

FIRE PROTECTION TECHNICAL MEMORANDUM

To: Ryan Waterman, Brownstein Hyatt Farber Schreck, LLP
From: Dudek Fire Protection Planning Team, Michael Huff, Principal
Subject: Rugged Solar Fire and Medical Emergency Call Demand Evaluation Based on Proposed Project
Date: February 22, 2022
cc: N/A
Attachment(s): None

1 Purpose of Assessment

This memorandum provides an evaluation of the revised Rugged Solar project (Proposed Project) compared to the Approved Rugged Project in relation to the fire and medical response analysis originally completed by Dudek and Hunt (2014). The 2014 analysis evaluated the greater southeastern San Diego County region, which at the time, was the location for multiple planned, large scale solar and other development projects that would result in increased populations, new ignition sources, and new demands on the available emergency response resources. The concern at that time related to the rural nature of the fire and medical emergency response resources, which relied on volunteers in many instances and lacked advanced life support personnel, and whether the new projects, including the Approved Rugged Project, would result in a need for enhancement of the response capabilities to meet the growing demand. In response to this concern, the Revised Final Program Environmental Impact Report (Revised PEIR) applied PDF-PS-1, which included provisions for funding a paramedic staff and start up kit along with annual funding for one paramedic staff firefighter, in order to reduce what would have otherwise been a significant impact to emergency services capacity in the area caused by the development of the Tierra del Sol and Rugged projects.

The focus of this memorandum is on the relevant Proposed Project changes and what, if any, affect they have on generating emergency calls and placing demand on the fire and medical response resources as compared to the Approved Rugged Project. Secondly, this memorandum evaluates and compares the existing emergency response resources and capabilities with those available in 2014 and based on those results, recommends an appropriate approach for Proposed Project fair-share contributions to regional response enhancements.

2 Project Description

The Proposed Project includes the finance, construction, and operation of a renewable energy solar project within a development footprint of 391.2 acres of a approximately 764-acre Proposed Project site. The Proposed Project would produce up to 74 MW of solar energy from single-axis photovoltaic (PV) trackers and would not utilize

the CPV dual-axis technology as originally contemplated for the Approved Rugged Project. The project components would also include inverter stations, which convert the Direct Current (DC) power from the PV modules to Alternating Current (AC) power, which is compatible with the San Diego Gas & Electric (SDG&E) system. The Proposed Project includes the following primary components, as shown in Attachment 1: Rugged Solar Plot Plan:

- A photovoltaic array with PV modules mounted on trackers oriented towards the sun that rotate East-West to track the sun. Trackers would be arranged around inverter stations.
- A collection system linking the trackers to the on-site, collector substation would consist of 1,500-volt (V) DC underground conductors leading to 34.5 kilovolt (kV) underground and overhead AC conductors. The collection system would be located within the same development footprint as the photovoltaic array. The overhead structures for the collection system would be steel poles approximately 50 to 75 feet high.
- A collector substation within a fenced area of approximately 26,000 square feet that would be located within the central portion of the project site. The on-site substation would include a 450-square-foot control enclosure.
- A 6,300-square-foot Operations and Maintenance (O&M) building would be used for storage of parts equipment. Upon completion, the solar facility would be remotely monitored off site through a supervisory control and data acquisition (SCADA) system.

2.1 Approved Rugged Project vs Proposed Project Changes

Primary differences between the currently Proposed Project and the Approved Rugged Project analyzed in the certified Revised Program Environmental Impact Report (Revised PEIR) are summarized in Table 1 and as follows:

- The currently Proposed Project would not have any on-site personnel while the Approved Rugged Project contemplated 20 operational, day-to-day employees
- The currently Proposed Project would utilize single-axis PV electrical generation system technology
- The Approved Rugged Project would utilize dual-axis concentrating photovoltaic (CPV) technology
- The development footprint would be reduced from 498.2 to 391.2 acres
- The solar energy produced would be reduced from up to 80 MW (Approved Rugged Project) to up to 74 MW (Proposed Project) with fewer trackers
- The tracker/panel height above ground would be reduced from 30 feet for the Approved Rugged Project to less than, but up to, 12 feet for the Proposed Project (seven feet on average).

This technology change from dual-axis concentrating trackers to single-axis trackers would require less ground disturbance as compared to the Approved Rugged Project. The single-axis tracker design would require 107 acres less disturbance (21% reduction) compared to the dual axis tracker layout. In addition, single-axis trackers installation requires substantially less equipment to install, such as very limited use of machinery for concrete foundations. Each Approved Rugged Project tracker had such a foundation. Single-axis trackers are also more reliable, and thus less maintenance would be required. Finally, single axis trackers using photovoltaic modules require less washing than the previously proposed dual-axis trackers; once per year instead of every 6 weeks. None

of these changes triggers the need for additional fire protection features or results in an unmitigated impact to fire and life safety when compared to the Approved Rugged Project.

Table 1. Proposed Changes to the Approved Rugged Solar Project

Description	Approved Rugged Project	Proposed Project	Difference
System Technology	Dual-Axis CPV	Single-Axis PV	Single-Axis PV is simpler and has fewer moving parts – less likely to include malfunction resulting in fire ignition
Solar Energy Produced (megawatts)	80	74	(6)
Tracker Panel Height (feet)	30 (maximum)	7 (average), 12 (maximum)	(18) – Smaller stature results in more easily accessible structures and lower profile, which would reduce potential for wind-blown ember production
Exterior Lighting	Project-Wide	Storage Building & Substation only	Significantly reduced lighting results in lower probability of a fire ignition related to lighting electrical
Project Site Acreage (acres)	765	764	(1)
Development Footprint (acres)	498.2	391.2	(107) – fewer acres within the development results in smaller footprint and improved access
Substation size (square feet)	6,000	26,000	20,000
O&M Building (square feet)	7,500	6,300	(1,200)
Panel Washing Frequency	Every six weeks (nine washings per year)	Once per year (up to 10 days)	(8) – significantly less maintenance required is expected to result in significantly lower probability for ignitions from maintenance crews
Operational day-to-day Employees	20	0	(20) – Zero employees on site will result in zero anticipated emergency calls, with the exception of during intermittent maintenance periods. This significantly reduces potential demand on response resources

3 Proposed Project Emergency Response Demand

As indicated in Table 1, changes to the Proposed Project include a smaller developed footprint, a less-complicated tracker system, significantly less on-site maintenance activities, and most importantly, reduction of the on-site daily worker population from 20 with the Approved Rugged Project to 0 with the Proposed Project.

Each of these changes results in a reduced potential demand for emergency response resources. The original assessment by Dudek/Hunt indicated that solar projects had a very low fire ignition occurrence rate. The assessment indicated that from a fire perspective, the potential risk was low and emergency response was within the General Plan Safety Element requirements. The Proposed Project further reduces the potential for a fire ignition by reducing the overall area that supports the solar tracker array and by replacing the more novel dual-axis concentrating PV trackers with a simpler, less novel single-axis PV tracker that have been in use on other projects without major incident to Dudek's knowledge.

The Proposed Project's trackers are anticipated to require significantly reduced maintenance and cleaning, resulting in a substantial reduction in the potential for maintenance worker related fire starts while on-site or traveling to and from the site. Likewise, on-site, daily personnel reductions from 20 to 0 negate the previously identified potential risk from this population for accidental ignitions.

In terms of medical emergencies, which were determined in the Dudek/Hunt report to represent the most significant potential risk and the response capability, at the time, that was most likely to be overwhelmed, Approved Rugged Project demand reductions and response capabilities improvements combine to address the Dudek/Hunt concerns. For example, the reduction of maintenance/cleaning activities along with the reduction of on-site daily workers from 20 to 0 result in significant reductions in the potential for medical emergencies. Dudek estimated that the 20 on-site personnel would generate up to 1.6 calls per year, using County baseline statistics for calls/capita. This is a relatively low number of calls but was determined at the time to contribute to the increase in medical calls in the area based on the cumulative project evaluation. The Proposed Project's reduction to have no onsite workers on a daily basis further reduces the call volume that would be anticipated from the Proposed Project. The potential for an emergency medical call would be limited to an accident during the daylight hours of the 10 to 20 days per year when washing and maintenance personnel would be on-site. Based on the relative lack of on-site personnel, it is estimated that the medical calls from the site would be near zero calls per year.

4 Regional Fire and Emergency Response Resources

The Dudek/Hunt 2014 Assessment of the regional response capabilities and the cumulative project demands on those capabilities resulted in a finding that, at the time, the response resources were appropriate for the existing condition, but in need of enhancements as the Approved Rugged Project generated call demands intensified. Enhancements included shifting to full-time, career fire positions and adding back-up paramedic capabilities at key locations, along with equipment and technical training for area firefighters. To that end, the Approved Rugged Project provided a project design feature (PDF) that would directly address the largest identified risk at the site, which was the potential medical calls generated from the Approved Rugged Project's anticipated 20 on-site personnel. The PDF, PDF-PS-1, included provisions for funding a paramedic staff and start up kit along with annual funding for one paramedic staff firefighter.

Since that time, regional fire and medical response capabilities have been enhanced and most of the identified recommendations have been addressed. Notable improvements throughout the region that directly benefit the Proposed Project and the region, include:

- 2014: Station 43 operational – full time Advanced Life Support – paramedic position
- 2014: “Closest resource” adopted – regardless of jurisdiction, the closest engine would be dispatched to respond to emergency calls
- 2015: Joint Cal Fire/County Fire Station 47 Boulevard constructed – includes ambulance with paramedic(s)
- 2018: Pine Valley Station 44 is completed
- 2018: Agreement for additional ambulance in Potrero

Based on the region’s response resource enhancements that have replaced volunteer stations with career stations and added advanced life support throughout the area, including at Station 47, which is the closest responding station to the Project, the findings in the 2014 Capabilities Assessment are no longer pertinent. The primary concern was the potential for medical call stacking, where multiple calls occurred simultaneously because of the increased population being brought to the region with the various cumulative projects. Because there was a lack of a back-up advanced life support capability that remained in the area at the time, it was a valid concern. With the provisions for multiple advanced life support capabilities provided by paramedic engine companies and ambulance, that concern appears to have been addressed.

5 Conclusion and Recommendation

This re-evaluation of the Approved Rugged Project’s potential contribution to regional emergency response demand compared to the Proposed Project has resulted in the following conclusions:

1. The Proposed Project has been scaled back in disturbed area and number of trackers/produced MW and includes technology that is less prone to ignitions.
2. The Proposed Project has reduced the daily and periodic on-site workers/maintenance population
 - a. The Proposed Project has eliminated the 20 daily on-site worker population
 - b. The Proposed Project has reduced tracker panel washing to once per year (up to 10 consecutive days) from 9 times per year
3. The San Diego County Fire Protection District (SDCFPD) and CAL FIRE have invested in the area to enhance the response capabilities throughout the Region
 - a. Provided advanced life support capabilities at a minimum three separate locations in the region
 - b. Have converted volunteer reliant stations to career stations on duty 24/7/365

The potential emergency services impacts on fire response resources from the Proposed Project, do not rise to a level of significance given the current response resources in the Proposed Project area and anticipated reduction in demand for emergency services from the Proposed Project. However, per County standards, any incremental/potential insignificant impact associated with the facility would be further minimized through the standard FSA/Developer’s Agreement negotiated for all projects.

These realities combine to indicate that the initial fire service agreement and PDF-PS-1 may not be appropriate or proportional for the Proposed Project. It appears that the Proposed Project area response services the original Approved Rugged Project PDF would provide are already in place and funding may be better appropriated to other fire and/or medical response resources, as designated by SDCFPD. Additionally, because the Proposed Project has been scaled back in various ways, it may be more appropriate to base the Proposed Project’s fire service fees or developer agreement on a reduced Proposed Project scale rather than on the Approved Rugged Project’s existing agreement. Projects within the former San Diego County Rural Fire Protection District may be subject to the “risk

rating x total acres” formula to determine the developer agreement funding amount. This approach would need additional discussion with SDCFPD to determine if it would be applicable and whether it would more proportionally determine the required ongoing Proposed Project fair share funding.