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Rob Koslowsky Comment re 2022 Energy Code Pre-Rulemaking

To Whom It May Concern:
For Docket #: 19-BSTD-03 Project Title: 2022 Energy Code Pre-Rulemaking

I request that the 2019 Building Code be amended to remove the reach code requirement to force rooftop solar and eliminate the all-electric mandate. To ensure cost-effectiveness and also resiliency in the face of rotating blackouts and PSPSs, a mixed-fuel residence is optimal.

I also request that residential battery backup not be made mandatory in the building code, especially for homeowners, due to the added tens of thousands of dollars in cost and ongoing maintenance and replacement over the life of a mortgage. A homeowner should be afforded the choice not to do so or have a better economic alternative such as natural gas backup generators.

For the details and economics, please refer to the attached file: Natural Gas as Backup Is Better than Solar plus battery_RKK_Oct 2020.

Thank you for your consideration,
â€¦.Rob

Rob Koslowsky
Cloverdale, California
Author of The Tubbs Fire.
Also author of The Upstart Startup & Breach of Trust.
Author's page

Additional submitted attachment is included below.

Natural Gas as Backup Is a Better Alternative to Solar + Battery

"Unfortunately, the new normal is upon us. You either use [the Tubbs] fire to forge something better or you get burnt by it."

– James Gore Sonoma County Supervisor, who is leading the County's recovery and resiliency efforts, April 10, 2019 [1]

I talked with Eliott, an energy and sustainability analyst, on October 22, 2020. He works for the County of Sonoma's Energy and Sustainability Division.

Eliott looked into my question about rebates as a result of making my home resilient after my family rebuilt our lives post-Tubbs fire. I must have misunderstood the county's moniker regarding "equity resiliency" and the language around "self-generation" incentives that I read about in a recent *Sonoma Magazine* article. It turns out these words are reserved for a very narrow, single source of energy resiliency (solar + battery backup). The more cost-effective and resilient natural gas backup generator alternative has been excluded for consideration.

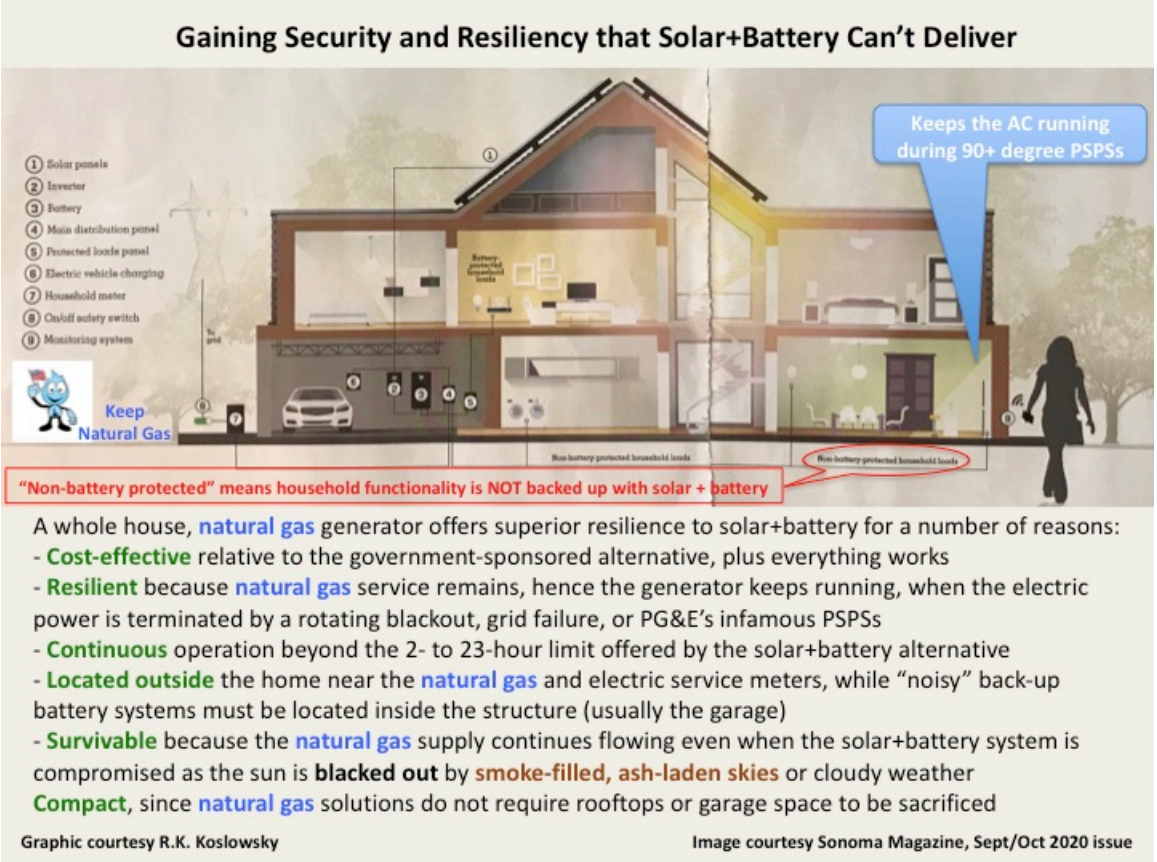
Is Solar+Battery Really the Only Way to Go?
In the summer of 2019, I evaluated solar + battery backup systems (up to 23 hours of backup) from both Tesla and Enphase Energy. I found that they were *not* a good resilient solution when compared to a natural gas-based whole-house generator.

The cost for solar + battery came in at $50,000 before rebates. Even without the associated financial incentives, the cost for an installed, whole-house, natural gas generator came in at $14,000. We found no rebates available from PG&E or Sonoma Clean Power and none from the county or the CPUC (SGIP), etc. We went ahead with our purchase since natural gas is much cleaner and safer than buying a small diesel- or gasoline-powered generator that only supports a couple of AC outlets (maybe a few lights, a cell phone charger, and a refrigerator), but certainly not a home's air-conditioning system or an electric vehicle charger.

I discovered that the natural gas solution offers superior resilience to solar+battery for a number of reasons, which I enumerated in 2019, prior to my decision to purchase from Leete Generators in Santa Rosa:

1. Cost-effective by 1/3 to 1/2 relative to the government-sponsored alternative
2. Resilient because the natural gas service remains, hence the generator keeps running, when the electric power is terminated by a rotating blackout, grid failure, or PG&E's infamous PSPSs
3. Continuous operation beyond the 2- to 23-hour limit offered by the solar+battery alternative
4. Located outside the home near the natural gas and electric service meters, while "noisy" back-up battery systems must be located inside the structure (usually the garage) with the added expense of noise-reducing, sound insulation pads and dampers to reduce interior wall vibrations [2]

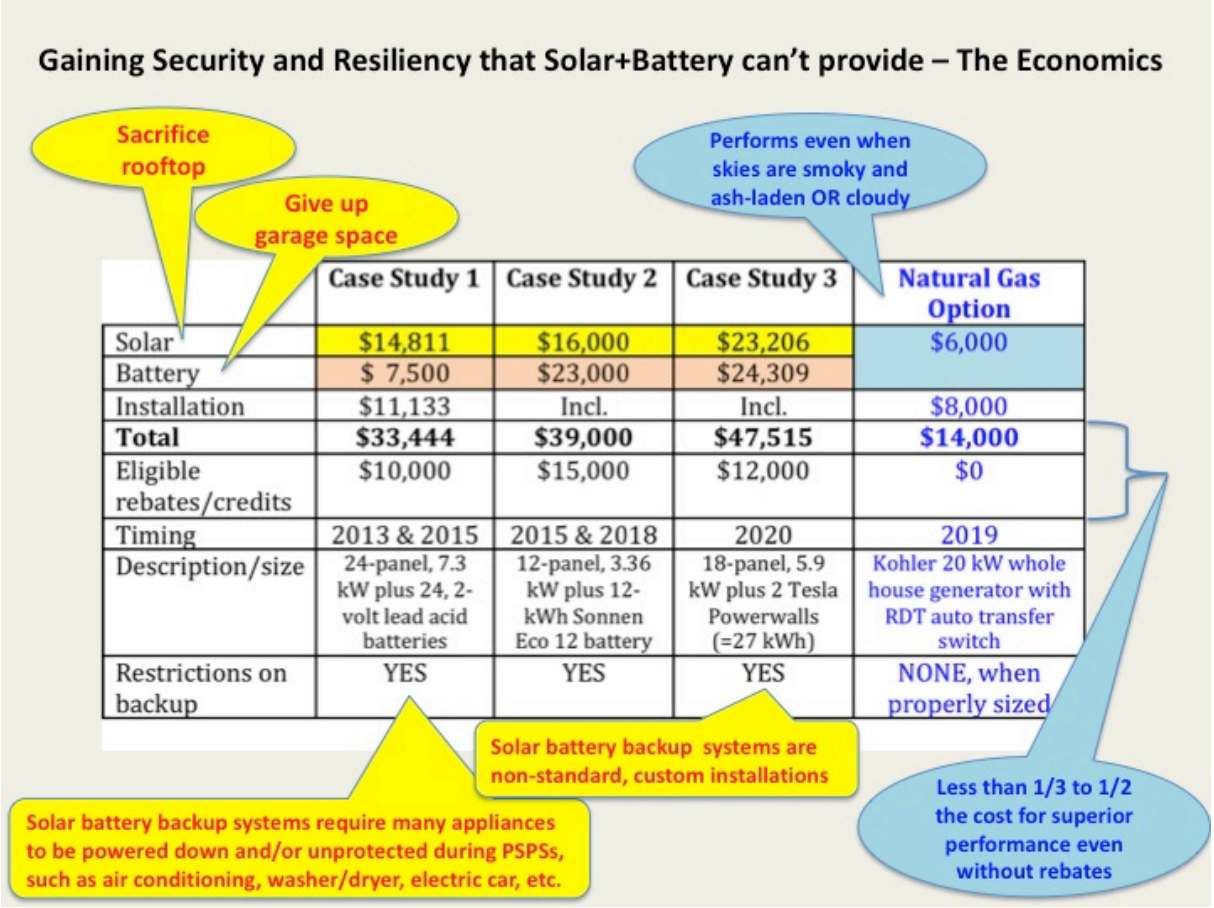
5. Survivable because the natural gas supply continues flowing even when the solar+battery system is compromised as the sun is blacked out by smoke-filled, ash-laden skies or cloudy weather
6. Compact, since natural gas solutions do not require rooftops or garage space to be sacrificed. Both back-up battery systems and electric heat pumps consume hundreds of square feet of garage space, while less than 10 feet of exterior space is required for a pad-mounted [3] whole-house, natural gas generator.



It dawned on me that my Kohler whole-house, natural gas generator I put in place qualifies as "self-generation." The unit efficiently converts natural gas into electricity during any type of electrical outage, generating our own electric power on site. My neighbor opted for a similar whole-house, natural gas system provided by Generac to do the same thing. Such cost-effectiveness should be viewed as the model for ensuring "equity resiliency" as even larger such natural gas generators could be used for multi-family dwellings, schools, or government buildings supporting essential services.

The Economics for Natural Gas are Superior to Solar + Battery for Resiliency and More
I developed the following table after further review of the documents furnished by the county. It compares three local case studies of folks going solar + battery backup versus my natural gas alternative. The whole-house, natural gas generator backup,

which I opted for, is the most cost-effective way to go, by up to three orders of magnitude. It's even greater if a Generac generator is used and it could be even more economical if rebates for all resilient solutions were granted equitably.



	Case Study 1	Case Study 2	Case Study 3	Natural Gas Option
Solar	$14,811	$16,000	$23,206	$6,000
Battery	$ 7,500	$23,000	$24,309	
Installation	$11,133	Incl.	Incl.	$8,000
Total	**$33,444**	**$39,000**	**$47,515**	**$14,000**
Eligible rebates/credits	$10,000	$15,000	$12,000	$0
Timing	2013 & 2015	2015 & 2018	2020	2019
Description/size	24-panel, 7.3 kW plus 24, 2-volt lead acid batteries	12-panel, 3.36 kW plus 12-kWh Sonnen Eco 12 battery	18-panel, 5.9 kW plus 2 Tesla Powerwalls (=27 kWh)	Kohler 20 kW whole house generator with RDT auto transfer switch
Restrictions on backup	YES	YES	YES	NONE, when properly sized

As I highlighted earlier, it seems that the county is doing a disservice to its residents by backing a single solution – solar + battery and excluding natural gas – in support of homeowner resiliency and energy survivability.

Since most Sonoma County homes already have natural gas (or propane (LPG) tanks in more rural areas of Sonoma County), it seems that another (and better) solution would be rebates and/or credits for whole-house, natural gas generators. To wit, a home's air conditioning can operate, for example, when the natural gas generator protects homeowners from power outages, unlike solar+battery backup systems. There are numerous others restrictions on household loads when solar batteries are used. Part of this could be due to the fact that almost every solar+battery installation is a custom-designed, non-standard project requiring rooftop (or backyard) and garage space, plus access to the exterior walls and electric panels. With a properly-sized natural gas generator, you deploy it on a pad close to the exterior gas meter and electric panels.

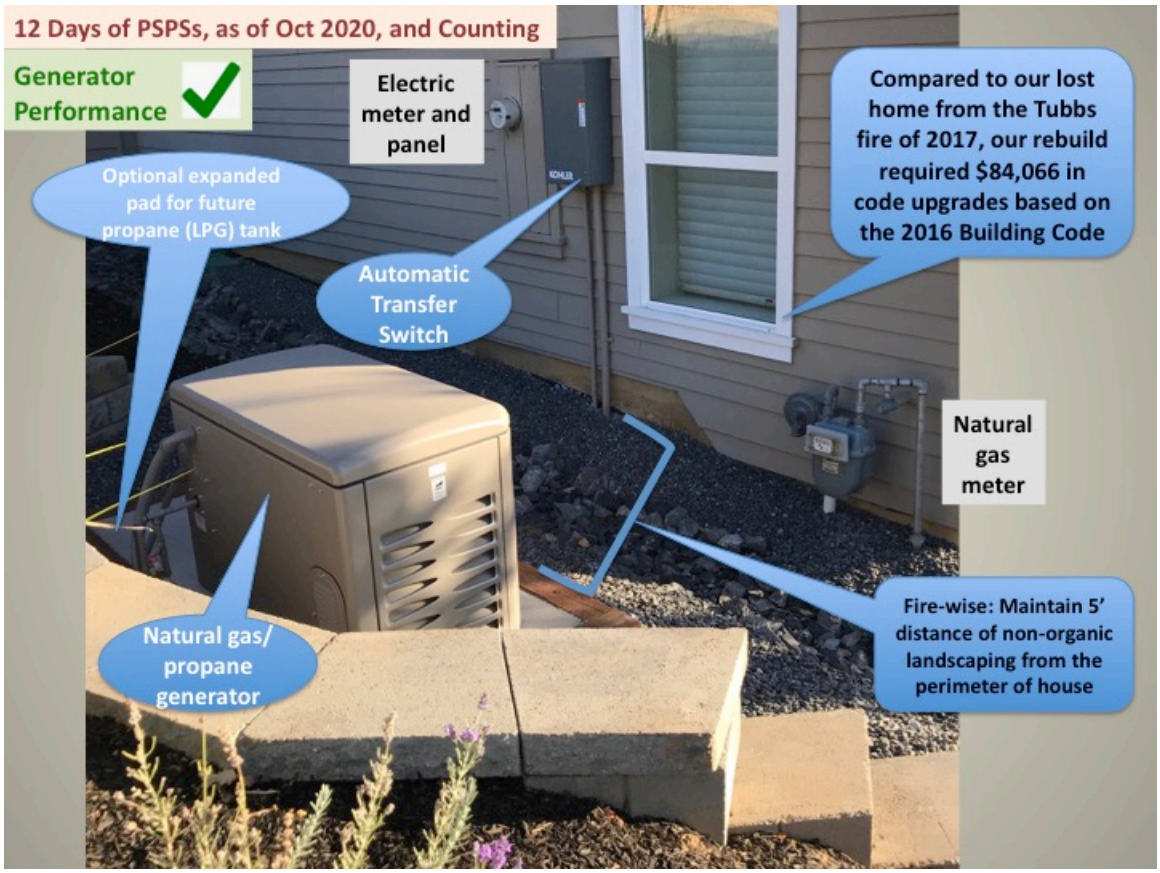


Photo and graphic courtesy R.K. Koslowsky, October 2020

With this in mind, I've asked the county to work with the CPUC and State to revisit how our superior resiliency solution could qualify for a county or state rebate.

"To [Supervisor James] Gore, making Sonoma County and all communities resilient after a disaster should be a top priority. 'I dare anybody to look around their community and think that this is not the most important work you can be doing as a public servant or community advocate.'"

– *Sonoma County builds framework for resiliency after destructive wildfires*, Nadine Ono, April 10, 2019 [1]

News tidbit regarding the role of Carbon Capture and Storage + maintaining a Japan's Energy Independence:

"Japan will be carbon neutral by 2050, its prime minister said on October 26, 2020, making an ambitious pledge to sharply accelerate the country's global warming targets, even as it plans to build more than a dozen coal-burning power plants in the coming years."

– *The Press Democrat* news services, October 27, 2020, p. A6

[1] *Sonoma County builds framework for resiliency after destructive wildfires*, Nadine Ono, April 10, 2019:
https://cafwd.org/reporting/entry-new/sonoma-county-builds-framework-for-resiliency-after-destructive-wildfires

[2] Back-up batteries are noisier than natural gas generators. “Some are reporting higher-than-expected operating volumes [with Tesla’s Powerwall]. One German customer measured a noise level of more than 80 decibels coming from a Powerwall installed in his home in February. That is roughly equivalent to the noise made by garbage disposal.” Meanwhile the Kohler whole house, natural gas generator operates (maximum output) at a much quieter level of 69 decibels. On such a logarithmic scale, this is a big deal. Further, the natural gas generators are installed outside, not inside the house, further attenuating household noise levels.
Source: https://www.greentechmedia.com/articles/read/is-teslas-powerwall-luster-already-fading
[3] Some homeowners, like me, left extra room on an expanded concrete pad for a future LPG tank as a second back-up measure in the unlikely event that both the electricity and the natural gas are turned off due to an earthquake.