

Table 5. Mitigation measures required for all action alternatives

MM No.	Mitigation Measures/ Monitoring	Location	Effectiveness¹	Timing	Responsible Entity
General					
G1	Construction personnel will be instructed on the laws pertaining to the protection of cultural and ecological resources on national forest and BLM lands, including collection and removal.	Onsite	Will help prevent collection or damage of artifacts or plant products.	Prior to construction	FS BLM KCEC
G2	Engineering design plans will be completed, based on the selected alternative. Unforeseen temporary use areas (TUAs), such as unanticipated pull locations or access to them may be identified as necessary. Any TUA not previously identified and analyzed will require coordination with the authorizing agency and appropriate clearances.	As determined	Protection of natural resources	Prior to construction	FS BLM KCEC
Soils and Water					
SW1	Develop an erosion control plan, whereby practices, locations of practices, and specifications for practices will be used to minimize erosion and sedimentations (BMP 41.1). As a part of this, a storm water prevention plan will be submitted and approved by the State of NM Environmental Division.	Project area for selected alternative	By effectively planning for erosion control, soil movement can be reduced. Erosion control objectives usually require a combination of practices that promote the reestablishment of vegetation on exposed slopes, provide physical protection to exposed soil, prevents the downslope movement of soil, or controls drainage.	Prior to construction	KCEC BLM FS
SW2	Structures and access roads will be placed so as to avoid to the degree possible features such as, but not limited to, intermittent watercourses, residential	Project area for selected alternative	By avoiding as much as possible steep slopes, drainages and other sensitive features, the amount of disturbance can be minimized.	During construction	KCEC FS BLM

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	uses, cultural sites and/or allow conductors to clear or span the features, within limits of standard structure design. If any sensitive feature is discovered during construction, avoidance may be accomplished by spanning or through minor realignment of the route.				
SW3	All construction vehicle movement or temporary use areas outside the right-of-way will be coordinated with the authorizing agency and restricted to predesignated access, contractor acquired access, or existing roads.	Project area for selected alternative	By limiting access to the project area, unnecessary impacts to soils and vegetation can be avoided or minimized. Unforeseen access needs will be coordinated with the authorizing agency to minimize surface disturbance.	During construction	KCEC FS BLM
SW4	Low bearing pressure vehicles and/or equipment or even helicopters may be used to the degree possible off any existing roads in construction of the power line.	Off designated roads or where two-tracks are created for installation	By limiting or distributing the weight of heavy equipment, soil compaction and disturbance to ground cover can be minimized.	During construction	KCEC
SW5	Access roads will not be widened unless essential for project implementation. Some locations may be limited to cross-country vehicular access.	Roads/two tracks used for installation/maintenance	By maintaining roads at their existing width, unnecessary damage to soils and vegetation can be avoided.	During construction	KCEC FS BLM
SW6	Access to pole sites and the line will be kept to existing roads or two-track utility corridor, unless the route is not feasible for transport, or more resource damage would develop if these designated access routes are used.	Project area for selected alternative	By limiting access, new, permanent vehicular access can be avoided. This will prevent long-term ground disturbance in areas currently inaccessible to motorized use.	During construction	KCEC FS BLM
SW7	Biological soil crusts will be avoided whenever possible. In the event a biological soil crust crossing is unavoidable,	Project area for selected alternative	Limiting unnecessary disturbance to soil crusts will protect the function of organisms that aid in soil	During construction.	KCEC FS BLM

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	the crossing will be the shortest distance across the crusted area. When feasible, pole locations will be moved to avoid crusts.		stability, water infiltration and plant health.		
SW8	Existing roads will be properly maintained. Grading may be necessary (BMP 41.14).	Project area for selected alternative	Proper drainage from road surfaces reduces surface erosion and sediment production.	During construction	KCEC FS BLM
SW9	Construction activities may be curtailed at any time during excessively wet periods where muddy conditions would result in watershed damage (BMP 41.11).	Project area for selected alternative	Avoiding working in excessively muddy conditions can prevent unnecessary soil compaction or soil displacement (BMP 41.27).	Wet periods during construction.	KCEC FS BLM
SW 10	Areas with disturbed soils will be rehabilitated by appropriate contouring and replanting with a native seed mix. All seed mixtures will be certified as “weed free.”	Disturbed sites	Establishing vegetation cover on disturbed sites prevents accelerated onsite soil loss. Seed mixes will help prevent undesirable plants becoming established in project area and provide soil stabilization.	During construction in mid-July to August	KCEC FS BLM
SW 11	Trees limbs (2 inches in diameter and smaller) will be lopped and scattered across the disturbance site following completion of power line installation.	Disturbed sites	Scattering small diameter woody material will provide protection to soils from erosion and provide improved conditions for plant regeneration.	During construction	KCEC
SW 12	All onsite servicing or refueling of construction equipment will be performed using protective spill containment or absorption mats.	Project area for selected alternative	To prevent pollutants such as fuels, lubricants and other harmful materials from being discharged on public lands.	During construction	KCEC
SW 13	Storage of oil fluids or petroleum products onsite is prohibited. All petroleum products shall be removed to a disposal facility authorized for disposal.	Project area for selected alternative	Reduces chances of spills and ensures proper disposal. An approved emergency response plan will be prepared and in place in the event of a spill.	During construction	KCEC
SW	Oil, fuel or other fluids shall	Project	Prevents any contamination	During	KCEC

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14	not be spilled or drained onto the ground or into drainages.	area for selected alternative	of water and soils during equipment servicing or refueling.	construction	
SW 15	KCEC will be responsible for implementation of erosion control measures such as water bars, drainage contours, straw bales, filter cloth or similar tools. Any such measures may be required at any location deemed necessary by the authorized FS or BLM officer during construction activities. Straw bales or other offsite vegetative materials will be certified as “weed free.”	Disturbed sites	Especially in areas with steeper slopes, erosion control measures can minimize soil movement during construction.	During construction	KCEC
SW 16	All existing roads would be left in a condition equal to or better than their condition prior to construction of the transmission line.	Project area for selected alternative	Construction will cause additional wear and tear on existing roads. Keeping them maintained and in good repair will minimize disturbance to soils and vegetation adjacent to them.	After construction	KCEC
SW 17	All access that is undesired or not required for regular maintenance will be closed using the most effective method appropriate to the area and developed with concurrence of the landowner or land manager or Forest Service officer. Site-specific requirements for the method of closure will be made on a case-by-case basis.	Project area for selected alternative	If additional access is needed into the project area for construction, it is likely to expand access to other motorized uses. Closing these areas after construction will prevent motorized vehicles from permanently using these areas and causing more disturbances to soil and vegetation.	After construction.	KCEC

Vegetation

VG1	Cutting down green trees to create a two-track corridor or access to pole sites will be kept to a minimum. If feasible, equipment should go around piñons and junipers,	Two-track corridor and any additional access routes off	Selectively cutting trees (especially piñons) will provide the healthiest piñons, having withstood bark beetle infestation, from being removed from	During construction	KCEC FS BLM
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	especially large, healthy ones.	existing roads.	the ecosystem.		
VG2	If green piñon tree removal is required, trees will be bucked no longer than 18” and green branches stacked immediately, covered with 4 mil. plastic and edges secured to the ground with an earthen berm. The plastic must remain in place for a minimum of 2 weeks—not to exceed 45 days. All plastic will be removed from the site after isolation.	All live trees that are cut down	This mitigation will slow or eliminate the spread of the Ips beetle from green trees that may be infected.	Optional at discretion of forest officer. During and after construction	KCEC FS BLM
VG3	Kit Carson Electric Cooperative will be responsible for control of any invasive or noxious plants established through construction or maintenance of a utility corridor. Prior to implementation the Forest Service will approve control or eradication methods.	Project area for selected alternative	These efforts will reduce or eliminate introduction and spread of invasive, nonnative, or noxious plants on public lands.	Prior to construction	KCEC FS BLM
VG4	All vehicles and equipment used during construction and maintenance will be spray washed prior to entering National Forest System and BLM lands. A high pressure hose will be used to clear the undercarriage, tire treads, grill, radiator, and truck beds of any foreign soil, plant matter or seed materials.	Project area for selected alternative	Cleaning will remove mud dirt and plant parts from undercarriages, tires, grills, radiators etc. This will reduce potential of spreading noxious weeds on public lands.	During construction and maintenance	KCEC
VG5	All fill mixture brought into the substation area will be free of noxious weeds.	Substation area	Borrow site should be inspected to minimize movement of noxious weeds.	Prior to use	KCEC BLM
VG6	Any reseeding will be done with a seed mixture authorized by the Forest Service or BLM.	Project area for selected alternative	These efforts will reduce or eliminate introduction and spread of invasive, nonnative, or noxious plants on public lands.	Prior to use	KCEC FS BLM

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Wildlife					
WL1	Raptor protection clip-on insulators will be installed on both lines adjacent to the pole on any distribution lines associated with new construction for the selected alternative.	Underbuilt lines and any distribution lines.	Application of protection measures can significantly reduce electrocution to birds of prey, and avoid outages resulting from electrocutions.	During construction	KCEC FS
WL2	Clearing of trees for construction purposes will be prohibited from April 1 to August 1.	Woodland types within project area	By prohibiting tree cutting and removal during the normal migratory bird breeding season, potential disturbance to nesting pairs and/or destruction of nests can be reduced. Will also reduce spread of Ips and loss of habitat.	April 1 to August 1	KCEC FS
Air					
AR1	Water will be sprayed on any area that is producing excessive airborne dust.	Disturbed sites	Airborne dust can be mitigated during extended dry periods by wetting disturbed sites.	As requested	KCEC
Visual Quality					
VQ1	Nonspecular conductors will be used for both 115kV and new 25kV. Wooden poles will be used, unless a metal pole is needed at corners or angles in the route. Metal poles will be treated to turn brown when exposed to the elements.	Full length of selected alternative	Nonreflective conductors and wooden or brown metal poles prevent lines from severely standing out on the landscape.	During construction	KCEC
VQ2	No paint or permanent discoloring agents will be applied to rocks or vegetation. All flagging will be removed upon completion of the project.	Full length of project area	Will prevent any unnecessary visual impact to project area as a result of marking survey or construction areas.	During construction	KCEC FS
Heritage Resources					
HR1	A project map will be provided to the contractor identifying all sensitive areas	Project area for selected	This will serve as an aid to the contractor to be aware of which mitigation	Prior to Construction	FS

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	relative to the selected alternative.	alternative	measures are pertinent for the area where work is currently ongoing.		
HR2	A Forest Service representative will be assigned for surface compliance inspection and monitoring in the vicinity of archeological sites.	Project area for selected alternative	Will monitor and work closely with KCEC and contractor to ensure application of mitigation measures.	Duration of construction	KCEC FS
HR3	Use selective pole placement to avoid impacts to heritage resource sites.	Pole sites	Preventing disturbance from pole installation will protect heritage resource sites.	Duration of construction	KCEC FS BLM
HR4	Access routes through significant heritage resource sites will be prohibited.	Project area for selected alternative	Preventing disturbance from equipment accessing the corridor will protect heritage resource sites.	Decision	FS BLM
HR5	In the vicinity of historic structures, single wooden poles, nonflare wire and selective pole placement will be used.	Pole sites	Selectively placing poles using natural terrain and vegetation to obscure them will minimize impacts to structure surroundings.	Decision	KCEC
HR6	If necessary, directionally fall trees near known heritage resource sites away from marked boundaries.	Adjacent to site boundaries	Ensures that there are no impacts to archeology sites.	During construction	KCEC FS
HR7	If any buried antiquities or remains are discovered, the contractor will notify the FS or BLM prior to continuing work.	Onsite	Will allow for proper treatment of any undiscovered sites.	During construction	KCEC

Other Resources

OR1	All construction debris or trash associated with construction will be properly contained while onsite and removed daily	Project area for selected alternative	Daily removal will prevent litter and trash accumulation onsite.	Daily	KCEC
OR2	Fences, gates and cattle guards will be repaired or replaced to their original condition if damaged during construction.	Project area for selected alternative	Property can be damaged during construction activities. If so, replacement or repair is effective resolution.	During or after construction	KCEC
OR3	KCEC will work with the New Mexico Department of	Highway corridors	Requirements for Occupancy of State	During construction	KCEC NMDOT

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	Transportation in the design and construction of structures along or crossing the highway right-of-way.		Highway System Right-of-Way by Utility Facilities, Title 17: Chapter 4, Part 2, have proven to effectively allow public utilities and public travel in close proximity.	ion	

1/ Environmental effects analyses are based on these assumptions