SANTA BARBARA AUDUBON SOCIETY

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December 4, 2024

To: Santa Barbara County Planning Commission

Subject: Strauss Wind Energy Project: Exceedance of Bird Mortality Thresholds

Dear Commissioners:

Santa Barbara Audubon Society (SBAS) is a chapter of the National Audubon Society. SBAS has about 1,100 members in Santa Barbara County. The mission of SBAS is to protect area birdlife and habitat and connect people with birds through education, conservation, and science.

SBAS supports all forms of renewable energy, including wind energy. SBAS has a long history with wind projects on the Strauss site, starting with the Lompoc Wind Project almost 20 years ago. We have endeavored to influence the development of Strauss to ensure that it would be designed and operated to have the minimum feasible impact on birds and other wildlife, while still producing abundant renewable energy. We believe that our efforts have been constructive. Many of the changes that we have suggested to the County to better protect birds have been incorporated into the Santa Barbara County Conditions of Approval (COA) for Strauss.

The goal of SBAS in submitting this letter is to recommend practical measures that can be implemented that will reduce bird deaths in compliance with the Strauss Adaptive Management Plan (AMP). Our hope and expectation is that these measures can be implemented in such a way that the wind farm produces sufficient energy and that Strauss is financially viable.

450 Golden Eagles, plus bats and other bird species, may die as a result of the Strauss wind farm

After delaying applying for its Incidental Take Permit (ITP) for three years, BayWa applied to the United States Fish and Wildlife Service (USFWS) and sought and received an ITP that would allow it to take (kill) up to 15 Golden Eagles per year. This equals an allowed take of 450 Golden eagles over the anticipated 30-year life of the project.

Killing 15 Golden Eagles per year would significantly reduce Golden Eagle populations in the vicinity of the project and even, further afield, in the Local Area Population (LAP). Indeed, the permitted take is nearly 2½ times the threshold for sustainable take (which is 6.14 golden eagles

per year in the LAP)[1,2]. The USFWS has directed BayWa to undertake a mitigation program to compensate for losses at Strauss.

BayWa has reported that, from the beginning of operations on November 9, 2023, through June 30, 2024, one dead Golden Eagle was found at Strauss[3]. This eagle apparently was one of a nesting pair, so the impact of this death on the local population is significant. The fact that only one Golden Eagle was killed in an eight-month period is encouraging. If the rate of Golden Eagle deaths at Strauss remains the same, the number of Golden Eagle kills at Strauss will be substantially less than 15 per year in the future. This would be a very good thing!

However, there is still great cause for concern regarding bird mortality and a pressing need for one or more additional measures to be implemented.

For one, with all due respect to those who have worked diligently to collect the bird-kill and bat-kill data, the mortality data is probably understated. More than one Golden Eagle may have been killed at Strauss since the start of operations. This is because the method of data collection that is being used is not the best practice method of data collection for counting bird- and bat-kills. Below, SBAS is respectfully requesting specific changes to the carcass survey method at Strauss including more frequent searches for carcasses and, most importantly, the use of carcass-finding dogs rather than just human eyes.

Second, many other bird species as well as bats have been killed at Strauss since the start of operations. Indeed, the reason for the Planning Commission hearing is that Strauss has exceeded its "Level 2 mortality threshold." So even though BayWa has reported only one Golden Eagle fatality in its data for the first eight months of operations, which again, if correct, is a very encouraging number compared to what it could have been, numerous other bird species and bats are dying.

In short, there is cause for concern, there is room for improvement, and in this letter and in its upcoming oral comments SBAS is respectfully requesting additional measures to reduce bird mortality.

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[1] Final Environmental Assessment for the Issuance of a Long-Term Incidental Eagle Take Permit for the Strauss Wind Energy Project; U.S. Fish and Wildlife Service Pacific Southwest Region, Migratory Bird Program, Sacramento, CA; Contact: Thomas Dietsch; September 2024.

[2] Included in the take of 15 Golden Eagles per year is "lost productivity from up to 30 occurrences of nest disturbance within 1 mi of Project O&M activities during the breeding season at an additional 0.59 golden eagle per occurrence, or 18 golden eagles over the Permit term.", according to the ITP, page 6. Data gathered since 2015 indicate that the project site has supported 1 nesting pair, with successful fledging of Golden Eagles in two of those years (a territorial pair was present throughout this period and unsuccessful nesting attempts were documented at least once).

[3] Quarterly report (Q2 2024) for post-construction fatality monitoring at the Strauss Wind Project, November 7, 2023 – June 30, 2024; page 6: WEST, Inc.; July 15, 2024.

Background

The Strauss Environmental Impact Report determined that birds and bats could be injured or killed during wind farm operations. Bird and bat mortality monitoring commenced when Strauss began operations. On April 24, 2024, Strauss reached the threshold for Level 2 adaptive management due to the cumulative fatalities of three non-listed sensitive bird species[4]. Once recorded bird or bat fatalities trigger the threshold criteria, permit conditions require County staff to submit a report to the Planning Commission at a public hearing. The hearing will be held on December 11, 2024 to discuss the nature of the impacts to birds and bats, the status of the AMP, and the measures taken, planned, and recommended to address impacts going forward. Our purpose in sending this letter is to recommend changes to the Strauss equipment and procedures that will result in lowering bird mortality at Strauss, hopefully to a level below the AMP mortality thresholds.

BayWa has deployed a system known as IdentiFlight which detects Golden Eagles. IdentiFlight uses optical technology combined with machine vision and artificial intelligence software to detect and identify bird species of interest in wind farms. When a large bird is detected, the system sends a signal to the appropriate wind turbine generator (WTG) to curtail (stop) its rotation. In most cases this is sufficient to prevent a collision between the bird and the WTG blade. And, according to IdentiFlight, "Most IdentiFlight customers experience less than 1% power generation loss per year, even at our most active sites."[5]

At the present time, the IdentiFlight system at Strauss is only configured to detect Golden Eagles. However, at other wind farms IdentiFlight has been programmed to detect other large bird species[6]. Hopefully, this capability can be extended to Strauss to reduce mortality of other species (see recommendation 3 below).

The IdentiFlight system is working fairly well at Strauss. However, it is not working well enough that the Strauss bird mortality meets the level 1 and level 2 mortality thresholds in the AMP. We believe that improvements to the IdentiFlight system configuration could result in reduction of bird mortality (see recommendation 2 below).

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[4] Ibid, page 6. "To date, the Level 1 thresholds identified in the AMP have been met for two species categories: 1) federal/state listed species (one golden eagle fatality, a California fully-protected species), and 2) raptors without designated conservation status (one American kestrel, one great horned owl, and two red-tailed hawk fatalities). The Level 2 thresholds identified in the AMP have been met for one species category: non-listed sensitive bird species (two sharp-shinned hawk fatalities and four horned lark fatalities; both are considered California Watch List Species)"

[5] https://www.identiflight.com/howitworks/#overview&gsc.tab=0

[6] See IdentiFlight Species List at https://static1.squarespace.com/static/5e710b62f0a8ee01b4352bf5/t/6650f6cf003e516fc4eb2d95/1716582098263/IDI+Species+List_USA.pdf

SBAS supports the County Planning and Development staff recommendations, in general

We have carefully reviewed the staff recommendations in the staff report[7]. We support the staff recommendations, in general. In some cases we recommend slightly different actions. Our recommendations for measures that should be taken at Strauss to reduce bird mortality to below the levels required in the AMP[8] are stated in the paragraphs that follow.

1. The County should establish a Working Group to evaluate strategies to reduce bird mortality at Strauss

The County should establish a Working Group to evaluate strategies to reduce bird mortality. The Working Group should comprise the Strauss operator BayWa r.e. Wind LLC (BayWa), County staff or contract biologist, USFWS and/or California Department of Fish and Wildlife (CDFW), and the IdentiFlight company. The Working Group should meet quarterly to review the operator's progress in collecting mortality data, carcass persistence and searcher efficiency studies, and measures under consideration to reduce bird and bat mortality. These measures would include the measures recommended by SBAS, which are described below. The Working Group should provide quarterly progress reports to County staff. At the end of one year, the Working Group should prepare a report on its recommendations for decreasing mortality. They should evaluate the expected performance of the various means of reducing mortality, along with a statement of cost impact. The details of any calculation of cost impact should be submitted to the Working Group for analysis and approval and those details should be included in the annual report. If Strauss continues to exceed its level 1 and level 2 bird mortality thresholds after one year, the Working Group should appear before the Santa Barbara County Planning Commission to explain measures taken to reduce bird mortality and plans for further measures to reduce mortality.

2. The IdentiFlight system at Strauss should be improved to reduce bird mortality

As mentioned above, the IdentiFlight system is not sufficiently effective in its current configuration. The system comprises only three optical imaging heads for the entire 3000-acre wind farm. This appears to be very light coverage of the wind farm compared to what IdentiFlight usually recommends. IdentiFlight claims more than 90% reduction in bird mortality with full coverage. However, it is likely that some of the optical imaging heads at Strauss are partially obscured by hills or foliage or WTGs or are too far away from some WTGs to provide adequate detection of distant birds. These optical imaging heads are only providing "partial

[7] "Staff Report for Level Two Bird and Bat Adaptive Management Plan for the Strauss Wind Energy Project", Santa Barbara County Energy, Minerals and Compliance Division, December 3, 2024.

[8] Santa Barbara County Strauss Conditions of Approval #42, MM BIO-16d, Adaptive Management Plan, 20 November 2019.

coverage". IdentiFlight's normal practice to for them to determine which imaging heads are providing full coverage and which are providing partial coverage. IdentiFlight will only warranty the performance of sensor heads with full coverage. **We recommend that the operator be required to provide the County with information on which areas of Strauss have full IdentiFlight coverage and which have only partial coverage.** This information will inform decisions on changes that need to be made on the configuration of the IdentiFlight system to improve coverage and thus better protect birds.

Another possible improvement would be to study the IdentiFlight curtailment strategy as to when and how Strauss curtails specific WTGs, depending on where a soaring bird is and what direction it is heading in the wind farm. Possibly changing curtailment parameters would reduce mortality. We recommend that the Working Group studies these questions in depth and implements improvements that would reduce bird mortality.

We support the County staff recommendation to conduct an effectiveness evaluation of the existing IdentiFlight system. We highly recommend that this evaluation be conducted with the active assistance of the IdentiFlight company.

3. IdentiFlight should be programmed to detect Red-tailed Hawks and Turkey Vultures

We recommend that the IdentiFlight system be configured to detect two additional large bird species, Red-tailed Hawks and Turkey Vultures. These two species comprise almost all the large-bird observations at Strauss[9]. The Red-tailed Hawk is a countable species for the Strauss level 1 and 2 thresholds. Take of both species is illegal under the Migratory Bird Treaty Act. That is, when Strauss kills a Red-tailed Hawk or a Turkey Vulture, it is breaking the law.

[9] "Summary of Observations During Large Bird Use Surveys at the Strauss Wind Farm, May 6 – 30, 2024"; WEST Environmental and Statistical Consultants, Corvallis, OR, 97330.
https://cosantabarbara.app.box.com/s/i5k1cdn2pdalmy4ifn73r3tfjvyvmn68/file/1615449858413

Red-tailed Hawk flying through Strauss, September 14, 2024. Photo credit: Adrian O'Loghlen

IdentiFlight has been trained for Turkey Vultures at other wind farms[10]. The IdentiFlight company indicates that they could use the Turkey Vulture data they already have in an existing IdentiFlight system for minimal or no cost.

The IdentiFlight species list indicates that it is "Trained and Ready" to detect and classify the Common Buzzard. This old-world hawk species is of the same genus as the Red-tailed Hawk and nearly the same size. IdentiFlight has indicated that they could train an existing system to detect the Red-tailed Hawk in a short time, also for minimal cost.

Training the IdentiFlight system to detect Red-tailed Hawks and Turkey Vultures and to curtail the WTGs when they are in danger would reduce mortality for these species and reduce incidences of Strauss violating federal law. We urge the County to require this capability, which will enable Strauss to make progress toward meeting its required level 1 and level 2 bird mortality levels.

We agree with the staff recommendation ". . . that the IdentiFlight system be programmed to identify and curtail for turkey vultures and red-tailed hawks in addition to golden eagles."[11]

[10] See IdentiFlight Species List mentioned above.
[11] Staff report, page 16.

The operator may claim that WTG curtailment due to including these species is too costly. If so, we urge the County to require detailed estimates of the cost of curtailment, using verifiable cost data. The County should not be satisfied with a generalized hand-waving statement that curtailment for Red-tailed Hawks and Turkey Vultures is "not economically feasible."

4. Selective curtailment of WTGs may prove effective

Bird mortality at Strauss may prove to be a function of its particular wind farm characteristics. SBAS suggests that the Working Group analyze the mortality data to determine whether there is a correlation between bird deaths and such factors as turbine number (i.e. which turbine), wind speed at the estimated time of bird strike, time of day of bird strike, time of year, etc.

Then the Working Group should study the mortality data to determine whether bird kill could be reduced by selectively shutting down some WTGs some of the time ("selective curtailment"). For example, some WTGs may have higher mortality at some times of the day or year, perhaps during bird migration or breeding, or at certain wind speeds. Shutting down particular WTGs under certain conditions might be an effective mortality reduction measure for small birds like horned larks which can't be detected by IdentiFlight (this would be in addition to shutting down WTGs when large raptors are present). We agree with the staff recommendation, " . . . selective curtailment, including seasonal and/or temporal curtailment, be considered in the future if bird and bat mortalities exceed those recorded in operating year one, and after other adaptive management responses are implemented and studied for efficacy"[12]

One strategy that has the potential to be effective for the documented nesting Golden Eagles at Strauss is to do surveys during the eagle nesting season. This is supported by COA 24 (Avoidance Measures for Nesting Birds), which requires nesting surveys for Golden Eagles. Survey results would determine the current breeding status and inform decisions on selective curtailment, if warranted. We support the staff recommendation, ". . . productivity monitoring of potential and in-use golden eagle nests within 1-mile of the SWEP occur during the breeding season (December 1 through July 31, or until nest failure)."[13]

Curtailing WTG N7 during the Golden Eagle nesting season might be particularly effective, as the IdentiFlight coverage of N7 is partially obscured and N7 was the WTG where the dead Golden Eagle was found in March of 2024. **We strongly recommend curtailing WTG N7 during daylight hours during the Golden Eagle nesting season if there is Golden Eagle nesting activity on or within one mile of Strauss.**

Regarding curtailments in general, in the worst case, particularly egregious WTGs could be shut down permanently, assuming that the bird mortality was unacceptably high. For example, WTG

[12] Staff report, page 15.
[13] Staff report, page 17

N8 had five fatalities (3 birds, 2 bats), compared with several WTGs which had none, in the 10-month period mentioned above[14].

Bats have already suffered mortality at Strauss. We agree with the staff recommendation that increasing the WTG cut-in speed at low wind speeds ". . .be considered if bat fatalities reach Level 2 thresholds in an operational year . . ."[15]

5. The Bird Gard auditory deterrent shows promise, needs to be proven

BayWa has informed SBAS that it is considering using the Bird Gard acoustic deterrent system to deter birds from approaching the WTGs, thereby reducing the probability of the birds being struck by the WTG blades. The Bird Gard speakers would be mounted on the nacelles of five WTGs.

Initial data on Bird Gard looks promising. We have seen "heat maps" from the Strauss IdentiFlight system which indicate that Golden Eagles tend to avoid a WTG where a Bird Gard loudspeaker is operating. According to the latest information that we have, sounds from the Bird Gard would come on randomly in short intervals, not be triggered by the presence of birds. We believe that this auditory deterrent is promising, but has not yet been fully evaluated and proven to be effective. We recommend the following:

A single Bird Gard speaker head should be evaluated under varying environmental conditions (fog, sunshine, rain, wind) to determine the probability of a Golden Eagle avoiding a WTG because of Bird Gard.

An estimate should be made of the number of Bird Gard speaker heads needed to effectively cover the entire wind farm. This estimate should be evaluated by the Working Group. Ideally, several Bird Gard systems should be installed on several WTGs to evaluate the effectiveness of an array of Bird Gards. Then that data could be used to determine how many Bird Gards would be needed for the entire wind farm and where they should be placed.

One of the problems with Bird Gard is that the birds may become acclimated to the sound of Bird Gard and no longer be deterred. Therefore, we recommend that Strauss use IdentiFlight data to determine when a bird is approaching a WTG and only turn on the Bird Gard sound when a bird is on a collision course. This would have the additional advantage of reducing the amount of time that the sound is on. The benefit of that is, 1) the birds are less likely to become acclimated to the sound, and 2) the sound would be on for a smaller percentage of the time and thus less likely to annoy Strauss's neighbors.

[14] Quarterly report (Q2 2024) for post-construction fatality monitoring at the Strauss Wind Project, November 7, 2023 – June 30, 2024; Table 3: WEST, Inc.; July 15, 2024.
[15] Staff report, page 15.

There are several potential disadvantages to Bird Gard that should be considered:

- Bird Gard has not been installed and evaluated at other wind farms.
- No studies have been published to determine the effectiveness of this kind of auditory deterrent in a wind farm.
- The effectiveness of Bird Gard in deterring large birds at Strauss has not been determined. Of particular importance is the question of whether Golden Eagles will become acclimated to the sound and no longer be deterred.
- If the Bird Gards are activated randomly, but nearly continuously, (not triggered by the presence of birds using IdentiFlight), birds may become habituated to the sounds and not be deterred. In addition, the Strauss wind farm may exceed its noise level requirements[16].
- Bird Gard would only cover a small percentage of the area of the wind farm.[17]
- There may be unintended adverse effects on neighbors, on-site Strauss employees and contractors, and other wildlife species.

6. Painting one blade black has proven successful in reducing bird deaths

Bird and bat deaths from wind turbines is a problem being addressed at countless wind farms around the world. SBAS has researched bird and bat deaths at wind farms. We have found that other wind farms in the United States and overseas are doing numerous creative things that are different from and perhaps better than those that BayWa has been doing at Strauss. SBAS has found that numerous other wind farms are using a strategy of painting one of the three blades on their turbines a different color than the other two blades; for instance, painting one of the blades black, while the other two blades are white. One such wind farm in Norway has been operating that way for a decade, with one of the three blades on many of its turbines painted black, and in a published study has reported more than 70% reduction in wind farm eagle deaths because of that one alteration[18]. A wind farm in Wyoming has done the same thing with many of its turbines, and is now collecting and studying the data from having done so[19]. This study is expected to be completed in in a couple of years and may provide valuable data to Strauss on the efficacy of blade painting in reducing bird deaths. Other wind farms have painted a blade, or several blades, with color patterns that vary along the length of the blade. For instance, white-black-white and

[16] Objections from neighbors is the number one complaint that Bird Gard gets from its customers, according to our discussions with the manufacturer. Bird Gard has a 1-year money-back warranty if the noise is too objectionable to neighbors. This indicates that noise from Bird Gard can be objectionable to humans.

[17] According to the staff report, page 13, each Bird Gard unit would cover only 25 acres. Five would cover only 125 acres out of the nearly 3000 acre wind farm.

[18] "Paint it black: Efficacy of increased wind turbine rotor blade visibility to reduce avian fatalities", 26 July 2020; Wiley Online Library, Ecology and Evolution. https://onlinelibrary.wiley.com/doi/10.1002/ece3.6592 .

[19] "Wyoming wind farm tries painting turbine blades black to prevent bird collisions", Wyoming Public Radio, April 5, 2024. https://www.wyomingpublicmedia.org/open-spaces/2024-04-05/wyoming-wind-farm-tries-painting-turbine-blades-black-to-prevent-bird-collisions

then black-white-black, to create a different visual look to birds when the blades are spinning fast. The objective is to reduce "motion smear," thus making the blades more visible to birds. In the case of the Wyoming wind farm, it has done this voluntarily even though doing so may have put those turbine blades out of warranty. That wind farm obtained permission from the FAA to paint its blades; BayWa could do the same. SBAS is unaware of a single case, worldwide, in which a turbine blade has developed a deformity or any other problem from having been painted black or any other color by a wind farm.

BayWa could retain scientists who are now working on this issue at other wind farms to conduct a similar study at Strauss, involving the painting of one or more blades on one or more of the turbines at Strauss, painting them either black or in a pattern of other colors.

Or, at the very least, the Strauss Working Group could study and report back to the County on the cost, feasibility, and design parameters of making such a change, and the data that is being gathered at other wind farms which have painted their blades, without BayWa making a change to its blades at this time. If, at the end of one year, bird death or bat death numbers continue to exceed the level 1 and level 2 thresholds at Strauss, then the County at that time would have the information it needs to require BayWa to implement blade painting also.

We support the County staff recommendation that ". . . a comprehensive feasibility study be conducted to evaluate the practicality and effectiveness of painting certain WTG blades for higher avian visibility in order to reduce fatalities."[20]

7. Increase the frequency of carcass searches and use dogs to improve their accuracy

Carcass-finding dogs are used at other wind farms because so many of the bats and birds that are killed by wind farms are small, and their remaining pieces, on the ground or in the brush, are even smaller. SBAS recommends more and better carcass searches at Strauss.

Strauss carcass search frequency was revised at the last Planning Commission hearing on Strauss in August of 2023. At that time the carcass search frequency was revised to "once every week at one third of the WTGs, or more if needed, as recommended in the CEC[21] guidelines."[22] This means that each WTG would be surveyed only once per month. We still believe that this is insufficient to accurately determine the bird mortality at Strauss. Coyotes and other scavengers can remove the carcasses in a single night. Indeed, the staff report, page 10, shows that an average persistence time of 8.2 days for a large bird carcass and 5.5 days for small bird carcasses. If the search frequency is only once per month, almost all carcasses will be gone by the time the search is done!

[20] Staff report, page 16.
[21] California Energy Commission
[22] Strauss Planning Commission action letter, August 14, 2023

The operator has proposed a modified carcass survey schedule[23]. This schedule recommends carcass searches on intervals of 14 – 30 days. Again, this is woefully inadequate given the average persistence time is 8.2 days for a large bird carcass. Most of the carcasses would be gone by the time a search is done!

We recommend that the carcass search requirement be changed immediately to require carcass searches every week at all the WTGs and the carcass searches should use dogs[24]. Sufficient coverage of carcass surveys is particularly important. It is vital to accurately determine how many birds are being killed at Strauss. Rigorous carcass surveys will provide more accurate data on the number and species of birds killed. Having accurate kill data will enable the County to make more meaningful decisions on management of mortality reduction strategies.

SBAS has researched the methodologies used for carcass searches. We have found that other wind farms in the United States and overseas are sending biologists out into the field to search for carcasses more frequently than Strauss is doing, and are sending them out into the field with carcass-smelling dogs. Such dogs are much more accurate at finding small body parts from dead birds and bats. One wind farm in Wyoming has been sending its biologists out to look for carcasses with dogs every three days.

8. SBAS supports other County staff recommendations

In addition to our recommendations above, we also support other staff recommendations that are stated in the staff report and that the operator should be required to do. These include:

- Initiate the required Before-After Control-Impact (BACI) study to analyze how Strauss is affecting birds and bats[25]
- Pay compensatory mitigation for certain bird and bat fatalities within Strauss's first five operational years[26]

9. The Requirements of the Strauss Conditional Use Permit (CUP) should not be relaxed

[23] Staff report, Table 4, page 12.
[24] Dogs are much more effective than humans in finding carcasses. See Domínguez del Valle J, Cervantes Peralta F, Jaquero Arjona MI. "Factors affecting carcass detection at wind farms using dogs and human searchers", **J Appl Ecol.** 2020;57:1926–1935. https://doi.org/10.1111/1365-2664.13714. "All studies to date agree that dogs out-perform human searchers at finding bird and bat carcasses around wind turbines". "A generalized linear mixed model reveals a high performance of dogs (~80% detection rate)" "Humans performed poorly at detecting small carcasses (~20% detection rate)".
[25] Staff report, page 17.
[26] Staff report, page 18.

When Strauss was originally approved in 2019, the County and BayWa mutually agreed on the conditions in the CUP. Strauss is operating well, despite exceeding the level 1 and level 2 bird mortality thresholds. SBAS believes that it is likely that, by implementing some or all the measures that we have outlined above, Strauss can meet the mortality thresholds. Therefore, **SBAS strongly opposes any relaxation of the conditions in the CUP.**

SBAS has made the recommendations above sincerely and believes that, if implemented, they will reduce bird mortality at Strauss. We hope that the Planning Commission will seriously consider our recommendations and will implement as many of them as possible.

Sincerely,

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