December 18, 2018

Contingency Authorization No. 1

County Contract with Aspen Environment Group (**BC-19-078**) to prepare a Supplement Environmental Impact Report (SEIR) to the Lompoc Wind Energy Project (LWEP) for the Strauss Wind Energy Project (SWEP).

Original Contract amount	$ 310,814.00
15% Contingency	$ 46,622.00
Total Contract Amount (including contingency funds)	$ **357,436.00**
Aspen Invoices paid to-date:	$ 0.00
Remaining funds: (including contingency funds)	$ **357,436.00**

Contingency funds may be authorized by P&D for additional work not included in the original scope of work. The proposed work described below focuses on the analysis of visual impacts and air quality impacts for SWEP.

Visual Analysis

Aspen's approved scope of work in the subject contract includes:

- Using 6 photo simulations of Key Observation Points (KOPs) from the LWEP EIR. Tasks include updating the written analyses for these 6 simulations to describe the specifics of the SWEP visual impact at the 6 KOPs.
- Preparing 3 new visual simulations.

Aspen requests revisions to its original scope of work due to the applicant's project description changes to its proposed transmission line route, its proposed switchyard location, and its proposed tree removals along San Miguelito Road. Attachment 1 is a summary of the simulation decisions between Energy, Minerals & Compliance staff and the SEIR consultant.

Work requested and not included in original scope of work:

- **Digital terrain analysis.** This task includes the analysis of the difference between the applicant's project description changes (e.g., slight turbine location changes, new transmission line route, new switchyard location, and new proposed tree removals). The analysis will help with decisions and selection of new KOPs 2, 3, 12/13, 14, and 15 (see Attachment 1 – Summary of each KOP). Once decisions on locations are selected, this task includes developing preliminary linear and polygon data in Google Earth and generating viewing perspectives from which to develop preliminary conclusions regarding Project visibility. Labor time required: 24 hours.

- **Four to five (4-5) additional visual simulations.** Three new simulations were included in the original scope of work. Based on the differences in the LWEP and SWEP project descriptions

(SWEP's removal of oak trees along San Miguelito Road, a new switchyard location, and route of the transmission line), it was determined that 4 to 5 additional visual simulations are needed to adequately address the project impacts for visual resources. This task includes preparing 4-5 additional new visual simulations. Therefore, a total of 7-8 new simulations for the SEIR; the 7 new simulations would be for KOPs 2, 4, 8, 11, 12/13, 14, and 15. A new simulation for KOP 3 would only be prepared if the KOP 3 analysis indicates that the visual impact would likely be significant. Labor time required: 40 hours for 4 new simulations; 50 hours for 5 new simulations.

- **Three (3) new existing view photos.** This task includes replacing the three existing view photos with three new view photos and project location indicators for KOPs 5, 9 (new location), and 10 (new location). Labor time required: 12 hours.

- **Seven (7) additional KOP analyses.** The original scope of work included updating written analyses for 6 simulations retained from the LWEP EIR. This task includes rewriting 7 additional KOPs from the LWEP EIR so that the analyses reflect the SWEP. Therefore, a total of 13 simulations would be updated for the SWEP SEIR. These include KOPs 1, 2, 3, 4, 5, 6/7, 8, 9, 10, 11, 12/13, 14, and 15. KOPs 6 and 7 are considered as one new written analysis since they will be conveying the same message. KOP 12 and 13 are being counted as one since they will be replaced by a single KOP with a new orientation towards the transmission line. Each KOP analysis and write-up includes data review, environmental setting narrative, impact analysis and narrative, and mitigation discussion. Labor time required: 56 hours.

- **Field work for five (5) new KOPs and simulations.** This task includes travel and field work for KOPs 2, 3, 12/13, 14, and 15. Field activities include a preliminary reconnaissance to select the appropriate KOP locations, followed by development of landscape setting characterizations, preliminary impact assessments, and image capture to support the development of visual simulations from each KOP. Labor time required: 46 hours.

- **Additional plan reviews, KOP selection, agency consultations, and scoping.** This task includes a series of additional plan reviews, KOP selection memos, agency consultations regarding KOP reviews, and scope revisions to finalize the Visual Resources budget. Labor time required: 20 hours.

Air Quality Analysis

The SEIR consultant has peer reviewed SWEP's air pollutant calculations and has determined that SWEP's air quality analysis substantially underestimates certain air pollutants that would be generated during project construction. The SEIR consultant states that SWEP's calculations:

- Omit off-road trucks and include unnecessary dumper/tenders.
- Include inconsistent excavation values with the project description.
- Miscalculate the moisture content for controlled emissions.
- Underestimate onsite unpaved road travel and concrete batch plant calculations.
- Include inaccurate assumptions for helicopter emissions.

Work requested and not included in original scope of work:

- Aspen will use SWEP's CalEEMOD model to correct the emissions estimates described above. Labor time required: 18 hours.

Aspen Environmental, Inc. requests that the Director of Planning & Development authorize transfer of $37,580.00 in contingency funds to Task 2 of Contract BC-19-078 and amend the remaining balance of the contingency fund to $9,042.00. (Attachment 2 includes cost estimates outline the proposed budgets for the work described above.)

Director authorization: Dianne M. Black (Signature) 12/18/18 (Date)

Attachments

Attachment 1 – Summary of Visual KOPs
Attachment 2 – Proposed Contingency No. 1 Budgets

G:\GROUP\PERMITTING\Case Files \CUPs\16 Cases\16CUP\16CUP-00000-00031 Strauss Wind Energy\CEQA\Aspen\Contingency Request #1\contingency authorization 12-18-18.doc

Attachment 1

Summary of Simulation Decisions

Strauss Wind Energy Project SEIR
KOP / Simulation Decision Summary

The following summarizes the final decisions made after Mr. Michael Clayton's (subcontractor to Aspen Environmental Group) review of the Strauss Wind Energy Project (SWEP) and recent project description changes. The information is organized by Key Observation Points (KOPs) from the Lompoc Wind Energy Project Environmental Impact Report (LWEP EIR).

KOP 1 – Northbound State Route 1.

- Retain KOP
- Retain simulation
- New analysis - describing how the visual impacts of the wind turbines from this KOP would differ from what is shown in the LWEP EIR for this KOP

KOP 2 – Southbound State Route 1.

- New KOP (due to the new switchyard location)
- New simulation
- New analysis – describing visual impacts of the switchyard and transmission line when driving on southbound State Route 1, viewing to the southwest north of the switchyard location

KOP 3 – San Miguelito Road.

- Retain KOP (however, digital terrain analysis and field work will be performed to see if there is another place along San Miguelito Road that may have a significant impact from the new location of the transmission line up on the hillside. If one is found, a new KOP location may be established.)
- Retain simulation (if a new KOP site is established or the retained KOP area is found to depict a significant visual impact, a new simulation will be prepared)
- New analysis – describing the visual impacts of the transmission line from this area

KOP 4 – Jalama Beach.

- Retain KOP
- New simulation
- New analysis – describing visual impacts of the wind turbines from this location

KOP 5 – Ocean Beach Park.

- Retain KOP
- New existing view image (not a simulation since the Project is not visible from KOP 5)
- New analysis –visibility of the wind turbines from Surf Beach will be added to the analysis

KOPs 6 and 7 – City of Lompoc.

- Retain KOPs
- Retain simulations
- New analyses – describing lack of wind turbine visibility from portions of the City. Other areas of the City (primarily northern portion) with views of the Project will be addressed in narrative only. (The analyses will reference KOP 8 as an example of wind turbine visibility.)

KOP 8 – La Purisima Mission.

- Retain KOP – however, at a slightly different location
- New simulation
- New analysis – describing wind turbine visibility from this location

KOP 9 – Harris Grade Road.

- Retain KOP – however, at a slightly different location
- New view image (not a simulation)
- New analysis – describing wind turbine visibility since it will not include a simulation

KOP 10 – Southbound State Route 1 (East of Vandenberg AFB).

- Retain KOP – however, at a slightly different location
- New view image (not a simulation)
- New analysis – describing wind turbine visibility since it will not include a simulation

KOP 11 – Upper San Miguelito Road.

- Retained KOP
- New simulation
- New analysis – describing project visual impacts from this location

KOPs 12 (San Miguelito Road) and 13 (Miguelito County Park).

- New KOP (Both KOPs will be replaced with one new KOP location)
- New simulation
- New analysis – describing visual impacts of transmission line from San Miguelito Road

KOP 14 – South Lompoc Residential Areas.

- New KOP
- New simulation
- New analysis – describing visual impacts in the southern Lompoc residential area, viewing southward and focusing on the switchyard location and the transmission line connecting directly to the switchyard

KOP 15 – San Miguelito Road.

- New KOP
- New simulation
- New analysis – describing visual impacts along San Miguelito Road from grading and tree removal

Attachment 2

Cost Estimates

Strauss Wind Energy Project EIR Supplement

Budget Summary

	Digital Terrain Analysis	Visual Simulations	New Existing View Photos	Additional KOP Analyes	Field Work and Plan Reviews	Air Pollutant Calculations	Total
ASPEN ENVIRONMENTAL GROUP							
Aspen Labor						$3,642	$3,642
Aspen ODCs							
Aspen Environmental Group Total						$3,642	$3,642
SUBCONTRACTORS							
Michael Clayton & Associates	$3,603	$7,506	$1,801	$8,407	$12,621		$33,938
Subcontractor Total	**$3,603**	$7,506	$1,801	$8,407	$12,621		$33,938
Total Budget Per Task	**$3,603**	**$7,506**	**$1,801**	**$8,407**	**$12,621**	**$3,642**	**$37,580**

Strauss Wind Energy Project EIR Supplement

Budget

Prime Contractor: Aspen Environmental Group

Labor Costs

Category or Name	Role	Hourly Rate*	Air Pollutant Calculations		Total	
			Hours	Amount	Hours	Amount
Jon Davidson	Project Manager	$210.00				
Stanley Yeh	Deputy Project Manager	$170.00				
Vida Strong	Project Advisor	$195.00				
Scott White	Biological Resources	$210.00				
Jennifer Lancaster	Biological Resources	$135.00				
Associate Biologist	Biological Resources	$127.00				
Will Walters	Air Quality, GHG	$212.00	16	$3,392	16	$3,392
Brewster Birdsall	Noise, Air Quality	$220.00				
Phil Lowe	Hydrology/WQ	$175.00				
Michael Macko	Cultural Resources	$130.00				
Alison Jaqua	Cultural Resources	$75.00				
Sarah Mace	Cultural Resources	$58.00				
Joe Stewart	Paleontological Res.	$135.00				
Tatiana Inouye	Land Use, Recreation	$140.00				
Patrick Meddaugh	Pub. Services, Utilities	$96.00				
GIS Specialist II	Mapping/Analysis	$95.00				
Graphics Specialist	Graphics/Mapping	$125.00				
Admin. Specialist	Accounting, Invoicing	$72.00				
Sr. Administrative III	Document Production	$125.00	2	$250	2	$250
Sr. Administrative I	Clerical	$100.00				
TOTAL			18	$3,642	18	$3,642

* Including fringe benefits, overhead, and fee.

Non-Labor Costs

Direct Project Cost Item	Unit Cost		
Printing & CD reproduction	-		
Mileage - 2 Wheel Drive (per mile)	$0.54		
Mileage - 4 Wheel Drive (per mile)	$0.75		
Travel	-		
Postage/Delivery	-		
Outside Services	-		
Document/Data Acquisition	-		
Miscellaneous	-		
Subtotal ODC Cost			
Aspen Fee 8%			
Total ODC Cost			

Total Cost by Task	$3,642	$3,642

Strauss Wind Energy Project EIR Supplement

Budget

Subcontractor: Michael Clayton & Associates

Labor Costs

Personnel	Role	Hourly Rate*	Ditigal Terrain Analysis		Visual Simulations (5)		New Existing View Photos (3)		Additional KOP Analyses (7)		Field Work and Plan Reviews		Total	
			Hours	Amount	Hours	Amount	Hours	Amount	Hours	Amount	Hours	Amount	Hours	Amount
Michael Clayton	Aesthetics, Visual	$139.00	24	$3,336	50	$6,950	12	$1,668	56	$7,784	66	$9,174	208	$28,912
TOTAL			24	$3,336	50	$6,950	12	$1,668	56	$7,784	66	$9,174	208	$28,912

* Including fringe benefits, overhead, and fee.

Non-Labor Costs

Direct Project Cost Item	Unit Cost						
Printing & CD reproduction	-						
Mileage - 2 Wheel Drive (per mile)	$0.65						
Mileage - 4 Wheel Drive (per mile)	$0.75						
Travel	-					$2,512	$2,512
Postage/Delivery	-						
Outside Services	-						
Document/Data Acquisition	-						
Miscellaneous	-						
Total ODC Cost						**$2,512**	**$2,512**

Subtotal Cost by Task		**$3,336**	**$6,950**	**$1,668**	**$7,784**	**$11,686**	**$31,424**
Aspen Fee 8%		$267	$556	$133	$623	$935	$2,514
Total Cost by Task		**$3,603**	**$7,506**	**$1,801**	**$8,407**	**$12,621**	**$33,938**

April 3, 2019

Contingency Authorization No. 2

County Contract with Aspen Environment Group (**BC-19-078**) to prepare a Supplement Environmental Impact Report (SEIR) to the Lompoc Wind Energy Project (LWEP) for the Strauss Wind Energy Project (SWEP).

Original Contract amount	$ 310,814.00
15% Contingency	$ 46,622.00
Total Contract Amount (including contingency funds)	$ **357,436.00**
Aspen Invoices paid to-date:	$ 0.00
Contingency Approvals to-date:	$ 37,580.00
Remaining funds: (including contingency funds)	$ **319,856.00** **($310,814.00 contract; $9,042.00 contingency)**

Contingency funds may be authorized by P&D for additional work not included in the original scope of work. The proposed work described below focuses on analysis of a risk assessment for the potential of wind turbine blade throws for SWEP.

Risk Analysis

Aspen requests revisions to its original scope of work due to the applicant's submittal of a Blade Throw Analysis for Turbine N-1 at the Strauss Wind Project (Attachment 1). Aspen's approved scope of work in the subject contract does not include review of a Blade Throw Analysis.

Work requested and not included in original scope of work:

- **Review of the applicant's submittal of a Blade Throw Analysis for Turbine N-1.** This task includes reviewing the applicant-submitted subject report (Attachment 2) with the County's risk thresholds. Labor time and cost required: 4 hours at $212/hours, for a total of $848.
- **Incorporation of Aspen's analysis of the Blade Throw Report in the Administrative Draft Environmental Impact Report's (ADSEIR) Hazards section.** This task includes preparing the results of the analysis of the subject report into the SWEP ADSEIR's Hazards section. Labor time and cost required: 1 hour at $212/hour, for a total of $212.

Aspen Environmental, Inc. requests that the Director of Planning & Development authorize transfer of $1,060.00 in contingency funds to Task 2 of Contract BC-19-078 and amend the remaining balance of the contingency fund from $9,042.00 (balance from Contingency Request #1) to $7,982.00.

Director authorization: _____ 4/3/19
Signature Date

Attachments

Attachment 1 – Aspen Scope of Work Request and Budget
Attachment 2 – Blade Throw Analysis for Turbine N-1 at the Strauss Wind Project

Attachment 1

Aspen Scope of Work Request and Budget to Review the
Blade Throw Analysis for Turbine N-1

Aspen environmental group

5020 Chesebro Road, Suite 200
Agoura Hills, CA 91301
(818) 597-3407
www.aspeneg.com

MEMORANDUM

To: Kathy Pfeifer

From: Jon Davidson

Date: April 3, 2019

Subject: Revised Contingency Request for Risk Analysis Review

In response to your request to have Aspen review the applicant's Blade Throw Analysis for Turbine N-1, we are requesting approval of the use of a portion of the contingency amount in our approved budget. The additional budget from the contingency would be used for the following tasks:

- **Review of the applicant's submittal of a Blade Throw Analysis for Turbine N-1.** This task includes reviewing the applicant-submitted subject report with the County's risk thresholds. Labor time and cost required: 4 hours at $212/hours, for a total of $848.
- **Incorporation of Aspen's analysis of the Blade Throw Report in the Administrative Draft Environmental Impact Report's (ADSEIR) Hazards section.** This task includes preparing the results of the analysis of the subject report into the SWEP ADSEIR's Hazards section. Labor time and cost required: 1 hour at $212/hour, for a total of $212.

The total amount of this contingency fund request is $1,060.

Attachment 2

Blade Throw Analysis for Turbine N-1 at the Strauss Wind Project

ARCVERA
RENEWABLES

April 1, 2019

Joerg Beland
BayWa r.e. Wind, LLC
5901 Priestly Drive Suite 300
Carlsbad, CA 92008

by email: beland@baywa-re.us

Re: Letter Report: Blade Throw Analysis for Turbine N-1 at the Strauss Wind project, near Lompoc, California

Joerg:

This report presents ArcVera's analysis of the public safety risk associated with potential blade throws at the proposed Strauss Wind project. The turbine planned for use at the Strauss Wind project subject to this analysis is the GE 3.8-137 turbine with a rated capacity of 3.8MW, a 137m rotor diameter, and a hub height of 81.5m, for a total upper tip height of 150m. Relevant information regarding the turbine was available in documentation provided from GE, notably the document "Technical Description and Data", Revision 02, dated 2018.

The scope of this analysis was limited to potential safety impacts to the public traveling on San Miguelito Road (vehicle, bicycle, or pedestrian) from turbine N-1. Turbine N-1 is sited 308 feet from the closest point of San Miguelito Road, inside of the 492-foot total turbine tip height setback required by a 2009 mitigation measure imposed by Santa Barbara County in the previous EIR for the Lompoc Wind Energy Project. This study evaluates the probability per year that a thrown blade fragment from turbine N-1 would collide with a vehicle, bicycle, or pedestrian on segments of the nearby San Miguelito Road that are within 492 feet of the N-1 site.

A traffic study was conducted along San Miguelito Road in the vicinity of turbine N-1 (Dudek, 2019) which formed the basis for the calculation of the probability of vehicles, bicycles, or pedestrians on San Miguelito Road in the event of a blade throw. The traffic study was conducted to determine average daily traffic (ADT) on two segments of San Miguelito Road for vehicles traveling both east and west of Sudden Road in the vicinity of turbine N-1. Two traffic counts were conducted in order to quantify the number of vehicles traveling on San Miguelito Road east of Sudden Road outside of the 492-foot total tip height radius of turbine N-1 versus those vehicles that travel on San Miguelito Road west of Sudden Road passing through the total tip height radius of turbine N-1.

This analysis is limited to evaluating the risk associated with blade throws affecting the portions of San Miguelito Road that are within 492 feet of a GE 3.8 MW turbine as proposed by Strauss Wind at the N-1 location.

ArcVera Renewables 1301 Arapahoe Street, Suite 105 Golden, CO 80401 USA Tel: +1 720.237.2929

ARCVERA
RENEWABLES

Methodology

This study evaluates the probability per year that a thrown blade fragment from turbine N-1 would collide with a vehicle, bicycle, or pedestrian on the portion of the nearby San Miguelito Road within 492 feet of turbine N-1. In order for such a collision to occur, three conditions must be met:

1. Turbine N-1 must throw a blade or blade fragment; and
2. The thrown blade must impact the road in the relevant area; and
3. A vehicle, bicyclist, or pedestrian must be present on the road in the area of impact

The overall probability of a collision is the product of the individual probabilities of these three conditions occurring. The following section describes the steps taken to quantify each of these probabilities.

Analysis

1. Probability of blade throw

- Blade failure rates were evaluated through both a literature search (see references at end of this document) and an analysis of ArcVera's turbine component failure database, which includes over 3,000 wind turbines installed in the United States. Identification of failures that involved thrown blades or fragments of blades is difficult as the specific failure modes are often not reported.
- Literature sources generally indicate blade failure rates of >0.1% per year per turbine, with a recent commonly-cited study indicating a failure rate of 5.4×10^{-3} (0.54%) per year, however this value includes all failures, not just those involving thrown blades. Studies that specifically cite blade throws have rates over an order of magnitude lower, from 2.6×10^{-4} (0.026%) to 4.2×10^{-4} (0.042%) per year.
- ArcVera's component failure database indicates results consistent with literature, with an overall blade failure rate of 5.4×10^{-3} (0.54%) per year, but failures where there was a reported catastrophic failure of a blade or where the blade was reported to be liberated were much more infrequent, at a rate of 1.1×10^{-4} (0.011%) per year, although this may undercount such failures as there were some cases where no details on the type of failure were provided by the owner/operator.
- Based on this review, a blade throw rate of 4.2×10^{-4} (0.042%) per year was used in the analysis, representing the conservative (high) end of the range of reported data that specifically identified blade throws as opposed to all blade failures.

2. Probability of road impact

- ArcVera reviewed analyses of blade throw distances and directions from literature sources. Rather than develop a complete independent physical/statistical model, we derived probabilities of road impacts based on the relevant published model results that were most comparable to the Strauss Wind site (e.g., similar turbine size and speed) (Rogers, 2011).

ArcVera Renewables 1301 Arapahoe Street, Suite 105 Golden, CO 80401 USA +1 720.237.2929

- The turbine layout was overlaid on aerial images of the site and an elevation map based on 30-meter resolution elevation data available from the USGS. The map was divided into thirty-six 10-degree direction sectors, and the distance from the turbine base to San Miguelito Road was calculated for each sector, along with the difference in elevation between the turbine and the road. Because the road is at a lower elevation than the turbine base, and thrown blades or fragments would be expected to travel farther when the terrain is sloped downwards, adjusted distances to the road for each direction sector were calculated incorporating the slope of the terrain. Figure 1 below shows the area in the vicinity of the turbine base, with the coloring indicating the elevation with blues and greens being lower and orange and red being higher. The 492-foot study area around turbine N-1 is indicated by the yellow circle. The portions of the road included in this analysis are highlighted in red; risks associated with blade throws on the other portions of the road are not calculated.

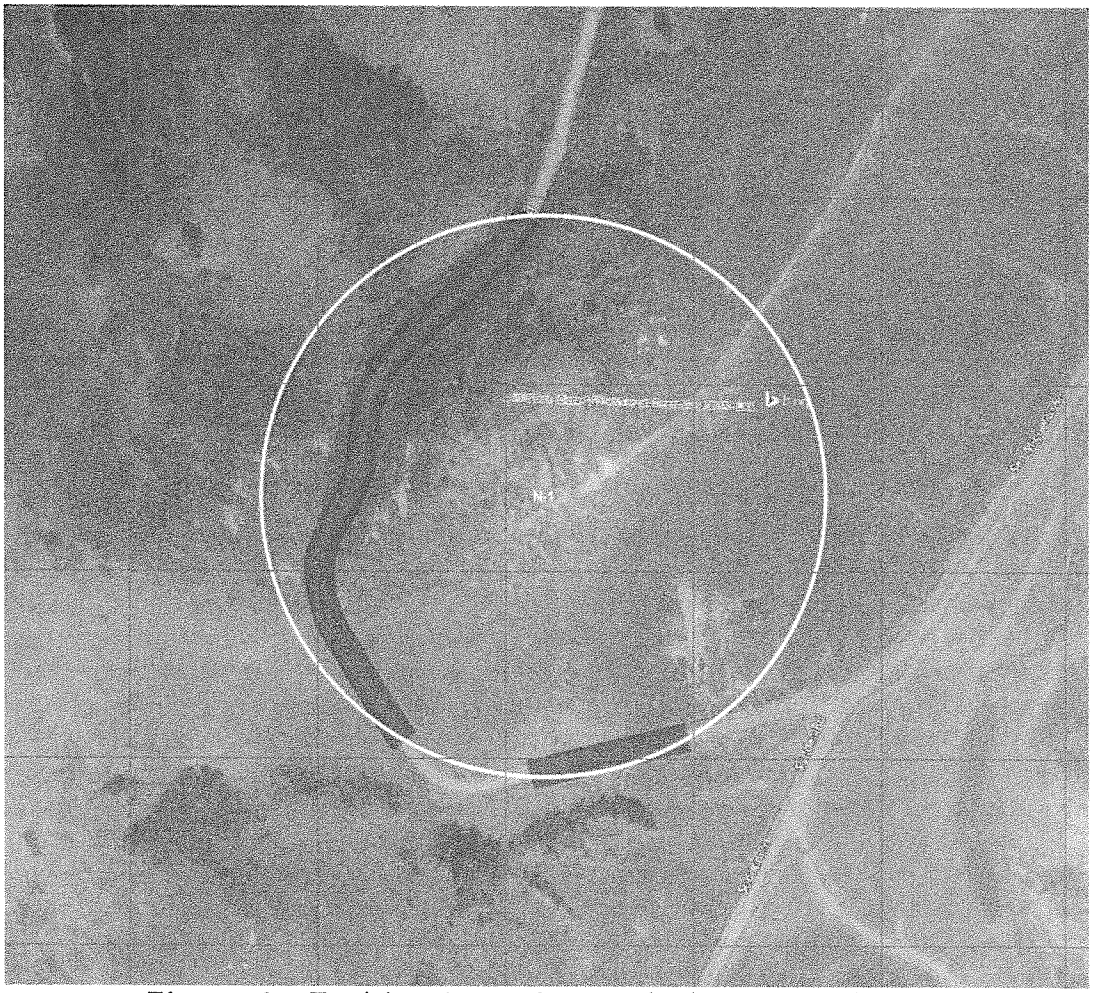

Figure 1 - Turbine Location and Elevation Change

- Wind data from met tower ID #2004, located approximately 800 meters (2,625 ft) from turbine N-1, were processed to calculate frequency distributions of

ArcVera Renewables 1301 Arapahoe Street, Suite 105 Golden, CO 80401 USA +1 720.237.2929

hub-height wind speeds binned into the same 10-degree direction sectors as used to calculate distances to the road. Tower #2004 was selected based on its proximity to turbine N-1 and overall quantity and quality of data. The data from tower #2004 are considered representative for this study. Wind speeds below the cut-in speed of 3 m/s were excluded from the distribution as blade throws would not be expected when the turbine is not operational. The wind rose from Tower #2004 is shown in Figure 2 below. Each point on the green line represents the frequency of occurrence for wind coming from the respective wind direction. The wind at the site is predominantly from the north-northwest.

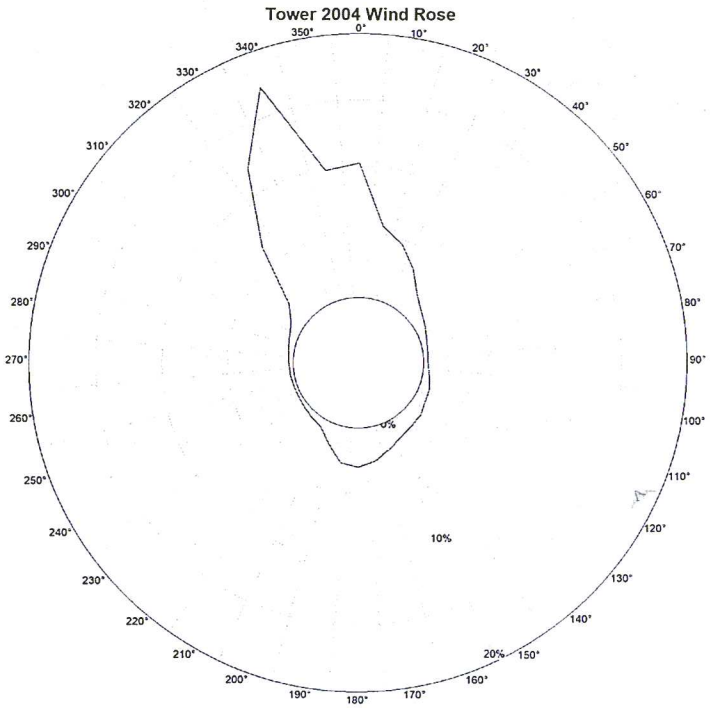

Figure 2 – Wind Rose

- Based on published blade throw model results, distances and direction of the flight of blade fragments are relatively insensitive to many turbine design parameters (Larwood, 2015). Tip speed is a primary driving factor in the distance traveled, but turbine maximum tip speeds have remained fairly constant over time. Turbine hub height is also a factor, but the 81.5m hub height of the proposed Strauss Wind project is similar to that of most other recent wind projects and of those assumed for modeling purposes in most studies. For this analysis, we used model results based on a turbine with an 80m hub height and an 80 m/s maximum tip speed, which are generally representative of the 81.5m hub height, 82 m/s maximum tip speed turbines at Strauss.
- The size of the blade fragment thrown also affects the distance the fragments travel. In general, smaller fragments have more potential to travel long distances. Over short distances, within about 100m (328 ft) from the turbine, the trajectories of various size fragments (up to full blades) are similar. No data on size of thrown blade fragments was available from the databases of failures. Therefore, we assumed a 40% blade fragment for the purpose of calculating

ArcVera Renewables 1301 Arapahoe Street, Suite 105 Golden, CO 80401 USA +1 720.237.2929

distance travelled, which produces a reasonable high-end (conservative) distribution of distances.

- Model results in literature show that, as might be expected, the direction of a thrown blade is roughly perpendicular to the wind direction (Rogers, 2011). A small amount of upwind or downwind flight is possible, but is secondary to the magnitude of crosswise flight. For the sake of simplicity we assumed the blade fragment would travel perpendicular to the wind direction; because the road circles around the hill with turbine N-1, this simplification does not materially affect the results.
- Published blade throw models generally present results as points of impact, but in most cases the area of concern would be larger than just a small point as the affected area would be large enough to encompass the size of the blade fragment. For the purpose of this analysis, ArcVera assumed that if the modeled center point of impact was within 30 meters (98 ft) of San Miguelito Road (on either side), representing approximately half of the length of the potential blade fragment, some or all of the road would be impacted.
- A distribution of impact locations was calculated for each wind speed and direction bin, using the 10-degree direction sectors corresponding to the calculated road distances and 1 m/s wind speed bins from the 3 m/s cut-in to the 25 m/s cut-out. At wind speeds of 9 m/s and above, the distributions were based on the full rotor speed and tip speed. Below that wind speed, the distribution of distances traveled by blade fragments were scaled down linearly assuming the turbine would operate at its minimum 6.3 rpm rotor speed at the 3 m/s cut-in speed and increase to its full 11.43 rpm at around 9 m/s. In other words, blade fragments were modeled to travel shorter distances at low wind speeds and farther at higher wind speeds consistent with the speed of the rotor.
- The frequency distributions of distances determined in the previous step were then multiplied by the frequency distributions of wind speed and direction to yield matrices of potential impacts weighted by the site-specific wind conditions. These results were then compared with the calculated distances from the turbine to the road for each direction, including the 30m (98 ft) buffer described above, and the frequency of road impacts were summed across directions and wind speeds to determine the total probability of impact on the portion of San Miguelito Road within 492 feet of turbine N-1. The results were calculated as 6.5×10^{-2} (or 6.5%). The majority of the modeled results indicated blade fragments landing closer to the turbine than the road.

3. Probability of traffic on road

- The traffic volume study provided by Dudek (2019) was used as the basis for the calculation of the probability of traffic on San Miguelito Road in the event of a blade throw. The total number of transits for each mode of transportation were used as inputs. The three modes of transportation evaluated were all motor vehicles, bicycles, and pedestrians.
- For each mode of transportation, the total time in which risk from a blade throw could occur per transit was based on two parameters: the time actually in the area represented by the potential size of the obstacle based on the size of the blade and the speed of the transportation method, plus reaction time

ArcVera Renewables 1301 Arapahoe Street, Suite 105 Golden, CO 80401 USA +1 720.237.2929

where the blade fragment may not be avoidable if already in the road. As data on traffic speeds were not included in the traffic volume study, these were estimated by ArcVera and assumed to be relatively slow (and therefore conservative) considering the rural nature of San Miguelito Road. Reaction times were also assumed to be long (i.e., conservative), representing the potential for inattentive driving and low visibility around the hill with turbine N-1. These conservative assumptions likely result in a slight overestimation of the probability that traffic on the road would be affected by any potential thrown blade.

- The probability that traffic would be affected was calculated for each mode of transportation based on the frequency of traffic per day multiplied by the percentage of time in the affected area, as a percentage of the full 24-hour day. These values are then summed across each mode of transportation to calculate the overall probability of traffic for each segment of the road. The input values and resulting probabilities are shown in the following Table 1.

Table 1 – Probability of Traffic on Roads

San Miguelito Road within 492 feet of turbine N-1				
Transportation mode	**Transits/day from traffic survey**	**Assumed speed (mph)**	**Added reaction time (seconds)**	**Probability of traffic on road**
Motor vehicles	22	20	10	0.45%
Bicycles	2	10	5	0.05%
Walking	0	2	2	0.00%
Total probability				0.50%

Findings

The overall risk is calculated as the product of the annual probability of a blade throw, the probability of a thrown blade impacting the portion of San Miguelito Road within 492 feet of turbine N-1, and the probability that traffic would be on the road at the time of a blade throw. The results are shown in the following Table 2.

Table 2 – Blade Throw Risk of Striking Traffic within 492 Feet of Turbine N-1

Probability of blade throw per year	4.2×10^{-4}
Probability of road impact per blade throw	6.5×10^{-2}
Probability of traffic affected on road	5.0×10^{-3}
Blade throw risk on traffic within 492 feet of turbine N-1 per year (product of above three probabilities)	1.3×10^{-7}

ArcVera Renewables 1301 Arapahoe Street, Suite 105 Golden, CO 80401 USA +1 720.237.2929

ARCVERA
RENEWABLES

The overall risk of 1.3×10^{-7} per year is equivalent to approximately a 1 in **7.4** million probability per year that turbine N-1 would throw a blade or blade fragment which would collide with traffic on San Miguelito Road within 492 feet of the turbine.

Should you have any questions, please don't hesitate to contact us.

Sincerely,

ArcVera Renewables

Gordon Randall
Director – Project Analysis

References

Traffic volume study, provided by BayWa via email 21 March 2019, file Lompoc.zip.

A method for defining wind turbine setback standards, Jonathan Rogers, Nathan Slegers, and Mark Costello, Wind Energy, 2011.

Wind turbine rotor fragments: impact probability and setback evaluation, Scott M. Larwood and C. P. Van Dam, University of the Pacific Scholarly Commons, 1 February 2015.

"Annual blade failures estimated at around 3,800"; Windpower Monthly, 14 May 2015, https://www.windpowermonthly.com/article/1347145/annual-blade-failures-estimated-around-3800

Permitting Setbacks for Wind Turbines in California and the Blade Throw Hazard, Scott Larwood California Wind Energy Collaborative University of California, Davis, 16 June 2005

ArcVera Renewables 1301 Arapahoe Street, Suite 105 Golden, CO 80401 USA +1 720.237.2929

April 30, 2019

Contingency Authorization No. 3

County Contract with Aspen Environment Group (Aspen) to prepare a Supplement Environmental Impact Report (SEIR) to the Lompoc Wind Energy Project (LWEP) for the Strauss Wind Energy Project (**BC-19-078**).

Original Contract amount	$ 310,814.00	
15% Contingency	$ 46,622.00	
Total Contract Amount (including contingency funds)	$ **357,436.00**	
Aspen Invoices paid to-date:	$ 0.00	(First invoice submitted on April 25, 2019)
Contingency Authorized to-date:	$ 38,640.00	
Remaining Contingency funds:	$ 7,982.00	
Remaining funds: (including contingency funds)	$ **318,796.00**	

Contingency funds may be authorized by Planning & Development Department (P&D) for additional work not included in the original scope of work. The proposed work described below focuses on gathering all documents referenced in the Strauss Wind Energy Project (SWEP) Draft Supplemental Environmental Impact Report (DSEIR).

Request for Documents Referenced in the SWEP DSEIR

Aspen requests revisions to its original scope of work due to the request P&D received from Adams Broadwell Joseph & Cardozo, Attorneys at Law, on April 23, 2019 for "*Immediate Access* to Documents Referenced in the Draft Supplemental Environmental Impact Report – Strauss Wind Energy Project (SCH No. 2018071002)."

Work requested and not included in original scope of work:

- **Providing County with electronic copies or links to all documents referenced or relied upon in preparing the SWEP DSEIR.** This task includes time for Aspen's staff to compile the documents referenced in the SWEP DSEIR, pursuant to the April 23, 2019 request described above. Please see Attachment 1 for Aspen's scope of work/budget and Attachment 2 for the April 23, 2019 letter from Adams Broadwell Joseph & Cardozo. Aspen's labor time and cost required: 1 hour at $210/hour (project manager), 3 hours at $130/hour (cultural resources expert), 4 hours at $135/hour (paleo resources expert) and 4 hours at $96/hour for a total of $1,524.

Aspen requests that the Director of P&D authorize transfer of $1,524.00 in contingency funds for additional work not included in the original scope of work of Contract BC-19-078 and amend the remaining balance of the contingency fund from $7,982.00 (balance from Contingency Request #2) to $6,458.00.

Director authorization: _____ 4/30/19
Signature Date

Attachments

Attachment 1 – Aspen Scope of Work Request and Budget
Attachment 2 – April 23, 2019 letter from Adams Broadwell Joseph & Cardozo

Attachment 1

Aspen Scope of Work Request and Budget
to compile reference documents used to prepare the SWEP DSEIR

Aspen environmental group

5020 Chesebro Road, Suite 200
Agoura Hills, CA 91301
(818) 597-3407
www.aspeneg.com

MEMORANDUM

To: Kathy Pfeifer

From: Jon Davidson

Date: April 30, 2019

Subject: Revised Contingency Request for Risk Analysis Review

In response to your request to have Aspen assist in compiling the documents and other information referenced in the Draft EIR, we are requesting approval for the use of a portion of the contingency remaining amount in our contract budget.

The additional budget from the contingency would be used to compile the referenced information sources, consisting of reports, studies, and websites, and submit them to the County. We compiled almost all documents during preparation of the EIR, but some scanning of portions of documents is needed (e.g. books). A few documents will need to be tracked down because, while the sourced information is correct, we do not have documents available to us in house. This additional effort will primarily be needed by our cultural and paleontological resources staff; however, assistance will also be provided by one of our junior staff members.

The estimated hours by labor category for this task are presented in the table below.

Name or Position	Hourly Rate	Estimated Hours	Amount
Jon Davidson	$210	1	$210
Michael Macko (cultural)	$130	3	$390
Joe Stewart (paleo)	$135	4	$540
Environmental Scientist	$96	4	$384
Total			**$1,524**

As shown in the table above, the total requested amount for this task is $1,524.

Attachment 2

April 23, 2019 letter from Adams Broadwell Joseph & Cardozo
requesting reference documents to prepare the SWEP DSEIR

ADAMS BROADWELL JOSEPH & CARDOZO
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
601 GATEWAY BOULEVARD, SUITE 1000
SOUTH SAN FRANCISCO, CA 94080-7037
TEL (650) 589-1660
FAX (650) 589-5062
ssannadan@adamsbroadwell.com

DANIEL L. CARDOZO
CHRISTINA M. CARO
YAIR CHAVER
SARA F. DUDLEY
THOMAS A. ENSLOW
TANYA A. GULESSERIAN
KYLE C. JONES
RACHAEL E. KOSS
NIRIT LOTAN
CAMILLE G. STOUGH

MARC D. JOSEPH
Of Counsel

SACRAMENTO OFFICE
520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4721
TEL (916) 444-6201
FAX (916) 444-6209

April 23, 2019

Via Email and U.S. Mail

Lisa Plowman, Director
Planning and Development
County of Santa Barbara
123 East Anapamu St.
Santa Barbara, CA 93101-2058
Email: lplowman@co.santa-barbara.ca.us

Clerk of the Board
County of Santa Barbara
105 E. Anapamu Street, Room 407
Santa Barbara CA, 93101
Email: sbcob@co.santa-barbara.ca.us

Via Email Only

Kathy Pfeifer, Planner
Email: Kathypm@co.santa-barbara.ca.us

Re: Request for *Immediate Access* to Documents Referenced in the Draft Supplemental Environmental Impact Report – Strauss Wind Energy Project (SCH No. 2018071002)

Dear Ms. Plowman, Clerk of the Board, and Ms. Pfeifer:

We are writing on behalf of California Unions for Reliable Energy ("CURE") to request ***immediate access*** to any and all documents referenced or relied upon in the Draft Supplemental Environmental Impact Report ("DSEIR") prepared for the Strauss Wind Energy Project (SCH No. 2018071002) ("Project"), proposed by Strauss Wind, LLC (an affiliate of BayWa r.e. Wind, LLC). The Project proposes to construct and operate a 102-megawatt (MW) wind energy project south of the City of Lompoc in Santa Barbara County, California. This request excludes any documents that are otherwise available on the Santa Barbara County website.[1]

Our request for all documents referenced or relied upon in the DSEIR is made pursuant to Public Resources Code (PRC), section 21092(b)(1), which requires that all documents referenced in an environmental review document be made available to the public for the entire comment period.

[1] http://www.countyofsb.org/ accessed April 23, 2019.

Pursuant to Government Code section 6253.9, if the requested documents are in electronic format and are 10 MB or less (or can be easily broken into chunks of 10 MB or less), please email them to ssannadan@adamsbroadwell.com as attachments. If any of the requested items are available on the Internet, we request that the County direct us to the appropriate electronic link(s) for accessing the documents.

I will be calling you to arrange for duplication/transmission of the documents. If you have any questions, please call me at (650) 589-1660.

Thank you for your assistance with this matter.

Sincerely,

Sheila M. Sannadan
Legal Assistant

SMS:acp

4377-016acp

July 18, 2019

Contingency Authorization No. 4

County Contract with Aspen Environment Group (Aspen) to prepare a Supplement Environmental Impact Report (SEIR) for the Strauss Wind Energy Project (SWEP) (BC-19-078).

Original Contract amount	$ 310,814.00
15% Contingency	$ 46,622.00
Total Contract Amount (including contingency funds)	$ **357,436.00**
Aspen Invoices paid to-date:	$ 277,219.16
Contingency Authorized to-date:	$ 40,164.00
Remaining Contingency funds:	$ 6,458.00
Remaining funds: (including contingency funds)	$ **80,216.84**

Contingency funds may be authorized by Planning & Development Department (P&D) for additional work not included in the original scope of work. The proposed work described below focuses on responding to a large volume of comments received during the public comment period for the SWEP Draft SEIR.

Work requested and not included in original scope of work:

Aspen requests revisions to Task 5 of its original scope of work due to the larger-than-expected number of public comments P&D received during the public review comment period for SWEP's DSEIR. Task 5 of Aspen's scope of work involves preparing responses to comments received on the DSEIR. The scope of work includes an assumption that Aspen's team would need to prepare responses to no more than 350 individual comments. Approximately 500 individual comments were received on the Draft SEIR. In addition, there were an unusually high number of technical and legal comments. Substantial effort will be required to prepare responses in defense of the DSEIR. Please see Attachment 1 for Aspen's scope of work/budget.

Aspen's labor time and cost required for finalizing response to comments is estimated at $13,362. Contingency Authorization #4 would transfer the remaining contingency amount of $6,458 towards this effort. A forthcoming budget amendment to BC-19-078 would require an additional $6,904 to cover the costs.

Aspen requests that the Director of P&D authorize transfer of $6,458.00 in contingency funds for additional work not included in the original scope of work of Contract BC-19-078 and amend the remaining balance of the contingency fund from $6,458.00 (balance from Contingency Request #3) to $0.00.

Director authorization: Lisa Bloom 7/17/19

Signature Date

Attachments

Attachment 1 – Aspen Scope of Work Request and Budget

Attachment 1

Aspen Scope of Work Request and Budget
to respond to the larger-than-expected number of public comments
received during the public review comment period for SWEP's DSEIR

Aspen environmental group

5020 Chesebro Road, Suite 200
Agoura Hills, CA 91301
(818) 597-3407
www.aspeneg.com

MEMORANDUM

To: Kathy Pfeifer

From: Jon Davidson

Date: July 16, 2019

Subject: Contingency Request for Responses to Comments

Aspen is requesting approval for the use of the remainder of the contingency amount in our approved budget to cover work not included in the scope of work in Aspen's contract for the Strauss Wind Energy Project (SWEP) Supplemental Environmental Impact Report (SEIR). This additional work is described below.

Additional Responses to Comments on the Draft SEIR

Task 5 of Aspen's scope of work involves preparing responses to comments received on the Draft SEIR. The scope of work includes an assumption that Aspen's team will need to prepare responses to no more than 350 individual comments. In total, about 500 individual comments were received on the Draft SEIR. For this reason, Aspen is requesting additional budget for the effort required to respond to this larger-than-expected number of comments.

Aspen is requesting approval to use the remaining portion in the contingency amount in our approved budget, which equals $6,458. A breakdown of this requested amount is provided below. This will cover a portion of the effort required to complete this task. A budget amendment is being requesting separately to cover additional costs, including additional services requested by the County.

Nam/Category	Role	Hourly Rate	Hours	Amount
Jon Davidson	Project Manager	$210	8	$1,680.00
Stanley Yeh	Deputy Project Mgr.	$170	4	$680.00
Jennifer Lancaster	Biologist	$135	16	$2,160.00
Scott White	Sr. Biologist	$210	8	$1,680.00
GIS Specialist II	Mapping	$95	2	$190.00
	Expenses			$68.00
	TOTAL			**$6,458.00**