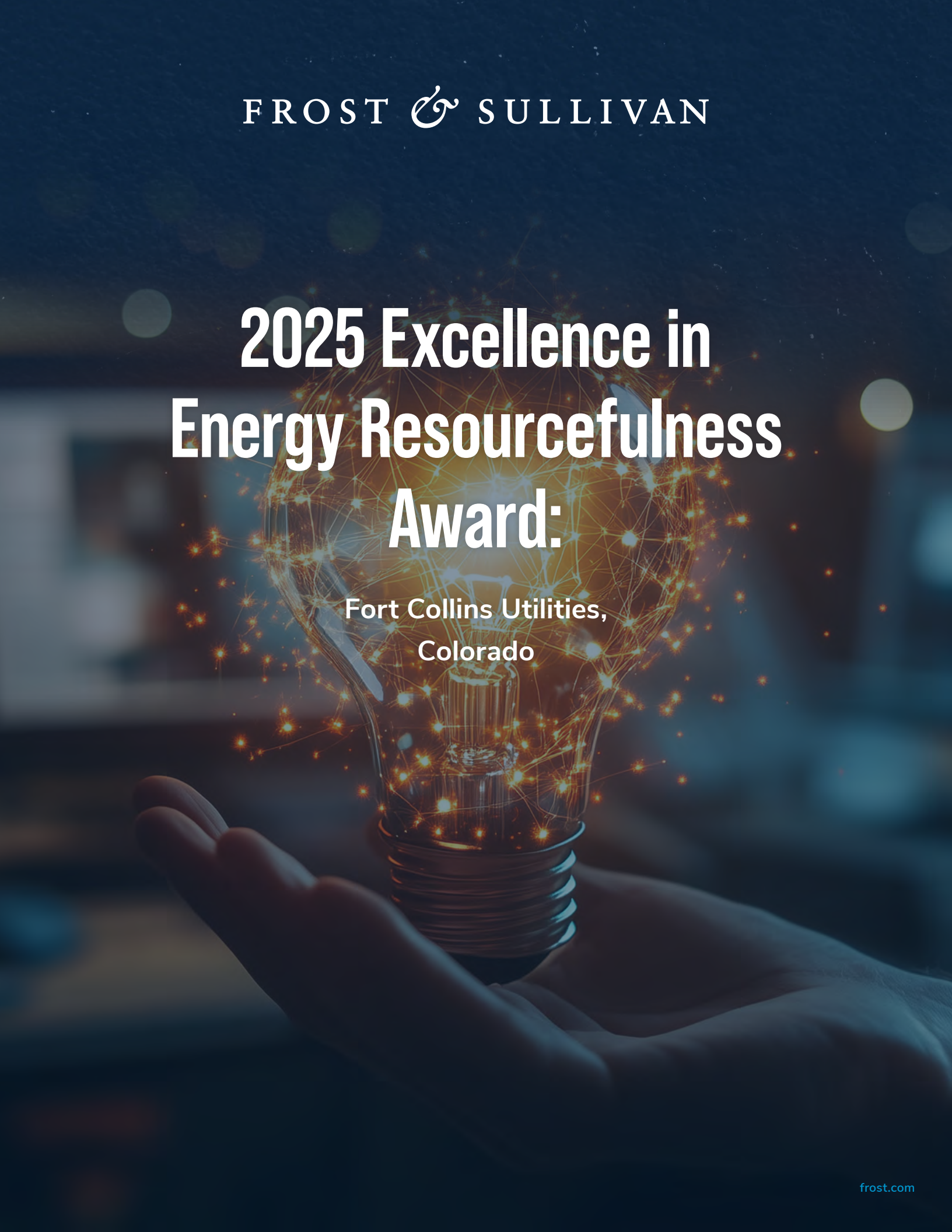
FROST & SULLIVAN

2025 Excellence in Energy Resourcefulness Award:

Fort Collins Utilities, Colorado



Introduction

Fort Collins is a mid-sized city with a population of 170,000 in the state of Colorado. It is a city known for its progressiveness, high-tech status, and environmental consciousness. The city's municipal, Fort Collins Utilities' tagline is to provide exceptional service for an exceptional community -by focusing on operational excellence, innovation, and sustainability. It is one of the growing number of cities in North America that has set an ambitious target of becoming carbon neutral by 2050 and to achieve 100% renewable electricity by 2030 through its Our Climate Future initiative. To support this mission, the municipality has been at the forefront of implementing grid flexibility and conservation programs.

Virtual power plants (VPPs) have proven to be a powerful strategy for controlling energy demand, managing peak power, and driving energy conservation. It is a low-cost and flexible alternative to building new generation and grid infrastructure. VPP can aggregate energy capacity from millions of distributed energy resources (DER) across homes and businesses, such as smart thermostats, electric vehicle batteries, rooftop solar, and behind-the-meter (BTM) batteries. When aggregated, it can serve as a single, coordinated power source. The DOE[1] estimates that the VPP market could reach over 30 GW by 2030, reflecting a significant shift toward decentralized grid management.

A distributed energy resource management system (DERMS) is considered an instrumental tool for enabling VPP by coordinating DERs and time-of-use rates. Both essential aspects of VPP involve providing economic price signals for load flexibility programs through capacity programs, ancillary services, and economic programs.

1 DOE Releases New Report on Pathways to Commercial Liftoff for Virtual Power Plants | Department of Energy

Frost & Sullivan estimates that the annual addition for residential BTM energy storage will grow from 3,300 MWh in 2023 to 10,897 MWh in 2030, indicating a compound annual growth rate (CAGR) of 30%. During this same period, residential PV is projected to grow at a 15% CAGR from 58 TWh in 2024 to 133 TWh in 2030. Adoption of DER is not limited only to the residential market.

The industry is seeing wider usage in the commercial and industrial sectors to achieve decarbonization goals and to participate in flexible load programs. This is in part due to FERC Order 2222, which opened the wholesale market opportunities for DER. Customers can earn up to $170,000 per MW of curtailment, depending on the ISO (independent system operator) or RTO (regional transmission operator) territory and the flexibility load program. Some programs are tailored to leverage battery energy storage. CAISO launched the Demand Side Grid Support program in 2023, which includes $314 million budget for battery capacity payments. Similarly, ISO-NE will introduce Distributed Energy Resource Aggregation in 2026, enabling the aggregation of small DERs, such as batteries and EVs.

> Colorado's approach to grid modernization is characterized by individual utility regulation rather than participation in a large, multi-state organized market such as an ISO or an RTO. In a decentralized, often progressive regulatory environment, municipal utilities are taking the lead in piloting advanced, flexible load programs.

Fort Collins is no different, implementing its own tools to optimize its variable loads locally through the rollout of Time of Use Rate and by implementing Itron's Intellisource for DERMS. This proactive, technology-driven approach has allowed Fort Collins to get a head start on achieving its clean energy targets years before the state's large transmission utilities fully integrate into a regional market. Currently, Colorado is slated to join an Organized Wholesale Market (OWM) by January 1, 2030[2]. This includes Platte River Power Authority, which is Fort Collins' wholesale provider.

Frost & Sullivan recognizes Fort Collins Utilities as the 2025 Excellence in Resourcefulness for Energy recipient for its community-oriented energy resourcefulness program.

2 Public Utilities Commission Modernize Electric Transmission Infrastructure (SB 21-072)

The table below lists the criteria for measuring Fort Collins' success for energy resourcefulness.

SOCIAL IMPACT	POOR	FAIR	GOOD	EXCELLENT
Delivering Superior Technology-Driven Resource Management				✓
Resource-Conscious Program				✓
Enhancing Overall Customer Experience and Engagement for Resourcefulness				✓
BUSINESS IMPACT	**POOR**	**FAIR**	**GOOD**	**EXCELLENT**
Well-Drafted Vision for Implementing a Technology Oriented Resourcefulness Strategy				✓
Yield Operational Efficiencies				✓
Enhances the Utility's Profile as Pioneer and Proponent of Sustainability				✓

Societal Impact

Fort Collins Utilities' modernization strategy directly contributes to societal well-being through advanced resource management, environmental stewardship, and enhanced customer empowerment.

Delivering Advanced Technology-Driven Resource Management

Fort Collins has been performing load and peak management since 1982 and has, over the years, been refining its models and programs. 2018 was a pivotal year for Fort Collins, when they decided that they needed to upgrade their system to accommodate and optimize variable loads such as grid-integrated water heaters and electric vehicles. This was also around the time the municipality launched time-of-day (TOD) rates. TOD rates use price signals to incentivize customers to shift energy use away from high-demand periods. A key success factor of this program has been Fort Collins' long-standing partnership with Itron.

Since the initial deployment, Fort Collins has served as a strategic test bed for Itron, enabling it to refine further functionalities such as OpenADR support and advanced telematic communications for electric cars. The system aggregates customer-owned devices, such as smart thermostats and grid-interactive water heaters, enabling the utility to manage and shift demand in real time actively. Through these efforts, the utility is focused on hitting specific targets, such as achieving 5% of its 2030 peak load as dispatchable capacity (approximately 16 MW).

Resource-Conscious Program

The grid flexibility programs aim to promote resource conservation and efficiency while respecting community values. Since its launch, the utility has successfully shifted around 750 MWh of energy annually through these programs. It also uses a "cost of conserved energy" metric to assess their success, justifying investments by showing that the cost of these initiatives is much lower than the cost of purchasing energy from the power supplier. This financial prudence, coupled with a strong environmental focus, ensures these programs are both effective and economically viable. Their emphasis on equity ensures these initiatives are accessible to all residents, including the most vulnerable, by providing free water heaters and maintenance services to those who need them most.

Enhancing Overall Customer Experience and Engagement for Resourcefulness

Fort Collins Utilities has effectively shifted its relationship with customers from a passive stance to an active partnership. The utility emphasizes a positive customer experience, demonstrated by its extremely low program abandonment rate of less than 1%. They provide various ways for customers to participate, meeting them "where they're at"whether through a technician-led installation or a simple app-based enrollment. The utility's transparency and communication about its goals and program benefits, such as lower bills and a cleaner environment, promote a sense of shared purpose.

> By offering customized incentives and educational resources, the utility empowers customers to be resourceful and actively manage their energy use, ultimately supporting the community's broader sustainability goals.

Business Impact

Fort Collins Utilities has made a significant business impact by adopting a technology-focused resourcefulness strategy that boosts operational efficiency and positions the utility as a sustainability leader.

Well-Drafted Vision for Implementing a Technology Oriented Resourcefulness Strategy

Fort Collins Utilities' vision isn't just a mission statement; it's a practical, data-driven roadmap to achieve its community-mandated climate goals. The "Our Climate Future" plan directly informs the utility's technological approach, including its reliance on distributed energy resources (DERs) and the Intellisource DER management system. The municipality's work is driven by specific, measurable goals, such as achieving 5% of its 2030 peak load under bidirectional control, which translates to 16 MW of dispatchable capacity. This focus on quantifiable metrics provides a clear path for technology deployment, ensuring that every investment in smart devices —from water heaters to electric cars —is aligned with the overall strategic vision.

Yield Operational Efficiencies

The utility's initiatives are not just about environmental benefits; they deliver tangible operational efficiencies that strengthen the utility's financial health. Fort Collins Utilities has demonstrated that its programs are a cost-effective alternative to traditional infrastructure investments. Their key metric, the "cost of conserved energy," shows that it's cheaper to encourage customers to conserve or shift their energy use than to buy wholesale power. The utility's cost of saving energy is around 3 cents per kilowatt-hour, while the cost of purchasing power is between 5 and 6 cents per kilowatt-hour. This cost-saving strategy extends the life of capital assets, such as service transformers and conductors, by reducing peak load and overall grid stress.

Enhances the Utility's Profile as Pioneer and Proponent of Sustainability

Fort Collins Utilities has solidified its reputation as an industry pioneer and a strong advocate for sustainability. The utility's willingness to act as a "test bed" for new technologies from vendors like Itron shows its commitment to innovation. By identifying gaps in existing technology and collaborating closely to develop new features, Fort Collins is not only solving its own challenges but also shaping the future of grid management for other utilities. This proactive approach has earned it accolades, including the Malcolm Baldrige National Quality Award, and positions it as a go-to partner for those looking to advance clean energy technologies. Their low program abandonment rate of under 1% also serves as a powerful testament to the utility's successful engagement model, further enhancing its standing as a leader in customer-centric sustainability.

Conclusion

Fort Collins Utilities' success is a prime example of how a municipal utility can strategically unify its societal mission with its business operations. By putting the community's climate goals at the heart of its strategy, its utility has transformed its operational model. This vision, driven by the "Our Climate Future" plan, has led to investments in forward-thinking technologies and approaches, such as DERMS and smart devices. This proactive approach will not only help the city meet its renewable energy targets but also enhance its overall reputation as a pioneer and strong advocate for sustainability in the energy sector.

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