NORTH ROUTE FAMILY – ROSEMONT 138KV PROJECT ALTERNATIVE ROUTES COMPARISON SUMMARY DRAFT 4-13-10

Alternative Routes	Links Included	Approximate Length (in miles)		Environmental	Engineering/Constructability	Mine Operations	Agency/Jurisdiction/Stakeholder Group Comments (received to date)	Public Comments	Comments
		Permanent	Temporary						
3	20, 25, 55, 85, 90, 95, 140, 170, 160, 190, 210	20.95	n/a	• Primarily requires new access (may create additional trespass onto Santa Rita Experimental Range) • New access creates disturbance to vegetation and wildlife resources • Shared route with pipeline corridor along link 140 • Adjacent to residences primarily along link 90 • Requires new right-of-way from private and Arizona State Land Department • Links 190 and 210 would be located within proposed mine plan of operations boundary • Requires new access for a portion of link 160	• Access to links 160, 170, 190 and 210 was assumed to be by building spurs off of Box Canyon Road • Link 95 and 140 require major improvement to existing access road • Most of these links are in mountainous areas and will require special foundations • Majority of these links reflect slow climbing access, therefore, they will require additional construction time and cost more, accordingly • Also, links 160 and 190 reflect construction from mountain peaks to mountain peaks. This will be very time consuming from construction perspective and requires heavier structures • Several very heavy angle structures will be required	Generally, North routes are not preferred due to the longer distance (schedule & cost). The preferred of the North Route Family is Route 3. Pros: • Redundancy - 2 lines into plant providing critical backup power in case of primary line loss • Line for construction power would take less time to build Cons: • Does not follow pipeline route so there are no shared access points	Second most preferable by Santa Rita Experimental Range Not supported by Town of Sahuarita Davis-Monthan airspace management considers this 2nd most compatible route		
8	20, 25, 55, 85, 90, 95, 140, 120*, 130*, 135*	15.62	4.11	• Primarily requires new access (may create additional trespass onto Santa Rita Experimental Range) • New access creates disturbance to vegetation and wildlife resources • Shared route with pipeline corridor along link 140 • Adjacent to residences primarily along link 90 • Requires new right-of-way from private and Arizona State Land Department • Link 120 disturbs several repeat photograph sites • Link 130 requires new access and avoids residences in the vicinity of links 105 and 155	• Access to links 120, 130, 135 was assumed to be off existing roads such as Helvetia with spurs built off of them • Link 95 and 140 require major improvement to existing access road • Links 95 and 140 are in mountainous areas and will require special foundations • Links 140 and 95 will be slow climbing access, therefore, they will require additional construction time and will cost more accordingly • There are also several very heavy angle structures	Not Preferred Pros: not specified Cons: • Links 120, 130, 135 are temporary and provide no valuable connection to system in future • Line for construction power would require 2 additional months to build • Does not follow pipeline route so there are no shared access points	Not supported by Santa Rita Experimental Range Link 120 is not supported by Santa Rita Experimental Range Not supported by Town of Sahuarita		
10	20, 25, 55, 85, 90, 95, 140, 120*, 105*, 155*	15.62	4.38	• Primarily requires new access (may create additional trespass onto Santa Rita Experimental Range) • New access creates disturbance to vegetation and wildlife resources • Shared route with pipeline corridor along link 140, 105, and 155 • Adjacent to residences primarily along links 90, 105, and 155 • Requires new right-of-way from private and Arizona State Land Department • Link 120 disturbs several repeat photograph sites	• Access to link 105, 155 and 120 was assumed to be off of existing roads such as Helvetia road with spurs built off of these • Link 95 and 140 require major improvement to existing access road • Links 95 and 140 are in mountainous areas and will require special foundations • These links also reflect slow climbing access over rocky terrain, therefore, construction will take longer and cost more • There are also several very heavy angle structures	Not Preferred Pros: • If Link 120 is used, links 105, 155 are preferable over 130,135 due to less turns/dead-end structures and the structures along 155 can be placed on private rather than public land Cons: • Links 120, 105, 155 are temporary and provide no valuable connection to system in future. • Line for construction power would require 2 additional months to build • Does not follow pipeline route so there are no shared access points	Not supported by Santa Rita Experimental Range Link 120 is not supported by Santa Rita Experimental Range Not supported by Town of Sahuarita		

*Temporary interconnection for construction power and will be removed once the 138kV transmission line for operation power is constructed

SANTA RITA ROUTE FAMILY – ROSEMONT 138KV PROJECT ALTERNATIVE ROUTES COMPARISON SUMMARY DRAFT 4-13-10

Alternative Routes	Links Included	Approximate Length (in miles)		Environmental	Engineering/Constructability	Mine Operations	Agency/Jurisdiction/Stakeholder Group Comments (received to date)	Public Comments	Comments
1	20, 25, 60, 100, 105, 155, 140, 170, 160, 190, 210	18.24	n/a	• Shared route with pipeline corridor, existing access for majority of the route • New access creates disturbance to vegetation and wildlife resources • Requires new access for a portion of link 160 • Links 190 and 210 would be located within proposed mine plan of operations boundary • Nearby residences primarily along links 105 and 155 • Santa Rita Road is designated as scenic by Pima County (February 2010) • Forest Service Concern Level 1 roads (i.e., Box Canyon Road) crossed by link 160	• Links 160, 190, 140, and 210 will require special foundations in rocky terrain • Access to links 160, 170 and 190 was assumed to consist of spurs off of Box Canyon Road • Major improvements to access roads for links 95 and 140 will be required • Links 60, 100, 105 and 155 will be accessed off of Santa Rita Road • Most of these links consist of slow going heavily sloped roads which result in longer construction time and cost • Construction along links 160, 190 and 170 consist of mountain peak to mountain peak links that are both time consuming and difficult to build and will involve heavy structures	Generally, Santa Rita Road Family routes are preferred due to the more direct route and ability to provide electrical distribution services to the water wells and booster stations. The preferred of the Santa Rita Road Route Family is Option 1. Pros: • Redundancy - 2 lines into plant providing critical backup power in case of primary line loss • Line for construction power would take less time to build. Power would be available when needed • Links 105, 155 are preferable over 130,135 due to less turns/dead-end structures, and the structures along 155 can be placed on private rather than public lands • Shared access to pipeline corridor Cons: not specified	Most preferred by Santa Rita Experimental Range Supported by Arizona State Land Department Not supported by Town of Sahuarita Davis-Monthan airspace management considers this 1st most compatible route		
3	20, 25, 60, 100, 130, 135, 95, 140, 170, 160, 190, 210	18.12	n/a	• Shared route with pipeline corridor for majority of the route • New access creates disturbance to vegetation and wildlife resources • Link 130 requires new access and avoids residences in the vicinity of links 105 and 155 • Requires new access for a portion of link 160 • Links 190 and 210 would be located within proposed mine plan of operations boundary • Santa Rita Road is designated as scenic by Pima County (February 2010) • Forest Service Concern Level 1 roads (i.e., Box Canyon Road) crossed by link 160	• Links 160, 190, 140, and 210 will require special foundations in rocky terrain • Access to links 160, 170 and 190 was assumed to consist of spurs off of box canyon road • Major improvements to access roads for link 140 will be required • Links 60 and 100 will be accessed off of Santa Rita Road • Most of these links consist of slow going heavily sloped roads which result in longer construction time and cost • Construction along links 160, 190 and 170 consist of mountain peak to mountain peak links that are both time consuming and difficult to build and will require heavy structures	Pros: • Redundancy - 2 lines into plant providing critical backup power in case of primary line loss • Line for construction power would take less time to build. Power would be available when needed Cons: • Links 130,135 require more turns and dead-end structures than links 105, 155	Supported by Santa Rita Experimental Range Supported by Arizona State Land Department Not supported by Town of Sahuarita		
7	20, 25, 60, 100, 105, 155, 140, 120*	12.91	2.18	• Shared route with pipeline corridor with existing access for majority of the route • New access creates disturbance to vegetation and wildlife resources • Requires new access for a portion of link 120 • Nearby residences primarily along links 105 and 155 • Link 120 disturbs several repeat photographs sites • Santa Rita Road is designated as scenic by Pima County (February 2010)	• Link 140 will require special foundations in rocky terrain • Major improvements to access roads for link 140 will be required • Links 60, 100 and 105 will be accessed off of Santa Rita Road • Access to link was assumed to be off of Helvetia Road • Link 140 consists of slow going heavily sloped roads which result in longer construction time and cost	Pros: • Links 105, 155 are preferable over 130,135 due to less turns/dead-end structures and the structures along 155 can be placed on private rather than public lands • Shared route with the pipeline corridor Cons: • Line for temporary construction power would require 2 additional months l to build power is not available when needed • Links 120 is temporary and provides no valuable connection to system in future	Not supported by Santa Rita Experimental Range Link 120 is not supported by Santa Rita Experimental Range Not supported by Town of Sahuarita Citizen member of Stakeholder Group – supports this route		
9	20, 25, 60, 100, 130, 135, 95, 140, 120*	12.79	2.18	• Shared route with pipeline corridor, existing access for majority of the route • New access creates disturbance to vegetation and wildlife resources • Link 130 requires new access and avoids residences in the vicinity of links 105 and 155 • Requires new access for a portion of link 120 • Link 120 disturbs several repeat photographs sites • Santa Rita Road is designated as scenic by Pima County (February 2010)	• Links 140 and 95 will require special foundations in rocky terrain. • Road improvements will be required along links 95 and 140 • Links 95 and 140 consist of slow going heavily sloped roads that will extend construction time and cost. • Access to links 60 and 100 are assumed to be off of Santa Rita Road • Access to link 120, 130 and 135 was assumed off of Helvetia Road	Pros: • Shared route with the pipeline corridor Cons: • Line for construction power would require 2 additional months to build power not available when needed • Link 120 is temporary and provides no valuable connection to system in future • Links 130,135 require more turns and dead-end structures than links 105, 155	Not supported by Santa Rita Experimental Range Link 120 is not supported by Santa Rita Experimental Range Not supported by Town of Sahuarita Citizen member of Stakeholder Group – supports this route		

*Temporary interconnection for construction power and will be removed once the 138kV transmission line for operation power is constructed

ADJACENT 46KV ROUTE FAMILY – ROSEMONT 138KV PROJECT ALTERNATIVE ROUTES COMPARISON SUMMARY

DRAFT 4-13-10

Alternative Routes	Links Included	Approximate Length (in miles)		Environmental	Engineering/Constructability	Mine Operations	Agency/Jurisdiction/Stakeholder Group Comments (received to date)	Public Comments	Comments
1	30, 110, 120, 105, 155, 140	15.06	n/a	• Adjacent to existing 46kV transmission line and would require access upgrade for a portion of the route • Shared route with pipeline corridor for links 105, 155, 140 • New access creates disturbance to vegetation and wildlife resources • Requires new access for a portion of link 120 • Link 120 disturbs several repeat photographs sites • Nearby residences primarily along links 105 and 155	• Link 140 will require special foundations in rocky terrain • Link 140 will be slow traveling and will take longer to construct • Access road improvement to link 140 will be required • Links 30, 110 will require improvement to existing access road • Access to link 120, 105 and 155 were assumed off of Helvetia or other existing roads	Pros: • Links 130,135 require more turns and dead-end structures than links 105, 155 Cons: • Personnel safety risks and possible multiple outages required when installing a 138kV line with the 46kV line • Line for construction power would require 2 additional months to build, power not available when needed • This route does not follow the pipeline corridor so there is no shared access	Not supported by Santa Rita Experimental Range Link 120 is not supported by Santa Rita Experimental Range Citizen member of Stakeholder Group – supports this route		
2	30, 110, 120, 130, 135, 95, 140	14.94	n/a	• Adjacent to existing 46kV transmission line and would require access upgrade for a portion of the route • Shared route with pipeline corridor for link 140 • New access creates disturbance to vegetation and wildlife resources • Requires new access for a portion of link 120 • Link 120 disturbs several repeat photographs sites • Link 130 requires new access and avoids residences in the vicinity of links 105 and 155	• Links 95 and 140 will require special foundations in rocky terrain • Access road improvement to links 95 and 140 will be required • Existing access road improvements will be required for links 30 and 110 • Links 95 and 140 consist of slow going heavily sloped roads, which will take longer to construct and cost more • Access to links 120, 130 and 135 was assumed to be off of Helvetia Road	Pros: not specified Cons: • Personnel safety risks and possible multiple outages required when installing a 138kV line with the 46kV line • Links 130,135 require more turns and dead-end structures than Links 105, 155 • Line for construction power would require 2 additional months to build, power not available when needed • This route does not follow the pipeline corridor so there is no shared access	Not supported by Santa Rita Experimental Range		
4	30, 110, 150, 170, 160, 190, 210	19.49	n/a	• Adjacent to existing 46kV transmission line and would require access upgrade for majority of route • New access creates disturbance to vegetation and wildlife resources • Requires new access for a portion of link 120 • Portion of link 150 within Box Canyon area • Links 190 and 210 would be located within proposed mine plan of operations boundary • Requires new access for link 160 which crosses Forest Service Concern Level 1 (i.e., Box Canyon Road)	• Links 160, 190 and 210 will require special foundations in rocky terrain • Access road or improvement to existing roads will be required along links 30, 110, 150, 170 and 210 • Access to links 160 and 190 was assumed to consist of spurs off of box canyon road • Some of these links consist of slow going heavily sloped roads, therefore, construction will be time consuming • Some of the construction will be from mountain peak to mountain peaks which will be difficult requiring special structures	Pros: not specified Cons: • Personnel safety risks and possible multiple outages required when installing a 138kV line with the 46kV line • This route does not follow the pipeline corridor so there is no shared access	Preferred by Town of Sahuarita Not supported by Santa Rita Experimental Range Davis-Monthan airspace management considers this 3rd most compatible route		
6	30, 110, 120, 105, 155, 140, 170, 160, 190, 210	21.78	n/a	• Adjacent to existing 46kV transmission line and would require access upgrade for a portion of the route • New access creates disturbance to vegetation and wildlife resources • Requires new access for a portion of link 120 • Link 120 disturbs several repeat photographs sites • Shared route with pipeline corridor for links 105, 155, 140 • Nearby residences primarily along links 105 and 155 • Links 190 and 210 would be located within proposed mine plan of operations boundary • Requires new access for link 160 which crosses Forest Service Concern Level 1 (i.e., Box Canyon Road)	• Links 160, 190, 140, and 210 will require special foundations in rocky terrain • Access road or improvement to existing roads will be required along links 30, 110, 120, 170, and 210 • Access to links 160 and 190 was assumed to consist of spurs off of Box Canyon Road. Some of these links consist of slow going heavily sloped roads, therefore, construction will be time consuming • Some of the construction will be from mountain peak to mountain peaks which will be difficult requiring special structures	This is the preferred route for the Adjacent 46kV Family (assuming Link 120 is permanent) Pros: not specified Cons: • Personnel safety risks and possible multiple outages require when installing a 139kV line with the 46kV line • This route does not follow the pipeline corridor so there is no shared access	Not supported by Santa Rita Experimental Range		

*Temporary interconnection for construction power and will be removed once the 138kV transmission line for operation power is constructed