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## → Beneficial electrification: Lessons from leading utilities

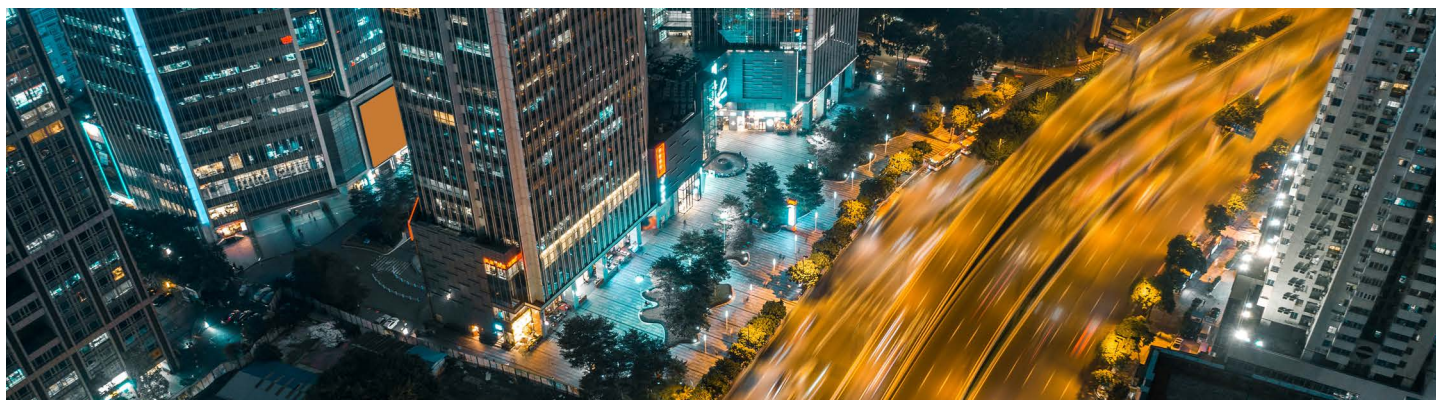
By Stacy Noblet, Chris Watson, Lauren Kastner, ICF

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### Executive summary

Electrification is gaining momentum as a key pathway to decarbonize energy use, with policymakers and regulators in many territories developing new policies and incentives to support electrification. But not all electrification is “beneficial electrification.”

In terms of reaching greenhouse gas (GHG) emission reduction goals, utilities should seek to make “no regrets” electrification decisions that include energy efficiency and low carbon fuel opportunities that can deliver cost-efficient and substantial emissions reductions. Without proper planning, there can be negative outcomes from mass electrification, such as a less reliable electric grid or increased inequities for low-income customers and disadvantaged communities.



In this white paper, ICF shares case studies from three U.S. utilities that are delivering beneficial electrification programs. This white paper will help utility program managers understand:

- Factors driving peer utilities to develop beneficial electrification programs
- How utilities are designing programs to meet key goals and deliver beneficial outcomes
- Key lessons learned from implementing beneficial electrification programs

## Introduction

The rolling hills of New York's Hudson Valley. The humid coast of northeast Florida. The desert of Arizona's Salt River Valley. These three regions have little in common in terms of climate, geography, or the structure of the communities that call them home. And yet, all three regions are served by utilities that are successfully implementing electrification programs—and that are planning to expand those electrification efforts even more.

The motivation for electric utilities to pursue electrification is obvious enough: A larger share of the energy pie is good for business, and electrification allows utilities to engage customers in new and different ways. Now that quickly growing levels of renewable energy are lowering the carbon intensity of power from the grid, electrification is also gaining popularity among policymakers, regulators, and consumers to meet decarbonization goals.

But as utility program managers know from decades of experience, the details are always important.

Fortunately, many utilities have years of first-hand electrification program design, implementation, and evaluation experience and continue to scale up efforts. Below, explore the key drivers that informed the design of electrification programs—and lessons learned to help put the beneficial in electrification—from JEA in Florida, Central Hudson Gas & Electric in New York, and Salt River Project in Arizona.

## JEA's electrification rebate and Drive Electric programs

Jacksonville, Florida-based JEA is a community-owned utility that serves 478,000 electric customers in northeast Florida. About half of its electric revenues come from residential customers, with the other half coming from its 50,000 commercial and industrial (C&I) customers—including two large U.S. Navy facilities—in a service territory that is generally warm, humid, and subject to the threat of coastal storms.

While JEA's energy efficiency programs have a long history and established reporting requirements to its board of directors and stakeholders, electrification is relatively new for JEA and the utility is defining what electrification means, including the desired outcomes. Through this process of defining electrification, to date, the utility is pursuing two programs that we'll explore in greater depth:

- Electrification rebates for certain C&I equipment purchases
- Drive Electric, designed to increase electric vehicle (EV) adoption among residential customers

### Key drivers for JEA electrification programs

Broadly, JEA seeks to create electrification programs that add value across four dimensions:

1. Financial value through revenue increases or reduction in system costs
2. Environmental value through GHG emissions reductions and improved air quality
3. Community impact through the creation of job opportunities and economic growth
4. Customer value through improved service and quality, business expansion, and rate stabilization

The utility translates those four dimensions of value creation into several drivers for the design of programs, all informed by an overarching imperative to use customer dollars responsibly. Note that the first driver is strategic load growth, because—as JEA Strategic Segment Manager of Customer Solutions and Market Development Tony Reynolds says—“not all load is good load.” That mantra also informs the third driver, that JEA seeks to grow off-peak loads.

### Electrification rebates

JEA's largest electrification program is its electrification rebate program for C&I customers. The program has been available to about 30,000 eligible C&I accounts for six years and is currently operating under a Phase II expansion.

The program started with measures offering rebates for the adoption of specific electrification technologies, including forklifts, scrubbers, airport ground equipment, truck refrigeration, cranes, and more. In the second phase, the program expanded to include rebates for a broader set of technologies, such as commercial fleets, workplace charging, and various industrial processes.

Combined, the two phases are projected to deliver 350 GWh of new energy sales from program launch through 2025, with a combined 2.7 million metric tons of reduced GHG emissions through 2045. If JEA achieves its 2025 goal, it will be equivalent to taking nearly 54,000 cars off the road for a year. And by 2045, the GHG emissions reductions will be like avoiding 6.8 billion miles driven by a passenger vehicle.<sup>1</sup>

### Drive Electric

JEA's Drive Electric pilot program was launched in June 2021 to drive the transition to EVs among residential customers. The initial phase of the program is an EV Concierge option that drives education and steers consumers through the EV buying process; it does not offer any financial incentives but does enhance EV adoption by engaging and supporting the customer. In fall 2021, JEA will launch the Bring Your Own Charger portion of the program, which is an incentive designed to shift charging to off-peak hours.

### Lessons learned

Across the two programs, the first focused on C&I customers and the second on residential customers, JEA captured many lessons that can help ensure successful implementation and beneficial impact:

- Leverage upstream sales channels to target and engage a broad array of customers and introduce the programs to key decision-makers.
- Enlist the utility's key account executives, because they have deep relationships with customers and can be your most effective program advocates.



<sup>1</sup> <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

- Implement program controls to ensure compliance with the program intent and reduce free ridership over time. Reviewing contractor business processes can help ensure accountability. Because it is impractical to eliminate all free ridership, adjust incentives to account for a certain amount.
- Consider custom projects within programs to create partnership opportunities with strategically important customers. These custom opportunities can lead to large multiyear electrification projects.
- Cast a wide net with the measures included in the program.
- Beware incentives that might reach only higher income earners and strive for programs that more equitably support customer electrification.
- Help customers overcome myths and misconceptions through education. For example, with EVs, customers often face range anxiety that can be alleviated through education about the technology and charging infrastructure.

### Salt River Project's electric technology programs

Phoenix, Arizona-based Salt River Project (SRP) is a community-owned utility that serves more than one million residential electric customers, 90,000 business customers, and large industrial operations including mines in the Salt River Valley around Phoenix. Its peak retail demand in fiscal year 2021 topped 7.6 GW in a service territory that is hot, dry, water scarce, solar rich, and defined by cooling load.

### Key drivers for SRP electrification programs

SRP initiated a stakeholder-driven process to envision energy and emissions reduction goals for the future, which resulted in the adoption of its SRP 2035 plan. That plan calls for the utility to achieve four strategic goals: CO<sub>2</sub> emissions reductions, water resiliency, supply chain and waste reduction, and customer enablement and a stronger grid.

The emissions reduction goal calls for the utility to reduce its CO<sub>2</sub> emitted per MWh by 65% from 2005 levels by 2035 and 90% by 2050, which it aims to achieve through four pathways:

- Energy efficiency: 3 million MWh of reduced energy use
- Demand response: 300 MW of dispatchable resources
- Electrification: 300,000 MWh of annual aggregate energy electrified
- Electric vehicles: 500,000 EVs on the road in SRP's service territory, with 90% participating in managed charging

With those goals and pathways, SRP 2035 created a clear impetus for the utility to develop specific electrification programs. It is important to note that while electrification is a significant portion of SRP's decarbonization plan, the utility realized that electrification alone is not enough for the utility to reach its CO<sub>2</sub> reduction goals. Its decarbonization pathway includes plans for measures outside the realm of electrification because SRP does not view electrification as a silver bullet.



## Electric technology program

SRP began analyzing electrification opportunities in March 2017, before approving its first electric technology program in summer 2017 and launching it in the fall of that year. The program initially launched with components to incentivize electric forklifts and truck stop electrification, but the SRP 2035 plan inspired steady expansion to include demand response-capable battery charger rebates and custom building electrification and electric fleet assessments.

Through May 2021, the programs have helped SRP reduce GHG emissions by 90,000 metric tons while driving 195 GWh of load growth. Those results were achieved through more than 400 rebates that came at a cost of just over \$1 million for purchases of forklifts and forklift chargers, custom equipment, and more. Importantly, 80% of the new load is off peak. SRP Senior Program Manager for Program Development Joseph deGraft-Johnson noted that, in one year, the program was able to drive adoption of 363 demand response-capable forklift chargers, creating a win-win that supported the utility's electrification and demand response goals.

In the future, SRP will look to incorporate electrification across its portfolio of programs, including in residential and builder programs, energy efficiency programs, and demand response programs. It will also seek to train and inform strategic stakeholders, such as contractors, to carry the electrification message to the market.



## Central Hudson Gas & Electric's EV Make-Ready and NYS Clean Heat Programs

Poughkeepsie, New York-based Central Hudson Gas & Electric is a subsidiary of Fortis Inc., a publicly traded owner of regulated gas and electric utilities across the U.S., Canada, and Caribbean. Central Hudson serves 309,000 electric utility customers and 84,000 natural gas customers in a service territory located between New York City and Albany. In the electric utility business, load is split nearly 50-50 between residential customers and C&I customers, with a peak 2020 demand of 1.14 GW reached in July in a region defined by warm summers, cold winters, and strong winter storms.

### Key drivers for Central Hudson electrification programs

Market factors and government policy drove Central Hudson's plans as it began to consider reasons for developing and implementing electrification programs.

Notably, the Climate Leadership and Community Protection Act (CLCPA) enacted in New York in 2019 set a goal for the state to reduce GHG emissions 40% below 1990 levels by 2030 and 85% by 2050. The law authorized critical funding for utilities like Central Hudson to accelerate development of EV charging infrastructure and equipment. In addition, the state created the NYS Clean Heat program, funding utility customer incentives to transition from fossil fuel-fired heating to electric [heat pumps](#) that deliver heat and air conditioning.

Other drivers included then-Gov. Andrew Cuomo joining a group of 11 governors in 2021 calling on the [Biden administration to pursue a zero-emission transportation sector](#). Cuomo's zero-emission transportation focus dovetailed with New York's goal to reach 850,000 EVs on the road by 2025 and tighter fuel economy standards.

Given the role of government programs as the driving force of Central Hudson's electrification efforts, compliance with state rules was a primary driver in the design of the utility's programs. In July 2020, the New York Department of Public Service issued the EV Infrastructure Make-Ready Order to enable the six investor-owned utilities in New York State, including Central Hudson, to accelerate the deployment of EV charging infrastructure to support CLCPA goals. The order required Central Hudson to create a comprehensive program to cover the incremental cost of utility-side and customer-side infrastructure to "make ready" a site for EV charging for public and nonpublic charging for light-, medium-, and heavy-duty EVs. Central Hudson will ensure that a certain percentage of investment occurs in disadvantaged communities and areas with low- and middle-income customers. While policy was the most significant driver of Central Hudson's new EV offerings, it was complementary to the company's existing commitments and offerings to support customer electrified transportation goals.

### Electric Vehicle Make-Ready Program

Central Hudson's EV Make-Ready Program created incentives for making sites ready for new EV infrastructure, an EV fleet assessment service, a medium- and heavy-duty EV charging pilot, and a managed charging pilot. To advance these program components, Central Hudson gained access to a pool of \$701 million for use by all New York utilities (\$200 million of which was designated for disadvantaged communities). The state's make-ready program goal was to enable nearly 54,000 Level 2 and 1,500 direct current fast charge (DCFC) EV chargers, of which Central Hudson expects to enable new 3,200 Level 2 and 69 new DCFCs through 2025.

The utility focused on helping customers through their EV journey, which starts with a customer reaching out to Central Hudson to determine its charging needs. The utility then develops a plan to ensure the grid can handle new demand from the requested charging infrastructure and, when all requirements are met, authorizes an incentive payment to the customer. Incentives through the EV make-ready program include up to 50% of the cost for grid infrastructure upgrades for non-public chargers, 90% of cost for upgrades for public chargers, and 100% of cost for upgrades for chargers in disadvantaged communities.

### NYS Clean Heat

The New York State Clean Heat program is a statewide program launched in 2020 incentivizing the adoption of electric air source heat pumps and geothermal heat pumps. Through the program, Central Hudson received \$43 million in funding to incentivize more than 12,000 heat pumps through 2025.

Because the program is delivered on a statewide level, Central Hudson's efforts to educate customers benefited from uniform program design and delivery. This created a clear and simple path to determine eligible technologies, contractors, target markets, and incentive structures, which translated to an easier process for customers to take advantage of the incentives.



## Lessons learned

Beneficial electrification is new for utilities and customers alike, and any successful program design needs to be mindful of that transition. With more than 2,500 projects completed, Central Hudson is creating significant opportunities through its building and vehicle programs, while focusing on customer support to help customers achieve the benefits of electrification. Other lessons learned from Central Hudson's Clean Heat and EV Make-Ready programs, as shared by Senior Program Manager TJ Rizzo, include:

- Define parameters and program rules to limit customer confusion and inefficiency from customers applying for incentives that they won't qualify for. For example, Central Hudson developed customized program materials and resources for customers to navigate the program more easily and determine their eligibility for various incentive levels.
- Create a simple, clear process flow to help customers advance through the incentive process; choosing a strong implementation partner will help ensure this goal is met.
- Examine your data to help stakeholders understand what the electrification options and opportunities really are, what needs to be implemented, and how programs can be scaled.
- [Understand customer profiles](#) so you can best target the right customers. For example, Central Hudson needed to understand which residential customers were using oil or propane heating and which commercial customers were in buildings where heat pumps could be feasibly installed. For EV customers, Central Hudson defined customer profiles with different EV charging needs and use cases.
- [Educate customers](#) on the availability and capability of new technologies, their ability to meet or exceed customer expectations, and how energy savings over time makes them a net gain financially.
- Develop a strong contractor network to deliver products and services that will allow customers to capture available incentives.



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## Conclusion

Every beneficial electrification program starts with careful planning, data analysis, program design, and alignment with strategic goals. Program design should consider how customers can be supported to achieve goals of the customer, utility, and other stakeholders, and should also enable a smooth implementation that delivers on those goals.

The road to the successful development of a beneficial electrification program, or improving an existing electrification program, requires a deep understanding of the technologies and customer targets, equipment distribution, and OEM landscape, while also navigating the regulatory landscape. By partnering with ICF, you get an advisory ally with broad and deep knowledge of the electrification landscape across North America and the electric utility business that can lead to the development of electrification programs that pass the test with regulators, achieve desired utility and customer goals, and benefit customers and stakeholders equitably.

ICF provides strategy, planning, and program implementation support across more than four hundred electro technologies and baselines that include:

- Light-, medium-, and heavy-duty EVs and fleet electrification
- Residential and commercial buildings
- Commercial and industrial electrification
- Agricultural electrification

## About the authors



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With more than 15 years of experience, Stacy is a transport electrification specialist helping federal agencies, state and local governments, and utilities to plan, design, and implement clean transportation strategies and programs.

Stacy's expertise is on-road electric vehicles (EV) and charging infrastructure. She's contributed to nationwide and local efforts to increase EV adoption through supportive infrastructure and policy development since modern-day EVs hit the roads in 2010. Stacy leads EV readiness plans, utility EV charging program design and execution, regulatory and policy tracking, and outreach and engagement.

Stacy's work includes the range of fuels and technologies that make up the clean transportation industry.



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Chris leads the Beneficial Electrification program with more than 20 years' experience in the energy, renewables, and energy efficiency sectors. He joined the team in 2016 and oversees market potential assessments, cost-benefit analysis, program design, and implementation of utility electrification programs across the U.S. and Canada.

Chris's expertise in electrifying transportation, buildings, and industrial equipment and processes helps utilities and customers reap the benefits through reduced emissions, improved grid efficiency, and lower operational costs.

He works with a range of established and emerging technologies, original equipment manufacturers, and trade allies across C&I and residential markets to deliver results for utilities and industry.



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Lauren is a clean transportation and electric vehicle (EV) expert who advises electric utilities, cities, and state agencies to design and implement EV charging infrastructure plans. Her more than eight years of experience spans clean energy and climate policy, the automotive sector, corporate sustainability, local government, and cleantech.

Lauren's current client work includes leading regulatory matters and the implementation of EV charging rebates, rates, fleet assessments, managed charging, and EV education programs. Her expertise in transportation decarbonization includes on-road light- and medium/heavy-duty vehicles, micromobility, global port equipment, and marine vessels.



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