ANALYSIS

Clean Power Delivers During Heatwaves: July 2025

For questions about this analysis and the underlying data, please contact the ACP research team, research@cleanpower.org.

Overview

The U.S. experienced peak heatwaves from July 28–30, with extreme temperatures concentrated across the Central and Eastern regions and little overnight relief. The event tied or broke temperature records and drove electricity prices in regions with less renewable generation well above typical July levels. As heatwaves become more frequent and intense, they place increasing pressure on electricity demand for cooling. This tightens available supply, requires higher-cost generation to meet demand, and heightens risks to grid reliability.

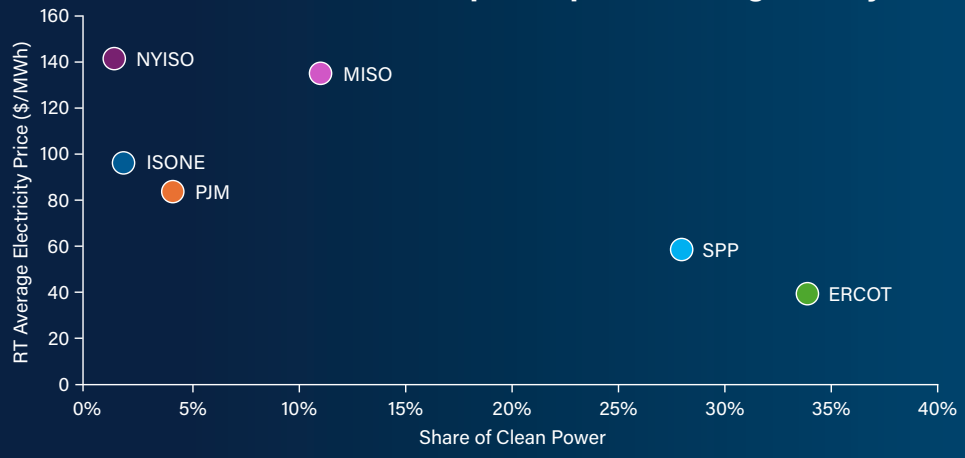
The heatwave clearly demonstrated which systems perform best under pressure—those with a diverse mix of power plants.

Overall, clean energy saved the grid more than $114 million during the 3-day heatwave. Wholesale electricity markets with significant wind, solar, and energy storage representation saw lower electricity prices than those without.

Even regions with modest clean power deployment saw substantial savings:

- In the **PJM Interconnection (PJM)**, a 4% share of wind and solar generation helped save the grid $16 million. PJM serves 67 million customers across D.C., Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia.
- In the **Midcontinent Independent System Operator (MISO)**, the Midwest saved almost $24 million thanks, in part, to wind and solar generating 11% of electricity, serving 45 million customers.
- In the **Electric Reliability Council of Texas (ERCOT)**, Texans saved $47 million where renewables make up 34% of generation, serving 27 million customers.
- In the **Southwest Power Pool (SPP)**, the Great Plains grid saved over $26 million where 28% of generation comes from wind and solar energy, serving 19 million people.

Grids with a significant share of clean energy generation saw lower wholesale power prices during the July 2025 heatwave

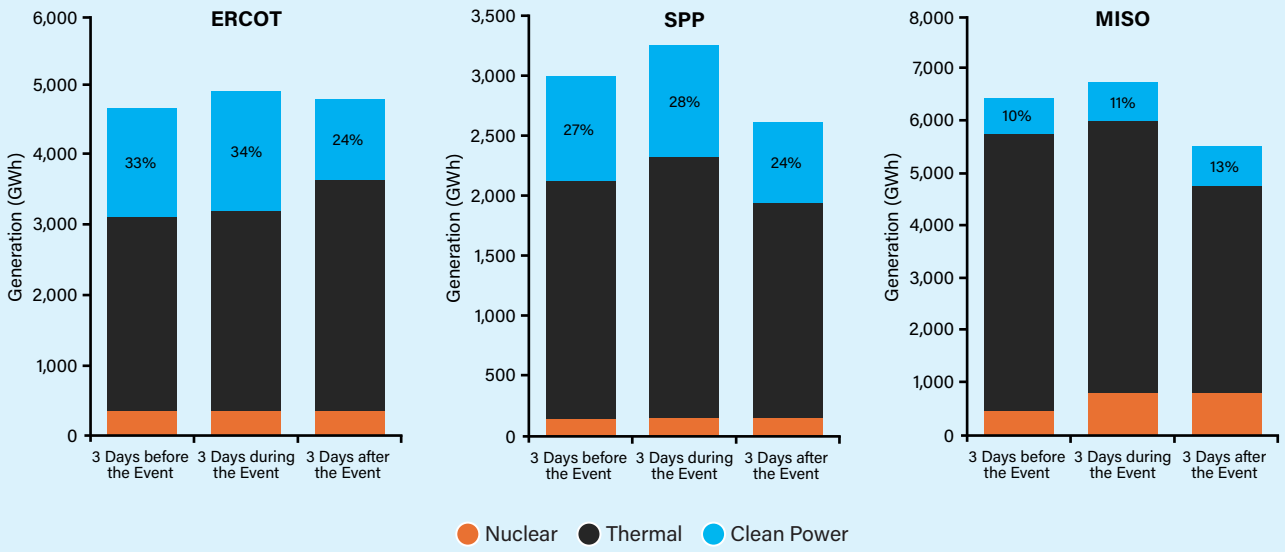


Market	Average Real-Time Electricity Price ($/MWh)	Wind & Solar Share
NYISO	$141	1%
ISO-NE	$96	2%
PJM	$83	4%
MISO	$135	11%
SPP	$58	28%
ERCOT	$39	34%

Consistent Power Generation from Clean Energy Resources Kept Prices Lower for Customers

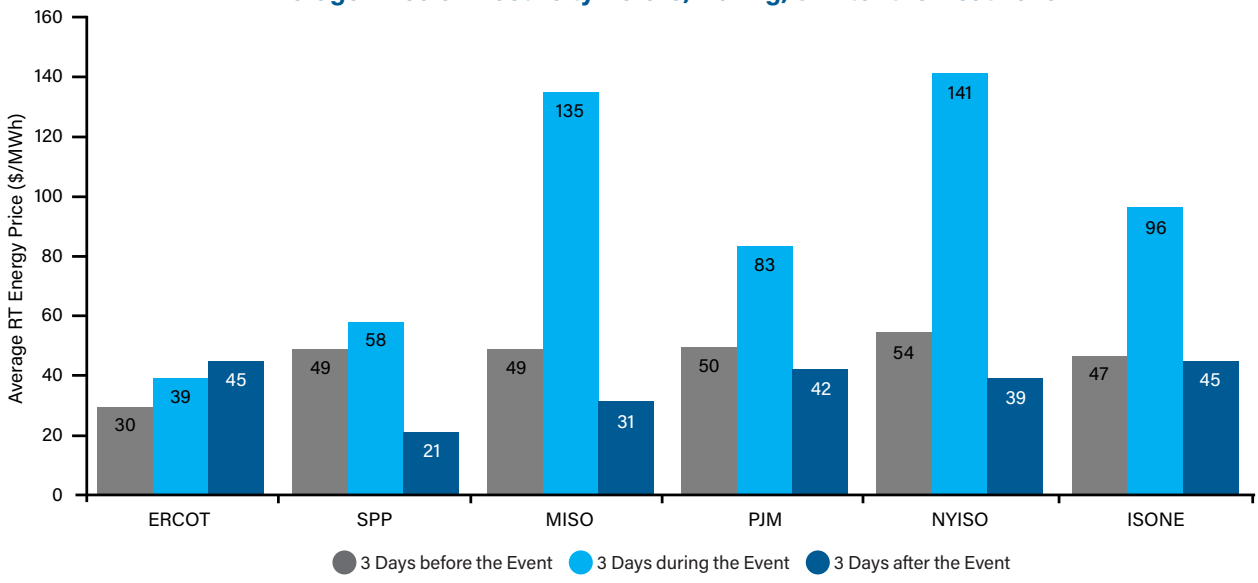
Clean energy across ERCOT, SPP, and MISO generated more—and in nearly every case, made up a larger share of total generation—during the heatwave than the periods before or after the heatwave. The regions met increased cooling demand without having to turn on more thermal resources. Clean power generated over 3,800 GWh during the storm across Texas, Plains, Midwest, and Northeast. **That's equivalent to powering over 44 million homes.**

Generation prior, during, and after heatwave, July 28-30



Regions with high clean power penetration kept electricity prices low during the heatwave. Wind and solar supplied over a quarter of electricity in SPP and Texas, holding average prices below $60/MWh. Clean energy accounted for less than 10% of demand in all other U.S. electricity markets. When the heatwave hit, more expensive thermal units and imported electricity were required. As a result, prices rose to between $80-140/MWh.

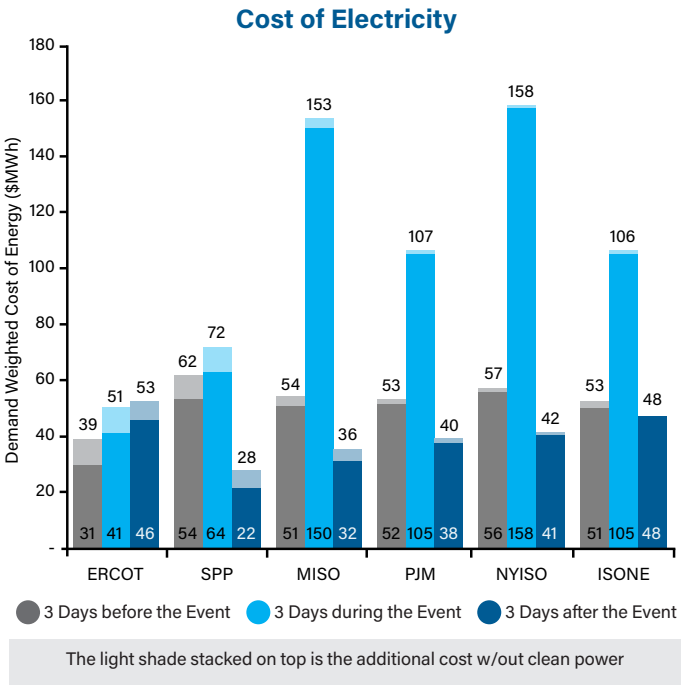
Average Price of Electricity Before, During, & After the Heatwave



Clean Power Saved the Grid Over $114 Million During the July 2025 Heatwave

Without clean power during the heatwave, U.S. grids would have faced more than $114 million in extra costs.[1] SPP, MISO, and ERCOT contributed over 85% of these savings, thanks to wind's steady output that reduced reliance on expensive thermal units. These are the ISOs with more renewables and storage that experienced the heatwave, and ultimately saw lower energy prices than those without.

The share of renewables actually increased in ERCOT during the heatwave to almost 35% of total demand and kept ERCOT from having a severe reliability shortage. If clean power hadn't been online during the heatwave, the operational cost to ERCOT would have been at least another $47M. That's a 23% increase, an additional $9/MWh to the $41/MWh price of energy during the heatwave. 67% of available thermal generation was already meeting demand during the heatwave. **If clean power hadn't been online, all of ERCOT's thermal capability would have been needed and may not have been enough to meet electricity demand.**



The light shade stacked on top is the additional cost w/out clean power

Breakdown by Regional Transmission Organization

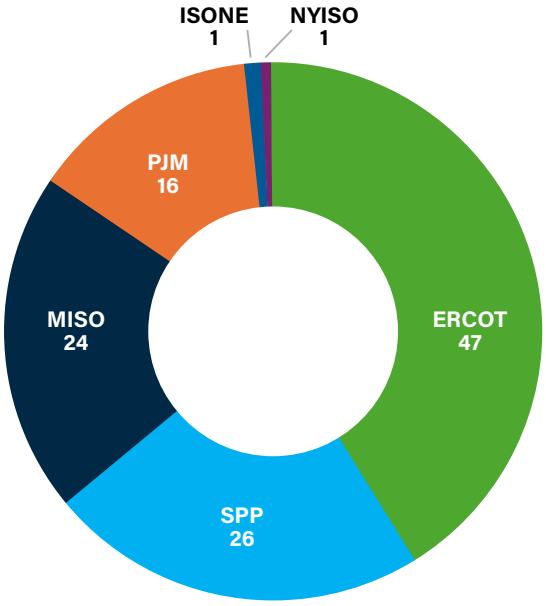
ERCOT
ERCOT's clean energy accounted for almost 35% of total demand. Without clean power, ERCOT's reliability to meet peak demand would have been threatened. Clean power saved the grid $47M in Texas.

SPP
SPP's wind output increased during the heatwave allowing it to keep on par with increased cooling demand. Accounting for 30% of the region's electricity demand, wind saved the grid $26M.

MISO
Wind and solar in MISO accounted for over 10% of total electricity demand during the heatwave, saving the region $24M in operating costs.

Northeast
During the heatwave, the Northeast (PJM, NYISO, and ISO-NE) relied on increased deployment of natural gas units and imported electricity. Renewables make up less than 5% of their electricity grid and thus saved $18M.

Operating Cost without Clean Power by impacted ISO



1 ACP analyzed the hourly grid dynamics in each ISO to assess clean tech performance. For every real-time hourly generation of clean power, ACP assumed a generic natural gas peaking plant would have taken its place to meet increased load with 10,000 Btu/kWh gas unit with a $5/MWh variable and operating cost. Fuel costs were based on monthly spot prices for indicative hubs. The extra cost is the additional operating cost of the gas unit relative to the real-time price of that market spread out over hourly electricity demand. It does not represent a new electricity price, rather the weighted additional operating cost of the grid to have that gas run. It does not include any scarcity price adders from tightening market conditions.

The American Clean Power Association (ACP) is the leading voice of today's multi-tech clean energy industry, representing energy storage, wind, utility-scale solar, and transmission companies. ACP is committed to meeting America's energy and national security goals and building our economy with fast-growing, low-cost, and reliable domestic power.

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