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December 20, 2024

VIA E-FILING DOCKET 23-OPT-01
VIA E-MAIL

Leonidas Payne
Project Manager
California Energy Commission
715 P Street
Sacramento, CA 95814

Re: Docket 23-OPT-01: County of Shasta AB 205 Review and Comments re Fountain Wind Project – Wildfire Air Attack Comments Letter

Dear Mr. Payne:

In accordance with the County of Shasta's ("County") obligation under Assembly Bill ("AB") 205 to review and comment on the Fountain Wind Project ("Project") application ("Application"), the County hereby submits the attached Wildfire Air Attack Concerns comments letter received by County on December 18, 2024 from concerned Shasta County Residents Steve Kerns, Shasta County Planning Commissioner for District 3 and Steve Fitch, Shasta Trinity National Forest Retired Forest Supervisor.

The comments contained in the attached letter address Application issues related to Aerial Fire Suppression. These comments are submitted within the scope of the County's cost reimbursement budgets, dated August 15 and November 14, 2023, and approved by California Energy Commission ("Commission") staff on November 29, 2023.

The County submits these comments as "the local government having land use and related jurisdiction in the areas of the proposed [Project] site and related facility,"[1] as contemplated by

AB 205, and as the local agency that has discretionary authority over the Project and previously denied a use permit for it in 2021. The County submits these comments on Application areas within the scope of its subject matter expertise to provide further information to the Commission in assisting it with its review of the Application.

Sincerely,

Alan B. Cox
Senior Deputy County Counsel

ABC/als

Attachment

WILDFIRE AIR ATTACK CONCERNS EXPLAINED BY EXPERT AND EXPERIENCED AIR ATTACK PILOTS & THE IMPACT OF THE PROPOSED FOUNTAIN WIND PROJECT — UNSAFE, UNACCEPTABLE AND UNMITIGATABLE

INITIAL ATTACK ON THE FOUNTAIN WIND PROPOSAL

The Redding Air Tanker Base operates jointly as an Interagency base by the U.S. Forest Service and Cal-Fire with 2 Grumman S-2T air tankers each with 1200 gal. of retardant and one OV-10A air tactical aircraft. Redding also, at times, has a Sikorsky S70i Fire Hawk helicopter with approx. 1000 gal. of water or capable of delivering a small helitack crew to fires.

If a fire would break out in the vicinity of this Fountain Proposal, typically two S2T air tankers and the OV-1A tactical plane with Air Attack Supervisor will be dispatched from Redding for initial attack. (On days with high fire load indices, more aircraft will be automatically dispatched.) The Air Attack Supervisor will direct the air resources and make decisions on air attack safety. However ultimately the pilot decides if they can fly safely on a particular fire.

Ron Raley, former Forest Service Air Attack Supervisor and experienced, on the ground Type I Incident Commander and Jim Barnes experienced Air-tanker Pilot at the Redding Air Attack Base (both familiar with the proposal) have explained what would happen after an initial dispatch. **They will help us understand how difficult the decision would be to engage aircraft safely in and around the Fountain Wind Project proposal:**

Both would arrive at the incident within 20 minutes.

The Air Tactical Group Supervisor (ATGS) would be looking for the smoke column as he approached from the west over Backbone ridge. Whoever is first to arrive would size up the situation and radio it to the other aircraft and the dispatcher. The ATGS cannot give Jim direction to make a drop yet. Without the Wind Farm present, if the fire was a spot, he could immediately instruct Jim to drop directly on the fire. If the fire exhibited a rapid rate of spread, the ATGS would probably ask for a direct flanking drop, half in and half out, on the priority flank. However, the ATGS may ask for a drop on unburned fuel in front of the fire to slow its spread until ground forces arrive. (It would likely be spreading as this area is noted for its reliable winds-hence Wind Turbines.)

Because of the immense complexity of managing the airspace and extreme dangers of an active wind farm, the ATGS would instead instruct Jim to orbit and standby for further direction. (orbit means he would circle at a safe distance)

The ATGS would complete his "size up" of the fire (size, fuel, wind speed and direction, topography, obstructions, spread) and pass the information on to dispatch.

If the Fire was in or near the Wind Farm the ATGS would have to tell the dispatcher to contact the Wind Farm supervisor and have him shut off and lock down the entire field of turbines. Australian Council for Fire and Emergency Services directs that wind farm turbines should be shut down "immediately" and that "Aerial personnel should assess risks posed by aerial obstacles, **wake turbulence** and moving blades in accordance with routine procedures." This, to eliminate turbulence affecting aircraft of any type over the area and eliminate chance of turbine winds effecting the fire spread. He would ask the dispatcher to instruct the adjacent Hatchet Ridge Wind Farm to de-energize their transmission line located through the middle of the Fountain proposal and to shut down and lock their turbines for safety of approaching or orbiting aircraft.

The ATGS would also ask the dispatcher to contact Red Bluff PG&E and Federal WAPA agency and de-energize the nearby 500KV transmission lines and multiple feeder lines from hydro plants in the area to eliminate flash over potential from smoke and retardant in the Round Mt. substation vicinity. All of these large power lines are just below this Wind Farm proposal. (This area serves as a key power intertie between Oregon and California providing 4800 MW of power to about 150,000 homes. 13% of the state's hydroelectric power production also comes from this complex.) Note: All this was shut down during the Fountain Fire and all had to be scrubbed after the fire was controlled.

(Australia did a study on how long it took to shut down, lock and position a simple single line wind farm and lock and position the blades for aviation safety. It took over an hour. (Imagine how much longer it would take to shut down this complex - The proposed Wind Farm, the Round Mtn. substation with all its complexities and the adjacent Hatchet Wind Farm!) During this down time under normal summer burning conditions arriving ground forces will have no air support and the fire could grow rapidly. Jim, in the S2T would be using up fuel orbiting. **AND** Cal-Fire's goal of keeping 95% of fires at 10 acres or less would be long gone.

The ATGS would help direct ground forces into the area and inform them of the status and progression of the fire.

Finally, the ATGS and Jim would quickly discuss the many hazards of maneuvering, turn radiuses, delivery speeds in the narrow canyons with 650 ft turbines on nearly all the ridges above, several weather towers with guy wires and transmission lines, smoke and heavy fuel on canyon slopes.

Could helicopters help? On their minds would be the recent Broadway incident recently where a Cal-Fire Assistant Chief, Captain, and pilot lost

their lives adjacent to a wind farm and powerlines at Cabazon, California in a mid-air collision of two helicopters. The site conditions contributing to this horrific accident were listed as "....**multiple aircraft hazards. The hazards included terrain, large windmills, high-tension powerlines, and Banning Municipal Airport.**" Except for the airport all exist in far greater numbers and worst arrangement on the Fountain proposal.

Then Jim Barnes (one of the most seasoned pilots in the Air Attack profession) would concur and likely explain to the Air Attack Supervisor that "He has flown several wind farms in other parts of the state on only grassy slopes (not heavy tall timber fuels) and they did not enter the farms but waited for the fire to emerge." He would remind the ATGS that air attack pilots just don't fly inside Wind Farms in these conditions. (See Barnes Former testimony and letters at 3 County and a CEC Hearing)

They would agree that conditions of the Fountain Wind Farm would be too dangerous to risk air assets of any type inside the wind farm and set up a plan for when and if the fire emerged into surrounding scattered homes, and the immense PG&E & WAPA power transmission complex. (These are called "wire hazards" by pilots note: PyroAnalysis report says the "wires" are more dangerous to aircraft than turbines.) Next on the ATGS's mind would be how to protect the communities of Round Mt., Montgomery Creek, Hillcrest, and Moose camp surrounding the Wind Farm proposal and finally, State Highway 299 the primary escape route for the entire region. It is at this point that a larger "box" strategy would be implemented and the direct attack strategy significantly abandoned. Clearly more acres will be burned and more resources and communities will be threatened.

In the **highly likely** event of this fire escaping initial ground attack, The Incident Commander would communicate to the ATGS the need for bringing in more air resources and larger air tankers to help contain the

fire as it left the proposed Fountain Wind Farm and threatened surrounding communities. These would be Large Airtankers (LATs) that can deliver from 2,000 to 4,000 gallons of fire retardant and or Very Large Air tankers (VLATs) capable of delivering well over 8,000 gallons of fire retardant.

Multiple helicopters would have been dispatched by now making the complexity of safely coordinating aviation assets much more difficult. They would be waiting out the flight restriction period nearby with water or crew to help ground forces as the fire leaves the wind farm.

Note: ALL THE ABOVE VITAL/ESSENTIAL RADIO COORDINATION ASSUMES THERE IS NO RADIO INTERFERENCE WHICH HAS BEEN A PROBLEM WITH ATTACK TRIED IN AUSTRALIAN WIND FARMS.

You have heard from Ron Raley and Jim Barnes, now, listen to former CDF (Cal-Fire) Deputy Chief of all air operation for 34year currently the Chair of the Associated Aerial Firefighters, Dave Wardall. Also hear from a current very experienced VLAT pilot Mark Baird both familiar with this proposal. Mark recently fought major fires on either side of the Fountain Wind proposal (Dixie & Fawn). They will explain all the reasons why this proposal would unequivocally be restricted to air assets or a "no fly zone."

As our fire grows in the Proposed Fountain Wind project more and larger airtankers are ordered, you may ask again, why can't they just put it out or help ground forces contain the fire in the Proposed Project.

PILOTS DAVE AND MARK:

Let the former Cal-Fire Deputy Chief of **all** air operations for 34 years and a **current** very experienced DC-10 pilot, Mark Baird, explain the situation going forward:

"I'm **David Wardall,** the Chairman of the Associated Aerial Firefighters a non-profit aerospace safety and training organization supporting aerial firefighting companies, pilots and airport crews. Currently I serve as a consulting aircraft structures engineer to the NTSB, NASA and am conducting engineering analysis for NASA. I have investigated many accidents and want to introduce this section because I want your staff to very clearly understand the risks of the Fountain Wind Project to our pilots and firefighters on the ground. Flying heavily laden aircraft (fixed and rotor wing) with poor visibility from smoke and very tall obstructions with immense blades along ridge tops is a prescription for a fatal accident both in the air and on the ground.

We have examined the proposed project, testified three times and determined it is an accident looking for a place to happen. The Fountain Wind project should be a NO FLY ZONE."

Mark Baird holds an Airman Certificate with Airline Transport Pilot DC-10 Type Rating. He has flight experience with more than 23,000 hours over more than 50 years. He has flown all over the world in all types of terrain and weather conditions. He was an instructor pilot on the DC-10 and B-747 aircraft. The DC-10 is currently the only aircraft in service to USFS and Cal-Fire which is classified as a VLAT. 2024 will be Mark's eighth season as a VLAT Pilot. Mark and others have suppressed fires with the DC-10, on three Continents: Australia, South America, and North America. His experience both flying and instructing in the DC-10 gives him extensive knowledge of the capability and maneuverability of this type of aircraft. He has fought fire from the air on major fires in the geographic region which contains the proposed Fountain Wind Project. He has engaged in aerial firefighting on fires started by the wind turbines themselves. He has engaged in aerial firefighting in Australia in the vicinity of wind turbines.

According to Mark, VLAT's are a very unique tool in the aerial firefighting arsenal. The VLAT is capable of delivering 9400 gallons of retardant to a

fire in one load. That is approximately three times the single load of LAT type aircraft and five to ten times the loads of the smaller airtankers or helicopters. When utilized correctly, the VLAT will have huge impacts on wild land fires containment. The VLAT is capable of delivering miles of fire line to the incident in one day."

"The ability to effectively support aerial firefighting activities is dependent upon many factors. Temperature, atmospheric pressure, smoke, convective activity, lightning, vegetation type, vegetation density, tree height, terrain elevation, density altitude, the presence of escape routes, ingress and egress routes, and hazards to navigation, (obstacle type and height), man-made infrastructure, water courses and other environmental factors all highly effect the ability of the aircraft and crew to accomplish the mission safely."

"Wind Projects present unique hazards to aerial firefighting activities. These types of man-made obstructions, whether mapped or not, are still hazards to aircraft. Catastrophic wild land fires show no respect, what so ever, to mapped obstructions. We have seen numerous examples of this fact in Northern California in the past few years. The Carr fire, the Klamathon Fire, the Dixie fire, the Camp fire, the White and Log fires, the Six Rivers, and the Happy Camp complex, the Park to name just a few. The fires themselves show no respect to mapped obstructions. The fire will burn through anything in its path whether the obstructions are mapped or not!"

"The question is as follows: Can the aircraft in question enter the Fire Traffic Area, maneuver to obtain an adequate amount of situational awareness, maneuver sufficiently to deliver the retardant effectively and then safely egress to a safe altitude? In close proximity to extremely tall obstructions, once again, whether mapped or not, with the volume of air traffic present in most large fires, the danger to aircraft of all sizes and

crew dramatically increases. These factors, among others, are reasons these types of wind projects are almost never constructed in tall timber and steep terrain. **There are no wind projects in Australia built in heavy fuel and steep terrain**, only one (that I am aware of) in the United States, None in Europe, none in South America were built on steep ridge tops in heavy fuels, especially near populated areas. These projects are always constructed on low rolling type terrain in light flashy (grass type) fuels. All such projects in Australia are in rolling terrain with little to no tree cover mostly in grassland."

"Any comparison of aerial activity in light fuel and rolling hills, to aerial firefighting in steep and deep terrain filled with tall timber and dense underbrush is simply ridiculous. This is akin to comparing apples to oranges. The extreme height of the proposed towers in the Fountain project only serves to further exacerbate the vast differences between the two types of aerial attack."

"Fighting fire in and around wind turbines is inherently hazardous. Typically, we would not be called until the fire has burned clear of the project area to a distance sufficient to allow safe operation of the aircraft. Additionally, the turbines themselves are potential ignition sources. According to DNV group, an international energy and renewables group, in any given year one out of every 2000 wind turbines will catch fire."

Mark has been to fires in Wyoming which were started by the turbines themselves. The Fountain Project consists of some of the tallest wind turbines ever built. Taller than most skyscrapers. The blades are longer with more rotating mass. More flammable liquid in the tower nacelle. These towers will generate more turbulence and all total will make aerial firefighting even more dangerous, particularly if a catastrophic fire causes the turbines themselves to become engulfed in flame.

During the Dixie fire Mark saw flame heights in excess of four hundred feet. No man-built structure would withstand this. The placement of the towers, along ridge tops and on adjacent spur ridges makes aerial firefighting difficult if not impossible. Retardant is typically dropped in support of existing fire line cleared of vegetation along ridge tops and on adjacent spur ridges. As stated in the Cal-Fire report, perhaps ground crews may or may not have easier access to the geography where fire lines can be supported, but aircraft will not!

Mark further states: "A fire running up-slope toward these over six hundred foot tall towers would not be defensible by air.

Aircraft are prohibited from dropping retardant onto electrical infrastructure. Retardant weighs approximately nine pounds per gallon. If not dropped from a high enough altitude to allow significant dispersion, the retardant is quite capable of crushing a truck, car, human body, or a wind tower. Similarly, we cannot drop on the transmission lines required to support the wind project. We cannot drop retardant within a specified distance of water courses. Much of the forest surrounding the proposed project is forest reproduction ground or tree farms. These "response" areas are particularly susceptible to catastrophic fire because typically the tree spacing is close, and the trunks are smaller in diameter. Branches are low. The totality of all of the hazards involved would create a patchwork of areas prohibited to retardant which renders vast areas indefensible by air. Fire lines not anchored correctly are easily flanked by wildfire. Patchy line coverage would not be effective."

"Maneuverability of category D, and E aircraft, or any aircraft for that matter, is a function of physics, and geometry. Rate and Radius of turn, climb gradients are mathematically determined. Aircraft limitations are

engineered to provide a margin of safety for the aircraft and crew. As the saying goes, "you can't fight the physics."

"The FAA TERPS, ICAO PAN OPS detail the radial distance, to accomplish turns in landing and intermediate configurations. Both of the above publications also detail the climb gradients required for aircraft in order to climb and clear obstacles under different circumstances. For example; category D aircraft traveling at 150 knots require approximately 1.3 nautical miles to perform an 180 degree turn at a bank angle of 30 degrees or "standard rate of turn". Obstacles, whether they are mapped or not, would hinder the maneuverability and safe operation of the aircraft. We typically do not drop retardant up-slope in rising terrain. The aircraft may not be capable of the climb gradient required to out climb the terrain. This is particularly true when there is an over six hundred foot tower on top of the ridge. Down slope drops are a matter of geometry and energy management."

"Too steep a drop angle even with power at idle will result in increased speed, and distance traveled for the amount of retardant calculated to exit the tank per foot, thinning the retardant line, which may render the drop ineffective. Imagine the difficulty crossing the ridge top 250 feet above a 600 plus foot tall line of towers, then try to get the aircraft down to an altitude of 250 feet above vegetation in time to make an effective drop....next to impossible. The DC-10 is prohibited from negative G in the landing flap configuration, which means that even if increased speed were not factors, the negative G pushover is not allowed."

"Flying between the towers is not an option. Maneuvering between obstructions should an emergency situation arise would not be an option. It is convenient to say an aircraft can be flown between two tall structures. But the Pilot must take into account what the FAA refers to as "all factors" which may impact the flight. Turbulence, cross wind,

mountain wave or up and down drafts, engine failures, abnormal trim or flight control configurations and a plethora of other potential problems would cast doubt on the wisdom of intentional or worse unplanned maneuvering close to the ground between two tall towers in a Category D aircraft. Ingress and escape become far more problematic when one cannot simply top the ridge and then push over down slope for the drop or plan an escape by out climbing surrounding ridges which are now littered with very tall obstructions."

"Most drops are either parallel to the ridge or spur ridge within one wingspan of the fire line or cleared area. Or drops could be perpendicular to the ridge top anchored into the ridge top fire line or anchored to some point on the ridge top. Very unlikely when there are large structures all along the ridge top."

"In conclusion, as an experienced DC-10 pilot, with over 23,000 hours flying all types of aircraft, all over the world, including over 17,500 hours in the DC-10, that communities, ranches, people, power transmission lines and the natural resources in and adjacent to the proposed Fountain Wind Project would, for all intents and purposes, be indefensible by air.

Finally, it is the decision of the Pilot in Command whether a mission is safe enough to warrant the risk to his aircraft and crew. No dispatcher, no incident commander, no Air attack Supervisor, no lead plane can, nor would, order a crew and aircraft into a situation not considered safe by the aircraft commander. The USFS and Cal-Fire both spend tremendous amounts of time and resources on the individual's responsibility to their safety and the safety of the people in their crew."

Mark takes that responsibility very seriously. So should we.

One must ask what could possibly motivate a project which would endanger the lives and property of the people and communities near the Fountain Wind Project, a high fire prone area? Is the value of the power generated by these turbines really worth more than the lives and property of the communities adjacent to this project? If there is any doubt, the answer should be a resounding NO.

Signed by:
W. David Wardall
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12/18/2024

W. David Wardall
Chairman Associated Aerial Firefighters
Former Cal-Fire Deputy Chief Air Operations

DocuSigned by:
Mark Baird
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12/19/2024

Mark Baird
Current Air Attack Pilot (VLAT)

Signed by:
Jim Barnes
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12/19/2024

Jim Barnes
Former Chair - Associated Aerial Firefighters
Former initial Attack Pilot Redding/State-wide

Signed by:
Ron Raley
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12/18/2024

Ron Raley
Former Air Attack Group Supervisor
Type 1 incident Commander