

Rural America's Energy Crisis: Lessons from Germany and California

For years, policymakers and energy developers have promised that transitioning to renewable energy would bring cheaper electricity, greater energy independence, and a brighter future for all. Rural communities, in particular, have been told they stand to benefit the most, with claims that wind and solar farms will provide jobs, economic growth, and stable energy prices. But as states across the U.S. rush to implement aggressive renewable energy mandates, the reality is playing out very differently.

Germany and California—two of the most aggressive adopters of renewable energy policies—now serve as cautionary tales. Both regions embarked on ambitious green energy transitions, replacing coal, gas, and nuclear power with wind and solar at an unprecedented scale. Their governments assured citizens that these policies would create affordable, reliable, and sustainable energy systems. Instead, electricity prices skyrocketed, grid instability worsened, and low- and middle-income families bore the brunt of the financial burden.

For farmers and rural communities, this issue is particularly alarming. Agriculture is heavily dependent on electricity, from irrigation systems and grain storage to refrigeration and processing. Rising energy costs don't just mean higher electric bills—they mean higher costs for food production, transportation, and essential farm operations. If the trends seen in Germany and California continue to spread, rural America could face an energy affordability crisis that threatens its economic sustainability.

This paper examines the real-world impact of renewable energy policies in Germany and California and explores what their failures mean for rural America. By analyzing skyrocketing electricity rates, growing bill delinquencies, and grid reliability issues, we uncover critical lessons

that farmers, policymakers, and rural communities cannot afford to ignore.

The Green Dream That Got Expensive

Back in the early 2000s, Germany was determined to become a renewable energy powerhouse. Sound familiar? That's because it's the same song and dance renewable energy developers are performing across rural America today. How often have we heard, "This state can become the leader in U.S. energy production..."? Whether it's Ohio, Indiana, or Kansas, the pitch is always the same: Your state is uniquely positioned to be the next big player in renewable energy, raking in investment dollars and creating "good-paying jobs."

That's exactly what Germany bought into two decades ago. The government eagerly rolled out the red carpet for wind and solar developers, dishing out lavish subsidies and enacting the Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz or EEG). Developers got paid above-market rates for every kilowatt-hour of wind and solar they produced, with the difference conveniently passed down to consumers.

Fast forward twenty years, and Germans are now paying some of the highest electricity prices in the world. In 2000, a German household paid around 14 cents per kilowatt-hour. By 2024, that number had more than doubled, soaring well above 35 cents per kilowatt-hour. Meanwhile, the U.S. national average sits around 12 cents per kilowatt-hour (Clean Energy Wire, 2024).

Imagine doubling your fuel costs overnight while still being expected to run your farm and turn a profit. That's what happened to German businesses and households, who were promised cheap, clean energy and instead got bills that made their eyes water.

A Grid Held Together with Duct Tape and Hope

Here's something renewable energy developers don't like to talk about: wind and solar don't provide power when you need it, only when nature feels like it. That means if Germany wants to keep the lights on when the wind dies down or the sun sets, it needs backup power. And guess what? That backup power isn't coming from fairy dust and unicorns—it's coming from coal, gas, and imports from neighboring countries that still believe in reliable energy.

In 2024, Germany imported approximately 67.0 terawatt-hours (TWh) of electricity, a 23.2% increase from the previous year. The majority of these imports came from:

- Denmark: Nearly one-third of Germany's electricity imports originated from Denmark, where electricity production is dominated by wind power. Denmark also acts as a transit country for electricity supplied to Germany from Norway and Sweden.
- Norway and Sweden: These countries, rich in hydroelectric resources, supplied Germany with substantial amounts of electricity.
- France: Known for its robust nuclear energy infrastructure, France has been a significant exporter of electricity to Germany, especially during periods when Germany's renewable sources underperform (FfE Research, 2024).
- Austria
- Poland
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But Germany's biggest vulnerability became clear in 2022, when the Russian invasion of Ukraine triggered a massive energy crisis across Europe. For years, Germany had been quietly phasing out coal and nuclear, assuming that renewables—backed by imported natural gas—

would be enough to keep the grid stable. That assumption collapsed when Russia cut gas exports to Europe in retaliation for sanctions.

With natural gas prices soaring by over 500%, German electricity prices spiked to record highs, forcing emergency measures that included reopening coal plants to avoid blackouts (Reuters, 2022). In other words, the very fossil fuels Germany had sworn off had to be brought back—at an enormous cost.

A Farm with No Barn and No Backup Plan

Germany's energy policy is like a farmer who decides to get rid of all his grain silos, convinced that his new, fancy automated supply system will bring in fresh feed exactly when he needs it. The problem? That system only works when the delivery trucks show up on time—which they don't when roads are flooded, drivers go on strike, or the fuel supply dries up.

Now, with no stored grain and no backup plan, the farmer is forced to buy emergency feed at five times the price—or let his livestock go hungry. If he had just kept some silos and a reserve stock, he wouldn't be in crisis mode every time the system hiccups.

That's exactly what Germany did. It dismantled its stable, reliable baseload energy sources—nuclear and coal—without first securing a proven and affordable backup plan. Then, when trouble came, it had to scramble to buy energy at astronomical costs.

Wholesale Prices Drop, But Farmers Still Pay More

One of the great ironies of Germany's energy transition is that while wholesale electricity prices sometimes fall—occasionally even turning negative—retail prices have continued to rise.

Yes, you read that right. Negative wholesale energy prices. Sounds great, doesn't it? The idea that power is so abundant that utilities are literally being paid to take it? Renewable energy advocates love to throw this around as proof that wind and solar are reducing costs. But here's what they don't tell you: Negative energy prices aren't a sign of efficiency—they're a symptom of a broken system.

Germany's Erneuerbare-Energien-Gesetz (EEG) mandates that electricity generated from renewables must be purchased first, even if it's more expensive than traditional sources like coal or natural gas. This priority dispatch rule forces grid operators to accept renewable electricity before using cheaper baseload sources. While this policy was designed to promote clean energy, it has led to unintended consequences (Clean Energy Wire, 2024).

If this sounds familiar, it's because many U.S. states have adopted similar Renewable Portfolio Standards (RPS), which require utilities to source a certain percentage of their electricity from renewables—whether or not it makes economic sense. Like Germany's EEG, RPS policies artificially prop up renewable energy by guaranteeing a market for it, often at above-market prices, while forcing out more reliable baseload power plants that once kept prices stable.

The Problem with Negative Pricing

One major issue is that priority dispatch often leads to situations where there is more electricity being produced than consumed, especially during periods of high renewable output and low demand. This oversupply drives wholesale prices into the negative, meaning utilities are essentially paid to take excess electricity.

While this might sound like a good deal, the reality is that the costs of these negative prices, along with the infrastructure required to manage

such fluctuations, are ultimately shouldered by consumers. Maintaining grid stability, balancing supply and demand, and paying backup power plants to be on standby all come with enormous costs—costs that are inevitably passed down to the people paying the electric bill (FfE Research, 2024).

Even worse, negative pricing discourages investment in reliable baseload energy. Power plants that would otherwise provide stable, low-cost energy are forced out of the market because they can't compete with artificially low—or even negative—prices caused by government-mandated purchases of wind and solar. This leads to fewer reliable energy sources and even more price volatility in the long run.

The Subsidy Cliff: What Happens When the Handouts Disappear?

One of the biggest issues with Germany's Energiewende

(Energy Transition) is that its entire system has been propped up by subsidies, much like U.S. renewables. Germany poured billions into renewable energy incentives, but as those subsidies start to phase out, the real costs of maintaining a renewables-heavy grid are becoming painfully clear.

The U.S. has already seen what happens when subsidies keep an unsustainable energy project afloat. The Crescent Dunes Solar Energy Project in Nevada is a perfect example.

Built with a \$737 million loan guarantee from the U.S. Department of Energy, Crescent Dunes was supposed to be a breakthrough in Concentrated Solar Power (CSP). Under a 25-year power purchase agreement (PPA), the plant charged NV Energy 13.5 cents per kilowatt-hour (kWh)—at a time when the state's average retail electricity price was just 9.73 cents per kWh. This means Crescent Dunes was selling

electricity at a price nearly 40% higher than the going market rate (Power Technology, 2024).

However, Crescent Dunes never lived up to its promises. Shortly after opening in 2015, critical failures in its molten salt storage system led to an eight-month shutdown. Over the next few years, repeated maintenance issues left the plant offline more than it was online. By 2019, NV Energy terminated its contract, and in 2020, the plant's owner, Tonopah Solar Energy, declared bankruptcy (Utility Dive, 2020).

And who was left to clean up the mess? U.S. taxpayers.

In an attempt to recover some of the money lost, the U.S. Department of Energy sued Tonopah Solar Energy, eventually settling for \$200 million—less than half of the \$425 million still owed.

Crescent Dunes is a perfect example of what happens when government subsidies prop up an energy source that cannot compete on its own merits. It's also a preview of what will happen when the U.S. federal government phases out subsidies for wind and solar—a move already planned under the Inflation Reduction Act.

California's Renewable Energy Initiatives and Rising Electricity Costs

California's ambitious push toward renewable energy has positioned the state as a leader in climate policy. However, this transition has led to unintended consequences, particularly for low- to moderate-income families, who are disproportionately affected by rising electricity costs. The increasing burden of energy expenses has resulted in a growing number of households becoming delinquent on their electric bills, highlighting significant social justice concerns.

In pursuit of environmental sustainability, California has implemented aggressive policies to reduce greenhouse gas emissions. The state mandates that one-third of its electricity consumption come from

renewable sources by 2020 and aims to reduce emissions by 40% below 1990 levels by 2030, and by 80% below 1990 levels by 2050. While these goals are commendable, they have contributed to higher electricity prices for consumers. California households have experienced rising electricity rates as a result of renewable-energy mandates and the carbon cap-and-trade program, with projections indicating continued increases in the coming years (Manhattan Institute).

As of recent data, California's average residential electricity rate stands at approximately 28.9 cents per kilowatt-hour, making it one of the highest in the nation, second only to Hawaii. In major cities like San Francisco and Los Angeles, rates are even higher, exacerbating the financial strain on residents (Klean Industries).

Disproportionate Impact on Low- to Moderate-Income Families

The escalation in electricity costs has disproportionately affected low- to moderate-income households. These families typically spend a larger share of their income on utilities, making them more vulnerable to rate hikes. A report from the California Public Utilities Commission (CPUC) revealed that over 11% of low-income households allocate more than 35% of their discretionary income to energy costs, a stark disparity compared to higher-income households (Utility Dive).

This inequity is further exacerbated by the structure of electricity rates in California. A significant portion of the rates paid by residents functions as a "tax" on electricity, disproportionately burdening lower-income households and discouraging the adoption of clean technologies such as electric vehicles and heat pumps (Next 10).

Increasing Delinquency in Electric Bill Payments

The financial strain from soaring electricity bills has led to a notable increase in payment delinquencies. Data from the California Public Utilities Commission (CPUC) and major utilities provides a year-over-year look at the growing crisis:

- 2014-2019: Delinquency rates remained relatively stable, averaging 4-5% of residential customers.
- 2020: Due to the economic downturn triggered by the COVID-19 pandemic, delinquencies surged to 12%, affecting over 3 million customers across the state.
- 2021: As of late June 2021, nearly 4 million customers of investor-owned utilities were behind on their energy bills, totaling \$1.4 billion in unpaid balances. Publicly owned utilities reported an additional \$300 million in unpaid energy bills (CalMatters).
- 2022-2023: Despite economic recovery efforts, delinquency rates remained above pre-pandemic levels, with millions still struggling to pay their electric bills as rates continued to rise.

The trend of rising delinquencies demonstrates the real-world impact of unaffordable electricity rates. Families struggling to keep up with these costs are often forced to cut back on other necessities like food, healthcare, and rent—a reality that contradicts the state's goal of achieving an environmentally and socially just energy transition.

Social Justice Implications

The current trajectory of rising electricity costs raises significant social justice concerns. Low- to moderate-income families are disproportionately affected, facing higher energy burdens that can lead to difficult choices between essential needs. This inequitable distribution of energy costs undermines the state's goals for a just and inclusive transition to renewable energy.

Moreover, the existing rate structures discourage the adoption of clean technologies among lower-income households, hindering broader environmental objectives. Addressing these disparities is crucial to ensure that the benefits of renewable energy are equitably shared and do not exacerbate existing inequalities.

California's experience underscores the importance of carefully balancing environmental initiatives with economic equity. As the state continues its transition to renewable energy, policymakers must consider the financial impacts on all residents, particularly those with limited incomes, to prevent further social inequities and ensure a fair and just energy future.

Lessons for Farms and Rural Communities - California's Energy Crisis as a Warning

California's energy crisis is not just an issue for city dwellers—it is a clear warning for rural communities, especially farmers. The sharp rise in electricity prices, growing financial strain on families, and increasing delinquencies are indicators of what happens when an energy grid is forcibly transformed without regard for affordability and reliability.

Farmers and agricultural communities depend heavily on electricity for irrigation, refrigeration, processing, and other essential operations. Unlike urban households that can reduce consumption by adjusting thermostat settings or turning off appliances, farmers have no choice but to run energy-intensive equipment when their operations demand it. If California's soaring electricity costs are a preview of what's coming for other states aggressively pushing renewable energy mandates, here's what farming communities should expect:

- **Higher Operating Costs for Farms: With California's electricity rates nearly 50% higher than the U.S. average, farms in the state**

are struggling to remain competitive. Many large agricultural operations have already started shifting production out of California to states with lower energy costs (California Farm Bureau Federation). If similar policies are implemented nationwide, farmers in rural America will face similar economic pressures.

- **Increased Costs for Food Production and Transportation:** Electricity is a critical component of food production, from grain storage to dairy processing. Higher energy costs mean higher food prices for consumers, as farmers are forced to pass on expenses. We are already seeing this effect in California, where agriculture-related businesses have reported skyrocketing operational costs due to increased electricity bills (Western Growers Association).
- **Rural Communities Hit Hardest by Rising Energy Burdens:** In California, low- and moderate-income families are struggling under rising utility costs, with millions of households falling behind on their bills. The same scenario could play out in rural communities nationwide, where wages are typically lower, and energy expenses make up a larger percentage of household income.
- **Grid Reliability Issues Leading to Unpredictable Outages:** California's renewable energy push has also led to unstable energy supplies and rolling blackouts, which have been devastating for farms dependent on consistent power for irrigation, livestock cooling, and equipment operation (California Independent System Operator). If other states follow the same path, rural electric cooperatives and farming operations could see the same reliability challenges, jeopardizing agricultural productivity.

The Takeaway for Rural America

California serves as a cautionary tale for farmers and rural communities. The aggressive push for renewables—without addressing cost concerns, grid reliability, or fair distribution of the burden—has placed undue strain on both households and agricultural businesses.

For farmers, this is not just about higher electric bills—it's about the sustainability of their livelihoods. If the California model spreads to other states, farms will be forced to pay more for energy, food prices will rise, rural communities will bear the brunt of affordability crises, and grid instability will threaten agricultural productivity.

Policymakers must recognize that rural communities are energy-dependent and cannot afford to gamble on unreliable and expensive energy policies. If the goal is a clean energy future, it must be affordable, stable, and fair to all sectors of the economy—including agriculture.

Still Sitting on the Fence About the Renewable Energy Push?

If you're still on the fence, wondering if the push for renewables might just work out fine, take a hard look at what's happening in your own backyard. Across the U.S., states are aggressively pushing legislation to expedite the permitting process for renewable energy projects, often at the cost of local decision-making. In many cases, state governments are stripping away the authority of local officials—those who know their communities best—and giving full control to unelected bureaucrats at the state level.

This is not some baseless concern. Virginia, Indiana, and Michigan have already taken steps to override local governance in favor of centralized state control.

- nVirginia: Proposed legislation would allow developers of large renewable energy projects to seek approval directly from the

State Corporation Commission (SCC), bypassing local governments. This means county and municipal leaders would no longer have the power to approve or reject industrial-scale solar and wind farms in their communities (Cardinal News).

- Indiana: House Bill 1628 aimed to shift permitting authority for large-scale infrastructure projects—including renewable energy—from local governments to the state. Supporters argue this will attract investment, but critics point out that it removes local control and community input from projects that will directly affect their landscapes, economies, and way of life (WTHR).
- Michigan: In November 2023, Michigan passed Public Act 233, which grants the Michigan Public Service Commission (MPSC) sole authority over permitting for large-scale solar, wind, and battery storage facilities. Local governments no longer have the power to approve or reject these projects, leading to widespread backlash from rural communities. In response, over 70 townships and counties have filed an appeal challenging the law, arguing that it strips away local zoning rights and silences community voices (Michigan Farm News, WXPR). Meanwhile, House Bills 4027 and 4028 have been introduced in an attempt to restore local authority over renewable energy projects (Foster Swift).

In plain terms - Local governments are being sidelined while renewable energy developers are given a free pass to do whatever they want, wherever they want, without the consent of the people who actually live there.

The Illusion of Exceptionalism: "We'll Do It Better!"

Germany and California weren't ignorant when they embarked on their ambitious renewable energy transitions. They had the best minds, the best plans, and seemingly unlimited funding to ensure success. Yet both

regions ignored economic reality, and now they serve as prime examples of what happens when you push an energy transition without considering cost, reliability, and infrastructure needs.

Some argue, "Well, our state, our renewable energy developers, will do it better!" But let's be honest—you're only fooling yourself if you think that your state can succeed where the most industrialized nations in the world have failed. If Germany, with its unmatched engineering expertise, couldn't get it right, what makes you think Ohio, Indiana, or Michigan will? If California, the so-called leader in climate policy, is facing crippling energy prices and record-breaking delinquencies, what makes you think your state's plan won't follow the same trajectory?

The Coming Economic Reality - You Thought Inflation Was Bad? Just Wait.

If you think the inflation of the last four years was tough, you haven't seen anything yet. The renewable energy industry is playing with taxpayer money, funneling billions into subsidized projects that will inevitably lead to significantly higher energy costs. This isn't speculation—it's exactly what happened in **Germany when they spent over \$500 billion on renewables, only to see their electricity prices double.** California is already there, with some of the highest residential electricity rates in the country—and guess who's paying for it? Low- and moderate-income families who are now struggling to pay their bills and falling into delinquency at record rates.

Every rushed renewable energy project that sidesteps local control and accountability is another step toward an economic crisis that will hit rural America the hardest. If you think higher electricity prices won't affect you, think again—every farm, every processing plant, every

trucking company that moves food from field to table relies on stable, affordable energy. As costs rise, so will the price of everything you buy—from food to fuel to farming equipment.

Final Thought: The Time to Speak Up Is Now

If your state is rushing to strip local control in favor of centralized renewable energy permitting, it's not about clean energy anymore—it's about power, money, and control. When local voices are silenced, when the reality of cost and instability is ignored, when the lessons of Germany and California are brushed aside, you can bet that the ones left holding the bill won't be the politicians or the developers—it'll be you.

So, are you still sitting on the fence? Or are you ready to stand up, push back, and demand a common-sense approach before history repeats itself once again?