

New ASU Collaboration Develops Breakthrough Valuation Framework for Microgrid Financing. Innovative modeling enables lenders and developers to appraise and finance microgrid projects as real estate assets.

I am very pleased to share a new collaboration between Arizona State University’s Laboratory for Energy and Power Solutions (LEAPS) and myself has produced a pioneering methodology for appraising and financing microgrids—localized energy systems that combine solar, battery storage, and a generator to deliver low-cost, reliable power. This can be self-contained and not connected to the grid.

The initiative integrates advanced engineering simulation tools with Uniform Standards of Professional Appraisal Practice (USPAP) reporting, allowing lenders to evaluate microgrids using the same rigor as conventional commercial real estate.

Microgrids are transforming from energy infrastructure into a new class of real estate assets. By quantifying their energy cost savings and operational efficiency, we can now value and finance microgrids using traditional debt and equity structures.

Microgrids are increasingly vital in regions facing energy supply constraints—such as Riverside County, California, where new grid connections are limited. Property owners can now deploy onsite systems to deliver electricity to tenants at rates below local utility prices, raising NOI and property value while supporting sustainability goals.

A simple definition of a microgrid is an integrated system of components typically including a natural gas fired generator, an array of solar photovoltaic (PV) panels, storage batteries, and solar PV inverters, as well as cables and control systems. Using the software a complete catalogue of all the possible components is integrated into one system that is then modeled for optimization at that specific location.

An elevated value is created in areas of high utility rates. My research has concluded that currently in 2025 the areas with the highest rates (in kWh) and the service providers are as follows. This is for residential properties. Commercial and industrial property rates are more complex and can include incentives as well as time of use tariffs.

Top High Priced Utilities Residential Pricing 2024 - 2025 in kWh			
No.	Company	Location	Residential Average Rate
1	Hawaiian Electric	Hawaii Island	\$0.4831
2	Hawaiian Electric	Oahu	\$0.4287
3	Kauai Island Utility *	Kauai	\$0.3100
4	PG&E CA	Northern CA	\$0.4500
5	SDG&E	SD County	\$0.400 - \$.4700
6	SoCalEdison	Los Angeles	\$0.3500
7	Con Edison	NYC	\$0.1850
8	Rhode Island Energy	Rhode Island	\$0.1600
* fuel purchase power adjustment higher M-T-M			

The valuation is unique for only that physical location and that location kWh pricing. The essence of the valuation is that a well-designed microgrid generates electricity at a much lower cost than that charged by the local utility, and it is measured in kilowatt hours (kWh). The projection of the sales of electricity from the microgrid to the tenants, and the operating expense components, then is projected out for the Net Operating Income for 20-years of economic life. Electricity from the microgrid is sold to the tenants at a lower price than what they would pay if they remained connected to the local grid. The value that is created is in accordance with a discounted cash flow model with no terminal value. It is stated as the Internal Rate of Return. Value is created by discounting the yield (net operating income) over the discount period as compared to the total cost of the microgrid

In certain situations, the modeling can be for two-way interconnectivity that allows switching between island and grid connected installation, that enables additional revenue when onsite generation exceeds onsite demand.

The model employs 20-year discounted cash flow analysis based on localized power costs and system design. Early results indicate exceptionally high Internal Rates of Return (IRR), particularly in states with above-average utility tariffs.

The collaboration also incorporates AI-assisted site modeling to optimize system layout and identify gas and grid interconnections including thermal energy components, further enhancing project economics. This unlocks a new category of real estate asset. All appraisal reports will be co-signed by ASU Ph.D. faculty and myself.

Recent federal legislation—the One Big Beautiful Bill Act (P.L. 119-21)—offers 100% first-year depreciation for nearly all microgrid components, dramatically improving investor returns. Combined with leverage, the model projects full equity recovery within two years and robust long-term cash flow.

This framework bridges the gap between engineering, finance and sustainability. It opens the door for traditional lenders to appraise and fund distributed energy systems at scale.

About LEAPS (Arizona State University)

The Laboratory for Energy and Power Solutions (LEAPS) develops advanced tools and systems integration methods to accelerate the deployment of sustainable energy technologies worldwide.

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