

The Friday Burrito

Atonement Loves Company

"No one goes on a direct path, even though it sometimes feels like your peers might be racing ahead. Everyone's trying to figure it out. But if you just put yourself out there, step out of your comfort zone, establish yourself in terms of skills, mentorship, but leave space for your passions, then you're going to turn out pretty well."

Sal Khan

"Great minds discuss ideas; average minds discuss events; small minds discuss people."

Eleanor Roosevelt

"When people use the word 'science,' it's often a tell, like in poker, that you're bluffing."

Peter Thiel

Being a little older, I am very fortunate to have someone call and check on me everyday. He is from India and is very concerned about my car warranty.

This week until yesterday in Southern California the summer heat lingered, dawdled, and encamped like an unwelcome house guest. The few wildfires that re-erupted in the area were quietly quelled. Life in the hot lane kept the likes of me sequestered in air-conditioned spaces. I have been itching for the fall to begin. MLB playoff games should be played in crisp October air. Same for football whether it be collegiate on the verge of semi-professional, or pro football dishing out more ads per game than I care to swallow. The YouTube recaps of the Sunday (plus Thursday and Monday) matchups have been my fave way to watch. Thirteen minutes of action with a few ads, but I notice with each passing year more time allotted to pushing products.

News features regarding our businesses have hit a familiar cycle: electricity demand due to AI growth is escalating ... maybe; climate ambitions are faltering ... maybe; electricity rates are climbing ... definitely. The one thing different that I experienced last week was an informal gathering of former California energy doyens about which [I write below](#). It struck me while listening to the opinions of my colleagues that we are at a time of reckoning. That is a moment when doubts arise about energy and environmental ambitions that appear to outstrip our best-efforts to achieve them and heap large costs on customers.

I've been around too long to think that things will radically change. They never do unless a crisis arises. Lacking that, we will muddle through imperfectly to wherever fate takes us. Our lot is best stated by John Lennon's observation to his son, Sean, "*Life is what happens to you while you're busy making other plans.*" Best not to overstate our influence over

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CAISO YTD Renewables

Curtailment:

As of 9/30/24: 3,101,666 MWh

As of 9/30/23 2,343,226 MWh

% of solar and wind output curtailed:

YTD as of Sept. 2024 5.03%

YTD as of Sept. 2023 4.52%

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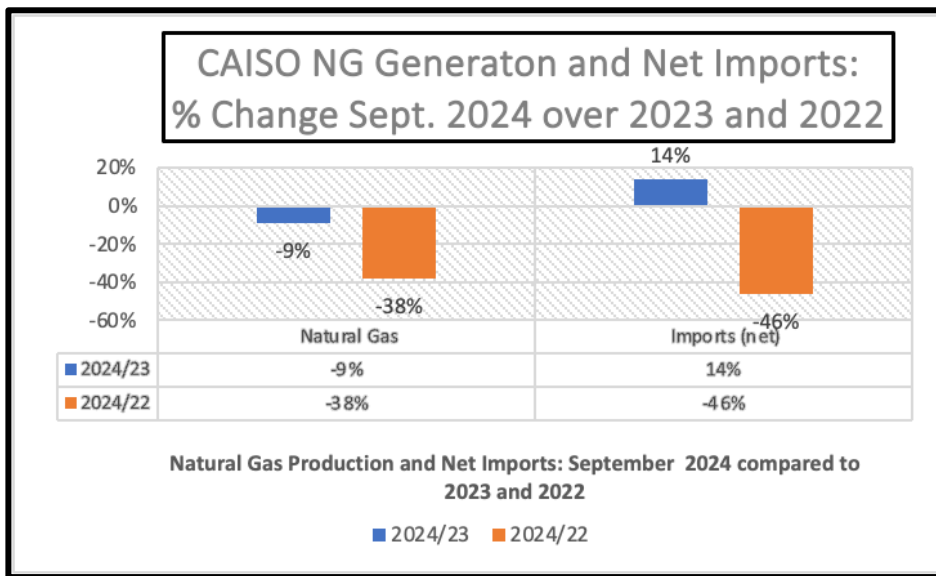
the unknown and uncertain.

September Recap of Nat Gas Generation, Curtailments and Net Imports

Although there is nothing new and exciting about this topic, but it does us well to continue watching, month-by-month, the changes year-to-year in the CAISO's natural gas generation and net imports.

Another thing to watch, and oft commented on by Burrito readers, are the year-to-date volumes of CAISO wind and solar curtailments, which are well above last year's. The yellow box on the previous page reports where things stood at the end of last month. Transmission-constrained output plus uneconomic bids for wind and solar energy so far have added about 750,000 MWh to last year's total.

September natural gas generation was down about 10% relative to last year, but 38% lower than 2022. This year, September began with high temperatures that moderated in the final weeks. It will be far more interesting to see the comparisons for October. Net imports have flopped around. They are up over last year but way down compared to



2022, almost half of that figure. My speculation is that last year Mid-C prices drew in a lot of California gross exports thereby lowering the net import number. This year however, the Mid-C prices have tamed a bit and the spread between the Southwest and Northwest has tightened.

How Do Utilities Take the Bite Out of Rapid Rate Escalation

Certainly, in California, electricity rates have been a topic of conversation amongst pols and consumer advocates. The rub of ever-increasing utility bills will not fade away anytime soon. The WSJ ran two articles on how electricity costs in both Florida and Arizona have become an important election-cycle issue.

What we believe...

Competition yields lower electricity costs. Stable and transparent rules and regulations promote private investment.

Private investors, rather than utilities, will spend money on new power plants and transmission facilities if they can earn a return that is balanced with the risks.

Private sector investment results in lower average prices without risking consumers' money.

However, when IOUs do the investing, the risks to them are minimal or non-existent because ratepayers effectively cover the utilities' costs.

Overcapacity lowers electricity spot market prices; yet retail rates can still increase in this case due to full cost-of-service regulation.

Markets work best when there are many buyers and sellers.

At-risk money will be put to investment where markets exist that are well regulated and yield credible prices.

And what we should do ...

Believe in ourselves.

Actively support the creation of independent, multi-state regional transmission organizations that coordinate policies with respective state utility commissions.

Support rules for resource adequacy that apply uniformly to all load-serving entities.

Enforce competitive solicitations by utilities for purchasing either thermal or renewable power.

The Florida opinion was an [Op Ed written by Mario Loyola](#) who teaches law at Florida International University and is a senior fellow at the Heritage Foundation. He confirmed that natural gas generation in the Sunshine state remains favored over variable renewable resources such as wind and solar. Electricity customers in Florida have electricity rates fabulously lower than, say, New York or California ... or even Texas because Texas is plenty long on the renewables side ... more so than California in fact. He noted that the blue states are losing the cost-containment battle while Florida, being a Red State, enjoys the benefits of avoiding the same pitfall.

[Continued on the next page](#)

Support choice among retail electricity customers.

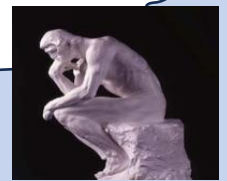
Lobby for core/non-core split of retail customers.

Advocate against policies that limit, through bid mitigation, merchant returns on investment that are comparable to utility returns.



Thinking Ahead

John Dizard



The Energy Transition To "What's In It For Us?"

It seems the good work of the Pathways committee on a Western regional grid organization is getting traction in Sacramento. I could be going out on a limb here, but could this turn to cooperation be related to the screams of pain from California ratepayers during an election year? If that's so, and the formerly overriding consideration of California's leadership for the global energy transition is...modified... well, it explains why the West is an exception to the general trend.

Across the developed world there's a political move towards electricity market fragmentation. Network theory and classical economics say this doesn't make sense, because a larger set of varied buyers and sellers provides a more efficient market. But when "the grid" becomes a hole into which the costs of expensive policy choices can be stuffed, it becomes unpopular.

Then the ratepaying and voting public is persuaded that wider, more diverse markets mean "we're paying for others to get cheap power. Screw 'em. What's in it for us?" In the PJM region, for example, the transmission component of wholesale power costs has nearly tripled over the past decade. No wonder the cloud's owners want to build right next to nuclear plants.

Ratepayer resentment will be channeled into support for challenges to [FERC's Final Order 1920](#) on RTO transmission planning and cost allocation issued last May. Whatever the outcome of the November elections, the Republicans and their supporters in the fossil fuel world will have a ready-made club for the next campaign. As [\(Republican\) Commissioner Mark Christie put in his dissent on Order 1920](#), consumers will be "forced to pay for projects that promote another state's public policy or corporate 'green power' commitments."

Christie lost the FERC vote, but I think the odds for Order 1920 surviving the Roberts Supreme Court [are not good](#). There might be quiet relief on the Democratic side, along with the public outrage.

In Britain the Labour Government is considering proposals for "regional pricing", i.e., letting wind-rich and income-poor Scotland keep the production cost benefits of renewables generation. In other words, lowering the prospective national spend on transmission in the hopes that energy intensive industry will follow cheap intermittent power.

OK. How'd that work in Germany? So far you would have to say it's a work in progress ... Actually, the French and German nationalists agree on that point.

Thinking Ahead (continued)

The anti-immigration AfD Party, which made dramatic gains in recent elections in the eastern German states, [vehemently opposes renewable energy projects](#). It particularly targets wind turbines and the accompanying transmission lines. The AfD's rise has mirrored the collapse of support for the Green Party, which is part of the ruling national coalition. This week [Finance Minister Robert Habeck, a moderate Green, had to announce that Germany would be in another recession by the beginning of the year, partly due to uncompetitive energy costs](#).

The French anti-immigration party, [the Rassemblement National, takes the position that Germany \(and France's other European neighbors\)](#) are being unfairly subsidized by relatively cheap and dispatchable French nuclear power. It wants to withdraw from the European power market and keep all the money and jobs on its side of the Rhine.

In the RN's strongholds in the south of France there are lots of spray-painted anti-transmission-project graffiti. A betting person would say the RN (despite an array of corruption charges) is on track to take national power within a couple of years.

Basically, the pro-climate case for transmission development and power market connection is failing. Under pressure, even [Kamala Harris has been backing away](#) from supporting her own Administration's green rules when those are seen to increase costs and decrease choice.

I've been watching the climate ["attribution science"](#) advocates explain Hurricane Milton. But they seem focused on finding ways to sue oil and coal companies for damages, not take credit for increasing renewables mandates and transmission charges. And actual transmission permitting, and construction has been moving inversely with rising ratepayer bills.

Time to shift the rationale for a resilient and flexible grid. "Climate" as a catch-all for the consumer absorbing the costs of intermittency won't work, whoever wins the elections.

And by the way, Milton shouldn't be the name of a deadly hurricane. C'mon NOAA! There are no evil Miltons! Pick from the names of warlords, famous criminals or screen villains.

Per Loyola, "What explains the difference? State policies. Eight of the 10 most costly states have enacted renewable portfolio standards, 'net zero' carbon-emission mandates, and regional cap-and-trade schemes. All eight are controlled by Democrats.

"Among the most populous states, Florida stands out as an island of sanity in a sea of government madness. Under continuous Republican governance since 1999, the Sunshine State took advantage of the shale boom, prioritizing natural gas over renewable energy. That has kept electricity prices low." Oddly, this argument reminds me of the differences between utility rates that once pointed to nuclear power as the reason. That is, states that discouraged nukes had lower rates than those that embraced the technology.

A [separate article that ran this week](#), "Arizona Voters at Breaking Point Over Cost of Electricity," recorded the frustration of residents who have seen their utility bills skyrocket by roughly 30% in the summer compared to the same months last year. It reported: "Gasoline is often the energy cost voters think about most. But in Arizona, electricity is giving it a run for its money. Rate increases, and a historic 113 consecutive days of temperatures peaking at or above 100 degrees in Phoenix, have generated record air conditioning bills and widespread consternation."

Arizona elects its state utility commissioners, so the battle for lowering electricity bills is being put squarely before Arizona legislators. Per the article, "The eye-popping charges are also drawing attention to a state regulator previously unknown to many voters—the Arizona Corporation Commission, whose elected members set utility rates." I like that part about ACC being unknown to many voters. We live in the shadows.

Data Center Demand: Hope or Hyperbole?

I suppose the topic of expanding data center demand growth for electricity will be with us for the next few years. There are ample arguments on both sides of hope vs. hyperbole that leave me uncertain. We gush over the possibility of new things disrupting the status quo. We also overstate our knowledge about how the utility infrastructure will accommodate this incremental load.

The [NYT](#) in its daily bemoaning of the climate crisis amplifies that GHG emissions will reverse the nation's carbon diet if the explosive demand growth is met with fossil-fuel generation. [David Gelles wrote two weeks ago](#), "*At the very moment the world seems to be making real progress in the fight against global warming, the scale of the problem seems to be getting even bigger ... Electricity demand is spiking, thanks to artificial intelligence and a new generation of energy-hungry data centers. Overall energy consumption keeps climbing as a new middle class rises in the developing world. And a large-scale phaseout of planet-warming emissions is being hampered by short-term politics, global conflict and ossified financial markets.*" Sour grapes if you ask me. If the climate scare wasn't enough to disorient the reader, then global conflict and ossified financial markets (whatever they are) should be sufficient to fill the void.

[Jinjoo Lee wrote a very thoughtful piece](#) this week in the WSJ recalling earlier boom-bust cycles in power plant development in anticipation of new loads dating back to the 1990s and early 2000s. He recalled correctly: "*Developers at the time assumed that the long-term power price would match the long-run marginal cost of new power-plant capacity, covering both variable operating costs as well as capital costs. In fact, ... after the aggressive build-out resulted in a surplus of capacity in many markets, power prices fell sharply, covering only the operating costs of these power plants—not enough for the companies to pay off the debt they raised to build them.*" Thus, the natural question today is, will the data center phantom strike as predicted or kind of peter out once enough of them have been established? Lee voiced this idea: "*While power demand looks set to inevitably grow, the magnitude and timing are still an open question ... So, while an outright bust looks unlikely, there is still the risk that independent power producers' stocks get ahead of themselves.*"

"The power industry has matured a lot in the past two decades. But the same fundamental lesson holds: High-voltage expectations can lead to painful burns."

Equity research firms such as Bank of America and Jefferies have focused their respective analyses on the question of whether the electricity demand boom is real, and if so, will it be a uniform surge or will there be regional pockets of development? After all, if the growth is real, then the equity valuations must be credible and identify the utilities with the potential for increased revenue and profitability. Ross Fowler at BofA US Power & Utilities recently stated that there will be winners and losers in the race to meet data center loads. That's what I was wondering, especially regarding California with its super high electricity prices. Why would a data center locate in the Golden State? Fowler opined: "*Electricity demand growth over the past two decades has been stagnant due largely to the development and proliferation of more efficient residential appliances and lighting, a decline in the domestic manufacturing base, and the successful execution of energy efficiency programs as utilities implemented environmental mandates ... There is now evidence that demand growth has returned, driven by the re-shoring of industry, the development of data and crypto mining centers and the electrification of buildings, transportation, and infrastructure.*"

"Zones that will likely experience the most robust demand growth, including ERCOT, the Southeast, Southwest, Northwest and SPP zones will all need significant investment in new effective capacity. In our base case scenario, in which we estimate 1.5% nationwide long-term demand growth, an incremental 100 GWs of effective capacity will be needed by 2035 ... The high case in our analysis, using a 3% growth factor, suggests a need for almost 300 GWs of effective capacity. We do not consider this to be a realistic goal." Effective capacity is, of course, what a resource actually contributes to reliability rather than the nameplate capacity.

Julien Dumoulin-Smith wrote for the Equity Research group at Jefferies Power & Utilities about a recent conference it hosted where McKinsey & Company presented its latest U.S. electric demand forecast, which was dominated by robust data center growth projections." *The September 2024 refresh forecasts US data center gigawatt (GW) demand increasing to 83GW in 2030 from 25GW 2024 with an acceleration in 2027-2028. The 83GW is up from ~56GW in from the prior September 2023 modeling.*" Those projections are a bit lower, even on the high side, compared with BofA's.

However, not unlike BofA, Jefferies picked up from the McKinsey report that data center developers want to move quickly ... get into production mode with as little delay as possible. That certainly eliminates most states that I know given their heavy red tape. Dumoulin-Smith summarized accordingly: " *The top challenge cited by McKinsey for data center development is power availability, primarily related to electric transmission & distribution interconnection.*" And, " *Data centers continue to diversify geographically: McKinsey has seen hyperscalers shift from primary (Virginia, Chicago, Dallas, Phoenix, California, and Northwest) to secondary (New York, New Jersey, Boston, Pennsylvania, Ohio, Denver, Houston, Florida, Atlanta, etc.). There are many emerging markets without material capacity today seeing growth: Carolinas, Alabama, Mississippi, Tennessee, Indiana, Wisconsin, Iowa, Omaha, Oklahoma, Kansas, Wyoming, & Albuquerque.*"

Thank God, California may yet escape the data-center demand growth epidemic.

Things in the People's Republic of California

A Night at the ~~Saloon~~ Salon

Last week, I attended a grand reunion of fellow travelers from the past who gathered at the Marines Memorial Club in San Francisco at the invitation of two leading alumni, Michael Peevey and Frank Lindh. Burrito readers know these names because I have interviewed each on multiple occasions to garner their respective insights on present-day energy issues. I'm a strong believer that those who lived through the ups and downs of our businesses have valuable insights to share, especially in the California energy space.

The evening was in the style of an old-fashioned [salon](#), meaning it was a gathering in an upscale setting of both retired and active professionals of varying backgrounds and perspectives. The image below was not an accurate portrayal of the event, but I liked it anyways. It was a treat to be surrounded by so many witty people with a common ground. As one former CPUC Commissioner observed, all the participants care deeply about California and its citizens and want what's best for their State.

My reason for taking part in the event was simple: the guest list had folks who I hadn't seen in years, or in several cases as much as a decade or more, with whom I wanted to visit. These were people I would gladly walk across a crowded room to hug hello and revisit old times. Whereas states outside of California also have professional networks that socialize together, in California that informal circle of



frenemies over the last 20 or so years has been populated by individuals with completely different views and beliefs that span the gamut. We used to meet at numerous conferences, hearings, speaking engagements, and roundtables. Along the way and after the formal sessions concluded, we would re-congregate in public saloons (not salons) to argue policy issues, imbibe in a cup of friendship, vault over the negative fears that divided us, learn to respect each other, and delight in retelling great stories that have lasted forever and expand with added embellishments.

It made sense that the evening's two organizers would undertake this task for the benefit of the invitees. Mr. Peevey has a long track record of starting and managing non-profit associations that bridge the gap between business, regulation, and politics. For example, he founded and was the inaugural executive director of [The California Council for Environmental and Economic Balance](#) (CCEEB) in 1973 to bring together leaders from business, labor, and public sectors to exchange information on environmental protection while supporting economic growth. The salient point was that joint collaboration was more valuable than isolated disagreement.

Although I was unaware in advance of the event's after-dinner salon-style agenda, it was set so that attendees had an open dais to voice their observations and concerns about California's formidable and numerous "clean" electricity programs. Peevey started the dialogue with a thought about the need to control retail rates. When I interviewed him last May about the proposed PG&E asset divestiture (since rejected by the CPUC) he broached the same idea that I scribed as follows, "*A radically different regulatory approach to rate making would be required. Something, for example, that sets an annual cap on rate increases to be no greater than the consumer price index. It would put enormous pressure on the utilities to reduce costs and possibly lower the quality of service.*" Whereas I was doubtful of his idea then, when he mentioned it last week it made more sense. What he was saying was if there was no limitation on the revenue requirements to escalate at or below the rate of inflation then there was no net-back mechanism to force utility managers to take effective cost-cutting measures. I gave that more thought since and I believe that rate caps alone would not work for several reasons, but targeted revenue-requirement growth, say, at or below the CPI applied to utility generation, transmission, sub-transmission, and distribution might make enormous sense. Those elements are about two-thirds of the customer's bill. Thus, at least the major parts of the underlying increases in customer rates could be addressed. The missing cost elements remaining outside of the control of the utilities per se would be the pass-through mechanism for energy procurement (e.g., price spikes in natural gas), Public Purpose Programs (PPP), nuclear decommissioning costs, DWR bond charges, California Cap-and-Trade credits, taxes and fees, and the monthly minimum metering charge.

Others also expressed their concern about escalating utility rates. California's high living costs are chasing our children and grandchildren out of the state, electricity expenses being one such element. As a result, they move to Idaho, Texas, Nevada, etc. At least one participant picked up on the need for tighter budgets for electricity generation and delivery.

One former utility executive argued that the state's many energy priorities carry with them a hefty price tag. Initiatives such as wildfire risk mitigation, electrification for everything from home heating to electric vehicles, expansion of the high-voltage transmission system, and investments in clean electric generation.

Coming from a different perspective, consumer advocates and policymakers are really feeling the pain of high rates borne by utility customers. But when the bills come due and customer complaints swell, it is a fact of life that policymakers tend to blame the electric and gas utilities even though the higher rates are due to the very policies enacted by the former.

I was pleased to hear several speakers comment on the prospect that California might fail to reach its 2045 climate goals. As the EIX white paper articulated how its utility plans to reach net-zero by 2045, there is a stated need, albeit elusive for now, for dispatchable clean generation resources to fill in the gap heretofore served by

the natural gas fleet. Beyond the scope of the white paper, but swarming the pop media, are plenty of words about green hydrogen fuels, clean ammonia as a fuel, small modular nuclear reactors, and carbon capture for natural gas generation ... but these solutions appear costly, remain unproven, and are in their infancy for full-scale development.

Please understand, it was a wonderful evening. The salon approach was a great excuse to visit with old friends and stimulate interesting conversation. And it showed that adults with different opinions can discuss thorny issues without bitterness or contempt. Although the only people who benefitted immediately were those who attended, one never knows from where the next good idea(s) will come.



Grand Phunk Salsa a la Energy GPS

The Op Ed below is from the team at Energy GPS with Tim Belden as the lead author. Reference herein is made to the firm's [eCommerce Platinum Plus Package](#) and is incorporated in the CAISO Daily Battery Dashboard ([sample](#)). To request more information about Energy GPS email sales@energygps.com.

Response to Brattle Analysis of CAISO Fast-Start Policy

Energy GPS does not have a horse in the EDAM versus Markets+ race. Our policy work has been limited to the fast-start pricing work, which concluded in 2022. We understand that some utilities will prefer EDAM while others will prefer Markets+. We believe that good policy decisions should be accurately informed and supported by good, unbiased analysis. However, Brattle recently published a comparative assessment of EDAM and Markets+ Design Features ("[Brattle Report](#)"), and the treatment of fast-start pricing policies in this report is a major concern.

The Brattle Report was prepared for PacifiCorp and has received considerable attention in the trade press. The Brattle Report opines on seven different market design features. Broadly speaking, it concludes that these market design differences don't amount to much, leaving the reader to think the Markets+ advocates are making a big deal out of insignificant market design matters. Powerex has published a response ("[Powerex Response](#)"), which analyzes the Brattle Report and points out several material misstatements of facts related to market design. It presents evidence overlooked by Brattle that is directly contrary to Brattle's conclusions, and identifies areas where Brattle mischaracterizes the evidence that it does present.

One of the biggest issues addressed by Brattle was the importance of fast-start pricing in market price outcomes. The Brattle Report critiqued an analysis of CAISO's fast-start pricing policies published by Powerex and the Public Power Council in 2022 ("[Fast Start Pricing Analysis](#)").

Powerex and the PPC hired Energy GPS to analyze (1) how much prices in CAISO would increase if fast-start pricing was incorporated into CAISO market design and (2) the estimated financial impact to ratepayers

outside of California who are served by utilities who sell to CAISO during the hours with affected prices. Energy GPS' original work was included as an Appendix therein. Our analysis shows that **the lack of fast-start pricing policies in the CAISO have resulted in lower market clearing prices and a wealth transfer from the Desert Southwest and Pacific Northwest ratepayers to California ratepayers averaging more than \$300 million**

Our analysis shows that the lack of fast-start pricing policies in the CAISO have resulted in lower market clearing prices and a wealth transfer from the Desert Southwest and Pacific Northwest ratepayers to California ratepayers averaging more than \$300 million per year from 2017 through 2020.

per year from 2017 through 2020. I agree with the points made in the Powerex Response to the Brattle Report, and for reasons stated below, it is my opinion that the Brattle Report's discussion of fast-start pricing badly misses the mark.

The Brattle Report begins by explaining the evolution from legacy RTO market design, which excluded startup and minimum run costs from affecting the calculation of LMPs, to the market rules currently in place in all RTOs except the CAISO, which incorporates the full startup and minimum-run costs of fast-start units (e.g., peakers) in LMPs during the relevant hours. Brattle then embarks on a literature review citing Market Monitor reports from MISO, SPP, and ISO New England. The Powerex Response provides a more thorough review of the literature than the Brattle Report, including more recent information from MISO that directly contradicts Brattle's assertions, as well as information from PJM that is largely consistent with Energy GPS' findings in the CAISO.

The Brattle Report then turns to a critique of the Energy GPS Fast-Start Pricing appendix in the Powerex paper. Our work was commissioned by Powerex and Public Power Council. The table below summarizes how fast-start units are deployed in the WECC from 2017 through 2020 (which can be found on page 25 of Fast Start Pricing Analysis).

WECC Relies Heavily on Fast-Start Peakers to Meet Ramping Obligations and Demand

		2017	2018	2019	2020	% All Hours
WECC	# of Fast Starts	19,222	16,728	16,157	16,268	
WECC	# of Hours with Fast Starts	6,012	6,067	5,692	5,953	68%
PNW	# of Fast Starts	1,347	945	432	490	
	# of Hours with Fast Starts	1,672	1,431	682	871	13%
NP15	# of Fast Starts	4,288	4,111	4,188	3,789	
	# of Hours with Fast Starts	2,906	3,088	2,618	2,692	32%
SP15	# of Fast Starts	6,355	5,260	5,354	5,025	
	# of Hours with Fast Starts	3,502	3,489	3,486	3,359	39%
DSW	# of Fast Starts	7,232	6,412	6,183	6,964	
	# of Hours with Fast Starts	4,597	4,251	4,248	4,313	50%

The number of fast-starts is simply the number of times in a year that a fast-start unit was deployed in a given region. It represents turning on a single fast-start unit. On average, the CAISO turns on fast-start units about 9,000 times per year! That's right, the CAISO Security-Constrained Economic Dispatch (SCED) tells a fast-start unit to fire up about 9,000 times each year. These dispatches are concentrated in the morning ramp and evening ramp hours. There is a fast-start unit running in more than one-third of the hours of the year in the

On average, the CAISO turns on fast-start units about 9,000 times per year. That's right, the CAISO SCED dispatch signal tells a fast-start unit to fire up about 9,000 times each year!

CAISO. During the summer hours when the sun is setting – typically the highest-priced hours of the year – there are typically 15 to 20 fast-start units running in the CAISO. We estimated the price impact should the CAISO shift from its current policies of excluding fast-start units from affecting LMPs and instead adopted what is standard market design in other RTOs. The price impacts were largest from 6pm to 7pm when prices during that hour would have averaged \$15 to \$23 per MWh higher depending on the region and the year.

The Brattle report challenges the premise that the 9,000 annual fast-start dispatches per year in CAISO would impact hub pricing rather than be limited to raising the price at peaker plant nodes. We spent considerable time and effort on this very topic. Our guiding principle when making modeling and data choices was to err on the side of under-estimating rather than over-estimating the impact of fast-start pricing. We employed strict rules to define fast-start units and an instance of a fast-start dispatch. Our cost estimates include only fuel and carbon costs and exclude any intra-day natural gas price premia or natural gas pipeline penalties. We removed generators that appeared to provide local reliability service or were located within congestion pockets with LMPs higher than the market hubs. We also examined the location of some peakers on the grid. We found that the 15 to 20 peakers that were running during the highest-priced hours were scattered around the market hubs. The higher calculated prices at the fast-start nodes would lift LMPs at many nodes within each market. Brattle's assertion that the large number of nodes that are averaged into the hub price would effectively drown out the impact of the fast-start node misses this fundamental point. I am confident that the higher costs associated with the units in our analysis would translate into higher hub prices in the CAISO as our report asserts.

For brevity, I'll outline my issues with the Brattle report. The report misrepresents our study's findings, claiming an average energy price impact of \$15 to \$23 per MWh. In reality, this figure refers to the highest-priced hour of the day, not an average across all hours. Additionally, Brattle asserts that Energy GPS ignored a counterfactual CAISO unit commitment and dispatch solution. We analyzed actual events, not a theoretical model. Our pricing analysis served as the counterfactual, and there's no need to simulate a new dispatch since CAISO policy and RTO market design dictate that the dispatch remains the same under fast-start pricing policies.

The report also discusses fast-start policy impacts on EDAM buyers and sellers, stating that most WECC utilities have balanced load and generation, downplaying the effect. However, utilities selling heavily into CAISO during the evening ramp—where fast-start pricing is most impactful—are closely considering Markets+. CAISO transmission data shows import spikes at Palo Verde, COB, and NOB during these hours. It's no coincidence that the largest sellers at these points are concerned and exploring alternatives like Markets+. CAISO's fast-start pricing has led to a wealth transfer from ratepayers in surrounding regions to California, averaging \$181 million annually from the Desert Southwest and \$157 million from the Pacific Northwest between 2017 and 2020. CAISO's strong opposition to fast-start pricing in its and other markets underscores its importance.

Recipes and Shout Outs

Spaghetti Carbonara with Chef [Laura Manz](#)

"One of the easiest meals to prepare on a busy weeknight is an Italian-style spaghetti carbonara. While there are many complex variations, the base recipe is simple and fast. Awesome if you happened to have guanciale, but pancetta or even thick-cut bacon with some marbling will yield great results."



Prepare 1 lb. spaghetti in generously salted water according to package directions, reserving $\frac{3}{4}$ cup of the cooking liquid. Meanwhile beat two eggs, two egg yolks, $3\frac{1}{2}$ oz. freshly grated parmesan and/or pecorino cheese, and $\frac{1}{2}$ tsp. of freshly ground black pepper and set aside. Dice or cut into thin batons 6 oz. of guanciale.

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In a large skillet on medium heat cook guanciale approximately 4 minutes until the fat begins to render, stirring occasionally. Add two whole-peeled garlic cloves to the pan and cook for two more minutes until the garlic begins to brown. Remove and discard the garlic. Add the spaghetti and toss vigorously until the pasta is coated with the rendered fat. Add the egg and cheese mixture along with the reserved pasta water and stir vigorously until a creamy sauce has formed. Serve immediately garnished with extra grated cheese, a grind of black pepper and a garnish of finely chopped parsley.

Thanks again, Laura. When one craves pasta, it is impossible to subvert the desire. It must be satisfied. In our home the chef makes her own sauce based on her Italian mother's recipes ... not to be shared. Family secret. This is a dish where portion control gets obliterated.

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Odds & Ends (_!_)



Below the belt are your stories if you are reading the red-meat edition. No Burrito next week.
Gba

GREAT TRUTHS THAT LITTLE CHILDREN HAVE LEARNED:

- 1) *No matter how hard you try, you can't baptize cats.*
- 2) *When your Mom is mad at your Dad, don't let her brush your hair.*
- 3) *If your sister hits you, don't hit her back. They always catch the second person.*
- 4) *Never ask your 3-year-old brother to hold a tomato.*
- 5) *You can't trust dogs to watch your food.*
- 6) *Don't sneeze when someone is cutting your hair.*
- 7) *Never hold a Dust-Buster and a cat at the same time.*
- 8) *You can't hide a piece of broccoli in a glass of milk.*

9) Don't wear polka-dot underwear under white shorts.

10) The best place to be when you're sad is Grandpa's lap.

GREAT TRUTHS THAT ADULTS HAVE LEARNED:

1) Raising teenagers is like nailing Jell-O to a tree.

2) Wrinkles don't hurt.

3) Families are like fudge...mostly sweet, with a few nuts.

4) Today's mighty oak is just yesterday's nut that held its ground.

5) Laughing is good exercise. It's like jogging on the inside.

6) Middle age is when you choose your cereal for the fiber, not the toy.

GREAT TRUTHS ABOUT GROWING OLD

1) Growing up is mandatory; growing old is optional.

2) Forget the health food. I need all the preservatives I can get.

3) When you fall down, you wonder what else you can do while you're down there.

4) You know you're getting old when you get the same sensation from a rocking chair that you once got from a roller coaster.

5) It's frustrating when you know all the answers, but nobody bothers to ask you the questions.

6) Time may be a great healer, but it's a lousy beautician.

7) Wisdom comes with age, but sometimes age comes alone.

Pass this on to someone who could use a laugh. Always remember to forget the troubles that pass your way; BUT NEVER forget the blessings that come each day.

REVELATION 3:20

A new pastor was visiting in the homes of his parishioners. At one house it seemed obvious that someone was at home, but no answer came to his repeated knocks at the door. Therefore, he took out a card and wrote: "Revelation 3:20" on the back of it and stuck it in the door.

When the offering was processed the following Sunday, he found that his card had been returned. Added to it was this cryptic message: "Genesis 3:10." Reaching for his Bible to check out the citation, he broke up in gales of laughter.

Revelation 3:20 begins "Behold, I stand at the door and knock." Genesis 3:10 reads, "I heard your voice in the garden, and I was afraid for I was naked."

Prize Rooster

John the farmer was in the poultry business. He had several hundred young layers (hens), called pullets and eight or 10 roosters, whose job it was to fertilize the eggs. The farmer kept records and any rooster that didn't perform went into the soup pot and was replaced. That took an awful lot of his time, so he bought a set of tiny bells and attached them to his roosters. Each bell had a different tone so John could tell from a distance, which rooster was performing. Now he could sit on the porch and fill out an efficiency report simply by listening to the bells. The farmer's favorite rooster was "the Dave," a very fine specimen he was.

But on this particular morning, John noticed that "the Dave's" bell wasn't ringing at all! John went to investigate. The other roosters were chasing pullets, bells-a-ringing. The pullets, hearing the roosters coming, would run for cover. But to Farmer John's amazement, "the Dave" had his bell in his beak, so it wouldn't ring. He'd sneak up on a pullet, do his job and walk on to the next one.

John was so impressed with "the Dave" that he entered him in the county fair, and "the Dave" became an overnight sensation among the judges. The result ... The judges not only awarded "the Dave" the "No Bell Piece Prize," but they also awarded him the "Pulletsurprise," as well.