



Save The Eagles International



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Repowering Altamont Pass with Smoke and Mirrors

A few months back it was disclosed through the media that the Altamont Pass Wind Resource Area was repowering with new safer turbines. With their new turbines Altamont was going to drastically reduce the bird mortality rate by 80 percent and raptors by 67 percent. We were led to believe that this major upgrade was going to drastically reduce the number of bird kills in the Altamont region while increasing energy production. This highly publicized move was received as good news across the world because thousands of eagles and tens of thousands of other raptors have been slaughtered at the wind turbines of Altamont Pass.

I began to think about it. The turbine designs haven't really changed, they 're just bigger. I did not understand how this could be possible. So I set out on a journey to find out if the new turbines really are safer for birds and raptors.

Why is my opinion important? I am a wildlife biologist, an expert on birds of prey, and I tell it the way it is. I have even done my own research in the Altamont pass area before wind turbines were installed. The wind turbine issue has been of great concern to me because protected and rare species have been getting chopped up in great numbers at Altamont for over 30 years. Some will say this is not my business and they will be wrong. Dead eagles are my business.

Over the years I have seen the wind industry answer to this problem. Environmental laws have been changed in their favor, the industry has virtually no regulations, they have their own army biologists, and as far as they are concerned, wind turbines belong just about everywhere the wind blows. Their money has always won and the golden eagles as well as all other raptors, have always lost.

I now have a different story to tell. It is important because the scientific studies that were used to bring us this good news are loaded with seriously flawed information. In addition, This false information is now being used to sell even more turbines to the ignorant across the world. Ignored is the fact that if something is not done, we are going see major population declines of nearly every raptor species across the world. This includes the extinction of several species. All caused by the uncontrolled installations of the propeller style wind turbine.

For this critique I have looked through decades of reports and studies on Altamont Pass. To sum it up, Altamont Pass is one big mess and mortality is really much worse than what is being reported. I will explain why and hope to bring some clarity to a very complex set of circumstances. Some of what I have to say is quite tedious but in the end I believe everyone that reads this, will never think of Altamont pass or any other wind farm, in the same light again.

The Golden Numbers

The industry numbers used to proclaim that the larger turbines used for the repowering of Altamont will be much safer, are presented in ratios comparing Fatalities/1 Megawatt /Per Year. Many charts and hundreds of ratios were used to compare the different species of birds killed at Altamont. I could tear apart any of these numbers but I will only illustrate and discuss a few of the key numbers. Those being the numbers used for the media reports, target species of raptors and those used for all native birds. The target raptors are those species killed in the greatest numbers every year at Altamont. They are the Golden Eagle, the Red-tailed hawk, the American kestrel, and the Burrowing Owl. The all native birds category, are all the many species of native birds killed at Altamont over the years.

The numbers from numerous studies show that raptor mortality since 2005 at Altamont has ranged from 4.035 fatalities per megawatt to .803 fatalities per megawatt per year according to the size class of turbine. The death rate for all native birds range from 11.00 fatalities per megawatt a year down to 2.389 for the newly repowered Buena Vista wind farm.

The higher mortality numbers were derived from the smallest 40-65 Kw class turbines in use at Altamont for over 20 years. The lower mortality figures were derived from studies conducted on much larger 1 MW turbines in the newer section of Altamont called Buena Vista. There were also comparisons to other progressively smaller turbine size categories as well. The categories shown below illustrate a progressive increase in mortality per megawatt. These numbers can be seen below.

40-65 KW Wind Turbines	95-200 KW Wind Turbines	250kw-400kw Wind Turbines	660 KW Wind Turbines	1MW Wind Turbines
4.035/MW/year	3.243/MW/year	1.579/MW/year	2.117/MW/year	0.748/MW/year
11.000/MW/year	8.140/MW/year	4.111/MW/year	3.512/MW/year	2.389/MW/year

These are impressive numbers and it appears that Altamont is on its way to reducing yearly mortality and living up to the settlement agreement made with the Audubon society, Californians for Renewable Energy ("CARE"); and Attorney General (People of the State of California), to reduce mortality. But there is a lot more to these numbers as I will illustrate and the agreement made to reduce mortality is not being met.

Rated Capacity and Actual Energy Production

Altamont pass has a rated capacity of 580 MW. This number represents the theoretical total energy output of their 5000 or so turbines under high wind conditions. Every turbine depending on its size also has an industry given "rated capacity". These turbines are represented in the different categories seen above. For the sake of simplicity I will compare just two different wind turbines. One from the lowest 40-65 KW category and one from the 1 MW category, those being an older Windmatic 65 KW will be compared with one of the new Mitsubishi 1 MW turbines that have been installed in the Buena vista section of Altamont. These can be seen in the images provided.

The average wind speed in the Altamont region is in the 12-16 mph range. At 12.5 mph the Windmatic wind turbine produces about 135,000 KWh per year. According to the manufacturer the 1 MW turbine at the same wind speed produces about 1,000,000 KWh. This comes out to a 7.4 to one ratio in energy production when compared to the smaller turbine. The "rated capacity" for the smaller turbine is 65 KW This industry rating when compared to the 1 MW Mitsubishi rating creates a ratio that is 15.4 to 1 (65kw divided by 1000kw). With this disparity between "rated capacity" and actual energy production it more than doubles the number of wind turbines used to compare fatalities for the much higher 40-65Kw mortality category. This type of comparison can be used with any of the turbines installed at Altamont.

All the mortality numbers from Altamont were derived by using comparisons to "rated capacity". By using bird mortality and equating it to rated capacity, it creates a deception or trick of numbers because rated capacity is a subjective wind industry figure that refers to maximum energy potential of a turbine at a particular wind speed. The term rated capacity is so vague that it should NEVER be discussed in any mortality impact studies to protected species.

I know the State Of California is well aware of this as well because twenty years ago the California Energy Commission made the following statement about rated capacity..... "Because the wind industry does not yet employ a standardized turbine rating system, much of the data reported is not directly comparable. Turbines are tested under different conditions and rated at widely varying miles per hour specifications. Evidence of the problem is indicated by the lack of correlation between blade swept area and turbine KW specifications." Yet the wind industry has created false correlations for their mortality studies.

Instead what should always be discussed in every scientific mortality study are total rotor sweep area, tip speed, and placement because these are the primary wind turbine factors that slaughter our birds.

Currently there is no data available from Altamont Pass or any other wind facility across America, equating actual energy production to raptor and bird mortality. If one understands the magnitude of what I have just presented, then it becomes obvious that that none of the wind industry mortality studies using rated capacity comparisons have

credibility. Rated capacity, that vague term of potential, is also used in another deceptive manner, it is used to embellish the energy projections of wind farms.

In the end, with these new turbines going into Altamont, more energy will be produced and that is the real reason why they are repowering. It is not for the birds and never has been. More energy will be produced because at 300 feet up in the sky these turbines reach into stronger winds and far more rotor sweep will be put into Altamont. Likewise if the same old turbines now on 60- 80 foot towers were placed at the same level, they too would produce far more energy.

Rotor Sweep

All things being equal, if we look at rotor sweep comparisons to produce the equal amounts of energy (135,000 kwh) it shows that at a 7.4 to 1 ratio Windmatic have a combined total rotor sweep of 1140 sq meters (7.4 x 154sq meters=1140). The new 1 MW Buena vista turbines reaching almost 300 feet into the air have a rotor sweep of 2959 square meters. Each of these turbines has a rotor sweep equal to the total sweep area of 19.2 of the smaller Windmatic turbines. They also a total rotor sweep of 2.6 times for the same energy production. But more importantly the mortality equivalent of 19.2 turbines in the numbers above, is being compared to just one 1 MW turbine when it should be compared to just 7.4 turbines. This creates a figure showing 2.6 times more fatalities for the smaller turbines. If this inflated 2.6 ratio is plugged into the industry numbers it drastically lowers the mortality numbers again for the smaller 40kw-65kw class of turbines.

Even so, there are far bigger problems with the wind industry mortality studies and their conclusions.

Proportional Rotor sweep and Search Areas

In order to get the mortality data, an area around each turbine must be searched. If we compare the areas searched between the different turbine types the results are shocking. Especially when comparing the search areas of the 1MW turbine to the smallest and supposedly most dangerous 40-65 KW turbines.

40-65 KW Wind Turbines	95-200 KW Wind Turbines	250kw-400kw Wind Turbines	660 KW Wind Turbines	1MW Wind Turbines
rotor sweep area 154 sq meters 1658 square feet	rotor sweep area app. 350 sq m app.1734 sq feet	rotor sweep area app. 800 sq m app. 1734 sq feet	rotor sweep area 1734 sq meter s18,664 sq feet	rotor sweep area 2960 sq meter 31,860 sq feet
50 meter search	50 meter search	50 meter search	60 meter search	75 meter search

Published Scientific reports claim declining fatalities in the new larger turbines installed at Altamont but the data also shows something else if you look close. The data shows that there a direct association between the number of fatalities found in relation to turbine size. It is an illusion because from the highest number of fatalities found in the studies down to the lowest shows progressively smaller search areas for each of the five larger wind turbines categories.

The area searched for each of the smaller Windmatic turbines is 50 meters out from the base of each turbine. The area searched looking for bodies around the 1 MW turbines at Buena Vista was 75 meters. Since the 1 MW turbines are actually 19.1 times bigger we can multiply the 7850 square meter Windmatic search areas by that amount for comparison. This will give us an area of 149,935 square meters that was searched for the fatalities listed for the smallest turbines. Now if we look at the total area searched for the much larger 1 MW turbines it is just 17662 square meters

A total single search of the so called safer 38 turbines installed in the Buena Vista wind project, covered 671175 square meters. The total search area of the same rotor sweep equivalent (726 40-65 Kw turbines) of the smaller turbines was 5,699,100 square meters. A difference of 5,028,735 square meters, or almost 2 square miles.

This is very important because wounded birds with severed limbs can travel for days before dying and smaller birds hit by blade tips can fly like a baseball upon impact.

The mortality figures given by the industry for the 1 MW turbines were derived from search area equivalents 8.5 times smaller. The new larger turbines with lower claimed fatalities had bird and bat mortality searches covering an area of over 26 million less square feet every time searchers looked through the turbines. What does this all really mean? That if you do not look, you will not see.

Now that the wind industry undersized search radius ploy has been exposed, an argument can also be made that comparison search areas should be derived from the equal angles created from the outside edge or the maximum height of the rotor sweep to the outside edge of the search radius. I have looked into this and depending on tower height, it still creates a search area radius in the 130-142 meter range that should have been done for each of the Buena Vista 1 MW turbines. This is still 3 - 3.6 times too small. But even if this had been done, the increased search areas would not account for the higher winds at the increased elevation of impact, nor the greater impact to birds generated from birds hitting blades with much faster tip speeds of the newly installed 1 MW turbines.

All Native Bird Comparisons

The new turbines were said to drastically reduce the bird mortality rate by 80 percent. This statement is not true. Not only are the all native bird figures wrong from the result of using distorted comparisons of rated capacity, rotor sweep, and search area sizes, but birds species that do not use the habitat, were used to create the low Buena Vista number of **2.389 bird fatalities/per MW/ per year**.

Bird species that do not live in or use the habitat should not have ever been used. I've walked the Buena Vista habitat. The habitat where the Buena Vista wind turbines are placed, is a treeless semi desert grassland (see images). You will not see wild turkeys, flickers, scrub jays, pelicans and many of the other bird species that were used to build the 80 percent reduction number. This is another trick of numbers used to create the safer turbine myth.

Other problems with the Turbine comparisons

Hidden in the numbers are several other facts that completely change the widely published repowering conclusions. With the largest 1MW turbines, is the terrible news that the golden eagle death rate went up over all other wind turbine categories from .043 fatalities to .084 per MW /per year. Even with the many flawed comparisons and conclusions the death rate still nearly doubled when compared to the 40-65 kw turbines. When accounting for these flaws, the death rate for the golden eagle becomes even more alarming because it easily escalates mortality to over 4 times as many golden eagles killed with the so called safer turbines.

Another fact buried in the 67% lower raptor mortality numbers is the fact that with the burrowing owl mortality category, no mortalities were reported because they also do not live around the turbines in Buena Vista 1 MW turbine habitat. This lowered the overall raptor mortality of the raptor species. The closest and rare observations of this species were all about 1/2 mile away from the closest turbines.

Lastly it must be pointed out that the these same 1 MW Turbines put in other locations of Altamont pass with better habitat would kill far more raptors, birds, and bats. In other words the bird and raptor mortalities reported would have been higher in nearly every category except for those species like the Horned lark and Prairie falcon that prefer this semi desert habitat. The death list from the Buena Vista turbines shows that their mortality numbers went up.

The only reasonable conclusions that can be made from the Buena Vista Mortality studies is that the new larger turbines are far more dangerous to the golden eagle and wind turbines kill the indigenous species from the habitat where they are placed.

The Stark Reality

One of the reasons the new turbines are so dangerous to eagles is because the placement of the Buena Vista turbines now has the highest concentration of wind turbines in all of the Altamont region. In addition, for any bird species that pays a visit to the Buena Vista Wind farm, the chances of coming out alive are the worst in all of Altamont. Now within this .85 mile square mile area, anything that flies must face 1,205,132 square feet of air space with spinning turbine blades. Their blade tip speed is 210 mph when spinning at 19.8 rpm. The Buena Vista section of Altamont Pass now has more than three times the density of spinning blades (rotor sweep) found anywhere else in the entire Altamont wind resource area. In other words, the equivalent of 726 of the older Windmatic wind turbines have been crammed into one small area.

For the Buena Vista project 179 older turbines were taken out and this repowering project added 441,320 more square feet of rotor sweep to the previous total. When the original 179 turbines that were pulled out, they also did not sit on .85 square miles, they were spread out over an area of 3.9 square miles. The untold truth is that the Buena Vista wind farm is now the most dangerous installment of turbines in the entire region of Altamont Pass and it is going get worse.

Why Altamont Death Rate is Really Much Higher

When looking through the many studies conducted at Altamont over the years, I also saw mistakes researchers were making with their the studies under the turbines. I can report that mortality is much worse than anything reported and much higher than any of previous of estimates. Especially for the smaller birds and bats. This is because all the previous studies were set up to see only the leftovers from scavenging. Unreported in the studies is the fact that Ravens, sea gulls, vultures are picking the search areas clean long before the searchers arrive. Over the years I have spent time studying each of these species and from what I have seen of their behavior I know that most of the smaller species killed by the turbines are carried off or eaten from the turbines in a day or two after they hit the ground.

In all the studies researchers have been coming back to the turbines checking for bodies two weeks, a month , or even 3 months later so they can tally up the fatalities. But its really old news and even if they checked everyday the ravens and gulls would make fools out of them.

A look at the many Altamont studies consistently shows that these species as a group are the most commonly seen birds in the Altamont Pass region. These species are tenacious scavengers equipped with very keen eyesight. Their eyesight may not equal that of an eagle's, but it is not far off. In addition there is another very important characteristic about raven behavior that plays a part in all of this. That is, they stash food. Hiding it away even if they do not need it or can ever possibly eat it all, they will fly off and hide it. I have witnessed ravens carry off and hide a months worth of food in a few hours. But due to spoilage much of the food taken could never be consumed.

Scavenger studies by researchers have been set up to account for the disappearance of fatalities, but as I have seen, they too are flawed. For example with the Buena Vista scavenger studies, the dead quail used in the scavenger studies were too big for gulls to swallow whole or for the ravens to carry away.

There are other very serious problems with all the mortality studies. These problems arise from deliberate interference from those protecting the money. Lack of researcher access given by the wind companies, wind farm personnel picking up and hiding bodies, land owners with leases wanting to keep a lid on the bad publicity so their money will keep coming in. Then there are those endless studies generated from the wind industry experts. As anyone can see from the results of the Altamont repowering studies, none have these have much merit.

I have a lot more I could say about Altamont but I will save it for another day. Right now I want the people in the Bay Area, to understand the next ugly chapter of what is about to take place at Altamont Pass, more eagles will die.

The future

The result of the repowering of Altamont will bring many more fatalities to the golden eagle and all raptors. Currently Altamont has a rated capacity of 580 Mw of which it has

never come close to achieving. With the new turbines and by using the obscure meaning of "Rated Capacity", I believe the industry is going to make it happen. In the process the total rotor swept area for Altamont will be increased by several million more square feet. For Altamont the blood bath will not only continue, it will get much worse. If this happens a mortality decline for raptors will never be reported until there is a decline in the overall raptor populations or the media grabs a hold of a cooked-up wind industry report.

The repowering of Altamont is in its early stages. I know that 100 much larger 2.3 MW turbines are scheduled to be put in at Altamont by NextEra. The total rotor sweep of these turbines will equal 4400 of the early turbines 65 KW turbines (see image). Combine these turbines with the 38 1 MW turbines installed at Buena Vista, the 31 Diablo Winds 660 KW turbines and together they will total 5434 of the early 65KW turbines. I have been told that as many as 700 of these huge new generation wind turbines are planned for the repowering of Altamont.

So I ask, at what point if ever, does any of this ever sink into the consciousness of the Bay Area?

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