



**WEEKLY UPDATE**  
**JULY 25 - 31, 2021**

**COLAB**  
San Luis Obispo County



12th Annual

**DINNER &  
FUNDRAISER**

**2020-2021 What the Heck Happened?**  
**There has never been a more crucial time**  
**To Raise the Lantern of Liberty**

**THURSDAY, SEPTEMBER 9, 2021**  
**ALEX MADONNA EXPO CENTER**

**5:00 pm Social Hour, Open Bar**

**6:15 pm Filet Mignon Dinner including Wine**

**\$125 a person**

**\$1,250 a table, seating for 10**

For tickets:

On-Line Reservations & Payment can be made **HERE** at  
[www.colabslo.org/events.asp](http://www.colabslo.org/events.asp)

or

Mail your check to

COLAB SLO County, PO Box 13601, SLO, CA 93406

Cocktail Attire Optional

More info at (805) 548-0340 or [colabslo@gmail.com](mailto:colabslo@gmail.com)

## **THIS WEEK**

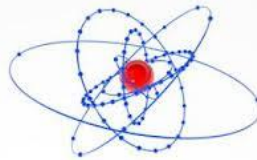
**NO BOS MEETING**

**OTHER AGENCIES DORMANT**

## **EMERGENT ISSUES**

**PROGRESSIVES/DEMS ORGANIZED TO HIJACK  
REDISTRICTING**

**MORE BUYERS' REMORSE ON DIABLO CLOSURE**



## **LAST WEEK**

**BOS MEETING**

**\$11 MILLION DEBT FOR LOS OSOS SEWER PLANT LEGAL CLAIM APPROVED**

**2020 CROP REPORT – COVID HURT A LITTLE – GRAPES DOWN 2<sup>ND</sup> YEAR**

**BOS REDISTRICTING – ACTION TO TAKE PLACE IN OCTOBER & NOVEMBER**

**PLANNING COMMISSION  
MANY ITEMS BUT NO BIG POLICY**

## **COLAB IN DEPTH**

**SEE PAGE 25**

### **THE AMERICAN DESCENT INTO MADNESS**

*America went from the freest country in the world in December 2019 to a repressive and frightening place by July 2021. How did that happen?*

**BY VICTOR DAVIS HANSON**

### **RECONSIDERING THE RISKS OF NUCLEAR POWER**

**BY JORDAN WILKERSON**  
**FIGURES BY SHANNON MCARDEL**

## **THIS WEEK'S HIGHLIGHTS**

**No Board of Supervisors Meeting on Tuesday, July 27, 2021 (Not Scheduled)**

The next meeting is scheduled for Tuesday, August 10, 2021.

## **EMERGENT ISSUES HIGHLIGHTS**

**PROGRESSIVES/DEMS/SOCIALISTS ORGANIZED TO HIJACK REDISTRICTING**

Several emails appeared last week which detail some of the efforts of the collective left to make sure that any conservative points of view are annihilated. Notwithstanding all the leftist rhetoric about fair voter elections and fair representation, the truth is that they are organizing a wide sweeping strategy to overwhelm the 3 conservative Supervisors.

The first email below was circulated to members and allies, soliciting them to speak during last week's first official redistricting hearing.

*On Mon, Jul 19, 2021 at 8:47 PM Ellen Beraud <[ellen@slocdp.org](mailto:ellen@slocdp.org)> wrote:*

*Hello everyone,*

*Many of us were reaching out to our connections in the community in the last week, which since the pandemic, may have taken some effort to get started!*

*Hopefully everyone got their own comments in either via email ([boardofsups@co.slo.ca.us](mailto:boardofsups@co.slo.ca.us)) or via the general public comment section on the County's webpage (<https://www.slocounty.ca.gov/Departments/Administrative-Office/Countywide-Projects-Programs/Redistricting.aspx>) or used their email address- [redistricting@co.slo.ca.us](mailto:redistricting@co.slo.ca.us)*

*I've updated our tracking form with updated phone numbers, added a few columns so we can keep track of our contacts.*

*[https://docs.google.com/spreadsheets/d/1YOzjjD6QvzTZwKRMa1oJgeFrWNlu\\_8E5T1meHI706Qs/edit?usp=https://docs.google.com/spreadsheets/d/1YOzjjD6QvzTZwKRMa1oJgeFrWNlu\\_8E5T1meHI706Qs/edit?usp=sharing=sharing](https://docs.google.com/spreadsheets/d/1YOzjjD6QvzTZwKRMa1oJgeFrWNlu_8E5T1meHI706Qs/edit?usp=https://docs.google.com/spreadsheets/d/1YOzjjD6QvzTZwKRMa1oJgeFrWNlu_8E5T1meHI706Qs/edit?usp=sharing=sharing)*

*You can enter your own notations into the spreadsheet any time, or we can enter them as we discuss the experience as a group at our next meeting on the 26th (the 4th Monday, our regular meeting). I also added a new section "People of Influence" so we can continue our conversations with them in the future (need to fill in contact info).*

*This is a valuable, confidential document- so please don't share outside of this group.*

***Is anyone able to monitor the BoS afternoon session to see how it goes? possibly take some notes?** I suppose we could view it later also- via archives.*

*I will be sending out a Zoom link for our meeting by the end of the week.  
Thanks again for everyone's efforts. The people we contacted appreciated it too!*

*Ellen*

*--*

*Ellen Beraud Vice Chair, SLOCDP 805-610-1321*

Beraud is a political carpet bagger who moved to the County a few years ago from San Francisco and ran unsuccessfully against Debbie Arnold for 5<sup>th</sup> District Supervisor. She is now Vice-Chair of the SLO County Democratic Party. The list of those who were solicited on this email is on the one hand what we would expect, as it includes just about every leftist organization in the County. On the other hand, it is very disturbing in that it includes a number of organizations which are supposed to be issue oriented and politically neutral. Worse yet, it contains organizations that receive county funding and that are required by their not-for-profit 501c(3) status to stay out of partisan politics.

It is not clear if inclusion of the names of some organizations is purely gratuitous by the SLO Democratic Party, or if their leaders are if not actual members or sympathizers. In any case, the list of those to whom the "confidential" email was sent is a Who's Who of the left in SLO

County. Note that from a political organizing standpoint, the Democratic Progressives include a very large number of interest groups and particularistic interests within their big tent. Republicans and conservatives could benefit from emulating this technique.

For example, some traditional Republicans have expressed contempt for the Tea Party as being too radical and too populist for their taste. Others dislike Donald Trump's Queens NY style brashness and egotism (necessary skills to be a developer in NYC).

	Contact	Email	Phone	Interest?	Contacted by	date	methods	outcome
2	AAUW	Marina Borgstrom	aauwslca@outlook.com					
3	AAUW - SLO			Yes				
4	AAUW - Atascadero	Christna Lefevre	latnerchristina@yahoo.com	Yes	Ellen-Christna	7/18	txt, email	?
5	AAUW - Pismo			Yes				
6	Alliance for Nuclear Responsibility	Rochell Becker (em)	rochelle@a4nr.org					(805) 704-1810
7	Atascadero Democratic Club	Dan Cook	dtcook@sbcglobal.net	Yes	Tom			805-434-0270
8	Atheists United SLO	Steve Arkowitz	info@auslo.org					
9	Bend the Arc SLO Coalition	Barry Price	info@bendthearc.us	Yes				559-284-0449
10	Bike Coalition	Tim Jout	tim@slodco.org	yes				805-546-1060
11	Bike County SLO	Rick Ellison	rick@bikeslocounty.org	Yes				(805) 547-2055
12	Biodiversity First!	Greg McMillan	greg@tyingment.com, critters@biodiversityfirst.net					
13	Cal Poly Cross Cultural	Beya Makekau	mcmonte@calpoly.edu					805-756-1153
14	Cal Poly College Democrats	Brian Kragh	cpslodems@gmail.com	Yes	Ellen	7/19	txt, call, email	forwardir
15	Cal Poly Gender Equity Center	Kirsten Vinther	kvinther@calpoly.edu					(805) 756-2600
16	Cal Poly Political Science Club	Anika Leithner	CalPolyPoliticalScience@gmail.com	Yes	Ask Brian Kragh (CP Dems club)			(805) 936-0417
17	Cal Poly Safer		safer@calpoly.edu	No				
18	CAPSLO	Blz Steinberg	hotline@capslo.org	No	Leslie Brown - sent email			805-544-4355
19	Central Coast Cannabis Council		communications@cccouncil.com	yes				805-244-5349
20	Central Coast Coalition for Undocumented	Catherine Trujillo	ccc.undocu@gmail.com	Yes				
21	Central Coast Labor Council	Jeremy Goldberg	jeremy@centralcoastlabor.org	Yes	Rita			805-987-0101
22	Child Development Resource Center	Michelle Holm	Michelle@childrensresource.org					(805) 544-0801
23	Citizen Climate Lobby - SLO		sankisobispo@citizensclimatelobby.org	Yes				619-437-7142
24	Close the Gap	Linda Seifert	alice@closethegapca.org, contact@linda707-386-9150	Yes	Ellen		VM, email	
25	Coalition to Protect SLO County		coprosloco@gmail.com					805-835-9610
26	Congregation Beth David	Shari Elshutz	sherie5678@aol.com					805-594-1999
27	Democrats of SLO Club	Mary Strobridge	demsofslc_pres@gmail.com	Yes				805-674-3652
28	Downtown SLO	Bettina Swigger	bettina@downtownslo.com		Ellen		VM, email	805-234-9677
29	Earth Day Alliance	Sandra Marshall	earthdayslo@gmail.com	Yes				805-544-8529
30	Ecologists	Stacey Hunt	stacey@ecologists.org					805-548-0597
31	EcoSLO	Marty A. Cienski	info@ecoslo.org					805-544-1777
32	El Moro Democratic Club	Lori Audill	mustangdem@gmail.com	Yes	Ellen Boykin	7/18	email	(805) 550-3278
33	Elks Club- AG		elks2504@gmail.com					(805) 489-2504
34	Empower Poly Coalition	Erika Wilson	empowercoalition@gmail.com, ewilson15@calpoly.edu					
35	Green Party	Peggy Koteen	pkoteen@aol.com	Yes				805-441-5897

For example, does the Community Action Program of SLO (CAPSLO) actively support and confer with the SLO Dems and progressives? After all, the email says this is a 'confidential' strategic communication. CAPSLO receives considerable County funding. Are the CAPSLO leaders trusted confidants and/or agents of the SLO Democratic Party?





26	HOPE- House of Pride and Equity		info@houseofprideandequality.org	805-316-1356	
27	Indivisible Rapid Response Team SLO	John Lamb	jamb_1@sbcglobal.net		Yes
28	Islamic Society of SLO	Nha Kulkallah	nohaty@gmail.com	805-541-6298	
29	Latino Outreach Council		latinooutreachcouncil@gmail.com	805-529-1120	
40	League of Women Voters	Carrie Pardo	pardocarrie@gmail.com	805-528-2755	
41	Libertarian Party of San Luis Obispo	Jon Prosser	grossengca.org	805-799-1	
42	Lonely Liberals- Paso Robles	Susan Robinson	susan@danclingdog.biz	805-712-4	
43	Mission Community Services		info@mcsocorp.org	(805) 595	
44	Mosque of Nasreen & Istoc		info@mosqueofnasreen.org	805-787-0	
45	Mothers for Peace- SLO	Linda Sealey	lindasealey@gmail.com	805-234-1	
46	Muslim Student Association	Omar Sharab	osharab@calpoly.edu	408-203-9	
47	NAACP SLO Chapter	Stephen Vines	naacpslocty@gmail.com	805-619-5	
48	Northern Chumash Tribal Council	Violet Sage Walker	Violetsagewalker@gmail.com	805-801-4	
49	People of Faith for Justice	Gina Whitaker	uuspirit@me.com	805-305-0	
50	Paso Robles Democratic Club				EB2
51	Planned Parenthood Central Coast Action	Kyra Solis	info@ppcentralcoast.org	805-729-8723	
52	Planned Parenthood Generation Action	Rachal Agarpo	publicaffairs@ppsent.org	916-316-9128	
53	Queer Crowd	Reese Galido	resist@thequeercrowd.com		Yes
54	Race Matters SLO	Courtney Halle	race.matters.slo@gmail.com	805-242-6242	Yes
55	REACH	Melissa James	melissa@REACHcentralcoast.org		Yes
56	RIS	Dave Juhnke	contact@RIS@slo.org	805-226-5400	
57	Santa Lucia Sierra Club	Andrew Christie	siemackclub@gmail.com	805-543-8717	Yes
58	Santa Maria Democrats	Beth Schneider	dcamv@dcamv.net	(805) 349-2708	
59	Shasta PAC	Dawn Addis	dawnjaddis@gmail.com		
60	SLO Chambers of Commerce	Jim Dantona (Molly I)	jim@slochamber.org	805-766-2761	Yes Ellen
61	SLO Climate Coalition	Eric Vieum	eric@carbonfeasts.org		Yes Rita
62	SLO Comm. Status of Women	Andrea Chemik	andrea.chemikova@gmail.com	805) 788-3406	Yes
63	SLO County Progressives	paden mcneill	paden@flipthewest.com	919-360-6177	Yes
64	SLO Queerdos		sloqueerdos@gmail.com	415-583-5079	
65	SLOCDP	Rita Casaverde	rita@slocdp.org	805-546-8499	
66	South County Democratic Club	Cheryl Storton	cherylstorton@gmail.com	(805) 718-4731	EB2
67	Stonewall Democrats	Jane Lloyd	stonewalldem@slo@gmail.com	213-8649232	
68	The Gala Pride and Diversity Center	Michelle Cal	email@galacc.org	805-541-4252	Yes
69	Together We Will 5 Cities		cherylstorton@gmail.com		

The League of women voters is supposed to be a non-partisan good government group. Their inclusion on this list reveals their real MO.

What about REACH, which is supposed to be an apolitical economic development not-for-profit created by the business community? It is receiving hundreds of thousands of dollars from the County each year to figure out how to replace the economic losses which will occur as Diablo closes. Are they happy to be on this list? Are they playing footsie with many of these ultra-radical leftist organizations?

What about the SLO Chamber of Commerce?



74	Turko Semmes	Turko Semmes	turkosemmes@gmail.com	907-242-3021		
75	Unitarian Universalist Fellowship	Jo Ernest	office.uustio@gmail.com	805-439-0188		
76	Women in the Pipeline SLO	Michelle Shoresman	mshoresman@hotmail.com		Yes	Rita
77	Women' March SLO	Andrea Chmelik	andrea.chmelikova@gmail.com	805-316-1640	Yes	
78	Womenade	Sandy Richardson	sandy@slowomenade.org			
79						
80	People of Influence:					
81	Heidi Harmon (SLO city)					Tom
82	Pandora Nash (Los Osos)					Tom
83	Evelyn Delany (D3)					Tom
84	Walter Heath (D2)					Tom
85	Jimmy Paulding (D4)					Tom
86	John Alan Connerly (D4)					Tom
87	Susan Funk (D5)					Ellen
88	Victoria Carranza (D5)					Ellen
89	Michael Letner (D5) subject matter expert					Ellen
90	Erica Stewart (SLO City)					Ellen
91	Christina Audei-Coreros					Ellen
92						Ellen
93						Ellen

You would expect the names under people of influence to be helping.

After the hearing on Tuesday, another email appeared which congratulates those who spoke. It also pointed out in congratulatory tone that the conservatives didn't have any speakers.

**from:** Ellen Boykin <[ellenb695@gmail.com](mailto:ellenb695@gmail.com)>

**Sent:** Tuesday, July 20, 2021 3:58 PM

**To:** Leslie Brown <[leslieob99@gmail.com](mailto:leslieob99@gmail.com)>

**Cc:** Ellen Beraud <[ellen@slocdp.org](mailto:ellen@slocdp.org)>; Lori Caudill <[mustangdem@gmail.com](mailto:mustangdem@gmail.com)>; John Alan Connerley <[john@slocdp.org](mailto:john@slocdp.org)>; Laura Parker <[lparker1@gmail.com](mailto:lparker1@gmail.com)>; Johnathan Lau <[twistedbonsaiproductions@gmail.com](mailto:twistedbonsaiproductions@gmail.com)>; [pardocarrie@gmail.com](mailto:pardocarrie@gmail.com); [stephentraveler@hotmail.com](mailto:stephentraveler@hotmail.com); [tfdieseldude14@gmail.com](mailto:tfdieseldude14@gmail.com); [ljdavis@thegrid.net](mailto:ljdavis@thegrid.net); Board of Supervisors <[Boardofsups@co.slo.ca.us](mailto:Boardofsups@co.slo.ca.us)>

**Subject:** [EXT]Re: Thank you for your efforts!

**ATTENTION:** This email originated from outside the County's network. Use caution when opening attachments or links.

I was able to watch about 45-50 minutes today, mostly the end of the Board's comments and all the speakers, both in-person and zoom. I am booked for the rest of the day but will add my notes tomorrow. Quick impressions: Charles Varni presented solid reasons for keeping Oceano/Nipomo/AG in 1 district, as did folks who followed him. Eric Greening (not sure of spelling, sorry!) made good arguments for making all of CP in 1 district. Micheal Lettner got into the nitty gritty of the data details, demanding deep accountability. The translation of Rita's comments was kind of botched. First, they weren't translating, then the translator kept say "she said ..." rather than doing an exact translation.

I'll provide more tomorrow.

Thanks,

Ellen Boykin

On Tue, Jul 20, 2021 at 3:32 PM Leslie Brown <[leslieob99@gmail.com](mailto:leslieob99@gmail.com)> wrote:

Hi All - here are my notes from today's meeting Board Hearing. Please excuse typos - my clerical skills are not my strength :-).

No motion was made to decide on a **definition for Communities of Interest**. The presentation from the guy at Redistricting Partners was good and useful for all to watch when you can. Also there are a few slides I note toward the end, with data on the current districts, that we should look at.

I would say our outreach effort worked pretty well. There were really no speakers countering our points. Time will tell if they come out of the woodwork once the next hearings are held.

I may have missed a few things - but I think I got almost everything said,

Leslie

Watch this one which they will use to try to gerrymander the districts in their favor.

You conservative termites who live in the wall are to be fumigated on this issue. So much for the idea that redistricting should be an apolitical objective process free from manipulation.

**More Doubt About Closing Diablo – Sacramento Bee Admonishes PUC for not Facilitating Replacement Energy**

## RECONSIDERING THE RISKS OF NUCLEAR POWER

(SEE RELATED ARTICLE ON PAGE 24)

All of sudden some scientists, environmentalists, and the left media have belatedly realized that closure of Diablo will result in much higher CO<sub>2</sub> emissions not to mention greater risks of blackouts and periodic energy use restrictions.

Sunday's extensive SLO Tribune Editorial under the headline commands you to just suck it up:

There are ambitious plans to transform the county into a green energy hub. An offshore wind farm and a large battery storage facility in Morro Bay are strong possibilities, though both are in the early planning stages.

In other words, the county is moving on, though nuclear energy proponents — including some who live hundreds of miles away — are not.

## Diablo Canyon is closing — and California will just have to adjust

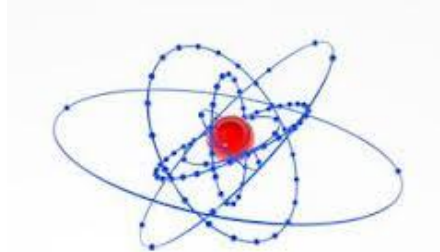
You deplorables in SLO County better just accept the situation and hope that battery farms and off shore windmills will generate enough career benefitted head of household jobs



to replace the 2000 which will be lost when the plant is fully closed and dismantled. While pretending that these new facilities will be a solution, ( once constructed, if ever, they will use few employees and the windmills will be in Federal waters and not locally taxable), the Pollyannaish Tribune editors have absolutely no recommendations for how to sustain the economy. .

Instead of pressuring a small California community to continue hosting a nuclear power plant that has generated safety concerns for decades, instigators of this misguided “save Diablo” effort should change their focus.

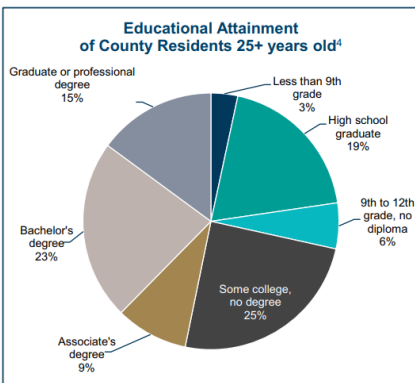
Support San Luis Obispo County’s efforts to become a leader in renewable energy. Let the doors shut on California’s last nuclear power plant.



**The editorial above ends with a call to shut the power plant.** Just exactly, what are the components of becoming a “green energy hub” which will generate 2,000 career benefited head of household jobs beginning in 2024? Where will these facilities be sited and will they be allowed under the County’s, the cities’, and Coastal Commission’s schemes of land use regulation. As we have pointed out, the Coastal Commission has rejected a small boutique hotel in Cayucos. How the hell are you going to put a massive battery storage facility across from the waterfront in Morro Bay?

In fact is there any city or county in the US which is a “green energy hub” generating head of household jobs on a large scale to which proponents can point? Perhaps it is Sunnyvale, where they make Teslas or Carson City, where they make Tesla batteries. Where could you obtain a permit in SLO County for a 1 million square foot electric car factory next to the railroad and Highway 101, which would be the key requisites. Of course, there is nowhere you could get permits to build enough workforce housing for the workers.

Just exactly which green energy components will we make here on a sufficient scale to replace our industrial jobs that are all going away?



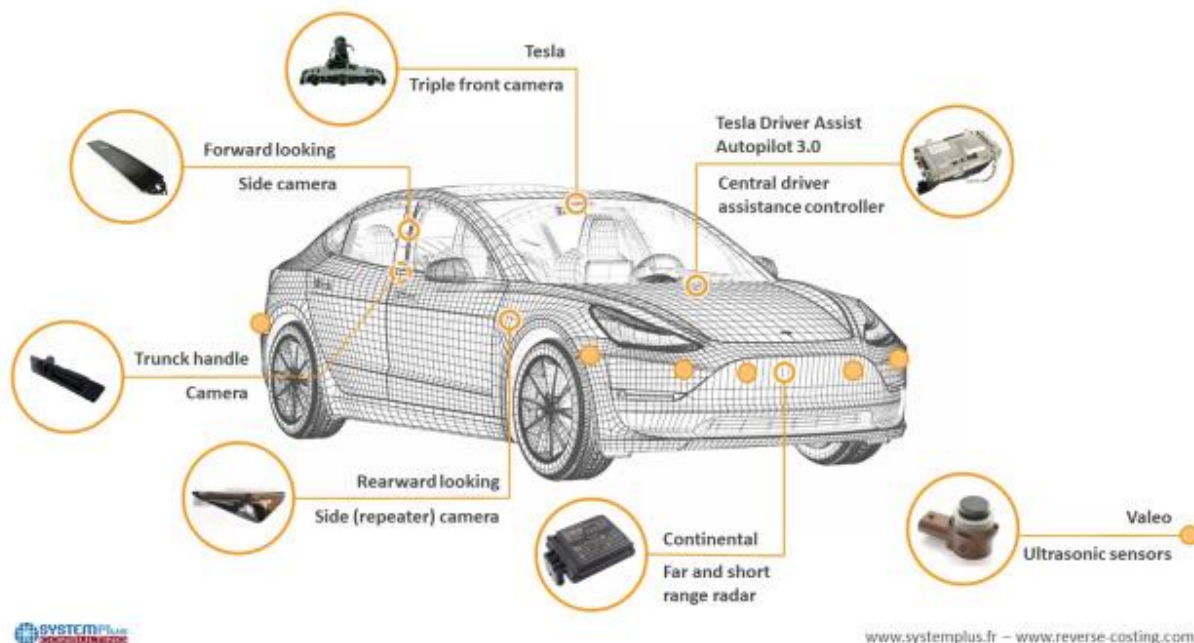
By the way, only 38% of the county population has a bachelor’s degree or advanced degree. Where are the other 62% going to find head of household Jobs?

Could facilities that make some of the tech components for electric cars be manufactured here? Would the local governments allow facilities of sufficient scale?

Who is working on this? Or is it all coming from China?

## Tesla Model 3 Sensors and Computing - analyzed by System Plus Consulting

Source: Automotive Teardown Tracks, 2020



Interestingly, the Sacramento Bee takes a bit more of a balanced and factual approach (see below). The writer appears to be more analytical and informed than the provincial wokesters at the Trib. Note that the Bee editorial appeared on Friday, July 23, 2021, while the Tribune editorial appeared on Sunday, July 25, 2021. Wonder if the Trib bunch were scrambling around on Saturday? It doesn't appear that they had time to do any checking with PG&E, local officials, or proponents of the plant's retention.

Normally, editorials follow news articles and are based on the supposedly factual content of those articles.

## To fulfill promises of Diablo Canyon closure, California ignores fossil fuel emissions

BY THE SACRAMENTO BEE EDITORIAL BOARD

JULY 23, 2021



**This Nov. 3, 2008 photo shows one of Pacific Gas and Electric's Diablo Canyon Power Plant's nuclear reactors in Avila Beach, Calif. MICHAEL MARIANT AP**

*The pitch to close PG&E's Diablo Canyon nuclear power plant was hard to refuse. It sold California on the best version of itself, where environmentalism and public safety harmonized with our goals for powering the grid exclusively with renewable sources.*

*The twin-reactor facility along the San Luis Obispo coast powers millions of homes, and the lost output is supposed to be substituted with sources that do not emit greenhouse gases. That was a highlight of the agreement with labor and environmental groups when [PG&E announced in 2016 that it would not renew the plant's license](#) and decommission it by 2025. It was also a key selling point for Californians outside the SLO community.*

*Five years later, that promise has become obsolete. As California absorbs the constant gut punches from global warming's quickening pace, the added stress on the power grid has increased the state's reliance on fossil fuels — even with Diablo Canyon's 2,200 megawatts of energy still online. California is facing unnerving realities with its power supply that are undermining the transition to a 100% green energy grid by 2045.*

*So far, the Public Utilities Commission, California's utility regulator, appears more concerned with replacing energy than reducing dangerous greenhouse gases.*

## **CRUEL TWIST**

*Recurring heat waves have hiked electricity demand statewide to the point where we experienced [rolling blackouts last summer](#) for the first time in almost two decades. That's forced California to burn cheaper carbon-emitting sources to keep the lights on. [Natural gas accounted for over 48%](#) of in-state power generation last year, up from 43% in 2019, according to the California Energy Commission. Roughly 29% of imported electricity was either natural gas or an unspecified non-renewable.*

*The extreme weather this summer has only deepened our dependence on it. About 28% of the state's energy supply is imported from other states, and the vulnerability of that approach was*

exposed earlier this month when the [Bootleg Fire in Oregon threatened transmission lines](#) that provide 4,000 megawatts of power. Gov. Gavin Newsom issued an [emergency proclamation](#) allowing power plants to “generate as much power as possible” to avoid catastrophe as a historic heat wave scorched the West Coast.

In a cruel twist, California needed to burn excess fossil fuels to meet the electricity demand caused by extreme heat that experts say would have been [impossible without climate change](#). That’s right — we need fossil fuels to protect us from the environmental dangers that [grew more severe](#) because of our over-reliance on them.

PUC’s solution over the last year has been to expand the state’s energy capacity. Last year’s blackouts were primarily caused by the rapid drop in solar power once the sun went down and temperatures remained high. To address that, an estimated 2,000 of the 3,500 megawatts of new energy [capacity coming online by August](#) is from industrial-scale batteries that store surplus solar.

Still, that doesn’t address where that power is coming from, and that’s why the PUC’s decisions right now are critical. The utility regulator approved a landmark order last month, requiring California’s power companies to [bring 11,500 megawatts of new electricity resources online](#) between 2023 and 2026. Replacing Diablo Canyon’s supply and fulfilling its green energy promise was at the heart of the order.

## **STOP DEALING IN DECEPTION**

Again, however, the [focus was on capacity](#) and ensuring the reliability of the grid. Zero-emission sources are only required for 3,500 megawatts of the total order, which essentially covers Diablo Canyon. Mark Specht, senior energy analyst for the Union of Concerned Scientists, said companies could decide to “buy a bunch of standalone energy storage, which doesn’t actually generate clean electricity.” Until additional requirements are laid out, the door is still open for fossil fuels to play a role.

“There’s really no guarantee that this procurement order will ratchet down greenhouse gas emissions to the extent that we need to,” Specht said. “I’m optimistic. I’m hopeful (the PUC) will address it. But the jury’s still out.”

The closure of Diablo Canyon and the driving forces behind the decommission project show that California’s ambitions are once again being humbled by the constraints of reality. The prospects of delivering on the promises of the 2016 agreement have sharply divided scientists, analysts and think tanks around the state.

*This Editorial Board recently met with the Breakthrough Institute, an organization that argues that a carbon-free energy producer like Diablo Canyon needs to remain open. For decades, we’ve been told that closing nuclear plants is a good thing, yet a [growing body of research shows](#) that it’s far safer and cleaner than coal and gas. State regulators are failing to eliminate fossil fuels from California’s energy stock, and with alternatives lacking in scale, Breakthrough’s experts believe a more realistic path to achieving California’s climate goals is by salvaging our last nuclear facility.*



*We remain hopeful that California won't need such a drastic reversal. But the window to act is rapidly closing. While the procurement order last month does try to offset carbon emissions, it still makes the elimination of fossil fuels feel like a pipe dream.*

*PUC must add ambitious greenhouse gas reduction targets to the procurement order. And California leaders need to streamline production of solar and wind farms to harness our most abundant renewable sources.*

*Increased greenhouse gas emissions tend to follow the closing of nuclear plants, so what California is trying to achieve with Diablo Canyon would be groundbreaking. But if state leaders want to pretend that simply adding clean energy capacity is the same thing as producing it, they're dealing in deception. We aren't going to be fooled.*

*The first reactor at Diablo Canyon closes in three years. The PUC has no room for error, and neither does our warming planet.*

**Perfect Storm:** In the end PG&E is still a private sector company owned by its stockholders. It has been clear since 2016 that it determined to close the plant because pending requirements to keep it open are too costly. The State requirement for twice-through cooling of the return ocean water would cost \$12 billion dollars. Moreover, and even after PG&E was forced agree to conduct \$100 million of seismic studies, people complained about the impact of the studies on fish and marine mammals.

Meanwhile, and as we have reported extensively, the State-enabled community choice energy authorities have savaged PG&E's customer base while forcing PG&E to serve those homes with its facilities and electricity.

Additionally, PG&E has been scapegoated on the large urban/wildland intermix fires that invaded urban areas. The fact that brush clearing and thinning have been prohibited, counties and cities have not protected their boundaries with firebreaks, and zoning has permitted development of high risk forested or brush covered areas. Likewise, the counties and cities have given these approvals but have not provided firebreaks and peripheral defensive high-capacity water systems. This has all been suppressed. Simultaneously PG&E was saddled with State requirements to acquire very expensive so called green energy which diverted billions in operating funds from maintenance.

Questions then arise:

Could some other entity seek relicensing to operate the plant?

What is it worth unlicensed?

What is it worth licensed?

Would the State recognize that twice through cooling is simply an artificial barrier? The current system provides no harm to adjacent sea life, and in fact the warmer water at the outfall attracts all kinds of fish, sea anemones, and crustaceans, which thrive.

One thing is clear. If the permitting for demolition of the plant is not timely approved, PG&E will mothball it for 40 or 50 years until the residual radiation in the fuel cools and the process is much less costly. That will mean no temporary demolition jobs to soften the economic blow for a few years. It will also mean that all the schemes of various interest groups for parks and green energy institutes will be on ice.

It appears that in essence the accumulative outcomes of government policy and inaction at all levels could result in the worst outcomes economically, GHG reduction wise, and for the availability and cost of electrical energy.

## LAST WEEK'S HIGHLIGHTS

### Board of Supervisors Meeting of Tuesday, July 20, 2021 (Completed)

**In General:** Except for the redistricting hearing in the afternoon, it was a short, uncontroversial, and dissatisfying meeting.

**Item 15 - County Increases Debt to Fund Los Osos Sewer System Mistake.** The Debt was approved unanimously on the consent calendar without comment or question. County Counsel probably warned the Board not to comment, as it was a litigation matter, but the litigation has now been over for 4 years. What's the risk?

**Background:** Back in 2018 the County approved a \$9,950,000 claim settlement by one of the construction companies (ARB) on the \$183 million project. ARB was one of 2 contractors installing the collection and recycled water portion of the project. This portion included the sewer pipes under the roads necessary to connect all the homes and businesses to the plant. ARB sued the County for \$23 million to cover cost overruns, which it asserted were caused by faulty design work by the firm that designed the project - Camp, Dresser, and McKee. Also involved was the firm HDR, which was paid at least \$9.7 million to supervise the project. In the end the issue was settled for the \$9.95 million. The County proffered the excuse that it was preferable to settle rather than go through expensive litigation.

To hand over nearly \$10 million dollars, the County must have thought it had some culpability. The Board and others made some noise about recovering the cost from the design firms, but nothing has ever transpired to indicate that this was a serious effort. The County was aware of the problem throughout the construction period, as ARB continuously and accumulatively filed change orders, which ultimately added up to the \$15 for the original claim. It was then escalated for interest and delays.

The sewer treatment plant budget did not have sufficient reserves to cover this cost because all the reserves had already been expended for other change orders. It was determined to provide the Sewer Treatment fund with a \$9,950,000 loan to cover the cost. The loan was provided by tapping the Solar Plant Mitigation Designation. This is a fund that the County required the developers of the 2 solar plants in the eastern County to set up to offset the current and future County costs that would occur due to traffic, fire hazard, population growth, and other impacts resulting from the construction and operation of the 2 large solar plants. At one point this designation contained over \$15 million dollars. Some was used during the construction phase, and some has been expended for small projects in the Carrizo Plain area.

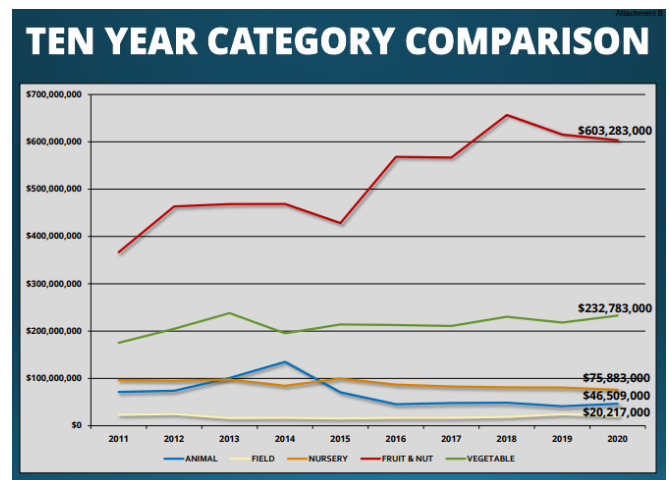
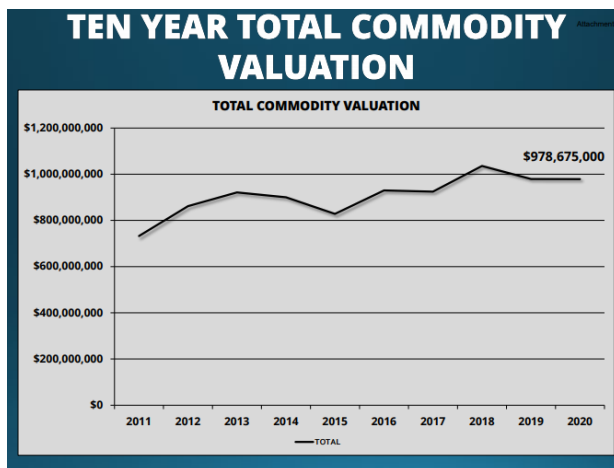
The plant was financed by debt, which included State notes, a United States Department of Agriculture loan, revenue bonds, and County “due diligence advances.”

After interest charges and other adjustments, the County will be reimbursing itself and the Solar Plant Mitigation Designation.

At this point and all in, the County must reimburse the Solar Plant Mitigation Designation in the amount of \$10,060,949 and the General Fund by \$1,605,363. To generate the actual cash, the County has renegotiated its \$43.4 million loan from the state (one of the financing sources as noted above) from \$42,337,416 to \$53,360,880, which will result in a \$542,069 increase to the debt service payment from \$1,605,363 to \$2,147,432. This will ultimately be passed through to the Los Osos residents as part of their annual sewer assessments.

Shortly after this debacle began to unfold, County Public Works Director Paavo Ogren announced he was resigning to take a job with a sewer district. After various job changes, he was appointed last week as the Director of the Integrated Waste Management Authority.

**Item 20 - 2020 Annual Crop Report.** The Report, which was received after a presentation, details the production status of major crops and livestock produced in the County. The total declined slightly due to COVID.



Cannabis is not considered an official agricultural crop and is thus not reported. Notwithstanding the legal and bureaucratic niceties, it would be interesting to see how it stacks up. After all, it is a plant that grows in the ground or a hydroponic facility. Hemp, which is an Ag crop, did not show up on the field crops list.

**Item 25 - Status and Legal Requirements of Supervisorial Redistricting and Public Hearing.** The Board received an hour-long PowerPoint presentation from its redistricting consultant, which outlined the legal requirements and provided a good deal of information on the nuances of the process. Key learnings included:

1. Although the districts are supposed to be as equal in population as possible, the law provides 10% accumulative leeway. Thus, if the Board wanted to make 1 or 2 districts larger than the average and 1 or 2 smaller than the average, they can do it (as long as they don't exceed an overall 10 % variance).

2. Communities of interest – cities, census designated places, racial minorities, areas containing many young or old people, ag areas, etc., are not to be divided whenever possible. After listening to examples, it is clear that this is an area which is very subjective and can be manipulated.

3. The census data that is coming late in September will be adjusted by the State to remove State incarcerated persons (the State Prison) from the count. A recent State law assigns them to their last known address prior to arrest and conviction. This could remove thousands, as most are probably from LA, the Bay Area, and the Inland Empire. Perhaps Gibson will lose so many that he could be assigned all or most of the City of SLO.

4. In the end and subject to meeting the requirements generally, the Board conservative majority should be able to control this one. They just need to stick together.

Another group of partisans from the South County is squawking that Oceano and Nipomo, and Arroyo Grande are a “community of interest.” This is simply a partisan ploy to oust Lunn Compton as 4<sup>th</sup> District Supervisor in the next election.

**At the Meeting:** Clearly the SLO progressives are organizing to raise hell and must be countered by our allies at meetings and other venues. Heidi Harmon, Susan Funk, Michel Laner, Rita Casaverde, Eileen Villa, and other leftist leaders all spoke at the hearing. Harmon wants the City to be the center point of pie shaped districts so that it has at least 3 supervisors. It's not clear how this meets the prohibition of dividing of communities of interest such as cities. Instead, the Mayor wants to have disproportionate interest over rural residents who want nothing to do with the City.

Another group of partisans from the South County is squawking that Oceano, Nipomo, and Arroyo Grande are a “community of interest.” This is simply a partisan ploy to oust Lynn Compton as 4<sup>th</sup> District Supervisor in the next election. There are thousands of low- and moderate-income people who live in manufactured housing next to the dunes. There are also



thousands of wealthy retirees who live in Monarch Dunes, Trilogy, and Black Lake who oppose job creating industries such as Phillips 66 and Oceano Dunes recreation. How are these two groups a community of interest.



Note that their avowed purpose is to foment (power) a “Political Revolution”

**Background:** Redistricting is one of the most important and far-reaching functions of a board of supervisors. Underneath the day to day policy and managerial issues that appear on the agendas and in the media are the fundamental value choices that are played out as board members decide each issue incrementally over time.

**The Redistricting Process and Time Constraints:** During this meeting the Board received a long PowerPoint presentation (68 slides) from its redistricting consultants that outlines the State and Constitutional requirements and provides illustrations of how the key requirements work. The top five are included in the list below:

*Under the California Elections Code, new supervisorial districts must be redrawn using the following criteria, in order of priority:*

- 1. To the extent practicable, districts must be geographically contiguous.*
- 2. To the extent practicable, districts must maintain the geographic integrity of neighborhoods and communities of interest.*
- 3. To the extent practicable, districts must minimize division of cities or census designated places.*
- 4. Boundaries must be easily identifiable and, if possible, bound by natural/artificial barriers.*
- 5. To the extent practicable, districts must not favor or discriminate against any political party.*

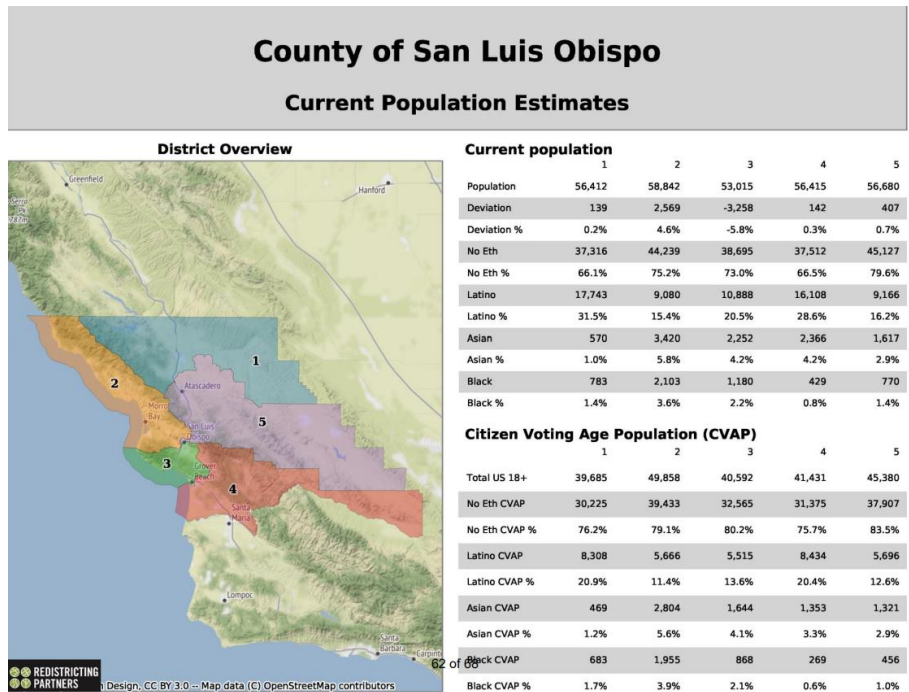
One of the slides presented the Board’s adopted schedule for the process:

# San Luis Obispo County Redistricting

## Timeline for Upcoming Meetings

- July 20<sup>th</sup>      First Board of Supervisors Meeting
- Sept. 23<sup>rd</sup>      Probable Release of final Census Data
- Oct. 26<sup>th</sup>      Second Board of Supervisors Meeting
- Nov. 19<sup>th</sup>      Third Board of Supervisors Meeting
- Nov. 30<sup>th</sup>      Fourth Board of Supervisors Meeting
- Dec. 14<sup>th</sup>      Fifth Board of Supervisors Meeting

The current population of the districts is illustrated in the slide below:



A major concern is that the census data on which the redistricting relies will not be delivered to the State by the Federal Census Bureau until September 24<sup>th</sup>. The State then has 30 days to make adjustments and deliver it to the counties. Normally the data is delivered in April of a redistricting year. The entire process must be completed by December 15, 2021. This means that it will be very compressed process.

The Clerk Recorder’s office has a software program which allows modeling of different shaped districts and which calculates the population. Citizens and officials should be able to make appointments to test their theories. During the last redistricting in 2011, Templeton was split up, violating the “no dividing of census designated places” goal. A Templeton resident sued and

carried the matter through to the Court of Appeals, which ruled in the County's favor. It allowed District 2 to contain substantially more population than the others (per the table on the page above).

### **Planning Commission Meeting of Thursday, July 22, 2021 (Completed)**

The agenda was busy and contained requests for project approval extensions, a cell tower, a Peoples Self Help affordable project in San Miguel, and a Peoples Self Help affordable project in Nipomo. There were also 12 market rate single family homes proposed for Teft Street in Nipomo. Additionally, a cannabis dispensary proposed at 660 South Frontage Road in Nipomo was approved. It has one of the largest delivery truck fleets in the County. None of these projects seem to contain any large policy issues impacting the overall County situation.

## **COLAB IN DEPTH**

**IN FIGHTING THE TROUBLESOME, LOCAL DAY-TO-DAY ASSAULTS ON OUR FREEDOM AND PROPERTY, IT IS ALSO IMPORTANT TO KEEP IN MIND THE LARGER UNDERLYING IDEOLOGICAL, POLITICAL, AND ECONOMIC CAUSES**

## **THE AMERICAN DESCENT INTO MADNESS**

*America went from the freest country in the world in December 2019 to a repressive and frightening place by July 2021. How did that happen?*

**BY VICTOR DAVIS HANSON**

Nations have often gone mad in a matter of months. The French abandoned their supposedly idealistic revolutionary project and turned it into a monstrous hell for a year between July 1793 and 1794. After the election of November 1860, in a matter of weeks, Americans went from thinking secession was taboo to visions of killing the greatest number of their fellow citizens on both sides of the Mason-Dixon line. Mao's China went from a failed communist state to the ninth circle of Dante's Inferno, when he unleashed the Cultural Revolution in 1966.

In the last six months, we have seen absurdities never quite witnessed in modern America. Madness, not politics, defines it. There are three characteristics of all these upheavals. One, the events are unsustainable. They will either cease or they will destroy the nation, at least as we know it. Two, the law has largely been rendered meaningless. Three, left-wing political agendas justify any means necessary to achieve them.

## Citizenship as Mere Residency

Two million people are anticipated to cross the southern border, *en masse* and illegally, over a 12-month period. If that absurdity were to continue, we would be adding the equivalent of a major U.S. city every year. The new arrivals have three things in common: Their first act was to break U.S. law by entering the country. Their second was to break the law by residing here illegally. And their third will be to find false identification or other illegal means to continue breaking the law. One does not arrive as a guest in a foreign country and immediately violate the laws of his host—unless one holds those laws in contempt.

Arrivals now cross a border that had been virtually closed to illegal immigration by January 2021. In the cynical and immoral logic of illegal immigration (that cares little for the concerns either of would-be legal immigrants or U.S. citizens), arrivals will be dependent upon the state and thus become constituents of progressives who engineered their arrival.

Yet the issue is not illegal immigration *per se*. If protests were to continue in Cuba, and 1 million Cubans boated to Miami, the Biden Administration would stop the influx, in terror that so many anti-Communists might tip Florida red forever.

How strange that the U.S. government is considering going door-to-door to bully the unvaccinated, even as it ignores the daily influx of thousands from Mexico and Latin America, without worrying whether they are carrying or vaccinated for COVID-19. Meanwhile, the progressive media shrilly warns that the new Delta Variant of the virus is exploding south of the border. Note how the administration applies standards to its own citizens that it does not apply to foreign nationals illegally entering the country.

## Crime as Construct

Crime is another current absurdity. There exists a mini-industry of internet videos depicting young people, disproportionately African American males, stealing luxury goods from Neiman-Marcus in San Francisco, clearing a shelf from a Walgreens with impunity, or assaulting Asian Americans. These iconic moments may be unrepresentative of reality, but given the mass transfers and retirements of police, and the frightening statistics of large increases in violent crime in certain cities, the popular conception is now entrenched that it is dangerous to walk in our major metropolises, either by day or at night. Chicago has turned into Tombstone or Dodge City in the popular imagination.

Scarier still is the realization that if one is robbed, assaulted, or finds one's car vandalized, it is near certain the miscreant will never be held to account. Either the police have pulled back and find arrests of criminals a lose-lose situation, or radical big-city district attorneys see the law as a critical legal theory construct, and thus will not enforce it. Or the criminal will be arrested and released within hours.

So a subculture has developed among Americans, of passing information about where in the country it is safe, where it is not, and where one can go, where one cannot. This is clearly not America, but something bizarre out of Sao Paulo, Durban, or Caracas.



## The Campus Con

The universities over the past 40 years were intolerant, hard Left, and increasingly anti-constitutional. But they also fostered a golden-goose confidence scheme that administrators dared not injure, given the precious eggs of federally guaranteed student loans that ensured zero academic accountability and sent tuition costs into the stratosphere. There was an unquestioned supposition that a degree of any sort, of any major, was the ticket to American success. In cynical fashion, we shrugged that most prestigious institutions were little more than cattle branders that stamped graduates with imprints that gave them unearned privilege for life.

Yet universities now have both hands around their golden goose's neck and are determined to strangle it. The public is becoming repulsed at the woke McCarthyite culture on campus, and will be more turned off when campuses open in the fall in 2019-style. At the Ivy League or major state university campuses, admissions are no longer based on proportional representation in the context of affirmative action, but are defined increasingly by a reparatory character.

Grades, test scores, and “activities” of the white and Asian male college applicants are growing less relevant. Only “privileged” white males with sports skills, connections, or families who give lots of money are exempt from the new racial reparation quotas. The new woke admission policy ironically is targeting the liberal suburban professional family, the Left's constituency, whose lives are so fixated on whether children graduate from Yale, Princeton, Harvard, Stanford, or like campuses.

Given the radical change in incoming student profiles, the faculty increasingly will have to choose between accusations of racism, or grading regardless of actual performance, given thousands of new enrollees do not meet the entrance standards of just two or three years ago. Remember that since wokeism was always a top-down elite industry, minority progressives still will fight it out with white leftists in intramural scraps over titles, salaries, and managerial posts.

The public has had enough. For the first time, people will ask why are we subsidizing student loans, why are multibillion-dollar endowments not taxed, and why do we think a B.A. in sociology or psychology or gender studies is an “investment” that prepares anyone for anything?

## Commissars and Jacobins

The critical race theory craze is reaching peak woke, or is already on the downslope. No complex and sophisticated society is sustainable with a Maoist creed of cannibalizing citizens for thought crimes. Commissars do not produce anything or serve anybody, but only monitor thoughts and speech to ascertain the purity of diversity, equity, and inclusion. They are not just a drain on the productive sector but will insidiously destroy it, since their currency is to ensure a timid, obsequiousness and banal orthodoxy.

We know from the failed Soviet system and from the French Revolution that the most mediocre in society became its most eager auditors of correct behavior. The arbiters of proper thought—the self-righteous paid toady, the perpetual victim employed in service to government payback, the freelancing snitch—were always the villains of freedom, productivity, and humanity, whether

we read of the killing off of Alexander the Great's inner circle, the forced suicides of the Neronian circle, the Jacobin murder spree, or the nightmarish world described by Aleksandr Solzhenitsyn.

That the Biden Administration has now joined with Silicon Valley to hunt down on social media any dissenters from this month's official policy on vaccinations and mask-wearing was not so shocking as to be expected from a media that banned coverage of Hunter Biden's laptop. In Cuban-fashion, millions of judge-jury-executioner online snitches, with government encouragement, will help root out incorrect thoughts at light speed.

### **Inflation Is a Mere Construct**

We used to know what inflation was, its pernicious role in past civilizations, and how to combat it. The danger of worthless currency is a staple of classical literature from Aristophanes to Procopius. The scary fact is not just that we are destroying the value of our money—the exploding price of gas, food, appliances, lumber, power, and housing are overwhelming even Joe Biden's entitlement machine—but that we are constructing pseudo economics to justify the nihilism.

Right now, we witness a multitrillion-dollar fight over borrowing beyond our \$30 trillion debt to build “infrastructure,” a word that has been expanded to include mostly anything  roads and bridges. What exactly is so liberal about the farmworker paying \$5 a gallon for gas to commute to the fields, the small contractor doing a remodeling job with plywood at \$80 a sheet, or the young couple whose loan qualification is always a month behind the soaring price of a new home?

### **Our People's Military**

Americans during this entire descent in madness sighed, “Well, at least there is the military left.” By that, I think they meant John Brennan had all but wrecked the CIA, while James Comey, Andrew McCabe, Kevin Clinesmith, Peter Strzok, and Lisa Page, et al. had weaponized the FBI. But the military was still a bastion of traditional, nonpartisan service, whose prime directive was to defend the country, win any war it was ordered to fight, and to maintain deterrence against opportunistic enemies. It was not envisioned as a “people's army.” It was not a revolutionary Napoleonic “nation in arms.” And it was not a “liberation army.” The Constitution, 233 years of tradition, and the Uniform Code of Military Justice all reassured America of its wonderful defense forces.

And now? We are in the process of a massive reeducation and indoctrination campaign. The revamping not only draws scarce resources away from military readiness, but targets, without evidence, the white working class, and defames it as insurrectionary—the very same cohort that disproportionately died in Afghanistan and Iraq.

If only General Mark Milley, chairman of the Joint Chiefs of Staff, and Admiral Michael Gilday, chief of naval operations, had been as animated, as combative, and as fired up in congressional

testimony about winning in Afghanistan or deterring the Chinese in the waters off Taiwan as they were in defense of their recommended lists of Marxist-inspired critical race theory texts!

One purpose of the Uniform Code of Military Justice was not to prevent retired top brass from attacking beloved presidents, or even blasé ones. Its aim was to remind the country that it is the business of civilians, not pensioned retired military subject to recall in times of crisis, to galvanize opinion against loudmouth unpopular presidents like Harry Truman, Richard Nixon, or Donald Trump.

The reason why the “revolving door” became a bipartisan worry was that four-star officers had mastered the navigation of Pentagon procurement. They possessed a rare skill easily—and hugely—monetized upon retirement, and thus its use was to be discouraged wholeheartedly.

And now?

The code is a mere construct. The revolving door is an advertisement for advancing to high rank. Policing the thoughts of American soldiers is apparently more important than fathoming the minds of our enemies on the battlefield.

### **Keep Cuba Castroite?**

What was so hard about understanding that Cuba since 1959 has been a Communist gulag, antithetical to human freedom and consensual government? What was so difficult about conceding that Cuba had been an ally of the nuclear Soviet Union, always egging it on to war against the United States?

Yet here we are with protestors against a failed, evil state in the streets of Havana, and our own government, media, and professional classes are worried that ossified Communism in Cuba may fall.

After opening the U.S. southern border to pseudo-political refugees, the Biden Administration is terrified that thousands of real ones might come to Miami in the fashion it invited millions to storm into Texas. The Biden Administration, and the Left in general, finally revealed what many of us have known: it had no real ideological view on illegal immigration. Its immigration policy was entirely utilitarian and hinged only on whether illegal immigration altered the demography of the electorate in the correct way.

### **The United Nations Über Alles**

Finally, almost all Americans used to agree that the U.S. Constitution was unique and guaranteed personal freedom in a way the United Nations charter could not. Dozens of fascist, Communist, totalitarian, and authoritarian regimes, usually the majority of governments on earth, ensured that any General Assembly or U.N. committee ruling would parrot the views of its illiberal and corrupt members.

Not anymore. Biden’s secretary of state, Antony Blinken, has invited in the U.N. to assess whether the United States meets global standards of justice or, in fact, is racist and in need of global censure: “I urge all U.N. member states to join the United States in this effort, and confront the scourge of racism, racial discrimination, and xenophobia,” he said last week.

That is like asking Libya in 2001 to assess whether our airline pilot training met proper standards or having China adjudicate the conditions in U.S. prisons.

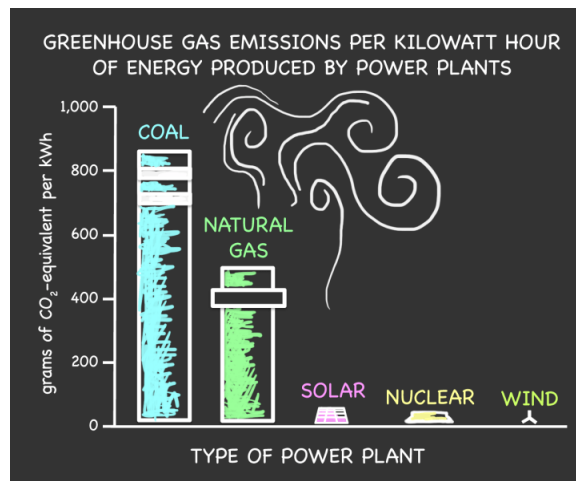
America went from the freest country in the world in December 2019 to a repressive, and frightening place by July 2021. It went not so much hard-Left, as stark-raving mad.

That abrupt descent, too, is not workable and millions will collectively decide they have no choice but to push back and conclude, “In the 233rd year of our republic, we tens of millions are not going to cede freedom of thought and expression to thousands of Maoists. Sorry, no can do.”

*Victor Davis Hanson is a distinguished fellow of the Center for American Greatness and the Martin and Illie Anderson Senior Fellow at Stanford University’s Hoover Institution. He is an American military historian, columnist, a former classics professor, and scholar of ancient warfare. He has been a visiting professor at Hillsdale College since 2004. Hanson was awarded the National Humanities Medal in 2007 by President George W. Bush. Hanson is also a farmer (growing raisin grapes on a family farm in Selma, California) and a critic of social trends related to farming and agrarianism. He is the author most recently of The Second World Wars: How the First Global Conflict Was Fought and Won and Trump. This article first appeared in the July 19, issue of American Greatness as well as the Hoover Institution of Stanford University Daily Update*



**HARVARD UNIVERSITY**  
The Graduate School of Arts and Sciences





# RECONSIDERING THE RISKS OF NUCLEAR POWER

BY JORDAN WILKERSON

FIGURES BY SHANNON MCARDEL

The United States emits an immense amount of carbon dioxide into the atmosphere. According to the Intergovernmental Panel on Climate Change, it is *extremely* likely that the rising global temperature trends since the mid-20<sup>th</sup> century is **dominantly due to human activity**. No scientific organization of national or international standing disputes this. Furthermore, the US Department of Defense has officially stated that climate change poses **a serious national security threat**. In light of all of this, the United States recently ratified the Paris Climate Agreement, which means we are **committed to significantly reducing our carbon emissions**. How do we do that?

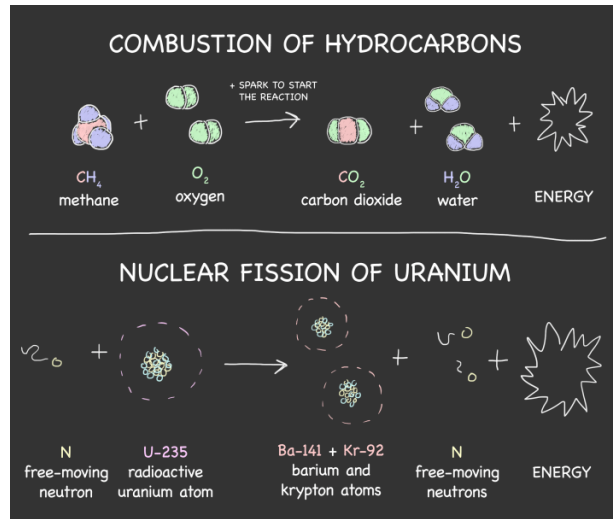
Given that, in 2015, we released 2 billion metric tons of carbon dioxide (CO<sub>2</sub>) from electricity generation alone, and fossil fuels accounted for **over 99% of these emissions**, a great place to start would be to begin replacing fossil fuel power plants with alternative energy sources. The main alternatives are solar, wind, and nuclear. The first two are certainly alluring, attracting the investment of a lot of government money worldwide. However, they are also variable. The wind isn't always blowing; days aren't always clear and sunny. This isn't to say relying solely on renewables is impossible or even unrealistic with some clever storage and transportation strategies. However, it is a challenge to replace the constantly running fossil fuel power plants with sources that are intermittent.

Ideally, we'd have a source that doesn't emit CO<sub>2</sub> and is consistently reliable; this is known as a baseload energy source. In this context, nuclear energy is the main alternative energy source that works. Yet, unlike its fickle counterparts, nuclear energy is subjected to hostile attitudes adopted by a number of governments in the world which restrict the building or continual operation of power plants. Fear for Chernobyl and Fukushima-type catastrophes exacerbate the unpopularity of going nuclear. The US, currently the world's largest producer, relies on nuclear energy for **20% of its overall electricity generation**. Yet there has historically been a strong anti-nuclear movement in the US, and the sentiment is still somewhat present today, as demonstrated by **closures of nuclear power plants** and stances held by prominent political figures such as Vermont Senator **Bernie Sanders**. In order to assess whether such notoriety is deserved, we need to learn about the physics of nuclear power and compare the statistics of its supposed dangers with that of existing energy sources.

## What is Nuclear Energy?

Nuclear energy and fossil fuel energy have similarities in the way they are extracted. The basis behind running a fossil fuel power plant can be illustrated by examining a typical fire. In this instance, organic matter such as wood or natural gas is burned and converted into CO<sub>2</sub> (see Figure 1). In this case, we change which atoms bond to each other and harvest the energy that is

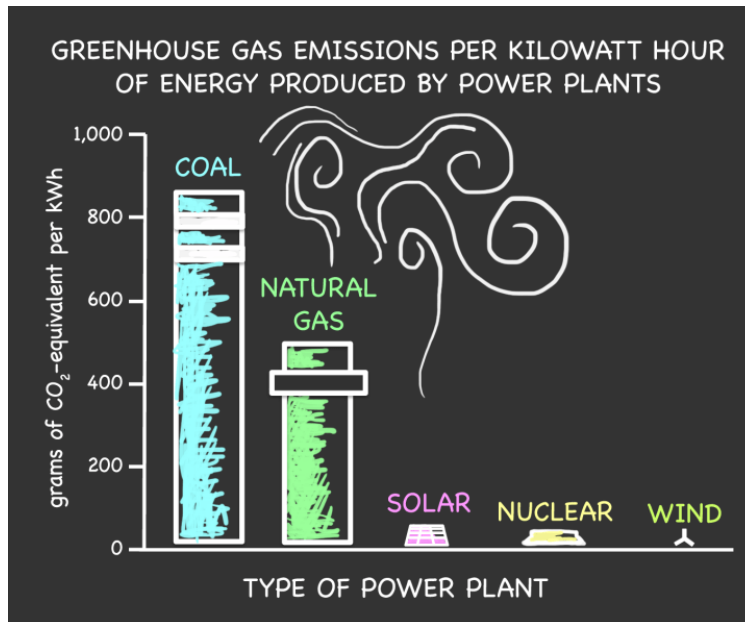
released when they reach a more stable configuration (as  $\text{CO}_2$ ). In a nuclear power plant, we are doing the same thing: extracting energy from atoms that ultimately gets converted to electricity. However, in a nuclear reaction, we don't just rearrange which atoms bond to which. We change the atoms *themselves*, and the energy released is enormous.



**Figure 1:** In both combustion and nuclear fission, the particles that make up atoms and molecules are rearranged into a more stable form, which causes a release of energy. How do the atoms change? In a nuclear reaction, the nucleus of the atom breaks into several pieces and releases an immense amount of energy. This process is known as nuclear fission. The nucleus we break apart for energy in most nuclear power plants is that of the uranium atom, specifically uranium-235 (that number indicates the total number of neutrons and protons in the nucleus).

To start a fire, which is an ongoing chemical reaction, we merely need some friction. Ongoing nuclear reactions do not begin so easily. To initiate the chain of reactions that supply us with energy in a nuclear power plant, we must bombard the uranium rod with high-energy neutrons. After we do this, the uranium breaks into two smaller nuclei (e.g. krypton and barium) and ejects several high-energy neutrons that cause more uranium to undergo fission.

This chain reaction provides a lot of energy, and the best part is that it does so without emitting any  $\text{CO}_2$ . In fact, the only  $\text{CO}_2$  emitted due to nuclear power plants is what's released indirectly from developing the construction materials! How does this compare to other energy sources? Coal power emits the equivalent of 820 g  $\text{CO}_2$  worth of greenhouse gases for every kilowatt-hour (g  $\text{CO}_2\text{eq/kWh}$ ) of electricity produced. (A kWh is a standard unit of energy used in billing by electrical utilities). Natural gas has a lower output at 490 g  $\text{CO}_2\text{eq/kWh}$ . Nuclear power, though? A mere **16 g  $\text{CO}_2\text{/kWh}$** . This is the lowest of all commercial baseload energy sources (see Figure 2).



**Figure 2:** The amount of greenhouse gases emitted from each energy source is shown above. Notice that, unsurprisingly, sources that don't use carbon-based fuel release the least amount of CO<sub>2</sub>.

## The Problems with Nuclear Energy

Nuclear energy isn't all good news, though. The Fukushima Nuclear Disaster is the latest testament to that. This **disaster** was a consequence of the combination of a tsunami and a powerful earthquake in March 2011. Although the chain fission reactions were shut down automatically in response to the earthquake, the tsunami damaged generators responsible for cooling the reactors of the plant. Without cooling, the components of the core of the reactors can literally melt from all the energy released from these reactions. In this case, they did. Radioactive material was subsequently released along with several chemical explosions, which were initiated by the immense heat released by the nuclear reactions.

Why is radioactive material dangerous? To start with, to be radioactive refers to the fact that this material is actively emitting radiation. This is not the same kind of radiation we're familiar with such as visible electromagnetic radiation from a light bulb. Electromagnetic radiation emitted as a result of nuclear fission, known as gamma rays, has 100,000 times more energy than visible light. Radioactive material can also emit highly energetic electrons (beta particles) and small clusters of protons and neutrons (alpha particles). This concentrated energy causes the molecules in our body to react in ways that can be extremely damaging, sometimes giving rise to cancer.

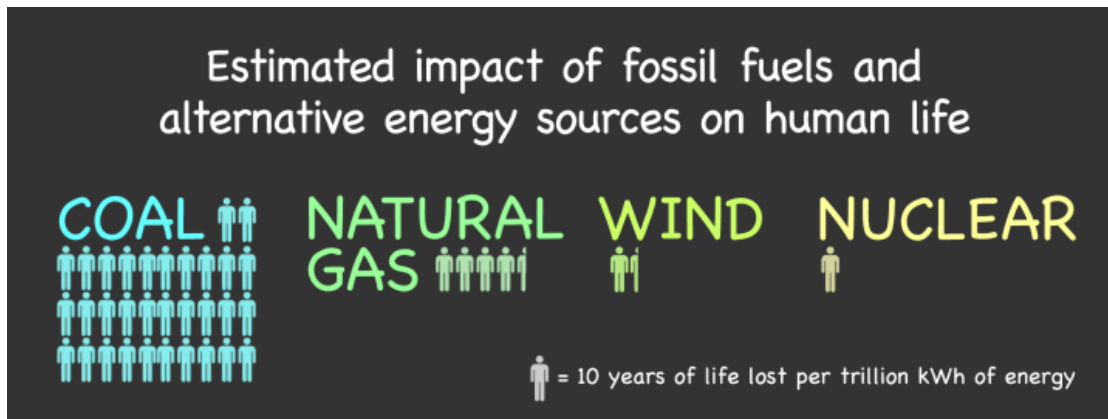
Radioactivity isn't just a characteristic of the material being used in the nuclear reactor. Even in the absence of a nuclear accident, nuclear power inevitably produces dangerous materials: radioactive waste. This waste, composed of mostly unconverted uranium along with intermediate products plutonium and curium, stays radioactive for extremely long periods, too, presenting a **major problem in regards to storage**.

## Putting Nuclear Power in Perspective

There is no doubt that nuclear power has problems that can cost human lives, but such risks are borne by all major modes of energy production. Therefore, the question shouldn't be, 'is nuclear energy deadly?' Instead, we should ask 'is nuclear energy more dangerous than other energy sources?'

Fossil fuels have a host of problems themselves. The **byproducts from burning fossil fuels are toxic pollutants** that produce ozone, toxic organic aerosols, particulate matter, and heavy metals. The World Health Organization has stated the urban air pollution, which is a mixture of all of the chemicals just described, causes **7 million deaths annually** or about 1 in 8 of total deaths. Furthermore, coal power plants release more radioactive material per kWh into the environment in the form of coal ash than does waste from a nuclear power plant under standard shielding protocols. This means that, under normal operations, the radioactive waste problem associated with one of the most mainstream energy sources in use **actually exceeds that from nuclear energy**.

In fact, on a per kWh of energy produced basis, both the European Union and the Paul Scherrer Institute, the largest Swiss national research institute, found an interesting trend regarding the **fatalities attributable to each energy source**. Remarkably, nuclear power is the benchmark to beat, outranking coal, oil, gas, and even wind by a slight margin as the least deadly major energy resource in application (see Figure 3).



**Figure 3:** The figure is based on estimates from Europe Union, which account for immediate deaths from accidents and projected deaths from exposure to pollutants. These estimates do not incorporate fatality rates in countries such as China where cheap coal combined with poor regulation are causes of considerably more fatalities.

The nuclear industry is constantly developing innovative technologies and protocols towards making the energy production process failsafe. Newer generations of nuclear reactors, particularly what is called a pebble-bed reactor, are designed so that the nuclear chain reaction cannot run away and cause a meltdown – even in the event of complete failure of the reactor's

machinery. Geological stability considerations will also likely play a bigger role in approving new sites of construction. And although long-lived nuclear waste may remain dangerous for considerable periods of time, that timescale is not prohibitive. In fact, even without recycling the fuel, which would further shorten the lifetime of radioactive waste, the radioactivity of the waste is reduced to around **0.1% of the initial value after about 40-50 years.**

The primary proposal for long-term storage of nuclear waste is burial in *very* carefully selected deep geological repositories. Yucca Mountain in Nevada was once a promising candidate, though this option was shut down in 2011 due to **strictly political reasons.** There is now only one deep waste repository in the US: the Waste Isolation Pilot Plant in New Mexico. However, this plant itself has faced some problems that highlight the need to research better alternatives for the Yucca Mountain repository. Unfortunately, the same sentiments that inspired closure of the Yucca Mountain repository have also **inspired reducing research funding and preventing investigations of other potential geological locations.** Finding a replacement for the Yucca Mountain repository is possible, but this requires greater cooperation between researchers and policy makers than is currently taking place.

Dangers associated with nuclear power are, in many ways, different from the dangers we face from other methods of getting energy. This might explain why fear of nuclear power persists and why the above fatality rates may surprise you. However, we know that nuclear energy does not produce the greenhouse gases that fossil fuels have been producing for over a century. Research also concludes that the more familiar dangers from using fossil fuels claim far more lives. Furthermore, with the advent of modern reactors such as the pebble-bed reactor and careful selection of plant sites, nuclear accidents like the one in Fukushima are actually not possible. When balanced with these notable benefits, the problems associated with nuclear power do not justify its immediate dismissal as a potential energy source for the world.

*Jordan Wilkerson is a PhD candidate in the Department of Chemistry at Harvard University. This article is part of our **Special Edition: Dear Madam/Mister President.***



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(Revised 2/2017)