EXHIBIT I
NOISE EMISSIONS AND COMMUNICATION INTERFERENCE

Describe the anticipated noise emission levels and any interference with communication signals which will emanate from the proposed facilities.

Background and Existing Conditions

Corona discharge from electrical transmission lines generates audible noise, and radio and television interference. Corona is a luminous discharge that emanates from an energized conductor due to ionization of the surrounding air and is caused by a voltage gradient, which exceeds the breakdown strength of air. Corona is a function of the voltage gradient at the conductor surface. This voltage gradient is controlled by engineering design and is a function of voltage, phase spacing, conductor diameter, conductor bundle, height of conductors above ground, line geometry, and meteorological conditions. In particular, irregularities on the surface of the conductor such as nicks, scratches, contamination, insects, and water droplets increase the amount of corona discharge. Consequently, during periods of rain and foul weather, corona discharge increases. This corona activity contributes to a small increase in power loss and is the source of transmission line audible noise, and radio and television interference. For the Project Red Hawk (Project) Site, it is anticipated the maximum calculated voltage gradient at the conductor surface is lower than corona inception and extinction levels. Successful operation of 230 kilovolt (kV) transmission lines and associated facilities with similar gradients indicates that the Project would only create modest corona effects.

Noise

Noise is defined as unwanted sound. Sound travels in waves from a specific source and exerts a sound pressure level (referred to as sound level), which is measured in decibels (dB). Zero dB corresponds roughly to the threshold of average human hearing and 120 to 140 dB corresponds to the threshold of pain. Human response to noise is subjective and can vary from person to person. Factors that can influence individual response include intensity, frequency, and time pattern of the noise; the amount of background noise prior to the intruding noise; and the nature of work or human activity that is exposed to the noise. **Table I-1** depicts average decibel levels for everyday sounds.

Table I-1. Common Noise Levels

Type	Description	Decibel Level
Painful	Firearms, air raid siren, jet engine	140 dB
	Jet take-off, amplified rock music at 4-6 feet, car stereo, band practice	120 dB
Extremely Loud	Snowmobile, chain saw, pneumatic drill	100 dB
	Lawnmower, shop tools, truck traffic, subway	90 dB

Table I-1. Common Noise Levels		
Type	**Description**	**Decibel Level**
Very Loud	Alarm clock, busy street	80 dB
	Conversation, dishwasher	60 dB
Moderate	Moderate rainfall	50 dB
	Quiet room	40 dB
Faint	Whisper, quiet library	30 dB
Source: American Speech-Language-Hearing Association 2017		

Audible noise associated with transmission lines as a result of corona discharge is a function of line voltage. The amount of audible noise is directly related to the level of corona activity, which in turn is affected by the conductors' physical condition, contamination and meteorological conditions, most notably rain. Transmission line audible noise is characterized by crackling, frying, sputtering, and low frequency tones, which are best described as humming sounds. Audible noise from transmission lines primarily occurs during foul weather conditions. Audible noise increases with rain or during dust storms, although it is generally masked by the background noise of rain and wind. In dry or fair weather conditions, the conductors operate below the corona-inception level and noise is typically only slightly audible at the edge of the transmission line right-of-way (ROW).

For the new switchyard and substations, the transformers are expected to be the major source of audible noise. The predominant noise from a transformer is a hum, comprised of sound in the frequency range of 75 hertz (Hz) to 1200 Hz, within the frequency range of the human ear. The transformer sound level is specified at the time of purchase and the specified sound level is controlled by the design and manufacturing of the transformer. The specifications for a transformer require a design that is in compliance with the sound level limits specified by industry standards, governing regulations, or local ordinances. Disconnect switches and circuit breaker operations create momentary, but very infrequent noise.

Environmental noise is usually measured in A-weighted decibels (dBA). Environmental noise typically varies over time, and different types of noise descriptors are used to account for this variability. The noise descriptor most commonly used to establish noise exposure guidelines for specific land uses is the day/night average noise level, commonly referred to as DNL. The noise level experienced at a particular site or area depends on the distance between the source and a specific receptor (humans, wildlife, etc.), presence or absence of noise barriers and other shielding features, and the amount of noise reduction provided by the intervening terrain. Some land uses are considered more sensitive to noise levels than others due to the amount of noise exposure and the types of activities typically involved.

Sources of noise around the Project Site primarily relate to standard noise from nearby agricultural, industrial, commercial and residential land uses and transportation sources and would include nearby Sossaman Road, Elliot Road, and local access traffic. The Project Site is also located in the

Phoenix-Mesa Gateway Airport, Airport Overflight 3 Area**.** This area, which is considered to be influenced by aircraft operations, requires Public Disclosure of Potential Noise Impacts.

The Project Site can be categorized as being largely vacant, with some surrounding agricultural, industrial, residential, commercial and vacant lands. Typical ambient noise levels for residential range from 50 to 60 dBA and the other land uses like industrial and agricultural would vary from 50 to 80 dBA depending on timing and use.

Sensitive receptors in the immediate area of the Project Site include a residential subdivision to the north and a few residences to the south associated with a dairy farming operation. However, there is an existing high voltage transmission line corridor between the Project Site and the residences to the north. The non-residential receptors within 1,000 feet of the Project Site include Canyon Valley School, northwest of the Project Site, and Paloma Church located to the east of the Project Site. There are no other sensitive noise receptors located within 1,000 feet of the Project.

Noise impacts from the Project would result from construction, operation, and maintenance activities. During construction, equipment used for clearing and grading, assembly and erection of the components, and rehabilitation activities would generate noise. This heavy equipment would include cranes, backhoes, trucks, and tractor graders. **Table I-2** identifies typical construction equipment noise levels.

Table I-2. Typical Construction Equipment Noise Levels

Equipment Type	**Noise Level at 50 Feet**
Backhoe	85 dB
Cranes	85 dB
Front-end loader	85 dB
Concrete truck/mixer	85 dB
Auger Drill Rig	85 dB
Water truck	81 dB
Tractor grader	80 dB
Flat-bed trucks	84 dB
Source: Federal Highway Administration Noise Handbook. August 2006	

Noise from construction activities may be audible, particularly to the closest residents in the subdivisions north of the Project Site, as well as a small residential area south of Project Site. This construction noise, however, would not be considered to be a major impact, because construction would occur during daytime hours when tolerance to noise is higher and likely to be considered only a nuisance.

During high-voltage transmission line operation, generated noise from transmission lines can best be described as a crackling or hissing sound and would be similar to the noise generated from the existing transmission lines north of the Project Site. Generally, noise is not noticeable on a 230kV transmission line, but may occur during wet-weather conditions such as rain, and possibly during the summer for brief periods after wind storms deposit dust on the line conductors. During maintenance activities, noise could be generated from a vehicle driving to and around the Project Site or equipment and crew conducting maintenance or repairs.

Noise generated by the construction of the Project would be consistent with other agricultural, industrial, residential and commercial development that exists around the Project Site. In the case that night-time construction is necessary, the Project would comply with noise ordinances in the City of Mesa.

Due to the predominately agricultural, industrial, residential, commercial and vacant nature of the Project Site and vicinity, operational noise impacts to residents and other land uses will be minimal.

Communication Interference

High voltage transmission line radio frequency noise is not expected to be noticeable outside the immediate vicinity of the transmission lines. Radio interference is most likely to affect the amplitude modulation (AM) broadcast band; frequency modulation (FM) radio is rarely affected by transmission lines. Only AM receivers located immediately adjacent to the transmission line have the potential to be affected by radio interference, and the effect may only be significant during rainy weather.

The radiated noise field intensity diminishes with increasing frequency. At frequencies above 30 megahertz, the radiated noise field intensity is so low it is difficult to detect. Therefore, FM radio reception and cellular telephone communication are above the frequency range where radio interference has been experienced with previous projects, and no objectionable interference is expected with any of the Project components. At the frequency range of FM radio or above, any rare instance of interference would generally be due to microsparks, which can be identified and corrected.

Salt River Project Agricultural Improvement and Power District (SRP) utilizes field intensity instrumentation capable of measuring radiated noise and interference from 150 kilohertz up to 1 gigahertz. These instruments are used for investigating reports of unusual relatively high transmission line noise, as well as for compiling ambient noise level data.

Radio interference is expected to be minimal due to the surrounding land uses in the area which are agricultural, industrial, residential, commercial and vacant lands. Furthermore, SRP is ready to address radio interference resulting from construction and operation of the proposed Project with corrective measures such as smoothing nicks on the conductor surface or tightening hardware, which can be applied to mitigate radio interference complaints. In addition to any repairs, relevant corrective actions may include adjusting or modifying receivers; adjusting, repairing, replacing or

adding antennas; antenna signal amplifiers; filters or lead-in cables; or other corrective actions. Based on the design parameters and physical configuration of the proposed facilities for the Project, no objectionable noise and interference with radio signals is anticipated.

References

American Speech-Language-Hearing Association, Noise, 2017, accessed 8/16/2019. [Online] Located at: http://www.asha.org/uploadedFiles/AIS-Noise.pdf

Occupational Safety and Health Administration, Occupational Noise Exposure. Accessed 8/16/19. [Online] Located at: https://www.osha.gov/SLTC/noisehearingconservation/

Federal Highway Administration Noise Handbook. August 2006 [Online], accessed 8/6/2019. Located at: http://www. nrc.gov/docs.pdf