeholder Theory, Environmental Justice Theory, and Social License to Operate, this study seeks to better understand how utility professionals encounter and respond to community concerns associated with data center development and related large-load infrastructure projects. Based on the identified gap in the literature, the study seeks to answer the following question: *How do utility professionals describe, interpret, and respond to community concerns associated with data center development and related large-load infrastructure projects?*

Methodology

Research Design

This study employed a qualitative pilot study design to explore how utility professionals describe, interpret, and respond to community concerns associated with data center development and related large-load infrastructure projects. A qualitative approach was selected because the study sought to understand participant experiences, perceptions, and interpretations rather than measure relationships among variables or test predetermined hypotheses. Qualitative methods are particularly appropriate when researchers seek to gain insight into complex social processes, stakeholder interactions, and context-dependent phenomena that may not be adequately captured through quantitative measures.

The study was designed as a pilot investigation intended to provide preliminary insights into an emerging issue facing utilities and their stakeholders. Pilot studies are commonly used to explore under investigated topics, assess the feasibility of research approaches, identify patterns warranting additional investigation, and inform future research efforts. Given the rapidly evolving nature of data center development and the limited research examining utility professionals' perspectives on community concerns within this context, a pilot study provided an appropriate foundation for exploratory inquiry.

A qualitative design was especially relevant because community concerns associated with data center development frequently involve issues such as trust, transparency, fairness, stakeholder engagement, affordability, and community acceptance. These issues are shaped by individual experiences and interpretations and are therefore well suited to qualitative examination. By allowing participants to describe their experiences in their own words, the study provided an opportunity to gain a deeper understanding of how utility professionals perceive stakeholder concerns, how they interpret competing interests, and how they approach communication and engagement activities during infrastructure development processes.

Semi-structured interviews served as the primary method of data collection. This approach allowed for consistency across interviews while also providing flexibility to explore participant experiences and perspectives in greater depth when relevant topics emerged. The interview format supported the collection of detailed information regarding participant observations, engagement practices, perceived stakeholder concerns, and responses to issues related to data center development and large-load infrastructure projects.

The study employed thematic analysis to identify recurring patterns and themes across participant responses. Thematic analysis was selected because it provides a systematic process for examining qualitative data and identifying common ideas, concepts, and experiences reflected

within interview narratives. Through this process, four primary themes emerged: communication and transparency as foundations of trust; concerns regarding customer costs and rate impacts; perceived information gaps and misinformation challenges; and balancing local concerns with broader economic and infrastructure objectives. These themes provided the framework for interpreting participant perspectives and addressing the study's research question.

Participants and Sampling

The study employed purposive sampling to recruit participants with professional experience relevant to utility operations, stakeholder engagement, regulatory affairs, and customer relations. Purposive sampling is commonly used in qualitative research when participants are selected based on their ability to provide information that is directly relevant to the research question. Because the study sought to understand how utility professionals describe, interpret, and respond to community concerns associated with data center development and related large-load infrastructure projects, participants were selected based on their professional knowledge and experience interacting with stakeholders affected by utility infrastructure decisions.

Three utility professionals participated in the study. Collectively, the participants represented diverse areas of utility practice, including regulatory affairs, corporate communications, and customer-focused operations. Participants possessed between 12 and 20 years of utility industry experience and were located in service territories across the eastern United States. Their professional backgrounds provided perspectives on stakeholder engagement, public communication, community concerns, regulatory processes, and utility-customer interactions. Participants also had direct experience addressing questions and concerns related to utility infrastructure, economic development, and community engagement, enabling them to provide informed perspectives on the issues examined in this study.

Given the exploratory nature of the pilot study, the purpose of participant selection was not to achieve statistical representation but rather to obtain information-rich perspectives capable of providing insight into the phenomenon under investigation. The relatively small sample size was consistent with the study's pilot design and allowed for in-depth exploration of participant experiences and observations. The intent was to identify preliminary themes, patterns, and areas for future investigation rather than produce findings that could be generalized across the electric utility industry. Participants were recruited based on their professional roles and willingness to participate in the study. To protect confidentiality, participants are identified throughout the findings and discussion sections using generic participant labels rather than names or specific job titles. This approach helped ensure that participants could speak openly about their experiences while maintaining confidentiality and minimizing the risk of identification.

The three participants provided perspectives from different functional areas of the utility industry, creating opportunities for comparison across professional roles while also revealing several common themes regarding communication, affordability concerns, stakeholder engagement, public understanding, and the challenges associated with balancing local community interests and broader infrastructure objectives. These perspectives formed the basis for the thematic analysis presented in the findings section.

Data Collection

Data were collected through semi-structured interviews with three utility professionals who possessed experience relevant to stakeholder engagement, customer interactions, regulatory affairs, communications, and utility infrastructure planning. Semi-structured interviews were selected because they provide a balance between consistency and flexibility, allowing researchers to address predetermined topics while also exploring participant experiences and perspectives in greater depth as new ideas emerge during the conversation. This approach was particularly appropriate for examining how utility professionals understand and respond to community concerns associated with data center development and related large-load infrastructure projects.

An interview guide was developed to provide consistency across participant interviews while allowing opportunities for follow-up questions and clarification. Questions were designed to explore participants' experiences with community concerns, communication and engagement practices, affordability and rate-related issues, perceptions of public understanding, trust-building efforts, and challenges associated with balancing local concerns with broader infrastructure and economic development objectives. Additional probing questions were used when appropriate to encourage participants to elaborate on their responses and provide specific examples from their professional experience.

Interviews were conducted individually and followed a conversational format that encouraged participants to discuss their observations and experiences in their own words. This approach allowed participants to provide detailed descriptions of stakeholder interactions, community concerns, and utility responses while preserving the flexibility needed to examine issues that emerged during the interviews. The semi-structured format also helped ensure that all participants addressed the core topics relevant to the research question while allowing for variation in individual experiences and perspectives.

Participant responses were documented and subsequently reviewed for analysis. Interview data were organized and prepared for coding and thematic analysis. Throughout the data collection process, efforts were made to maintain consistency in questioning while allowing participants sufficient opportunity to expand upon ideas they considered important. This approach supported the collection of rich qualitative data and facilitated the identification of recurring themes across participant responses.

The interview protocol was implemented in accordance with approved research procedures and ethical requirements. Participants were informed of the study's purpose, the voluntary nature of participation, and the measures taken to protect confidentiality. Participation was voluntary, and participants were given the opportunity to decline participation or discontinue involvement at any time. The resulting interview data provided the foundation for the thematic analysis conducted in this study.

Data Analysis

The interview data were analyzed using thematic analysis, a qualitative analytical approach used to identify, examine, and interpret recurring patterns within textual data. Thematic analysis was selected because it provides a systematic method for organizing participant responses and identifying common themes related to the research question. The approach was particularly appropriate for this pilot study because it allowed for the exploration of participant perceptions, experiences, and interpretations regarding community concerns associated with data center development and related large-load infrastructure projects.

The analysis began with repeated review of the interview responses to develop familiarity with the data and identify initial concepts. During this process, participant comments were examined for recurring ideas, language patterns, and experiences related to stakeholder engagement, communication practices, affordability concerns, trust, transparency, community acceptance, and infrastructure development. Initial codes were assigned to segments of text that reflected meaningful concepts or topics relevant to the study's purpose and research question.

Following the initial coding process, related codes were grouped into broader categories based on conceptual similarities and recurring patterns across participant responses. These categories were then reviewed and refined to ensure that they accurately represented the perspectives expressed by participants and were supported by multiple examples within the data. The iterative nature of the analysis required repeated examination of the interview responses as codes and categories were compared, refined, merged, or separated as appropriate.

The final stage of analysis focused on identifying overarching themes that captured the central patterns present across participant interviews. Four primary themes emerged from the data: (a) communication and transparency as foundations of trust, (b) concerns regarding customer

costs and rate impacts, (c) perceived information gaps and misinformation challenges, and (d) balancing local concerns with broader economic and infrastructure objectives. These themes represented the most consistent and meaningful patterns identified across participant responses and provided a framework for understanding how utility professionals describe, interpret, and respond to community concerns. Throughout the analytical process, theme development was guided by the study's research question and informed by the theoretical perspectives discussed in the literature review. Particular attention was given to issues related to stakeholder engagement, procedural fairness, distributive fairness, legitimacy, trust, and community acceptance. The analysis sought to remain grounded in participant responses while identifying broader concepts that contributed to understanding utility professionals' perspectives on community concerns associated with data center development and large-load infrastructure projects. Because this study was designed as a qualitative pilot study, the purpose of the analysis was not to generate statistically generalizable findings but rather to identify preliminary patterns, themes, and areas for future investigation. The resulting themes provided insight into participants' experiences and perceptions and served as the foundation for the findings presented in the following section.

Trustworthiness and Credibility

Several measures were employed to enhance the trustworthiness and credibility of the study. In qualitative research, trustworthiness refers to the extent to which findings accurately represent participant perspectives and are supported by the data collected. Because the purpose of this study was to explore how utility professionals describe, interpret, and respond to community concerns associated with data center development and related large-load infrastructure projects, particular attention was given to maintaining consistency throughout data collection and analysis while ensuring that interpretations remained grounded in participant responses.

Credibility was supported through the use of semi-structured interviews, which provided a consistent framework for questioning while allowing participants the flexibility to describe their experiences and perspectives in their own words. This approach encouraged detailed responses and provided opportunities for clarification when necessary. The use of a common interview protocol also helped ensure that each participant addressed topics relevant to the research question, supporting comparability across interviews.

Trustworthiness was further enhanced through the systematic application of thematic analysis. Interview responses were reviewed multiple times during the coding and theme development process to ensure that identified themes reflected recurring patterns present across participant accounts rather than isolated observations. The iterative review of the data allowed for refinement of codes and themes and helped ensure that conclusions were supported by the interview evidence. Throughout the analysis, attention was given to maintaining alignment between participant responses, coding decisions, emerging themes, and the research question.

The study also sought to support dependability through the documentation of data collection and analytical procedures. Maintaining a clear record of interview questions, coding decisions, theme development, and analytical processes contributed to consistency and transparency throughout the study. This documentation provided an audit trail that linked the study's findings to the underlying interview data and supported the logical progression from participant responses to thematic conclusions.

Finally, efforts were made to maintain researcher awareness of potential bias throughout the research process. The analysis was guided by the participant data rather than predetermined expectations regarding findings or outcomes. Interpretations were developed from recurring patterns present in the interviews and were evaluated in relation to the study's theoretical framework, research question, and purpose. These practices helped strengthen the credibility, consistency, and overall trustworthiness of the findings presented in this study.

Ethical Considerations

This study was conducted in accordance with established ethical principles for research involving human participants. Prior to data collection, approval was obtained from the Marymount University Institutional Review Board (IRB). IRB approval helped ensure that the study's procedures protected participant rights, minimized potential risks, and complied with applicable ethical standards for human-subjects research.

Participation in the study was voluntary. Individuals who agreed to participate were informed of the purpose of the study, the nature of their involvement, and their right to decline participation or withdraw from the study at any time without penalty. Participants were also informed that their responses would be used for research purposes and that reasonable measures would be taken to protect their confidentiality throughout the research process.

To safeguard participant privacy, identifying information was not reported in the study findings. Participants are referenced using generic labels rather than names, specific job titles, or other details that could reasonably identify individual participants. This approach was intended to encourage candid discussion while reducing the likelihood that participants could be associated with specific responses or viewpoints.

Confidentiality was maintained throughout data collection, analysis, and reporting. Interview data were used solely for the purposes of this study and were analyzed in a manner intended to protect participant anonymity. Care was taken to present findings accurately and responsibly while ensuring that individual participants could not be readily identified from the information provided.

Finally, the study was conducted with a commitment to honesty, accuracy, and respect for participant perspectives. Findings were reported based on the data collected, and interpretations were grounded in participant responses and established qualitative research practices. These ethical considerations helped support the integrity of the research process and the credibility of the study's findings.

Findings

Analysis of the interview data resulted in the identification of four primary themes related to how utility professionals describe, interpret, and respond to community concerns associated with data center development and related large-load infrastructure projects. The themes included (a) communication and transparency as foundations of trust, (b) concerns regarding customer costs and rate impacts, (c) perceived information gaps and misinformation challenges, and (d) balancing local concerns with broader economic and infrastructure objectives. Together, these themes illustrate how participants understood stakeholder concerns and the approaches used to address them.

Theme 1: Communication and Transparency as Foundations of Trust

Communication and transparency emerged as the most consistent theme across participant interviews. All three participants emphasized that effective communication plays a central role in addressing community concerns and fostering positive relationships between utilities and stakeholders. Participants described communication not merely as the provision of information but as an ongoing process that involves honesty, responsiveness, education, and meaningful engagement with affected communities. Participants consistently suggested that trust is more likely to develop when stakeholders feel informed, heard, and respected throughout project planning and development processes. When asked what utilities can do to address community concerns related to data center development and infrastructure projects, Participant 1 responded succinctly: *"Communication and honesty."* Similarly, Participant 2 stated that utilities must be *"open and honest"* when discussing projects with stakeholders, while Participant 3 emphasized that *"communication is number one."* The consistency of these responses across participants

suggests that communication is viewed as a foundational element of successful stakeholder engagement.

Participants also stressed the importance of transparency regarding project impacts and decision-making processes. Participant 2 explained that stakeholders often become more receptive when utilities provide clear explanations about project needs and anticipated impacts. According to the participant, many concerns can be addressed when organizations are willing to openly discuss project details and answer questions directly. This perspective suggests that transparency may help reduce uncertainty and strengthen stakeholder confidence in utility decision-making. Beyond simply sharing information, participants emphasized the importance of engagement and responsiveness. Participant 3 described situations in which community input influenced project-related decisions, noting that meaningful engagement requires listening to stakeholder concerns and demonstrating a willingness to consider feedback. Participant 1 similarly discussed the importance of maintaining dialogue with community members rather than limiting communication to one-way information sharing. These observations suggest that participants viewed communication as most effective when it is interactive rather than transactional.

Several participants also indicated that trust develops over time through repeated interactions. Participant 2 noted that credibility can be strengthened when utilities consistently provide accurate information and follow through on commitments made during the engagement process. Participants suggested that stakeholders are more likely to trust organizations that communicate early, remain accessible throughout project development, and demonstrate responsiveness to community concerns. In contrast, delayed communication or perceived withholding of information may contribute to skepticism and diminish stakeholder confidence.

The experiences shared by participants indicate that communication and transparency serve purposes that extend beyond information dissemination. Participants frequently linked communication practices to broader outcomes such as trust, credibility, stakeholder relationships, and project acceptance. Collectively, their responses suggest that utility professionals view communication and transparency as foundational tools for addressing concerns, building trust, and supporting constructive engagement during data center development and related large-load infrastructure projects.

Theme 2: Concerns Regarding Customer Costs and Rate Impacts

Concerns regarding customer costs and potential rate impacts emerged as a prominent theme across participant interviews. Participants consistently reported that community stakeholders frequently question how data center development, large-load customers, and associated infrastructure investments may affect electricity costs. While participants generally noted that utilities seek to minimize cost impacts to existing customers, they acknowledged that affordability concerns are among the most common issues raised during discussions involving infrastructure expansion and economic development projects.

When discussing community concerns, participants indicated that questions regarding electric bills often arise early in stakeholder conversations. Participant 2 explained that one of the first questions community members frequently ask is, *“How’s it going to affect my bill?”* Similarly, Participant 1 noted that customers often express concern that they may *“pick up that cost”* if substantial infrastructure investments are required to support new development. These responses suggest that affordability concerns serve as a primary lens through which many stakeholders evaluate proposed infrastructure projects. Participants also indicated that questions regarding rates often extend beyond the actual amount of a customer's bill. Several responses suggested that stakeholders are interested in understanding who will bear the financial responsibility for infrastructure improvements associated with large-load customers and whether existing residential and commercial customers will be affected. Participant 3 observed that community discussions often include concerns regarding *“a possible increase to customers’ electricity bills,”* particularly when stakeholders are uncertain about how project-related costs are

allocated. These comments suggest that concerns about electricity rates are closely connected to broader perceptions of fairness and accountability.

In addition to affordability concerns, participants described the challenge of explaining complex utility cost-recovery and regulatory processes to community members. Utilities must often communicate how infrastructure investments are planned, financed, and reviewed within regulatory frameworks, yet these processes can be difficult for stakeholders to understand. Participants noted that misunderstandings regarding cost allocation may contribute to public concern and skepticism, particularly when projects involve significant infrastructure construction or large-scale electricity demand. As a result, participants emphasized the importance of clear communication regarding rate impacts, infrastructure needs, and regulatory oversight.

Several participants suggested that addressing affordability concerns requires more than simply assuring stakeholders that rates will remain stable. Instead, participants indicated that community members often seek transparency regarding how costs are evaluated, how decisions are made, and why infrastructure investments are necessary. Participant responses suggest that stakeholders are more likely to view utility decisions favorably when they understand both the purpose of an investment and the mechanisms used to protect customers from inappropriate cost burdens.

Overall, participant interviews indicate that customer costs and rate impacts represent a significant community concern during data center development and related large-load infrastructure projects. Participants consistently reported that stakeholders seek information regarding affordability, infrastructure costs, and cost allocation practices. The findings further suggest that these concerns are not solely financial in nature but are also associated with perceptions of fairness, transparency, and trust in utility decision-making processes. As a result, utility professionals frequently view clear communication regarding costs and rate impacts as an essential component of stakeholder engagement and community outreach.

Theme 3: Perceived Information Gaps and Misinformation Challenges

Perceived information gaps and misinformation emerged as a recurring theme throughout participant interviews. Participants consistently indicated that many community concerns associated with data center development and related infrastructure projects are influenced by limited public familiarity with utility operations, infrastructure planning, regulatory processes, and the technical requirements of large-load customers. While participants acknowledged that some concerns stem from legitimate questions regarding project impacts, they also described situations in which incomplete, inaccurate, or misleading information contributed to stakeholder uncertainty and misunderstanding. Participants frequently noted that data center development involves complex technical and regulatory issues that may be unfamiliar to many community members. Participant 3 explained that stakeholders often have limited understanding of how data centers operate or why supporting infrastructure may be necessary. Similarly, Participant 2 observed that questions frequently arise regarding electricity demand, infrastructure requirements, and the relationship between data center development and customer rates. These observations suggest that information gaps may create challenges for communities attempting to evaluate the potential impacts of proposed projects.

Participants also described instances in which misinformation complicated engagement efforts. According to Participant 1, inaccurate assumptions about utility operations, project costs, or infrastructure impacts can spread quickly within communities and contribute to heightened concern. Participants indicated that such situations often require utilities to devote additional time and resources to correcting misconceptions and providing factual information. However, participants emphasized that addressing misinformation requires more than simply presenting technical data. Effective engagement often involves explaining complex information in a manner that is understandable and relevant to community stakeholders. Despite identifying misinformation as a challenge, participants generally did not attribute all stakeholder concerns to a

lack of knowledge. Several responses suggested that community concerns frequently reflect a combination of informational, economic, environmental, and fairness-related considerations. Participant 2 noted that even when stakeholders receive accurate information, they may continue to have questions or concerns regarding project impacts, affordability, or local consequences. This perspective indicates that disagreement should not automatically be interpreted as evidence of misunderstanding. Rather, community concerns may persist because stakeholders evaluate projects according to different priorities, values, or perceptions of risk.

Participants emphasized the importance of proactive communication as a strategy for addressing both information gaps and misinformation. Early engagement, public education efforts, open dialogue, and opportunities for questions were identified as important mechanisms for improving stakeholder understanding. Participant 3 suggested that providing information before misinformation becomes widespread is often more effective than attempting to correct misconceptions after opinions have already formed. Participants also emphasized the value of ongoing communication that allows stakeholders to seek clarification and remain informed as projects develop.

Overall, participant responses suggest that information gaps and misinformation represent meaningful challenges during data center development and related infrastructure projects. However, the findings also indicate that utility professionals distinguish between misunderstandings and legitimate stakeholder concerns. Participants viewed education and communication as important tools for improving public understanding, but they also recognized that some concerns reflect broader questions regarding affordability, fairness, environmental impacts, and community acceptance. As a result, participants described successful engagement as requiring both accurate information sharing and meaningful dialogue with affected stakeholders.

Theme 4: Balancing Local Concerns With Broader Economic and Infrastructure Objectives

The fourth theme that emerged from the interviews involved the tension between local community concerns and broader economic, infrastructure, and system-level objectives. Participants consistently described situations in which utility infrastructure projects and data center development initiatives generated both localized impacts and broader regional benefits. As a result, utility professionals often found themselves navigating competing stakeholder interests and attempting to balance community concerns with organizational, economic development, and reliability goals.

Participants indicated that communities frequently evaluate projects through the lens of local impacts. Concerns regarding visual effects, land use, property values, environmental considerations, construction activities, and potential cost implications were described as common topics raised by community members. At the same time, participants noted that utilities and other stakeholders often evaluate projects according to broader considerations, including system reliability, economic development opportunities, future electricity demand, and long-term infrastructure planning needs. This difference in perspective sometimes created challenges when discussing the rationale for projects with affected communities.

Several participants provided examples illustrating how utilities attempt to balance these competing priorities. Participant 3 described instances in which community feedback resulted in modifications to project plans, suggesting that stakeholder concerns can influence project outcomes when engagement occurs early and stakeholders are provided opportunities to participate. Similarly, Participant 1 discussed the importance of listening to stakeholder feedback and considering alternatives when feasible. These observations indicate that utilities may seek to balance operational and infrastructure objectives with community concerns rather than viewing the two as mutually exclusive.

Participants also acknowledged that achieving complete agreement among stakeholders is not always possible. Community members, elected officials, developers, regulators, utility

representatives, and other affected parties may prioritize different outcomes based on their respective interests and responsibilities. Participant 2 noted that some stakeholders focus primarily on local impacts while others emphasize broader economic or system-wide benefits. Consequently, utility professionals frequently face the challenge of addressing legitimate concerns raised by local stakeholders while also pursuing projects considered necessary for reliability, economic development, or future infrastructure needs.

An additional aspect of this theme involved differing perceptions of project benefits and burdens. Participants observed that communities may support economic growth and infrastructure investment in principle while still questioning whether the associated impacts are being distributed fairly. Discussions regarding data center development often included questions about who benefits from new development and who bears the costs associated with infrastructure expansion. These concerns frequently intersected with issues related to affordability, transparency, and trust, further illustrating the interconnected nature of the themes identified in this study.

Participant responses suggest that utility professionals regularly operate within an environment characterized by competing stakeholder interests and differing definitions of value, fairness, and success. The findings indicate that community concerns are not limited to specific project impacts but often reflect broader questions regarding the balance between local priorities and regional infrastructure objectives. Participants described communication, stakeholder engagement, transparency, and responsiveness as important tools for navigating these tensions and fostering constructive dialogue among affected stakeholders. Collectively, these observations highlight the complexity of balancing community concerns with the infrastructure and economic development needs associated with data center growth and related large-load development projects.

Discussion

The findings of this study suggest that community concerns associated with data center development and related large-load infrastructure projects are not solely questions of information exchange or project communication. Rather, participant responses indicate that concerns regarding communication, affordability, misinformation, and competing stakeholder interests are interconnected and may collectively influence perceptions of fairness, trust, and project acceptance. Across the interviews, participants repeatedly emphasized communication and transparency, concerns regarding customer costs, information gaps, and tensions between local impacts and broader infrastructure objectives. Considered together, these themes suggest that stakeholder responses to infrastructure development may be shaped by a combination of procedural considerations, distributive concerns, and perceptions of institutional trustworthiness.

One important insight emerging from the findings is the relationship between communication, participation, and procedural fairness. Participants consistently emphasized the importance of early engagement, transparency, responsiveness, and opportunities for stakeholder involvement. These observations align closely with Environmental Justice Theory, particularly the concept of procedural justice, which suggests that stakeholders evaluate not only project outcomes but also the fairness of decision-making processes (Schlosberg, 2007; Walker, 2009). The findings suggest that communication is most effective when it extends beyond information dissemination and provides meaningful opportunities for dialogue and participation. From this perspective, stakeholders may be more willing to engage constructively when they believe their concerns are acknowledged and considered during project planning. This interpretation also aligns with Social License to Operate theory, which emphasizes the role of transparent and responsive engagement in developing legitimacy and credibility (Moffat & Zhang, 2014).

A second insight concerns the relationship between affordability concerns and perceptions of distributive fairness. Participants frequently reported that community members ask whether infrastructure investments associated with data center development will affect existing customers'

electric bills. While these questions involve financial considerations, the findings suggest they may also reflect broader concerns regarding fairness. Environmental Justice Theory argues that stakeholders often evaluate projects according to how benefits and burdens are distributed across affected groups (Jenkins et al., 2016; Schlosberg, 2007). Participants' observations indicate that stakeholders may be concerned not only with infrastructure costs themselves but also with who bears those costs and who receives the resulting benefits. Consequently, opposition or concern may persist even when technical explanations regarding rates and cost allocation are provided. This finding extends previous research by suggesting that affordability concerns may function as indicators of perceived distributive fairness rather than solely as economic concerns.

A third insight involves the relationship between fairness and trust. Across the interviews, participants consistently linked stakeholder trust to transparent communication, honesty, responsiveness, and meaningful engagement. Social License to Operate theory suggests that trust develops when organizations are perceived as legitimate, credible, and committed to acting responsibly (Moffat & Zhang, 2014). The findings support this perspective while also suggesting that trust may be influenced by both procedural and distributive considerations. Stakeholders may be more likely to trust utility organizations when engagement processes are perceived as fair and when infrastructure costs and benefits are distributed in ways that appear equitable. In this sense, trust may function as a bridge between stakeholder perceptions and project acceptance. Communities that perceive decision-making processes and project outcomes as fair may be more willing to participate constructively even when concerns remain.

The findings also complicate a common assumption within infrastructure communication efforts. Participants identified misinformation and information gaps as genuine challenges, yet their responses suggest that not all stakeholder concerns can be resolved through additional information alone. Several participants acknowledged that stakeholders may continue to oppose or question projects even when they possess accurate information regarding technical details or project impacts. This finding suggests that disagreement should not automatically be interpreted as evidence of misunderstanding. Some concerns may instead reflect legitimate differences in values, priorities, risk perceptions, or fairness assessments. Environmental Justice Theory is particularly useful in understanding this distinction because it emphasizes that opposition may arise from concerns regarding recognition, participation, and equity rather than knowledge deficits alone (Schlosberg, 2007). This observation extends prior research by highlighting the importance of distinguishing informational challenges from fairness-related disputes.

Stakeholder Theory provides additional insight into the tensions observed in Theme 4. Participants frequently described situations in which local concerns conflicted with broader infrastructure, reliability, or economic development objectives. These tensions can be understood as stakeholder prioritization challenges involving multiple groups with competing interests (Freeman, 1984; Mitchell et al., 1997). Utilities, regulators, economic development organizations, community residents, developers, and large-load customers may all evaluate projects according to different criteria. From a Stakeholder Theory perspective, utility professionals must navigate competing claims involving power, legitimacy, and urgency while attempting to maintain stakeholder relationships and organizational objectives. The findings suggest that successful engagement may depend partly on how effectively utilities recognize and balance these competing interests.

The study also offers several managerial implications. Utility professionals may benefit from viewing stakeholder engagement as more than a communication function. The findings suggest that effective engagement requires attention to procedural fairness, transparency, responsiveness, and perceptions of distributive fairness. Communication strategies focused exclusively on technical information may be insufficient if stakeholders perceive that their concerns are not genuinely considered or that project benefits and burdens are distributed inequitably. Utility leaders may therefore benefit from expanding engagement efforts to include

earlier participation opportunities, ongoing dialogue, and greater transparency regarding infrastructure planning, cost allocation, and decision-making processes.

The findings also have potential regulatory and policy implications. As data center development continues to accelerate, regulators and policymakers will likely face increasing scrutiny regarding infrastructure investment decisions, cost allocation mechanisms, and community engagement practices. Participants' responses suggest that public concerns often extend beyond technical infrastructure considerations and include questions regarding fairness, accountability, and stakeholder participation. Policies that encourage transparent decision-making processes and meaningful stakeholder engagement may therefore contribute to greater trust and project legitimacy. At the same time, regulators may need to consider how affordability concerns and perceptions of cost allocation influence public acceptance of infrastructure expansion.

These findings should be interpreted cautiously because they emerge from a qualitative pilot study involving a small sample of utility professionals. The study was not designed to generate statistically generalizable conclusions or represent the perspectives of all utilities or community stakeholders. Instead, the findings provide preliminary insight into how utility professionals describe and respond to community concerns associated with data center development and related large-load infrastructure projects. Future research involving larger samples, additional stakeholder groups, and diverse geographic settings may help further examine the relationships among communication, fairness, trust, and project acceptance identified in this study. The findings suggest that community concerns associated with data center development may be best understood as interconnected questions of participation, fairness, trust, and legitimacy rather than isolated issues of communication or technical understanding. The study contributes to existing scholarship by illustrating how utility professionals perceive these relationships and by identifying potential pathways through which communication practices, stakeholder participation, perceptions of fairness, and institutional trust may influence community acceptance of infrastructure development.

Limitations

Several limitations should be considered when interpreting the findings of this study. First, the findings reflect the perspectives, experiences, and reported practices of the three utility professionals who participated in the study. Although the participants provided valuable insights into stakeholder engagement and community concerns associated with data center development and related large-load infrastructure projects, their perspectives should not be interpreted as representative of all utility professionals or utility organizations. The study was designed to explore participant experiences in depth rather than to generate findings that can be generalized across the electric utility industry.

Second, the study examined community concerns indirectly through the perspectives of utility professionals rather than through direct interviews with community stakeholders. As a result, the findings represent participants' interpretations of stakeholder concerns and engagement experiences rather than the firsthand views of community members themselves. While utility professionals frequently interact with stakeholders and may possess substantial knowledge of community concerns, the study cannot establish how community stakeholders independently perceive infrastructure development, affordability issues, engagement processes, or project impacts. Future research that includes community members, local government representatives, and other external stakeholders could provide a more comprehensive understanding of these issues.

A third limitation involves the potential influence of shared professional, organizational, regional, or regulatory contexts. Although participants represented different functional roles, they operated within similar industry environments and may have been exposed to comparable organizational practices, regulatory expectations, and stakeholder engagement approaches. These common experiences may have influenced how participants interpreted community concerns and described engagement activities. Consequently, alternative perspectives that may exist among

utility professionals working in different organizational or regulatory settings may not be fully reflected in the findings.

Additionally, the context of infrastructure development can vary substantially across geographic regions and utility jurisdictions. Regulatory frameworks, energy market structures, customer demographics, environmental conditions, political environments, data center concentrations, and community attitudes differ across locations. These contextual factors may influence both stakeholder concerns and the ways in which utility professionals respond to those concerns. Therefore, findings from this study should be interpreted within the context in which the data were collected and should not be assumed to apply uniformly across all utility service territories or infrastructure development settings.

Because this study employed a qualitative pilot design with a small sample, the findings should be evaluated in terms of transferability rather than statistical generalizability. Readers may determine the relevance of the findings by considering the similarities between the study context and their own organizational or community environments. The detailed descriptions provided throughout the study are intended to support such assessments while recognizing that stakeholder engagement practices and community concerns may vary across different settings.

Finally, the themes identified in this study should be viewed as preliminary patterns that warrant further examination. Pilot studies are intended to support exploration, identify emerging themes, and inform future inquiry rather than produce definitive conclusions. While the findings suggest potentially important relationships among communication, transparency, perceived fairness, trust, and community acceptance, additional research involving larger and more diverse samples is necessary to determine the extent to which these patterns are observed across different stakeholder groups, utility organizations, geographic regions, and infrastructure development contexts. Acknowledging these limitations helps define the appropriate boundaries of the study's conclusions while also identifying opportunities for future investigation.

Future Research

The findings of this pilot study identify several opportunities for future research. Although the present study focused on the perspectives of utility professionals, future investigations should incorporate a broader range of stakeholder groups to develop a more comprehensive understanding of community concerns associated with data center development and related large-load infrastructure projects. Interviews with community residents, local government officials, regulators, economic development representatives, environmental organizations, landowners, and large-load customers may provide additional insight into how different stakeholder groups perceive project benefits, burdens, fairness, and engagement processes. Comparing these perspectives with those of utility professionals could improve understanding of areas of agreement and disagreement and reveal opportunities for more effective stakeholder engagement.

The findings also generate several research questions that warrant further examination. The communication and transparency theme raises questions regarding which specific engagement practices most strongly influence stakeholder trust, perceptions of legitimacy, and community acceptance. Future studies could examine whether early engagement, responsiveness, transparency regarding project impacts, or opportunities for participation have differing effects on stakeholder perceptions. The customer costs and rate impacts theme suggests a need for additional research examining the relationship between stakeholder perceptions of affordability and actual cost-allocation mechanisms. Future studies could investigate whether public perceptions of fairness correspond with regulatory cost-recovery structures and whether understanding those mechanisms influences stakeholder trust and project acceptance.

The perceived information gaps and misinformation challenges theme raises questions regarding how different stakeholder groups define and interpret misinformation. Future research could examine whether utilities, community members, regulators, and developers distinguish between misinformation, incomplete information, disagreement, and distrust in similar ways.

Research could also investigate whether opposition to projects is more strongly influenced by information availability, source credibility, perceptions of fairness, or broader community values.

The theme involving local concerns and broader economic and infrastructure objectives suggests opportunities to examine how different stakeholder groups evaluate project benefits and burdens. Future studies could investigate whether local residents, developers, utilities, regulators, and elected officials prioritize economic development, environmental impacts, reliability, affordability, and quality-of-life considerations differently. Such research may help explain how perceptions of distributive fairness influence stakeholder support for infrastructure projects.

Future research should also examine whether procedural fairness, distributive fairness, and trust operate as mechanisms connecting stakeholder engagement practices to community acceptance. The findings of this study suggest a possible conceptual relationship in which communication and participation influence perceptions of procedural fairness, perceptions of project costs and benefits influence distributive fairness, and both forms of fairness contribute to trust and legitimacy. Future qualitative and quantitative studies could test and refine these relationships across different utility environments, stakeholder groups, and geographic regions. Additional studies should compare multiple geographic regions, regulatory structures, utility business models, and levels of data center concentration. Future researchers may also benefit from triangulating interview data with regulatory filings, public comments, public hearing records, rate proceedings, project communications, and other documentary evidence. Such approaches could provide a more comprehensive understanding of how stakeholder concerns evolve throughout infrastructure planning and development processes.

Finally, future research should continue to examine these issues through the theoretical lenses of Stakeholder Theory, Environmental Justice Theory, and Social License to Operate. By expanding the scope of inquiry beyond the preliminary patterns identified in this pilot study, future research can contribute to a more comprehensive understanding of how utilities and communities navigate the challenges associated with rapidly increasing electricity demand and large-load infrastructure development.

Practical Implications

The findings of this study suggest several practical implications for utility organizations, regulators, policymakers, and developers involved in data center development and related large-load infrastructure projects. First, the results indicate that stakeholder engagement should be viewed as a strategic component of project development rather than a communications activity that occurs after key decisions have been made. Participants consistently emphasized the importance of early communication, transparency, responsiveness, and opportunities for stakeholder participation. Utilities may therefore benefit from engagement approaches that begin early in the planning process and continue throughout project development, allowing stakeholders to ask questions, express concerns, and participate in meaningful dialogue before positions become firmly established.

Second, the findings suggest that utilities should address stakeholder concerns using a broader framework than information dissemination alone. Participants reported that community concerns frequently involve questions of affordability, fairness, transparency, and trust in addition to technical issues. As a result, engagement efforts focused exclusively on explaining project details may not fully address stakeholder concerns. Utility professionals may benefit from engagement strategies that acknowledge community values, perceptions of fairness, and concerns regarding the distribution of project costs and benefits. Such approaches may help strengthen organizational credibility and improve stakeholder relationships during infrastructure development efforts.

The study also highlights the importance of clear communication regarding customer costs, rate impacts, and infrastructure investment. Participants indicated that affordability concerns are among the most common issues raised by stakeholders during discussions involving data center

development and large-load growth. Utilities may therefore benefit from proactively explaining cost-allocation mechanisms, infrastructure planning requirements, and regulatory oversight processes in ways that are understandable to nontechnical audiences. Increased transparency regarding these issues may help reduce uncertainty, improve public understanding, and strengthen confidence in utility decision-making. For regulators and policymakers, the findings suggest that public acceptance of infrastructure projects may depend not only on technical merit and regulatory compliance but also on stakeholder perceptions of fairness and legitimacy. Policies and regulatory processes that encourage meaningful public participation, transparency, and responsiveness may contribute to greater stakeholder confidence and trust. Likewise, regulators may benefit from recognizing that affordability concerns often reflect broader questions regarding fairness and cost allocation rather than solely concerns about electric bills. The findings also have implications for data center developers and economic development organizations. Participants reported that economic development benefits alone may not be sufficient to generate community acceptance. Stakeholders may evaluate projects according to local impacts, perceived fairness, environmental considerations, and trust in project sponsors. Consequently, developers may benefit from engagement approaches that emphasize transparency, responsiveness, and ongoing relationship-building with affected communities. The findings suggest that obtaining formal approvals does not necessarily ensure public acceptance and that long-term project success may depend on maintaining stakeholder trust throughout the development process.

Finally, the study suggests that utility professionals play an important role as intermediaries between technical planning processes and community stakeholders. Their ability to communicate complex information, address concerns, and foster constructive dialogue may influence how communities perceive infrastructure projects and utility decision-making. Investments in stakeholder engagement capabilities, community outreach practices, and communication training may therefore strengthen utilities' ability to navigate the challenges associated with rapidly growing data center development and large-load infrastructure expansion.

Conclusion

The primary contribution of this study is the identification of a potential relationship among stakeholder engagement, perceived fairness, institutional trust, and community acceptance during data center development and related large-load infrastructure projects. Rather than suggesting that communication alone determines project outcomes, the findings indicate that community responses may be influenced by how stakeholders evaluate decision-making processes, the distribution of project benefits and burdens, and the credibility and legitimacy of utility organizations. Viewed collectively, the themes suggest that communication, participation, distributive fairness, procedural fairness, and trust may function as interconnected elements that shape stakeholder acceptance, resistance, or willingness to engage constructively with infrastructure development initiatives. This qualitative pilot study explored utility professionals' perspectives regarding community concerns associated with data center development and related infrastructure projects. Four primary themes emerged from the analysis: communication and transparency as foundations of trust, concerns regarding customer costs and rate impacts, perceived information gaps and misinformation challenges, and balancing local concerns with broader economic and infrastructure objectives. Together, these themes suggest that stakeholder concerns extend beyond technical questions and frequently involve broader considerations of fairness, participation, legitimacy, and accountability. Participants consistently emphasized the importance of early engagement, honest communication, responsiveness, and meaningful stakeholder involvement when addressing community concerns. The findings further suggest that stakeholder responses may be influenced by interconnected perceptions of procedural fairness, distributive fairness, transparency, and institutional trust. While participants identified information gaps and misinformation as meaningful challenges, the findings also indicate that stakeholder concerns cannot always be resolved through information sharing alone. Some concerns may

reflect differing values, priorities, and perceptions regarding whether project benefits and burdens are distributed fairly and whether stakeholder voices are genuinely considered during decision-making processes. Consequently, effective stakeholder engagement may require utilities to address not only informational needs but also broader concerns regarding fairness, participation, accountability, and community impact.

Several practical recommendations emerge from the findings. First, utilities should engage stakeholders early enough for community input to meaningfully influence project planning and decision-making rather than waiting until major decisions have already been made. Second, utilities should explain infrastructure costs, rate impacts, and cost-allocation mechanisms in accessible language so stakeholders can better understand how financial responsibilities are distributed. Third, utilities should document how stakeholder feedback influences project decisions and communicate those changes to affected communities. Fourth, organizations should recognize that providing information is not the same as providing meaningful opportunities for participation. Fifth, utilities should evaluate stakeholder perceptions of trust, legitimacy, and fairness alongside traditional project metrics such as schedules, budgets, and regulatory approvals. Additional recommendations are also supported by the findings. Utilities should distinguish between misinformation and legitimate stakeholder disagreement, recognizing that opposition may reflect differing values or fairness concerns rather than a lack of understanding. Utilities should also assess how project benefits and burdens are distributed among stakeholder groups and address concerns when communities perceive inequities. Finally, stakeholder engagement programs should be designed around legitimacy, credibility, responsiveness, procedural fairness, and distributive fairness rather than being treated primarily as communication functions. These approaches may help strengthen trust and improve community acceptance during infrastructure development initiatives. The findings contribute to the literature by providing preliminary insight into how utility professionals understand and navigate community concerns during a period of unprecedented electricity demand growth. Viewed through the lenses of Stakeholder Theory, Environmental Justice Theory, and Social License to Operate, the results suggest that community acceptance is shaped by more than regulatory approval or technical feasibility. Stakeholder perceptions regarding legitimacy, trustworthiness, transparency, participation, and fairness may play an important role in shaping responses to infrastructure development.

As a pilot study, the findings should be interpreted as exploratory rather than definitive. Nevertheless, they identify potentially important relationships among engagement practices, perceptions of fairness, institutional trust, and project acceptance that warrant further investigation. As data center development continues to accelerate and utilities confront increasing infrastructure demands, understanding how community concerns are identified, interpreted, and addressed will become increasingly important. Ultimately, the study suggests that managing electricity infrastructure growth successfully will require not only technical expertise and regulatory compliance but also sustained attention to stakeholder participation, fairness, legitimacy, and trust.

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