

The Friday Burrito

TMI is TMI

"Writing comes more easily if you have something to say."

Sholem Asch

"The harder you work, the luckier you get."

Gary Player

"You want to be the pebble in the pond that creates the ripple for change."

Tim Cook



The season's first cloudburst suddenly hit southern California this week, but it was short-lived. Barely twenty minutes in total. Nonetheless, the sound of falling drops on the roof and patio warranted a reawakening of sorts. A thrill that the cycle of life including the natural world was working. The lush smell of damp earth, rain-soaked asphalt, and revived foliage stirred up nostalgic memories. It also meant I didn't have to water the front lawn.

Visually the low-hanging grey clouds became a welcome friend, ushering in chilly winds and frosty breath. Fresh white snow draped the mountain tops in the Angeles National Forest. Ah yes, taking in my favorite season this way has been inspiring.

I didn't attend the CAISO Symposium this week in Sacramento. Although I would have liked to visit with old friends and new cronies, not needing to travel to attend an industry conference is one of the undocumented benefits of retirement. It's time to make way for a new army of players.

TMI Nuclear Plant: A Phoenix Arises from the (B)Ashes

On Wednesday, the [NYT ran an article about the owner's plan](#) to refurbish the Three Mile Island (TMI) nuclear plant and restart Unit 1 under a new 20-year power-purchase agreement with Microsoft starting in 2028. By now the news isn't news, but public reaction being slow to percolate has been foaming up in waves of contrasting messages. The divide is between those who understand that new sources of carbon-free energy are needed to support the A.I. surge, versus those who myopically believe that the money going to revive a nuclear plant would be more wisely spent in new solar, wind, and storage resources.

Of course, I agree with the pro-nuclear fans. I wrote years ago that one cannot purport to battle climate change without embracing the nuclear option. Back then I was thinking of small modular reactors, but, hey, re-

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Western States Ticker

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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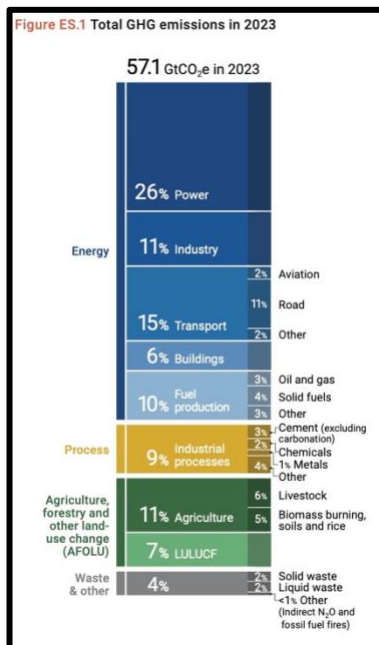
building old facilities is okay whereby the cost will be underwritten by well-heeled global corporations, in this case Microsoft and Constellation Energy. Per the article, "*Microsoft is effectively paying Constellation to bring Three Mile Island back online.*"

Three Mile Island was once the sad eponym of the nuclear energy industry's decline. Now however, in a sudden reversal of fortune, according to the NYT, "*Three Mile Island's proposed revival reflects how vastly the perspectives on nuclear power in the United States have shifted since a cooling failure led to the partial meltdown of one of the island's reactors in 1979.*"

On the financial side of the TMI deal, the Times reported something that doesn't cut mustard: "*Constellation and Microsoft haven't disclosed the financial terms of their deal, but the investment bank Jefferies estimated that Microsoft may have agreed to pay \$110 to \$115 per megawatt-hour, or nearly double the market rate for wholesale electricity.*" I am baffled and have my doubts. Especially since the same article explained upfront that these plants would be eligible for federal tax credits. Is there a 24x7 clean energy source that costs less? I doubt it if one includes all the capital outlays, the annual carrying costs, and incremental resources needed to keep the alternative equally reliable as a nuclear plant. On the other hand, what effective capacity factor will a new TMI have, rebranded as the Crane Clean Energy Center? Multi-week refueling gaps and unscheduled outages will be a most interesting topic (read critical) after Unit 1 starts again in 2028.

U.N. Reports Zero Progress in Net Zero

In a separate NYT article that ran last week, [titled, "The U.N.'s Verdict on Climate Progress Over the Past Year: There Was None,"](#) it summarized the findings of an annual U.N. report about the Emissions Gap. Yeah, it's a scare tactic to satisfy the beating tribal drums announcing that the end is near if carbon emissions aren't arrested, like, say, yesterday. The U.N. report's executive summary states, "*The increase in total greenhouse gas (GHG) emissions of 1.3 per cent from 2022 levels is above the average rate in the decade preceding the COVID-19 pandemic (2010–2019), when GHG emissions growth averaged 0.8 per cent per year.*" What's a globe to do?



The current emission policies don't come close to closing the gap, and don't take into account global population growth. Soon leaders from

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.

different sovereigns will gather in Baku, Azerbaijan for the annual climate summit whereby the poor nations will thrust the collection plate in front of the wealthy ones asking for more money: " *One of the big topics at the climate talks in Baku will be money. For years, developing countries like India and Indonesia have said they would be willing to accelerate efforts to cut emissions if they received financial assistance from wealthier countries to do so. According to the U.N. report, cutting global emissions to zero could require an extra \$900 billion to \$1.2 trillion per year in global investment.*" Trick or treat!

A [WSJ editorial this week](#) gave a great example of why the climate nirvana never will be reached any time soon. The German auto company, VW, is getting hammered by rising energy-production costs and declining sales in the EV sector. As a result, a company that hasn't experienced layoffs in over 30 years and never closed a plant in Germany for economic reasons is now doing both: " *Volkswagen could close three vehicle factories, cut 10,000 jobs and impose steep across-*

[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.

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Today, FERC holds its much anticipated Commissioner-led Technical Conference on co-located load. The recent announcement of an agreement between Talen Energy and an Amazon data center to co-locate at Talen's Susquehanna nuclear plant in Pennsylvania for up to 960 MW set off a flood of protests. FERC set up this Technical Conference in response. Speakers include NERC, PJM, MISO, NYISO, SPP, independent market monitors, Data Center Coalition, Google, transmission owners, generation owners (e.g., Talen, Vistra, Constellation), customers (both big and small), and state regulators.

"Co-locating load" refers to connecting a customer directly to a generator (in this case, an existing generator), ensuring that the customer relies solely on its co-located generator. Usually, co-location is behind-the-meter, but it could be in front of the meter. Co-locating BTM typically involves less cost for additional infrastructure, for which the load pays. In front of the meter co-location, usually more costly, involves infrastructure, much/all of which transmission customers pay for. Concerns raised by protestors to be addressed at the Technical Conference include (1) higher market prices (caused by a decrease in available generation supply with the dedication of existing generation to new load); (2) need for expensive system upgrades; (3) cost shifts; and (4) reliability. Mike Kormos, formerly PJM's Chief Operations Officer, has written a very instructive white paper that he will present at the Technical Conference, which provides an independent assessment of what's happening here. He explains serving any new load affects market prices and may affect infrastructure costs and reliability (so don't take it out on data centers). Indeed, BTM co-location imposes no costs on grid customers and, thus, no cost shifts. It will result in less use of the transmission system and less revenue for the transmission provider—but this will be quickly made up for by generators in the queue anxious to get the freed-up capacity. His analysis makes sense to me; we'll see today whether others agree.

the-board pay reductions is a warning for Americans about the peril[s of] climate policy ... Volkswagen Group employs some 300,000 in Germany with 10 factories for its flagship VW brand. It has avoided involuntary layoffs for three decades and hasn't shuttered a factory in its home country in its 87-year history."

The EU mandate on non-fossil fuel options for autos has made VW's current predicament unavoidable. The editors report: *"Europe continues its forced march toward electric vehicles. The EU requires that EVs constitute a higher share of vehicle sales each year, with internal-combustion engines phased out by 2035. This is forcing companies such as VW to divert large sums of investment capital to making EVs despite chronically soft sales ... The mandate also exposes European firms to new competition from Chinese companies that can deliver cheaper EVs to European consumers forced to buy them."* How long can this craziness go on? As a reaction the EU has levied stiff import tariffs on Chinese EV's which is causing a trade war across many products transshipped between Germany and China. And, VW sales in China are on the decline, so, higher tariffs on both sides are an untimely move.

Great Britain or Grin and Bear?

Suppose you owned a single-family home in a rural area very near a clean energy resource. Would you be willing to accept five years of free electricity (but not for charging your EV) in exchange for putting solar panels on your roof if they weren't there before, plus an electric heat pump on your patio, and a storage battery with a dedicated computer somewhere inside your home? Also suppose that your retail electricity provider manages your household electricity consumption/production profile and adjusts it in response to the wholesale grid prices. Cooperative electricity retailers in Great Britain are offering such programs according to an [article in the NYT](#) entitled, "Free Electricity, Anyone? Britain Tries New Tricks to Green Its Grid." The force of this nascent movement has as much muscle as do microgrids in the U.S. For example, the deal I just described above in Great Britain is offered by a firm called Octopus, and so far ... wait for it ... they have fewer than 30 customers.

The [NYT](#) reports, *"There are only a few dozen zero-bills homes so far. Octopus aims to have 100,000 by 2030 by partnering with builders. Buyers get 10 years of free electricity. 'You've now got a highly variable system of electricity — wind, solar — replacing the old world,' said Greg Jackson, the Octopus executive. 'But we don't have a pricing system to reflect this.' He is lobbying to change that. Step one, he says: Let sellers like Octopus offer lower prices to people living near new energy sources."*

I was curious about the 10-years-free claim because the article earlier describes the company's offer as a 5-year deal: *"A big part of that is tweaking the electricity system from the inside, which is what Greg Jackson of Octopus does, using software to profit from the peaks and troughs of power ... Mr. Jackson's latest invention is the 'zero bills' home. Residents pay nothing for light and heat for five years. And yet, Octopus still makes money. How? The houses usually generate more electricity than they use, storing surplus in batteries. Octopus can sell that energy to the grid when demand and prices are high. (The free electricity doesn't apply to car-charging, which takes a lot of power.)"* Bollocks! This scheme reminds me of the infamous competitive retailer in Texas called Griddy, since liquidated of its 10,000 customers paying only the ERCOT real-time wholesale prices after the fiasco of Snowvid 2021.

What about fossil fuels in Great Britain? British homes are mainly heated with gas, and gas will remain in the electricity mix as a reserve. Per the [NYT](#), *"In September, Britain closed its last coal-burning power plant. Its new Labour Party-led government has lifted restrictions on onshore wind projects, created a new entity called Great British Energy to invest 2 billion pounds in renewables. The government has said it would allow already approved North Sea oil and gas projects to proceed, but not issue new permits."*

And we say, good luck with that.

Things in the People's Republic of California

Let's Do a Better Job Explaining Electricity Price to the Public

I have harbored a long-held frustration, probably since the California Energy Crisis reared its ugly head, about describing the ABCs of electricity to a frustrated and angry public. My plea has been that It's not just my job, but that of all of us regardless of how long you've been in the industry or your specific task. Mr. and Mrs. John Doe don't give a fig about the details ... but they do get upset when their monthly electricity bills increase. I should add that my holy quest to simplify the story about electric power has utterly failed. Yet, I keep trying because new issues continue to arise and are covered in the media.

So, I entreat you to improve the passage I introduce below. I start with a simple example of a consumer buying a pound of beef at a grocery store, and attempt to extend that transaction as if it were handled under an organized wholesale power market. Yes, there are many details missing but the goal here is to paint a picture that amplifies the basics rather than perfect the analogy.

The Simple Example: You go to the grocery store, look at the meat display and the posted price is, say, \$1.39/lb. Ignoring for the moment quality and brand considerations, you decide whether you want it at that price. This is **not** how power markets work. In fact, it's not how any cash or forward commodity market works. We'll draw a rough parallel to see why.

If you and I bought beef like utilities purchase power, then it would go more like the following. The day before, you call the grocery store and say you want 1 lb. of beef tomorrow and commit to paying no more than \$1.29/lb. ... no doubt looking for a bargain. The beef suppliers to this grocery store can offer to provide any quantity of beef at any price they wish.

The grocer sums up all the orders to buy beef, from the highest bid to the lowest bid. The grocer also sums up all the suppliers' offers from the lowest to the highest price. The grocer accepts from the suppliers the quantity demanded where the two meats meet. Let's say demand and supply balance at \$1.39/lb. (We ignore the margin for the grocer's efforts for the moment.) One more pound of beef might be purchased at a lower price, but there are no suppliers willing to make even one more pound available at that offer. One more pound of beef might be offered at a higher price, but there isn't even one buyer willing to pay that price for an additional pound.

The next day you go to the market and seek your pound of flesh but, alas, the price has settled at \$1.39/lb. Your previous day's request ends up unfulfilled and you don't get any beef. Instead, all the beef at the store goes to the people who the day before bid either \$1.39/lb. or higher. Had you done the same thing, then the pound of beef would be in your hand instead of on someone else's dinner table.

The parallel to power markets is slim, but it drives home the point that when you see a price for electric power on the CAISO website it is AFTER all the buyers and sellers have submitted their bids and the market has settled. The price that clears the forecasted demand for electricity (unlike the grocer who doesn't need to forecast demand for beef because they will only sell beef to those who have made a

binding obligation to pay at least the clearing price) is settled before anyone sees the outcome for price. Price discovery is transparent and is after the fact. That's how an organized market works. If a buyer wants to purchase after the market clears, then he/she must find a seller willing to offer outside of the market. How? Probably by calling known sellers or buyers, one at a time, hoping for a favorable outcome.

Even my simple example gets caught up in nuances and particulars that do little to help the average consumer understand what is going on behind the switch plate or plug outlet. Further, the consumer only in rare instances alters his/her purchasing behavior based on electricity price. Outrage, yes, but behavior modification ... er, not so much if at all. Finally, the load-serving entity, let's say your local utility, buys all its anticipated demand at the settled price(s), and passes along the cost to its customers ... eventually. Until then, the utility must balance its costs against the revenue received from customers via its approved tariff.

Take a stab at the same exercise and send me your entry. This is actually an important element of our business too often ignored, IMHO.



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. To request more information about Energy GPS email sales@energygps.com.

Energy Efficiency and Demand Side Debate

I've been thinking a lot about the demand side of the electricity equation lately. Yes, the new shiny object in the news is the massive demand growth driven by A.I., onshoring industry, and EV growth. Might as well throw in a little crypto while we are at it. Those of us who were around back in the late 1990s remember a [Forbes](#) article portending explosive electricity demand due to the "internet" and the proliferation of personal computers. Those claims turned out to be spurious and were fully debunked by Jon [Koomy](#)'s careful research and analysis. The A.I.-driven demand projections seem more grounded in reality. But it seems like many forces may cause such demand to come in below the hype – interconnection of load and availability of supply may constrain the growth coupled with efficiencies within the datacenters may somewhat moderate the growth.

While the bullish load growth story is undoubtedly important, that's not where most of my "demand side" mental energy has been spent. As Energy GPS spends more time on long-term grid modeling, I find the models require jamming unheard of quantities of renewables plus storage on to the grid to meet the ever-increasing RPS goals while keeping the lights on. All the while, the models assume strong load growth and virtually zero price-sensitive demand. As regulators in Washington, Oregon, and California gradually remove more tools from the electricity supply toolbox (e.g., gas peakers), it sure would be great if we could pull out a demand-response Swiss army knife.

Severin Borenstein published an informative [blog](#) titled "Why Don't We Do It With Demand?" shortly after the blackouts in California four years ago. After describing the various supply options, Borenstein states: "But the fastest and cheapest contribution to keep supply in sync with demand when the weather is variable and much of generation is intermittent is to reshape demand to more closely track supply. California policymakers talk about demand responsiveness, but efforts so far have been pretty halfhearted."

Halfhearted is just about right. When the CAISO published its root cause analysis of the blackouts, the demand response resources provided about 60% of its contracted capacity. My local utility, Portland General Electric, just informed me that I will see a \$25 bill credit for allowing them to dial down my air conditioner on at least half of their attempts to do so this past summer. I qualified for the maximum credit, but I have no idea whether my house barely met the "half of the time" target or whether we crushed it. Surely, if people had better information they may do better.

In [last week's Burrito](#), Gary mentioned the [paper by his friend Ken Costello](#) which discusses how utility regulators have moved beyond their traditional role of protecting consumers from monopoly power to advancing social causes. Last week's Burrito described energy efficiency programs as part of the problem claiming, "ratepayer-subsidized EE programs are likely to fail a cost-benefit test." I started my electricity career as an energy policy researcher at Lawrence Berkeley Labs working on energy efficiency. I am familiar with the way Energy Trust of Oregon runs the state's energy efficiency programs for investor-owned utilities. They have a substantial planning and evaluation staff and subject their programs and measures to rigorous cost-benefit tests. The Adam Smithian assertion in the Burrito that the invisible hand of the perfectly efficient market should handle these things ignores substantial research in this area. In particular, consumers do not have perfect information, there are principle-agent issues with landlords and tenants (for example), and there is lack of access to financing. That's not to say that Ken's full article won't point out egregious examples of ill-conceived programs that are not cost-effective. But, on balance, the energy efficiency programs I'm familiar with (I don't consider rooftop solar as energy efficiency) have done a huge amount of good for the world and for ratepayers.

On balance, the energy efficiency programs I'm familiar with have done a huge amount of good for the world and for ratepayers.

I wish I could see a clearer path forward on the regulatory side to more effectively tap demand response. One only needs to look at Texas where they have thousands of MW of price-sensitive demand response as well as about one thousand MW of demand-side emergency response service. In typical Texas fashion, they have a clear set of rules and send a strong price signal. And it works!! Meanwhile, the states that are leading the energy transition push in the west eschew time-stamped price signals which reflect the true underlying value of energy, wires, and capacity at that time, instead, preferring command and control programs – I just don't see how we are going to get there with halfhearted efforts that mask price signals and only require me to show up 50 percent of the time.

Recipes and Shout Outs

Easy Soy Sauce Chicken with Chef [Laura Manz](#)

"I love this set-and-forget recipe for slow cooker Shoyu (soy sauce) chicken. Use a good quality Japanese shoyu, Aloha brand, or low-sodium soy sauce."

Prepare a cooking sauce with 2 cups soy sauce, 1 cup brown sugar, 1 Tbsp. of rice vinegar, ½ cup mirin, 1 Tbsp. of minced garlic, 2 Tbsp. of grated ginger, 1 tsp. of black pepper, ½ tsp. of white pepper. Place a whole chicken in the slow cooker; pour the sauce over the top; add 1 large bunch of chopped scallions. Cook on low for about 3 hours. Flip the chicken over and cook for another 3-4 hours until it's cooked through. Serve over rice with a side of stir-fried snow peas or very thinly sliced cabbage.



Thanks, Laura. I suppose the next few editions will have some of your favorite Thanksgiving dishes. Can't wait.

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Odds & Ends (_!_)



Below the belt are your stories if you are reading the red-meat edition. See you next week.

Gba

Life Philosophy

A boat docked in a tiny Mexican village. An American tourist complimented the Mexican fisherman on the quality of his fish and asked how long it took him to catch them.

"Not very long," answered the Mexican.

"But then, why didn't you stay out longer and catch more?" asked the American. The Mexican explained that his small catch was sufficient to meet his needs and those of his family.

The American asked, "But what do you do with the rest of your time?"

"I sleep late, fish a little, play with my children, and take a siesta with my wife. In the evenings, I go into the village to see my friends, have a few drinks, play the guitar, and sing a few songs. I have a full life."

The American interrupted, "I have an MBA from Harvard and I can help you! You should start by fishing longer every day. You can then sell the extra fish you catch. With the extra revenue, you can buy a bigger boat."

And after that?" asked the Mexican.

With the extra money the larger boat will bring, you can buy a second one and a third one and so on until you have an entire fleet of trawlers. Instead of selling your fish to a middleman, you can then negotiate directly with the processing plants and maybe even open your own plant. You can then leave this little village and move to Mexico City, Los Angeles, or even New York City! From there you can direct your huge new enterprise."

"How long would that take?" asked the Mexican.

"Twenty, perhaps twenty-five years," replied the American.

"And after that?"

"Afterwards? Well, my Friend, that's when it gets really interesting," answered the American, laughing. "When your business gets really big, you can start selling stocks and make millions!"

"Millions? Really? And after that?" said the Mexican.

"After that you'll be able to retire, live in a tiny village near the coast, sleep late, play with your children, catch a few fish, take a siesta with your wife and spend your evenings drinking and enjoying your friends."

And the moral of the story is: Know where you're going in life... you may already be there.

Med School Lecture

A professor was giving a lecture on "Involuntary Muscular Contractions" to his first-year medical students.

Realizing that this was not the most riveting subject, the Professor decided to lighten the mood slightly.

*He pointed to a young woman in the front row and said, "Do you know what your a*shole is doing while you're having an orgasm?"*

She replied, "He's probably golfing with his friends."