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Per email

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RE: Service Agreement Between Santa Fe County and Atar Fire, LLC

Santa Fe, June 21, 2024

Dear Commissioners,

The County has hired Atar Fire, LLC, to “Perform and complete comprehensive and expert research on the safety, fire risk and proper storage of lithium-ion batteries”.
Of course I welcome any investigation into the safety of industrial solar power plants.

My concern is the fire danger presented by the approximately 200,000 solar panels. A research paper in “Fire and Materials”, a peer reviewed leading journal at the interface of fire safety and materials science, noted in a research article regarding photovoltaic systems, meaning the solar panels:

“Photovoltaic (PV) systems design and construction are generally focused on efficiency and reliability, in order to increase the amount of solar energy that can be converted into electrical energy. Therefore, in a PV electrical generation plant, fire risk is not taken into account by technical designers and, furthermore, is not considered by constructors of PV plant installation.”¹

The planned facility will roughly cover about 600 NFL football fields. Fires in solar facilities can potentially have serious consequences to the environment such as starting a bushfire and the possibility of fire spreading quickly through the hot panels. A failed component that short circuits can result in a fire that spreads throughout the inverter. That fire damage then causes a domino effect, allowing all of the energy and voltage to come in and fuel the fire until the sun goes down. The battery storage (BESS) can catch fire as well, and the power supply to the region and nearby communities can be interrupted.

¹ Cancelliere, p. PV electrical plants fire risk assessments and mitigation according to the Italian national fire services guidelines. Fire and Materials, Dec 2014

The environmental pollution caused by the fire smoke and the toxic materials that could leak and contaminate the ground have a serious impact on biodiversity and can be hard to measure. All these consequences are unlikely to be reversed after a fire has happened.²

Wild animals can pose a serious threat and start a fire due to the panel's high temperature. That was the case of a large fire started on a solar farm in California that reached more than 1,000 acres and impacted the wildlife.

A new Firetrace International report highlights concerns that there is no awareness of the true extent of fire risk.³ Data concerning solar farm fires is in short supply. In fact, such is the lack of statistics that researchers – specifically, those at the UK's BRE National Solar Centre – have reached the worrying conclusion that solar farm fires are being underreported.⁴

The issue with solar system fires is how little is known about them. Questions have lingered for years as to what the common causes are, where system failures are occurring, and how often these failures could happen. However, when a solar system is determined to be the cause of a fire, that is as deep as the reporting goes, with no exploration into specific failure or causation. Furthermore, if a responding fire department doesn't have solar photovoltaics listed as an option in their reporting system, it gets filed to USFA miscellaneously. Many companies and owners of projects that have caught fire don't want to share that information because of the negative reflection.⁵

In 2015, the first year data from USFA was made available, there were 25 fires in solar installations. From 2015 until 2018 the Fire Administration has recorded 155 fires caused by solar installations, with 84 being residential systems and 71 being non-residential.⁶

There were 56 recorded utility solar system fires in 2018, the most recent year of reported data, which is up 36% from the 41 recorded in 2017. In California alone, from February 2019 until October there were 16 utility solar fires. In that time frame, there were 17 more in the rest of the USA.⁷ With the increase in use of solar it is to be expected there will be an increase in fires.

I also want to point out that the problem with research is the lack of it. I attended a three day 2023 Energy Storage System Safety and Reliability Forum, organized by Sandia National Laboratories. There it was explained that the major issue with the research is that it is scaled down compared to the situation in the field. What happens in the field, with the actual circumstances, cannot be replicated in a laboratory. The research should be performed in the field, at field scale.

² <https://www.firetrace.com/fire-protection-blog/how-solar-farm-fires-can-damage-the-environment>

³ <https://www.firetrace.com/solar-farm-fire-risk-report>

⁴ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/786882/Fires_and_solar_PV_systems-Investigations_Evidence_Issue_2.9.pdf

⁵ <https://www.pv-magazine.com/2020/04/23/solar-system-fires-are-on-the-rise-in-the-u-s/>

⁶ <https://pv-magazine-usa.com/2021/06/25/how-do-we-prevent-solar-fires-if-we-dont-know-anything-about-them/>

⁷ <https://onedrive.live.com/?authkey=%21ADZAYZw3zBKJ%5F1k&id=C8BE25A716873030%216383&cid=C8BE25A716873030>

That however is costly. Knowledge about what transpires in the field, what causes malfunction at any level, is the best way to get information, how to treat fires, how to prevent them in the future. Unfortunately, that is severely limited due to proprietary issues from the side of the industry.

Since solar panels contain toxic metals, and given the scale of the planned facility, they can be considered hazardous chemicals falling under the rules provided by the federal Emergency Planning and Community Right-to-Know Act (EPCRA). Section 303 requires the Local Emergency Planning Committee to develop an initial emergency response plan for such a facility. Given the potential danger and the lack of scientific evidence regarding the safety of over 200,000 panels between 3 residential areas, the least the residents can expect from their County Officials is that they make sure an emergency response plan is generated **before** the facility is build, and not afterwards.

Without a thorough investigation into the dangers of the solar panels in addition into the investigation of the BESS, I feel like I am embarking on a flight with a new airplane that has never been tested. I hope you will make sure that the field of solar panels gets the same amount of scrutiny as the BESS is under.

Kind regards,
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