08TP486169.0	CIRCUIT 4861 69KV TAP
08TP5483 138	CIRCUIT 5483 138KV TAP
08TP5485 138	CIRCUIT 5485 138KV TAP
08TP566769.0	Tap 5667-6 69.0 kV
08TP676369.0	Tap 6763 69.0 kV
08TP686369.0	TAP 6863 69.0
08TP686469.0	Tap 6864 69.0 kV
08TP7481 138	CIRCUIT 7481 138KV TAP
08TP7482 138	Tap 7482
08TP966 69.0	Tap 966
08TREATY69.0	Treaty 69kV
08TRENTO 138	Trenton 138 kV
08TRIMBL 345	Trimble 345kV
08TRMNL1 138	TERMINAL 1 138.0
08TRMNL169.0	TERMINAL 1 69.0
08TRMNL2 138	TERMINAL 2 138.0
08TRMNL269.0	TERMINAL 2 69.0
08TRNTN169.0	TRENTON BUS1 69KV
08TRTLCK69.0	TURTLE CREEK 69.0
08TTCPPE 138	French Lick Texas Eastern (TETC) Pipeline 138kV
08TWYMI1 138	TWENTYMILE 1 138.0
08TWYMI2 138	Twenty Mile 2
08TXEHRT69.0	Texas Eastern Trans. Corp. 69 kV
08TXEMNR69.0	TAX E MANOR 69.0
08TYLRVL69.0	TYLERSVILLE 69.0
08UNION 138	UNION 138KV
08UNION 69.0	Union 69.0 kV
08UNTP 69.0	Union Tap 69.0 kV
08URBANA69.0	Urbana 69kV
08USDOE 138	US Department of Energy
08USPOST69.0	US POST 69.0
08VDSBRG 230	Veedersburg
08VDSBRG69.0	Veedersburg 69kV
08VERONA69.0	Verona 69.0 kV
08VIGO I 138	Vigo Ind. Park 138kV
08VILLA169.0	Villa1 169 kV
08VILLA269.0	VILLA 2 69.0
08VIN 138	VINCENNES
08VIN J 138	VINCENNES JUNCTION
08W LAF 138	West Lafayette
08WAB R 138	Wabash River 138 kV
08WAB R 230	Wabash River 230 kV
08WABASH 138	WABASH
08WABASH12.4	Wabash River 12.4kV
08WABASH69.0	Wabash 69
08WABGTJ69.0	Wab G. Tire Jct. 69kV
08WABR1 13.8	Wabash River Generator Unit #1 13.8 kV
08WABR2 13.8	Wabash River Generator Unit #2 13.8 kV
08WABR3 13.8	Wabash River Generator Unit #3 13.8 kV
08WABR4 13.8	Wabash River Generator Unit #4 13.8 kV
08WABR5 13.8	Wabash River Generator Unit #5 13.8 kV
08WABR6 24.0	Wabash River Generator Unit #6 24.0 kV
08WALEBR69.0	Waleboro 69kV
08WALHL169.0	WALNUT HILLS 1 69.0
08WALHL269.0	Walnut Hills 2
08WALTON 230	WALTON

08WALTON 345	WALTON
08WALTON69.0	WALTON
08WARREN69.0	WARREN 69.0
08WARRN1 138	Warren Bus 138kV
08WARRN2 138	Warren Bus 138kV
08WASH J 138	Washington Jct
08WASH J69.0	Washington Jct. 69kV
08WASHMU 138	Washington Municipal
08WATLAS69.0	West Atlas
08WBSH 169.0	Wabash 1 69kV
08WBSH 369.0	Wabash 3 69kV
08WDLAWN69.0	Woodlawn
08WEBSTE 230	WEBSTER STREET (KOKOMO)
08WEND1 138	WEST END 1 138.0
08WEND10 138	Warren Bus 138kV
08WEND3 138	West End 3 138 kV
08WEND7 138	West End 7
08WEND8 138	West End 8
08WEND9 138	WEST END 9 138.0
08WESTWD 138	WESTWOOD
08WESTWD 345	WESTWOOD
08WHEAT 345	WHEATLAND (ENRON)
08WHITEH 138	Whitehall Pike 138kV
08WHITST 345	WHITESTOWN
08WHITWR69.0	WHITETOWER 69.0
08WHTFLD 138	Whitfield
08WHTL E69.0	Wheatland E. 69kV
08WHTSVL 230	Whitesville
08WHTV S69.0	Whitesville S. 69kV
08WILDR212.4	Wilder 2 13.2kV
08WILEY1 138	WILEY 1 138.0
08WILEY2 138	Willey 2
08WILM J 138	WILMINGTON JUNCTION
08WIMNTN 138	Wilmington
08WLDER1 138	WILDER 1 138.0
08WLDER169.0	WILDER 1 69.0
08WLDER2 138	Wilder 2
08WLDER269.0	WILDER 2 69.0
08WLDGRJ69.0	Willard Green Jct. 69kV
08WLDRM169.0	WILDER M1 69.0
08WMSVL169.0	WITHAMSVILLE 1 69.0
08WMSVL269.0	Withamsville 2
08WODSDL 345	WOODSDALE 345KV
08WRTGTN69.0	Worthington Steel 69kV
08WSDLE 69.0	Woodsdale
08WSDLE113.8	WOODSDALE 1 13.8
08WSDLE213.8	WOODSDALE 2 13.8
08WSDLE313.8	WOODSDALE 3 13.8
08WSDLE413.8	WOODSDALE 4 13.8 kV
08WSDLE513.8	WOODSDALE 5 13.8
08WSDLE613.8	WOODSDALE 6 13.8
08WSDLM113.8	WOODSDALE M1 13.8
08WSDLM213.8	WOODSDALE M2 13.8
08WSDLM313.8	WOODSDALE M3 13.8
08WSHJCT69.0	Washington Municipal Junction 69kV
08WSTL J69.0	Westland Jct. 69kV

08WTR ST 138	Water St. 138kV
08WYSCR169.0	WYSCARVER 1 69.0
08WYSCR269.0	Wyscarver 2
08XTEK 69.0	XTEK 69.0
08ZIMER 345	ZIMMER 345.0
08ZIMRHP26.0	ZIMMER HP 26.0
08ZIMRLP22.0	ZIMMER LOW PRESSURE 22 KV
09ADKINS 345	ADKINS 345 KV
09AIRWAY 138	AIRWAY 138 KV
09AIRWAY69.0	AIRWAY 69 KV
09ALPHA 138	ALPHA 138 KV
09ALPHA 69.0	Alpha 69 kV (Greene County)
09AMSTRD 138	AMSTERDAM 138 KV
09AMSTRD69.0	AMSTERDAM 69 KV
09ATLNTA 345	ATLANTA 345KV
09ATLNTA69.0	ATLANTA 69 KV
09BATH 138	BATH 138 KV
09BATH 345	BATH 345 KV
09BATH 69.0	BATH 69.0 KV
09BELLBR 138	BELLBROOK 138 KV
09BJ TAP69.0	BLUE JACKET TAP 69 KV
09BLUJK 138	BLUE JACKET 138 KV
09BLUJK 69.0	BLUE JACKET 69 KV
09BURDOX 138	Burdox 138 kv
09CARGIL 138	Cargil 138 kv
09CENTER 138	CENTERVILLE 138 KV
09CLDWTR69.0	COLDWATER 69 KV
09CLINTO 345	CLINTON 345 KV
09CLINTO69.0	CLINTON 69 KV
09CROWN 138	CROWN 138 KV
09CROWNE69.0	CROWN EAST 69 KV
09CROWNW69.0	CROWN WEST 69 KV
09CVNGTN69.0	COVINGTON 69 KV
09DARBY 138	DARBY 138 KV
09DARBY 69.0	DARBY 69 KV
09DELMOR12.0	DELMOR 12 KV
09DELMOR69.0	DELMOR 69 KV
09DIXIET69.0	Dixie Tap 69 kv
09ELDEAN 138	09Eldean 138 kV Sub
09ELDEAN69.0	09Eldean 69 kV Sub
09ESIDNY 138	EAST SIDNEY 138 (COOP DELIVERY POINT)
09GIVENS 138	GIVENS 138 KV (COOP DELIVERY POINT)
09GREENE 138	GREENE 138 KV
09GREENE 345	GREENE 345 KV
09GRNFLD69.0	GREENFIELD 69 KV
09GRNVIL 138	GREENVILLE 138 KV
09GRNVIL69.0	GREENVILLE 69 KV
09HALTER 138	HALTERMAN 138 KV (COOP DELIVERY POINT)
09HEMPST 138	HEMPSTEAD 138 KV
09HEMPST69.0	HEMPSTEAD 69 KV
09JASPER69.0	JASPER 69 KV
09KETTER69.0	KETTERING 69 KV
09KILLEN 345	KILLEN 345 KV
09KINGSC69.0	Kingscreek 69 kv
09KNOLLW 138	KNOLLWOOD 138 KV
09LOGAN 138	LOGAN 138 KV

09LOGAN 69.0	LOGAN 69 KV
09MECHAN 138	MECHANICSBURG 138 KV
09MIAMI 138	MIAMI 138 KV
09MIAMI 345	MIAMI 345 KV
09MIAMI 69.0	MIAMI 69 KV
09MONUM1 138	Monument 1 138 kV
09MONUM2 138	Monument 2 138 kV
09MONUMT12.5	MONUMENT 12 KV
09MORAIN69.0	MORAINE 69 KV
09MRTNSV69.0	MARTINSVILLE 69 KV
09NCARLI 138	NEW CARLISLE 138 KV
09NCARLI69.0	NEW CARLISLE 69 KV
09NEEDMO 138	NEEDMORE 138 KV
09NETAP 69.0	CIRCUIT 6619 TAP
09NORMAN 138	NORMANDY 138 KV
09NORMAN69.0	Normandy 69 kv
09NORTHR 138	NORTHRIDGE 138 KV
09OHH 138	O.H. HUTCHINGS 138 KV
09OHH C.69.0	O.H. HUTCHINGS CENTRAL 69 KV
09OHH E.69.0	O.H. HUTCHINGS EAST 69 KV
09OHH W.69.0	O.H. HUTCHINGS WEST 69 KV
09OVERL1 138	Overlook 1 138 kV
09OVERL2 138	OVERLOOK 2 139
09OVERLK69.0	OVERLOOK 69 KV
09PIQUA 69.0	Piqua 3 - 69 kV Sub
09PIQUA469.0	09Piqua4 - 69 kV Sub
09QUINCY 138	QUINCY 138 KV
09ROCKTP69.0	Rockford Tap 69 kv
09ROSSBG69.0	ROSSBURG 69.0 KV
09SHELBY 138	SHELBY 138 KV
09SHELBY 345	SHELBY 345 KV
09SIDNEY 138	SIDNEY 138 KV
09SIDNEY69.0	SIDNEY 69 KV
09SPRING 138	SPRINGCREEK 138 KV
09ST.MRY69.0	SAINT MARY'S 69 KV
09STATAP 138	STAUNTON 138 KV TAP
09STAUNT 138	STAUNTON 138 KV
09STAUNT69.0	STAUNTON 69 KV
09STUART 138	STUART 138 KV
09STUART 345	STUART 345 KV
09SUGRCK 138	SUGARCREEK 138 KV
09SUGRCK 345	SUGARCREEK 345 KV
09TAIT 69.0	TAIT 69 KV
09TAITCT69.0	Tait CT 69kV
09TAP61069.0	CIRCUIT 6610 69 KV TAP
09TEXTAP69.0	TEXAS EAST TAP 69
09TREBEI 138	TREBEIN 138 KV
09TREBEI69.0	TREBEIN 69 KV
09URBANA 138	URBANA 138 KV
09URBANA69.0	URBANA 69 KV
09VANDAL69.0	VANDALIA 69 KV
09WASHCH69.0	WASHINGTON COURTHOUSE 69 KV
09WEBSTR 138	WEBSTER 138 KV
09WEBSTR69.0	WEBSTER 69 KV
09WILMNG69.0	WILMINGTON 69 KV
09WMANCH69.0	WEST MANCHESTER 69 KV

09WMILTN 138	WEST MILTON 138 KV
09WMILTN 345	WEST MILTON 345 KV
09WMILTN69.0	WEST MILTON 69 KV
09WYAND1 138	Wyandot 1 138kV
09WYAND2 138	Wyandot 2 138kV
09YANKEE69.0	YANKEE 69 KV
10AB GT113.8	A.B. BROWN GT1
10AB GT213.8	A.B. BROWN GT1
10ABB G122.0	A.B. BROWN UNIT 1
10ABB G222.0	A.B. BROWN UNIT 2
10ABBRWN 138	A.B. BROWN 138KV BUS
10ANGD13 138	ANGEL MOUNDS 138KV
10ANGD6969.0	ANGEL MOUNDS 69KV
10BG GT113.8	BAGS GT1
10BG GT213.8	BAGS GT2
10CASL13 138	CASTLE 138KV
10CASL6969.0	CASTLE 69KV
10CATO_T 138	CATO TAP 138 KV
10CATO13 138	CATO 138KV
10CATO6969.0	CATO 69KV
10CUL G114.4	CULLEY UNIT 1
10CUL G214.4	CULLEY UNIT 2
10CUL G322.0	CULLEY UNIT 3
10CULY13 138	FB CULLEY GENERATION 138KV
10CULY6969.0	FB CULLEY GENERATION 69KV
10DUBS13 138	DUBOIS 138KV
10DUBS6969.0	DUBOIS 69KV
10DUFF13 138	Duff Sub 138kv bus
10ELOT13 138	ELLIOT 138KV
10ELOT6969.0	ELLIOT 69KV
10FBUR 138	FARM BUREAU COOP 138KV
10GRIMM 138	GRIMM RD 138KV
10GRND13 138	GRANDVIEW 138KV
10GRND6969.0	GRANDVIEW 69KV
10HEID13 138	HEIDELBACH 138KV
10HEID6969.0	HEIDELBACH 69KV
10JSP G169.0	JASPER UNIT 1
10JSP_M 69.0	JASPER MAIN 69KV
10JSP_N 69.0	JASPER NORTH 69KV
10LYNV6969.0	LYNVILLE 69KV
10MTVN13 138	MT VERNON 138KV
10MTVN6969.0	MT VERNON 69KV
10NE GT12.5	NORTHEAST GT1&2
10NE13 138	NORTH EAST 138KV
10NE69 69.0	NORTH EAST 69KV
10NEWHRM69.0	NEW HARMONY 69KV BUS
10NTVL13 138	Newtonville Sub 138kv bus
10NTVL16 161	Newtonville Sub 161kv bus
10NTVL6969.0	Newtonville Sub 69kv bus
10NW13 138	NORTH WEST 138KV
10NW69 69.0	NORTH WEST 69KV
10OAKCTY69.0	OAKLAND CITY 69KV BUS
10OHRIVR69.0	OHIO RIVER 69KV BUS
10PONT13 138	POINT 138KV
10PONT6969.0	POINT 69KV
10SIGTAP 138	SIGECO tap at Petersburg

10SNAK13 138	Snake Run Sub
10SNAKG113.8	Snake Run CT1
10SNAKG213.8	Snake Run CT2
10TELCTY69.0	TELL CITY 69KV BUS
10TOYOTA 138	TOYOTA 138KV BUS
10VICT6969.0	VICTORY 69KV
10WAR 1515.0	WARRICK 15KV BUS
10WAR G115.0	WARRICK UNIT 1
10WAR G215.0	WARRICK UNIT 2
10WAR G315.0	WARRICK UNIT 3
10WAR G420.0	WARRICK UNIT 4
10WARING 138	WARRICK RING 138KV BUS
10WP_SIG69.0	WAUPACA 69KV BUS
113832 T 138	tap point to Pleasure Ridge 138 kV bus in Ashbotto
113842 T 138	tap point to Jeffersontown 138 kV bus in Watterson
113870 T 138	tap point to Plainview 138 kV bus in Beargrass-Mid
116658 T69.0	tap between Shelbyville, Aiken, and 6686 tap
116659 T69.0	tap point to Freys Hill 69 kV bus in Harrods Creek
116662 T69.0	tap point to Mt Washington EKPC substation
116686 T69.0	tap point to Crestwood 69 kV bus in Centerfield-WH
11ADAMS 138	Adams 138 kV bus
11ADAMS 34.5	Adams 34.5 kV bus
11ADAMS 69.0	Adams 69 kV bus
11AIKEN 69.0	Aiken 69 kV bus
11ALCALD 161	Alcalde 161 kV bus
11ALCALD 345	Alcalde 345 kV bus
11ALEXAN69.0	Alexander 69 kV
11ALGNQU 138	Algonquin 138 kV bus
11ALGNQU69.0	Algonquin 69 kV bus
11AMERI 138	American Avenue 138 kV bus
11AMERI 69.0	American Avenue 69 kV bus
11ANDALE69.0	Andalex 69 kV
11ANDO T69.0	Andover 69 kV bus
11ANDOVE34.5	Andover 34.5 kV bus
11ANDOVE69.0	Andover 69 kV bus
11AOSM T69.0	tap point to AO Smith substation
11AOSMIT69.0	AO Smith 69 kV bus
11APPLPA 138	Appliance Park 138 kV bus
11APPOL 69.0	Appolo Fuel 69 kV
11ARNOLD 161	Arnold 161 kV bus
11ARNOLD69.0	Arnold 69 kV bus
11ARTE T 161	Artemus 161 kV
11ARTEMU 161	Artemus 161 kV bus
11ARTEMU69.0	Artemus 69 kV bus
11ASHAVE69.0	Ashland Avenue 69 kV
11ASHBOT 138	Ashbottom 138 kV bus
11ASHBOT69.0	Ashbottom 69 kV bus
11ASHBY 138	Ashby 138 kV bus
11ASHOIL69.0	Ashland Oil 69 kV
11AVON 169.0	tap point to Avon substation
11AVON 269.0	tap point to Avon substation
11BARBOU69.0	Barbourville City 69 kV
11BARD C69.0	Bardstown City 69 kV bus
11BARD I69.0	Bardstown Industrial 69 kV bus
11BARDST 138	Bardstown 138 kV bus
11BARDST69.0	Bardstown 69 kV bus

11BARDWE69.0	Bardwell 69 kV
11BARLOW69.0	Barlow 69 kV bus
11BEARGR 138	Beargrass B95138 kV bus
11BEARGR69.0	Beargrass 69 kV bus
11BEATTY69.0	Beattyville 69 kV bus
11BEDFOR69.0	Bedford EKPC 69 kV bus
11BELL&Z69.0	Bell & Zoller 69 kV
11BELT L69.0	Belt Line 69 kV
11BENHAM69.0	Benham 69 kV
11BEREA 69.0	tap to Berea 69 kV
11BEREAE69.0	tap point to EKPC West Berea-Three Links Jct 69 kV
11BG ORD69.0	Bluegrass Ordnance 69 kV bus
11BG PKW 138	Bluegrass Parkway 138 kV bus
11BIMBLE69.0	Bimble 69 kV bus
11BISHOP69.0	Bishop 69 kV
11BKR LN 138	Baker Lane 138 kV bus
11BLCKMT69.0	Black Mountain 69 kV
11BLCKWD69.0	Blackwood 69 kV
11BLED T69.0	tap point to Bledsoe substation
11BLUE L 138	Blue Lick 138 kV bus
11BLUE L 161	Blue Lick 161 kV bus
11BLUE L 345	Blue Lick 345 kV bus
11BLULCK69.0	Blue Lick 69 kV bus
11BNDS M69.0	Bonds Mill 69 kV bus
11BOND 69.0	Bond 69 kV bus
11BONNIE 138	Bonnieville 138 kV bus
11BONNIE69.0	Bonnieville 69 kV bus
11BOONE 69.0	Boone Avenue 69 kV bus
11BOONSB69.0	Boonesboro North 69 kV bus
11BOYLE 69.0	Boyle County 69 kV bus
11BRCKNG 138	Breckenridge 138 kV bus
11BRCKNG69.0	Breckenridge 69 kV bus
11BRDGEK69.0	Bridgeport EKPC 69 kV
11BRDGHE 138	tap to Bridgeport HE 69 kV
11BRGPMP69.0	Beargrass Pumping 69 kV
11BROMLY69.0	Bromley 69 kV bus
11BRUSH 69.0	Brush Creek 69 kV
11BRWN N 138	Brown North 138 kV bus
11BRWN N 345	Brown North 345 kV bus
11BRWN P 138	Brown Plant 138 kV bus
11BRWNCT 138	Brown Combustion Turbine 138 kV bus
11BRWNT1 138	tap point to Brown Combustion Turbine 138 kV bus i
11BRWNT2 138	tap point to Brown Combustion Turbine 138 kV bus i
11BUCHAN69.0	Buchanan 69 kV
11BUCKNR 345	Buckner Dynegy 345 kV bus
11BUENA 69.0	Buena Vista 69 kV
11BUSH J69.0	tap point to Bush EKPC substation
11BUTLER 138	Butler 138 kV bus
11CALLOW69.0	Calloway 69 kV
11CAMARG69.0	Camargo 69 kV bus
11CAMPGR 138	Campground 138 kV bus
11CANAL 138	Canal 138 kV bus
11CANAL 69.0	Canal 69 kV bus
11CANERN69.0	Cane Run 69 kV bus
11CARLIS69.0	Carlisle 69 kV bus
11CARN T 138	tap point to Carntown 138 kV bus in Ghent-Kenton l

11CARNTN 138	Carntown 138 kV
11CARNTN69.0	Carntown 69 kV bus
11CARON 69.0	Caron 69 kV
11CARPEN69.0	Carpenter EKPC 69 kV
11CARROL 138	Carrollton 138 kV bus
11CARROL69.0	Carrollton 69 kV bus
11CAVE R69.0	Cave Run EKPC 69 kV
11CEN CI69.0	Central City South 69 kV
11CENTRF 138	Centerfield 138 kV bus
11CENTRF69.0	Centerfield 69 kV #1 bus
11CERRO-69.0	Cerro-Salem 69 kV
11CHRIST69.0	Christian 69 kV
11CLARK 138	Clark County 138 kV bus
11CLARK 69.0	Clark County 69 kV bus
11CLAXTO34.5	Claxton 34.5 kV bus
11CLAY 69.0	Clay 69 kV bus
11CLAY V69.0	tap point to Clay Village EKPC 69 kV bus in Shelby
11CLAYSM 138	Clays Mill 138 kV
11CLIFTO69.0	Clifton 69 kV bus
11CLVRPR 138	Cloverport 138 kV bus
11CMC TA69.0	tap point to Central Manufacturing substation
11CMP BR69.0	Camp Breckenridge 69 kV
11CMPBBG69.0	Campbellsburg EKPC 69 kV
11CMPBV269.0	Campbellsville 2 69 kV
11CMPGEK69.0	Campground EKPC 69 kV
11CN RN6 138	Cane Run Unit 6 138 kV bus
11CNE RN 138	Cane Run Switching Station 138 kV bus
11COASTA69.0	Coastal Coal 69 kV bus
11COLLIN69.0	Collins 69 kV bus
11CORBIN69.0	Corbin East #1 69 kV
11CORHAR69.0	Corhart 69 kV
11CORY T 161	tap point to Corydon 161 kV bus in Morganfield-Gre
11CORYDO 161	Corydon 161 kV bus
11CORYDO69.0	Corydon 69 kV bus
11CRAB O69.0	Crab Orchard 69 kV
11CRESCE69.0	Crescent 69 kV
11CRITTE 161	Crittenden 161 kV bus
11CRITTE69.0	Crittenden 69 kV bus
11CRSTWO69.0	Crestwood 69 kV
11CUMB F69.0	Cumberland Falls EKPC 69 kV
11CUMBER69.0	Cumberland 69 kV
11CYNT S69.0	Cynthiana South 69 kV
11CYNTH 69.0	Cynthiana Switching Station 69 kV bus
11DAHLIA69.0	Dahlia 69 kV
11DANV 169.0	Danville #1 69 kV
11DANVIL 138	Danville North 138 kV bus
11DANVIL69.0	Danville North 69 kV bus
11DARKHO69.0	Dark Hollow 69 kV
11DAWSON34.5	Dawson Springs 421 34.5 kV bus
11DAYHOI69.0	tap to Dayhoit 69 kV
11DAYS B69.0	Days Branch 69 kV
11DAY-WA 138	Dayton Walther 138 kV bus
11DEL PA69.0	Del Park 69 kV
11DELAP 69.0	Delaplain 69 kV bus
11DELVIN 161	Delvinta 161 kV bus
11DIXDAM69.0	Dix Dam 69 kV bus

11DIXIE 138	Dixie 138 kV bus
11DIXON 69.0	Dixon 69 kV
11DORCHE 161	Dorchester 161 kV bus
11DORCHE34.5	Dorchester 34.5 kV bus
11DORCHE69.0	Dorchester 69 kV bus
11DW CRN 138	Dow Corning West 138 kV bus
11DWINA 69.0	Dwina 69 kV bus
11E BERN69.0	East Bernstadt 69 kV bus
11E DIAM69.0	East Diamond 69 kV
11EARL N 161	Earlington North 161 kV bus
11EARL N69.0	Earlington North 69 kV bus
11EARLIN69.0	Earlington 69 kV bus
11EASTLA69.0	Eastland 69 kV
11EASTVW69.0	Eastview 69 kV bus
11EASTWO69.0	Eastwood 69 kV bus
11ECHOLS69.0	Echols 69 kV
11EDDY P69.0	Eddyville Prison 69 kV
11EDDYVI69.0	Eddyville 69 kV
11ELIHU 161	Elihu 161 kV bus
11ELIHU 69.0	Elihu 69 kV bus
11EMANUE69.0	Emanuel 69 kV
11EMINEN69.0	Eminence 69 kV bus
11ESSERV69.0	Esserville 69 kV
11ETHEL 138	Ethel 138 kV bus
11ETHEL 69.0	Ethel 69 kV bus
11ETOWN 138	Elizabethtown 138 kV bus
11ETOWN 69.0	Elizabethtown 69 kV bus
11ETWN 269.0	tap to E'town 2 69 kV
11ETWN 469.0	E'town 4 69 kV
11EVAR T69.0	tap to Evarts 69 kV
11EVARTS69.0	Evarts 69 kV bus
11EWINGT69.0	Ewington 69 kV bus
11FAIRFL69.0	Fairfield 69 kV
11FAIRMN69.0	Fairmount 69 kV bus
11FARLEY 161	Farley 161 kV bus
11FARLEY69.0	Farley 69 kV bus
11FARM T 138	tap point to Farmers 138 kV bus in Rodburn-Spencer
11FARMER 138	Farmers 138 kV bus
11FARMER69.0	Farmers 69 kV bus
11FARNSL69.0	Farnsley 69 kV bus
11FAWK T 138	tap between Fawkes (EKPC), Fawkes, and Lake Reba T
11FAWKES 138	Fawkes 138 kV bus
11FAWKES69.0	Fawkes 69 kV bus
11FERG S69.0	Ferguson South 69 kV bus
11FERNVL 138	Fern Valley 138 kV bus
11FERNVL69.0	Fern Valley 69 kV bus
11FFRT 34.5	Frankfort 34.5 kV bus
11FFRT 169.0	Frankfort 69 kV bus
11FFRT 269.0	Frankfort 2 69 kV
11FFRT E 138	Frankfort East 138 kV bus
11FFRT E69.0	Frankfort East 69 kV bus
11FINCHV69.0	Finchville 69 kV bus
11FL TL 69.0	Flordia Tile 69 kV
11FLEMIN 138	Flemingsburg 138 kV bus
11FLOYD 69.0	Floyd 69 kV
11FMC 69.0	FMC 69 kV

11FOGG P69.0	tap to Fogg Pike EKPC 69 kV
11FORD 138	Ford 138 kV
11FORD 69.0	Ford 69 kV
11FOREST69.0	Forester Creek 69 kV
11FOUR M69.0	Four Mile 69 kV
11FREDON69.0	Fredonia Quarry 69 kV
11FREYSH69.0	Freys Hill 69 kV
11GARRD 69.0	Garrard CT tie 69 kV
11GEORGT69.0	Georgetown 69 kV
11GHENT 138	Ghent 138 kV bus
11GHENT 345	Ghent 345 kV bus
11GIBRLT69.0	tap to Gibralter Mine 69 kV
11GODDRD 138	Goddard 138 kV bus
11GORGE 69.0	Gorge 69 kV
11GR RV 161	Green River 161 kV bus
11GR RVR 138	Green River 138 kV bus
11GR RVR69.0	Green River 69 kV bus
11GR STL 138	Green River Steel 138 kV bus
11GR STL69.0	Green River Steel 69 kV bus
11GRADE 138	Grade Lane 138 kV bus
11GRADY 69.0	Grady 69 kV bus
11GRAHVL 161	Grahamville 161 kV bus
11GRAHVL69.0	Grahamville 69 kV
11GRBURG69.0	Greensburg 69 kV bus
11GREASY69.0	Greasy Creek EKPC 69 kV bus
11GRNV W69.0	tap to Greenville West 69 kV
11GRPLAZ69.0	Green River Plaza EKPC 69 kV bus
11HAEFLN 138	Haefling 138 kV
11HAEFLN69.0	Haefling 69 kV bus
11HALEY 69.0	Haley 69 kV
11HAMBLN69.0	Hamblin 69 kV
11HANCOC 138	Hancock 138 kV bus
11HANCOC69.0	Hancock 69 kV bus
11HAR55769.0	Harlan 557 69 kV
11HARDBG 138	Hardinsburg 138 kV bus
11HARDN 138	Hardin County 138 kV bus
11HARDN 345	Hardin County 345 kV bus
11HARDN 69.0	Hardin County 69 kV bus
11HARLAN 161	Harlan "Y" 161 KV bus
11HARLAN69.0	Harlan "Y" 69 kV bus
11HARR T69.0	tap to Harrodsburg North 69 kV
11HARRDS69.0	Harrodsburg 69 kV
11HIGB 269.0	Higby Mill 2 69 kV
11HIGB A69.0	Higby Mill 69 kV A bus
11HIGB B69.0	Higby Mill 69 kV B bus
11HIGBY 138	Higby Mill 138 kV bus
11HIGHLA69.0	Highland 69 kV
11HILLSI69.0	Hillside 69 kV bus
11HINKLE69.0	Hinkle EKPC 69 kV
11HLCRST69.0	Hillcrest 69 kV bus
11HODGEN69.0	Hodgenville 69 kV bus
11HOPEWL69.0	Hopewell 69 kV bus
11HOWRD 161	Howards Branch 161 kV bus
11HRDSTA69.0	tap to Pleasant View Mine 69 kV
11HRDSTB69.0	Hardesty B 69 kV
11HRMNYL69.0	Harmony Landing 69 kV

11HRRDSC69.0	Harrods Creek 69 kV
11HRSTBR 138	Hurstbourne 138 kV bus
11HUGHS 69.0	Hughes Lane 69 kV bus
11HUNT T69.0	tap point to Hunters Bottom substation
11IBM 69.0	IBM 69 kV
11IBM N 138	IBM North 138 kV bus
11IMBODE 161	Imboden 161 kV bus
11IMBODE69.0	Imboden 69 kV bus
11INDIAN69.0	Indian Hill 69 kV bus
11JEFFJC 138	tap point to Jeffersonville CIN 138 kV bus in Nort
11JERICH69.0	Jericho EKPC 69 kV
11JOYLAN69.0	Joyland 69 kV
11KEN AM69.0	Ken America 69 kV
11KENTEN69.0	Kentenia 69 kV bus
11KENTON 138	Kenton 138 kV bus
11KENTON69.0	Kenton 69 kV bus
11KENWOO69.0	Kenwood 69 kV
11KEOKEE69.0	Keokee 69 kV
11KEOKTV69.0	Keokee TVA 69 kV
11KNOB C 138	Knob Creek 138 kV bus
11KOSMOS 138	Kosmos Cement 138 kV bus
11KU PK 69.0	KU Park Plant 69 kV bus
11KUHLMA69.0	Kuhlman 69 kV
11KY DAM69.0	Kentucky Dam TVA 69 kV bus
11KYSTHO69.0	Kentucky State Hospital 69 kV
11LAGR E69.0	La Grange East 69 kV bus
11LAGR P69.0	La Grange Penal 69 kV bus
11LANC 269.0	Lancaster 2 69 kV
11LANCST69.0	Lancaster 69 kV
11LANSDW 138	Lansdowne 138 kV bus
11LANSDW69.0	Lansdowne 69 kV bus
11LAWREN69.0	tap to Lawrence 69 kV
11LE I T69.0	tap point to Lebanon Industrial substation
11LEBN C69.0	Lebanon City 69 kV bus
11LEBN W 138	Lebanon West 138 kV
11LEBNON 138	Lebanon 138 kV
11LEBNON69.0	Lebanon 69 kV
11LEIT C69.0	Leitchfield City 69 kV bus
11LEITCH 138	Leitchfield 138 kV bus
11LEITCH69.0	Leitchfield 69 kV bus
11LEX PL69.0	Lexington Plant 69 kV bus
11LIBRT 69.0	Liberty Road 69 kV
11LIV C 161	Livingston County 161 kV bus
11LK REB 138	Lake Reba 138 kV bus
11LK REB69.0	Lake Reba 69 kV bus
11LKSHOR69.0	tap to Lakeshore 69 kV
11LOCKPO 138	Lockport 138 kV bus
11LOCUST69.0	tap to Locust 69 kV
11LONDON69.0	London 69 kV bus
11LONG R69.0	Long Run EKPC 69 kV
11LOUD A69.0	Loudon Avenue 69 kV A bus
11LOUD B69.0	Loudon Avenue 69 kV B bus
11LOUDON 138	Loudon Avenue 138 kV bus
11LR TAP 138	Lake Reba Tap 138 kV bus
11LR TAP 161	Lake Reba Tap 161 kV bus
11LWRNCB69.0	Lawrenceburg 69 kV

11LYNCH 69.0	Lynch 69 kV bus
11LYND S69.0	Lyndon South 69 kV bus
11LYNDON 138	Lyndon 138 kV bus
11LYNDON69.0	Lyndon 69 kV bus
11MADISO69.0	Madision 69 kV bus
11MAGAZI 138	Magazine 138 kV bus
11MAGAZI69.0	Magazine 69 Kv
11MANC S69.0	Manchester South 69 kV bus
11MANCHE69.0	Manchester 69 kV bus
11MANNIN34.5	Mannington 34.5 kV bus
11MANSLI 138	Manslick 138 kV bus
11MARI S69.0	Marion South 69 kV
11MARION 138	Marion County 138 kV bus
11MARION69.0	Marion 69 kV bus
11MDVL S69.0	tap to Madisonville South 69 kV
11MDVLGE69.0	tap to Madisonville GE 69 kV
11MED CN69.0	UK Medical Center 69 kV bus
11MERCR 138	tap point to Danville North 138 kV bus in Brown Pl
11METL+T69.0	Metal & Thermit 69 kV
11MIDDLS69.0	Middlesboro 69 kV bus
11MIDDLT 138	Middletown 138 kV bus
11MIDDLT 345	Middletown 345 kV bus
11MIDDLT69.0	Middletown 69 kV bus
11MIDWAY 138	Midway 138 kV bus
11MIL CK 138	Mill Creek 138 Kv
11MIL CK 345	Mill Creek 345 kV bus
11MIL88169.0	Mill Creek 881 69 kV
11MILBUR69.0	Milburn TVA 69 kV
11MILE L69.0	Mile Lane EKPC 69 kV
11MILLRS69.0	Millersburg 69 kV bus
11MILLWO69.0	Mill Wood 69 kV
11MILTON69.0	Milton EKPC 69 kV bus
11MORG 469.0	Morganfield 610 69 kV
11MORGNF 161	Morganfield 161 kV bus
11MORGNF69.0	Morganfield 69 kV bus
11MORH E69.0	Morehead East 69 kV
11MORH W69.0	Morehead West 69 kV
11MORTON69.0	Mortons Gap 69 kV bus
11MRRSFR69.0	Morris Forman 69 kV
11MT TBR69.0	Mount Tabor 69 kV
11MUD LA 138	Mud Lane 138 kV bus
11MUD LA69.0	Mud Lane 69 kV bus
11MUHLNB69.0	Muhlenberg Prison 69 kV
11M-V SI69.0	Mid-Valley Simpsonville 69 kV
11MVEK J69.0	Mount Victory EKPC 69 kV
11N.CORB69.0	North Corbin 69 kV
11N.MADS69.0	North Madison EKPC 69 Kv
11NACHAN69.0	Nachand 69 kV
11NAS 138	North American Stainless 138 kV bus
11NEBO 69.0	Nebo 69 kV bus
11NELSON 138	Nelson County 138 kV bus
11NELSON69.0	Nelson 69 kV
11NEWHAV69.0	New Haven 69 kV bus
11NICH 769.0	Nicholasville City #7 69 kV
11NORTHS 138	Northside 138 kV bus
11NORTHS 345	Northside 345 kV bus

11NORTON69.0	Norton East 69 kV
11OAK HI34.5	Oak Hill 34.5 kV bus
11OAK HI69.0	Oak Hill 69 kV bus
11OC TAP 138	tap point to Owen County 138 kV bus in Ghent-Scott
11OFFI T69.0	tap to Office EKPC EKPC substation
11OFFICE69.0	Office EKPC EKPC 69 kV bus
11OHIO C 138	Ohio County 138 kV bus
11OHIO C69.0	Ohio County 69 kV bus
11OKOLON 138	Okolona 138 kV bus
11OKONIT69.0	Okonite 69 kV bus
11OLINCO69.0	Olin Corporation 69 kV bus
11OMU 69.0	Owensboro Municipal Utilities 69 kV bus
11OSAKA 69.0	Osaka East 69 kV bus
11OVER S69.0	tap to Overland South 69 kV
11OWEN C 138	Owen County 138 kV bus
11OXMOOR69.0	Oxmoor 69 kV bus
11P WEST 138	Paddys West 138 kV bus
11P&G 69.0	Proctor & Gamble 69 kV
11PADDYR 138	Paddys Run 138 kV bus
11PADDYS 161	Paddys Run 161 kV bus
11PADDYS69.0	Paddys Run 69 kV bus
11PADDYW 345	Paddys West 345 kV bus
11PAINT 69.0	Paint Lick 69 kV bus
11PAR 1269.0	Paris 819 69 kV
11PAR CI69.0	Paris City (2) 69 kV
11PARI 469.0	Paris 688 69 kV
11PARIS 69.0	Paris 21 69 kV
11PBODYC69.0	Peabody Camp 1 69 kV
11PBODYW69.0	Peabody Water Pump 69 kV
11PENALF69.0	La Grange Penal 69 kV
11PEP PK34.5	Pepper Pike 34.5 kV bus
11PHILIP69.0	Vaksdahl Avenue 69 kV bus
11PICADO69.0	Picadome 69 Kv
11PIN72269.0	Pineville 722 69 kV
11PINE M69.0	Pine Mountain EKPC 69 kV bus
11PINEVI 161	Pineville 161 kV bus
11PINEVI 345	Pineville 345 kV bus
11PINEVI69.0	Pineville 69 kV bus
11PINEVL 161	Pineville 161 kV bus
11PINEVL 500	Pineville 500 kV bus
11PISGAH 138	Pisgah 138 kV bus
11PISGAH69.0	Pisgah 69 kV bus
11PITTSB69.0	Pittsburg 69 kV bus
11PLAINV 138	Plainview 138 kV bus
11PLSRDG 138	Pleasure Ridge 138 kV bus
11POCK N 161	Pocket North 161 kV bus
11POCKET 161	Pocket 161 kV bus
11POCKET 500	Pocket North 500 kV bus
11POCKET69.0	Pocket 69 kV bus
11POND C 138	Pond Creek 138 kV bus
11POP RI69.0	Poplar Ridge 69 kV
11POWDER69.0	Powderly 69 kV
11POWEL 69.0	Powell Mountain Coal 69 kV
11PR 3 M99.0	interior connection in Paddys Run #3 three winding
11PRINCE34.5	Princeton 34.5 kV bus
11PRINCE69.0	Princeton 69 kV bus

11PRKR M69.0	tap to Parkers Mill 69 kV
11PRKRSE69.0	Parker Seal 69 kV
11PRUN2A14.0	Paddys Run 14 kV 2A bus
11PRUN2B14.0	Paddys Run 14 kV 2B bus
11PUCKET69.0	Puckett Creek 69 kV
11PYRO 269.0	Pyro #2 69 kV
11RADCL 69.0	Radcliff South 69 kV
11REYNOL 138	Reynolds 138 kV bus
11RICE T69.0	Rice Station EKPC 69 kV
11RICH S69.0	Richmond South 69 kV
11RICHMO69.0	Richmond 69 kV
11RIVR Q 161	River Queen 161 kV bus
11RIVR Q69.0	River Queen 69 kV bus
11RIVRVI69.0	Riverview 69 kV
11ROCKHO69.0	Rockhold EKPC 69 kV
11ROCKWE69.0	Rockwell 69 Kv
11ROCKY 69.0	Rocky Branch 69 kV bus
11RODBRN 138	Rodburn 138 kV bus
11RODBRN69.0	Rodburn 69 kV bus
11ROGERS 138	Rogersville 138 kV bus
11ROGERS69.0	Rogersville 69 kV bus
11RQ TAP 161	tap point to River Queen 161 kV bus in Earlington
11RQ TAP69.0	tap point to River Queen 69 kV bus in Walker-Green
11RVRCTY69.0	River City Shredding 69 kV
11S CHEM69.0	tap to Spencer Chemical 69 kV
11S PADU 161	South Paducah 161 kV bus
11S PADU69.0	South Paducah 69 kV bus
11S.ELKH69.0	South Elkhorn EKPC 69 Kv
11SALT L69.0	Salt Lick 69 kV
11SALVIS69.0	Salvisa 69 kV
11SARDIS69.0	Sardis 69 kV bus
11SBMINE34.5	Smith Brothers Mines 34.5 kV bus
11SC TAP69.0	tap point to Shelby County 69 kV bus in Finchville
11SCOTST69.0	tap to Scott Street 69 kV
11SCOTT 138	Scott County 138 kV bus
11SCOTT 69.0	Scott County 69 kV bus
11SEMINO69.0	Seminole 69 kV bus
11SEWELL69.0	Sewellton 69 kV bus
11SHADRA 138	Shadrack 138 kV bus
11SHAKRT69.0	Shakertown 69 kV
11SHARKE 138	Sharkey EKPC 69 kV bus
11SHARON69.0	Sharon 69 kV bus
11SHAVR 69.0	Shavers Chapel 69 kV
11SHIVEL69.0	Shively 69 kV bus
11SHLB E69.0	Shelbyville East 69 kV
11SHLB S69.0	Shelbyville South 69 Kv
11SHLBYV69.0	Shelbyville 69 kV bus
11SHREWS 138	tap point to Leitchfield 138 kV bus in Ohio County
11SIMPSM69.0	Simpsonville 69 kV
11SKYLIG69.0	Skylight 69 kV bus
11SMITH 138	Smith OMU 138 kV bus
11SMITH 345	Smith 345 OMU kV bus
11SMYRNA69.0	Smyrna 69 kV bus
11SONORA69.0	Sonora 69 Kv
11SOUTHV69.0	Southville Station #6 EKPC 69 kV
11SPENC 138	Spencer Road 138 kV bus

11SPENC 69.0	Spencer Road 69 kV bus
11SPNDLT69.0	tap to Spindletop 69 kV
11SPRNGF69.0	Springfield 69 kV bus
11SSET S69.0	Somerset South 69 kV bus
11ST CHA69.0	Saint Charles 69 Kv
11STEWAR69.0	Stewart 69 kV
11STHPRK69.0	South Park 69 Kv
11STINK 69.0	Stinking Creek 69 Kv
11STONWL69.0	Stonewall 69 Kv
11STPAUL69.0	St Paul 69 kV bus
11STRGHT69.0	Straight Creek 69 Kv
11STRNGT69.0	Stringtown 69 Kv
11SUNOCO69.0	Sunoco 69 Kv
11SUNST 69.0	Sunset Mines 69 kV
11SWEETH69.0	Sweet Hollow 69 kV bus
11SYLVAN69.0	Sylvania 69 kV
11TAYLOR69.0	Taylor 69 kV bus
11TAYLRC69.0	Taylor County 69 kV bus
11TAYLRV69.0	Taylorsville 69 kV
11TIPT 169.0	Tip Top #1 69 kV
11TIPT 269.0	Tip Top #2 69 kV
11TIPT M99.0	Tip Tap transformer mid-point
11TIPTOP 138	Tip Top 138 kV bus
11TIPTOP34.5	Tip Top 34.5 kV bus
11TOMS C69.0	Toms Creek 69 kV bus
11TOYT N 138	Toyota North 138 kV bus
11TOYT S 138	Toyota South 138 kV bus
11TREE T69.0	tap point to Tree Haven EKPC substation
11TRIMBL 138	Trimble County 138 kV bus
11TRIMBL 345	Trimble County 345 kV bus
11TUN H 69.0	Tunnel Hill 69 Kv
11TYRONE 138	Tyrone 138 kV bus
11TYRONE69.0	Tyrone 69 kV bus
11US STE69.0	Corbin US Steel 69 kV
11V METR69.0	Van Meter EKPC 69 kV bus
11VERDA 69.0	Verda 69 kV
11VILEY 138	Viley Road 138 kV bus
11VSAI W69.0	Versailles West 69 kV
11VSAILL69.0	Versailles 69 kV
11W CLIF 138	West Cliff 138 kV bus
11W CLIF69.0	West Cliff 69 kV bus
11W FRNK 138	West Frankfort 138 kV bus
11W FRNK 345	West Frankfort 345 kV bus
11W FRNK69.0	West Frankfort 69 kV bus
11W HI T69.0	tap to West High Street 69 kV
11W IRVI 161	West Irvine 161 kV bus
11W IRVI69.0	West Irvine 69 kV bus
11W LEXN 138	West Lexington 138 kV bus
11W LEXN 345	Wext Lexington 345 kV bus
11WACO 69.0	Waco 69 kV
11WALKER 161	Walker 161 kV bus
11WALKER69.0	Walker 69 kV bus
11WARREN69.0	tap to Warren TVA 69 kV
11WATRSD 138	Waterside 138 kV bus
11WATTRS 138	Watterson 138 kV bus
11WATTRS69.0	Watterson 69 kV bus

11WC-DD 69.0	West Cliff 69 kV bus in Brown Plant 138 kV to Dix
11WDLWN 69.0	Woodlawn 69 Kv
11WEBC 369.0	Webcoal #3 69 kV
11WEBC 469.0	Webcoal #4 69 kV
11WEDONI 138	Wedonia 138 kV bus
11WHAS 69.0	WHAS 69 kV
11WHITEO69.0	White Oak 69 kV bus
11WHTC T69.0	tap point to Wheatcroft 69 kV bus in Morganfield-N
11WHTCRO69.0	Wheatcroft 69 kV
11WI TAP 161	tap point to West Irvine 138 kV bus in Lake Reba T
11WICK C69.0	Wickliffe City 69 kV
11WICKLI 161	Wickliffe 161 kV bus
11WICKLI69.0	Wickliffe 69 kV bus
11WIL D169.0	Wilson Downing #1 69 kV
11WIL D269.0	Wilson Downing #2 69 Kv
11WILMOR69.0	Wilmore 69 kV
11WINC S69.0	Winchester South 69 Kv
11WINCHS69.0	Winchester 69 kV bus
11WOFFOR69.0	Wofford 69 kV bus
11ZION 69.0	Zion 69 kV
14BRYAN5 161	Bryan Road
14COLE 5 161	Coleman 161 kv
14COLE 7 345	Coleman EHV 345 kv
14DAVIS5 161	Daviess Co. 161 kv
14HANCO5 161	Hancock Co. 161 kv
14HENDR4 138	Henderson Co. 138 kv
14HENDR5 161	Henderson Co. 161 kv
14HM TP5 161	HMP&L Substation 4 Tap
14HMPL5 161	HMP&L Substation 4
14HOPCO 69.0	Hopkins County 69 kV
14HOPCO5 161	Hopkins Co. 161 kv
14LIVIN5 161	Livingston Co. 161 kv
14MCRAK5 161	McCracken Co. 161 kv
14MEADE5 161	Meade County 161 kV bus
14MORGAN69.0	Morganfield 69 kV
14N.HAR4 138	New Hardinsburg 138 kv
14N.HAR5 161	New Hardinsburg 161 kv
14NATAL5 161	National Aluminum 161 kv
14NEWMN5 161	Newman 161 kv
14REID 69.0	Reid 69 kV
14REID 5 161	Reid 161 kv
14REID 7 345	Reid EHV 345 kv
14SKILM5 161	Skillman 161 kv
14WILSO5 161	Wilson 161 kv
14WILSO7 345	Wilson 345 kv
15AES 138	Applied Energy Systems 138 kV
15AES1 13.2	AES Unit 1 13kV Generator Bus
15AES2 13.2	AES Unit 2 13kV Generator Bus
15AMBRDG69.0	Ambridge 69 kV
15ARMCOB69.0	ARMCO 69 kV
15ARSENL 138	Arsenal 138 kV
15B.I. 138	Brunot Island 138 kV
15B.I. 345	Brunot Island 345 kV
15B.I. 69.0	Brunot Island 69 kV
15B.I.1 13.2	Brunot Island Units 1ABC 13kV Generator Bus
15B.I.2 13.2	Brunot Island Units 2AB 13kV Generator Bus

15B.I.3 13.2	Brunot Island Unit 3 13kV Generator Bus
15B.I.4 13.2	Brunot Island Unit 4 13kV Generator Bus
15B.V. 138	Beaver Valley 138 kV
15BRENTW 138	BRENTWOOD 138 kV
15BUCYRU69.0	Bucyrus 69 kV
15BV J&L 138	Beaver Valley J&L 138 kV
15BVRVAL 345	Beaver Valley 345 kV
15BVRVL121.5	Beaver Valley Unit 1 23kV Generator Bus
15BVRVL221.5	Beaver Valley Unit 2 23kV Generator Bus
15CARSNT 138	Carson Tap 138 kV
15CARSON 138	Carson 138 kV
15CARSON 345	Carson 345 kV
15CHESWK 138	Cheswick 138 kV
15CHSWK123.5	Cheswick Unit 1 22kV Generator Bus
15CLAIRT 138	Clairton 138 kV
15CLINTN 138	Clinton 138 kV
15CLINTN 345	Clinton 345 kV
15COLFAX69.0	Colfax 69 kV
15COLLIE 138	Collier 138 kV
15COLLIE 345	Collier 345 kV
15CRE2PH 138	Crescent 138kV bus
15CRESCN 345	Crescent 345 kV
15CYCLOP 138	Cyclops 138 kV
15DRAVO 138	Dravosburg 138 kV
15DRAVO 69.0	Dravosburg 69 kV
15EDGWTR 138	Edgewater SS No. 1-138kV Bus
15ELRM 269.0	Elrama Station No. 2-69kV Bus
15ELRM 3 138	Elrama #3 138 kV
15ELRM 4 138	Elrama #4 138 kV
15ELRM 5 138	Elrama Station No. 5-138kV Bus
15ELRM1 69.0	Elrama #1 69 kV
15ELRMA113.2	Elrama Station Unit 1 13kV Generator Bus
15ELRMA213.2	Elrama Station Unit 2 13kV Generator Bus
15ELRMA316.0	Elrama Station Unit 3 16kV Generator Bus
15ELRMA417.0	Elrama Station Unit 4 16kV Generator Bus
15ELRSYN 138	Elrama Station 138kV Sync Bus
15ELWYN 138	Elwyn 138 kV
15EVRGRN 138	Evergreen
15FINDLY 138	Findlay 138 kV
15FORBES69.0	Forbes 69 kV
15GM 69.0	General Motors 69 kV
15HIGHLA69.0	Highland 69 kV
15HOMSTD 138	Homestead SS No. 1-138kV Bus
15HOPEWE 138	Hopewell 138 kV
15HOPEWE69.0	Hopewell 69 kV
15J&LARC 138	J&L Arc Furnace 138 kV
15J&LMID 138	J&L Midland 138 kV
15J&L-SS69.0	J&L Southside 69 kV
15LEGNVI 138	Legionville 138 kV
15LOGNFR 138	Logans Ferry 138 kV
15MIDLAN 138	Midland 138 kV
15MONTOU 138	Montour 138 kV
15MTNEBO 138	Mt. Nebo 138kV
15NEVILL 138	Neville 138 kV
15NEVILT 138	Neville Tap 138 kV
15NORTH 138	North 138 kV

15NORTH 69.0	North 69 kV
15OKLND 138	Oakland 138 kV
15PHIL1 69.0	Phillips #1 69 kV
15PHIL2 12.0	Phillips #2 12 kV
15PHIL3 69.0	Phillips #3 69 kV
15PHIL4 138	Phillips #4 138 kV
15PLUM 138	Plum 138 kV
15PNECRK69.0	Pine Creek 69 kV
15PPERRY 138	Port Perry SS No. 1-138kV Bus
15RACCOO 138	Raccoon 138 kV
15RANKN 138	Rankin SS No. 1-138kV Bus
15ST.JOE 138	St. Joe 138 kV
15ST.JOE69.0	St. Joe 69 kV
15STJOE113.2	St. Joe Units 13kV Generator Bus
15UNIVRS 138	Universal 138 kV
15USS 138	USS Irvin Works 138 kV
15USSBRA 138	USS Braddock 138 kV
15USSILL 138	USS Illinois 138 kV
15VALEYT 138	Valley Tap 138 kV
15VALLEY 138	Valley 138 kV
15VALLEY69.0	Valley 69 kV
15WILDWD 138	Wildwood 138 kV
15WILMER 138	Wilmerding 138 kV
15WILMER69.0	Wilmerding 69 kV
15WILSON69.0	Wilson 69 kV
15WOLFRN 138	Wolf Run 138kV
15WOODVL 138	Woodville 138 kV
16AIRCO 138	AIRCO 138 KV SUBSTATION
16ALLSN4 138	ALLISON 4 138 KV SUBSTATION
16ALLSN8 138	ALLISON 8 138 KV SUBSTATION
16BROOKW 138	BROOKWOOD 138 KV SUBSTATION
16CAMBY 138	CAMBY 138 KV SUBSTATION
16CASTLT 138	CASTLETON 138 KV SUBSTATION
16CENTER 138	CENTER 138 KV SUBSTATION
16CNTRTN 138	CENTERTON 138 KV
16CRESTV 138	CRESTVIEW 138 KV SUBSTATION
16CRFDSV 138	Crawfordsville Road
16CRMLTP 138	CARMEL TAP 138 KV
16CUMBRL 138	CUMBERLAND 138 KV SUBSTATION
16DOWELA 138	DOWELANCO 138 KV SUBSTATION
16EAST 138	EAST 138 KV SUBSTATION
16EDGEWD 138	EDGEWOOD 138 KV SUBSTATION
16EDISON 138	EDISON 138 KV SUBSTATION
16FORD 138	FORD 138 KV SUBSTATION
16FRANCS 345	Francis Creek
16FRANK 138	FRANKLIN TOWNSHIP 138 KV SUBSTATION
16FVE_T 138	FIVE POINTS TAP 138 KV
16GARDLN 138	GARDNER LANE 138 KV SUBSTATION
16GEIST 138	GEIST 138 KV SUBSTATION
16GEORG113.8	GEORGETOWN UNIT 1 13.8 KV
16GEORG213.8	GEORGETOWN UNIT 2 13.8 KV
16GEORG313.8	GEORGETOWN UNIT 3 13.8 KV
16GEORG413.8	GEORGETOWN UNIT 4 13.8 KV
16GEORGE 138	GEORGETOWN 138 KV SUBSTATION
16GER CH 138	GERMAN CHURCH 138 KV SUBSTATION
16GLENS 138	GLENSVALLEY 138 KV SUBSTATION

16GUION 138	GUION 138 KV SUBSTATION
16GUION 345	GUION 345 KV SUBSTATION
16HANNA 138	HANNA 138 KV SUBSTATION
16HANNA 345	HANNA 345 KV SUBSTATION
16HARV F 138	HARVESTOR FOUNDARY 138 KV SUBSTATION
16HONYCK 138	HONEY CREEK TAP 138 KV
16IND_CK 138	INDIAN CREEK 138 KV SUBSTATION
16JULIET 138	Julietta 138 kV bus
16LAFFRD 138	LAFAYETTE ROAD 138 KV SUBSTATION
16LAWRNC 138	LAWRENCE 138 KV SUBSTATION
16LILLY 138	LILLY SOUTH 138 KV SUBSTATION
16MAYWOO 138	MAYWOOD 138 KV SUBSTATION
16MILL 138	MILL STREET 138 KV SUBSTATION
16MOORSV 138	MOORESVILLE 138 KV SUBSTATION
16MULLNX 138	Mullinex 138 kV bus
16NE 138	NORTHEAST 138 KV SUBSTATION
16NORTH 138	NORTH 138 KV SUBSTATION
16NW 138	NORTHWEST 138 KV SUBSTATION
16PARKER 138	PARKER 138 KV SUBSTATION
16PETCT818.0	PETERSBURG CT8 18.0KV COMBUSTION TURBINE
16PETE 138	PETERSBURG PLANT 138 KV SUBSTATION
16PETE 345	PETERSBURG PLANT 345 KV SUBSTATION
16PETE 120.0	PETERSBURG UNIT 1 20 KV
16PETE 222.0	PETERSBURG UNIT 2 22 KV
16PETE 322.0	PETERSBURG UNIT 3 22 KV
16PETE 422.0	PETERSBURG UNIT 4 22 KV
16PIKE 138	PIKE 138 KV SUBSTATION
16PK FLE 138	PARK FLETCHER 138 KV SUBSTATION
16POST 138	Post Road
16PRITC113.8	Pritchard 1
16PRITC213.8	Pritchard 2
16PRITC313.8	Pritchard 3
16PRITC413.8	Pritchard 4
16PRITC513.8	Pritchard 5
16PRITC613.8	Pritchard 6
16PRITCH 138	PRITCHARD PLANT 138 KV SUBSTATION
16PROSPC 138	PROSPECT 138 KV SUBSTATION
16RIV RD 138	RIVER ROAD 138 KV SUBSTATION
16ROCKVL 138	ROCKVILLE 138 KV SUBSTATION
16ROCKVL 345	ROCKVILLE 138 KV SUBSTATION
16SAN BL 138	SANITATION BELMONT 138 KV SUBSTATION
16SAN SP 138	SANITATION SOUTHPORT 138 KV SUBSTATION
16SE 138	SOUTHEAST 138 KV SUBSTATION
16SHEFFI 138	SHEFFIELD 138 KV SUBSTATION
16SOUTH 138	SOUTH 138 KV SUBSTATION
16STHPRT 138	SOUTHPORT 138 KV SUBSTATION
16STOCT413.8	Stout CT 4
16STOCT513.8	Stout CT 5
16STOCT618.0	Stout CT 6
16STOCT718.0	Stout CT7
16STOUGT13.8	Stout Gas Turbines
16STOUT 345	STOUT PLANT 345 KV SUBSTATION (SOUTH YARD)
16STOUT313.8	STOUT UNIT 3 13.8 KV
16STOUT413.8	STOUT UNIT 4 13.8 KV
16STOUT513.8	STOUT UNIT 5 13.8 KV
16STOUT613.8	STOUT UNIT 6 13.8 KV

16STOUT722.0	STOUT UNIT 7 22 KV
16STOUTC 138	STOUT PLANT 138 KV SUBSTATION (SOUTH YARD)
16STOUTN 138	STOUT PLANT 138 KV SUBSTATION (NORTH YARD)
16STOUTS 138	STOUT PLANT 138 KV SUBSTATION (SOUTH YARD)
16SUNNYS 138	SUNNYSIDE 138 KV SUBSTATION
16SUNNYS 345	SUNNYSIDE 345 KV SUBSTATION
16SW 138	SOUTHWEST 138 KV SUBSTATION
16TEPPCO 138	TEPPCO 138KV SUBSTATION
16THOMPS 138	IPL Thompson Substation 138 kV
16THOMPS 345	THOMPSON 345 KV SUBSTATION
16TOBEY 138	TOBEY 138 KV SUBSTATION
16TREMNT 138	TREMONT 138 KV SUBSTATION
16UNITED 138	UNITED 138 KV SUBSTATION
16WEST 138	WEST 138 KV SUBSTATION
16WHEAT 345	WHEATLAND (ENRON) PLANT
16WILLMS 138	WILLIAMS STREET 138 KV SUBSTATION
16WSTLAN 138	WESTLANE 138 KV SUBSTATION
176936_B69.0	LaGrange Co. R.E.M.C. Indian Lakes 69kV Tap
176942_A69.0	Hoosier Hill 69kV Tap
176942_F69.0	Fremont 69kV Tap
176959_E69.0	Hudson 69kV Tap
176966_C69.0	Jasper Co. R.E.M.C. Carpenter 69kV Tap
176966_E69.0	Remington 69kV Tap
176986_B69.0	W.V.P.A. Waterloo Ind. Park 69kV Tap
176986_L69.0	Steuben Co. R.E.M.C. East Angola Tap
176987_C69.0	LaGrange Co. R.E.M.C. North LaGrange 69kV Tap
176990_C69.0	Topeka 69kV Tap
176991_B69.0	McGill 69kV Tap
176991_E69.0	Sharp Steel Service 69kV Tap
176994_B69.0	6994 to 6942 69kV Tap
176994_K69.0	Univertical Corp. 69kV Tap
17AETNA 138	Aetna Substation 138kv Bus
17AINWTH 138	Ainsworth Substation 138kV Bus
17AMOCO 138	AMOCO Substation 138kV Bus
17ANGOLA69.0	Angola Substation 69kv Bus
17BABCOK 138	Babcock Substation 138kV Bus
17BABCOK 345	Babcock Substation 345kv Bus
17BETA 138	Beta Steel Arc Furnace Substation 138kV Bus
17BRGHTN69.0	Brighton Substation 69kV Bus
17BRTNLK 138	Barton Lake Substation 138kv Bus
17BRTNLK69.0	Barton Lake Substation 69kv Bus
17BURNSD 138	Burns Ditch Substation 138kV Bus
17BUROAK 138	Burr Oak Substation 138kv Bus
17BUROAK 345	Burr Oak Substation 345kv Bus
17BUTRMK69.0	Buttermilk Corners Substation 69kV Bus
17CALUMT 138	Calumet Substation 138kV Bus
17CHIAVE 138	Chicago Avenue Substation 138kv Bus
17CHIAVE 345	Chicago Avenue Substation 345kv Bus
17DEKALB 138	Dekalb Substation 138kv Bus
17DEKALB69.0	Dekalb Substation 69kv Bus
17DUNACR 138	Dune Acres Substation 138kv Bus
17DUNACR 345	Dune Acres Substation 345kv Bus
17EWINMC 138	East Winamac Substation 138kV Bus
17FLNTLK 138	Flint Lake Substation 138kv Bus
17GODLND 138	Goodland Substation 138kv Bus
17GODLND69.0	Goodland Substation 69kV Bus

17GRNACR 138	Green Acres Substation 138kV Bus
17GRNACR 345	Green Acres Substation 345kv Bus
17GSHJCT 138	Goshen Junction Substation 138kv Bus
17HARTSD 138	Hartsdale Substation 138kV Bus
17HENDRK 138	Hendricks Substation 138kV Bus
17HIGHLD 138	Highland Substation 138kV Bus
17HIPLE 138	Forrest G. Hiple Substation 138kv Bus
17HIPLE 345	Forrest G. Hiple Substation 345kv Bus
17HIPLE 69.0	Forrest G. Hiple Substation 69kv Bus
17HONEYC69.0	Honey Creek Substation 69kV Bus
17HOWE 69.0	Howe Substation 69kv Bus
17INLND5 138	Inland Steel Co. No. 5 Substation 138kV Bus
17INLND7 138	Inland Steel Co. No. 7 Substation 138kV Bus
17INLND8 138	Inland Steel Co. No. 8 Substation 138kV Bus
17ISG 2 138	ISG Indiana Harbor, Inc. #2
17ISG 3 138	ISG Indiana Harbor, Inc. #3
17ISG BH 138	ISG Burns Harbor, Inc. - Steel Plant
17KENWOD 138	Kenwood Substation 138kV Bus
17KOSCKO 138	Kosciusko Substation 138kV Bus
17LAGRNG 138	Lagrange Substation 138kv Bus
17LAGRNG69.0	Lagrange Substation 69kv Bus
17LESBRG 138	Leesburg Substation 138kv Bus
17LESBRG 345	Leesburg Substation 345kv Bus
17LESBTP 138	Leesburg 138kV Tap
17LIBRTY 138	Liberty Park Substation 138kV Bus
17LKGORG 138	Lake George Substation 138kv Bus
17LKGORG 345	Lake George Substation 345kv Bus
17LNG 138	L.N.G. Plant Substation 138kV Bus
17LUCHTM 138	Lutchman Substation 138kV Bus
17MAPLE 138	Maple Substation 138kv Bus
17MCHCTY 138	Michigan City Generating Station 138kv Bus
17MCHCTY 345	Michigan City Generating Station 345kv Bus
17MIDWST 138	Midwest Steel Substation 138kV Bus
17MILLER 138	Miller Substation 138kv Bus
17MITCHL 138	Dean H. Mitchell Generating Station 138kv Bus
17MITCHY 138	D.H. Mitchell Generating Station 34kV Yard 138kV B
17MONTCL 138	Monticello Substation 138kv Bus
17MONTCL69.0	Monticello Substation 69kV Bus
17MRKTNE 138	Marktown Substation East 138kV Bus
17MRKTNW 138	Marktown Substation West 138kV Bus
17MUNSTR 138	Munster Substation 138kv Bus
17MUNSTR 345	Munster Substation 345kv Bus
17NEVADA69.0	Nevada Mills Substation 69kV Bus
17NRTHES 138	Northeast Substation 138kv Bus
17NRTHPT 138	Northport Substation 138kv Bus
17NRTHPT69.0	Northport Substation 69kv Bus
17OAKDAL69.0	Oakdale Hydro Station 69kV Bus
17OTTER 69.0	Otter Substation 69kV Bus
17PLYMTH 138	Plymouth Substation 138kv Bus
17PLYMTH69.0	Plymouth Substation 69kv Bus
17PRAIRE69.0	LaGrange Co. R.E.M.C Prairie Heights Substation 69
17PRAX 1 138	Praxair, Inc. - Substation No. 1 (E.Chicago) 138kV
17PRAX 3 138	Praxair, Inc. - Substation No. 3 (Lake Side) 138kV
17PRAX 5 138	Praxair, Inc. - Substation No. 5 (Burns Harbor) 13
17PRAXTP 138	Praxair 138kV Tap
17RCHSTP69.0	Rochester Tap (Intertie point w/ PSI)

17REMGTN69.0	Remington Substation 69kV Bus
17ROXANA 138	Roxana Substation 138kv Bus
17RYNLDS 138	Reynolds Substation 138kv Bus
17SCHAFR 138	R. M. Schahfer Generating Station 138kv Bus
17SCHAHF 345	R. M. Schahfer Generating Station
17SCHFTP 138	Schahfer 138kV Tap
17SCHLMR69.0	South Chalmers Substation 69kV Bus
17SHEFLD 138	Sheffield Substation 138kv Bus
17SHEFLD 345	Sheffield Substation 345kv Bus
17SMILFD69.0	South Milford Substation 69kV Bus
17SPR TP69.0	South Prairie 69kV Tap
17SPRARI 138	South Prairie Substation 138kv Bus
17SPRARI69.0	South Prairie Substation 69kV Bus
17STARKE 138	Starke Substation 138kV Bus
17STJOHN 138	Saint John Substation 138kv Bus
17STJOHN 345	Saint John Substation 345kv Bus
17STLWEL 138	Stillwell Substation 138kv Bus
17STLWEL 345	Stillwell Substation 345kv Bus
17TANEY 138	Taney Substation 138kV Bus
17THAYER 138	Thayer Substation 138kV Bus
17TOWRRD 138	Tower Road Substation 138kv Bus
17TRALCK 138	Trail Creek Substation 138kv Bus
17TWINLK69.0	Twin Lakes Substation 69kV Bus
17TWR RD 345	Tower Road Substation 345kv Bus
17ULERCH69.0	White Co. R.E.M.C. Ulerich Substation 69kV Bus
17US TIN 138	United States Steel Corp. Tin Mill Substation 138k
17USCOKE 138	United States Steel Corp. Coke Works Substation 13
17USSTCK 138	United States Steel Corp. Stockton Substation 138k
17USWMIL 138	United States Steel Corp. West Mill Substation 138
17WCEP 138	Whiting Clean Energy 138kV Bus
17WOLCTV69.0	Wolcottville Substation 69kV Bus
17WOLFLK 138	Wolf Lake Substation 138kv Bus
1812THT 138	TWELFTH STREET 138 KV
1812THTJ 138	12TH ST JCT 138 KV
18ABBE 138	ABBE 138 KV
18ABBE J 138	ABBE JCT 138 KV
18ACUGS 138	ACUGLAS 138 KV
18AIRPT 138	AIRPORT
18AIRPT2 138	AIRPORT 2 138 KV
18ALBA 138	ALBA 138 KV
18ALCO 138	ALCONA 138 KV
18ALCO G4.80	ALCONA 4.8 KV
18ALDE 138	ALDER CREEK 138 KV
18ALGE 138	ALGER 138 KV
18ALGE J 138	ALGER JCT 138 KV
18ALGO 138	ALGOMA 138 KV
18ALGO J 138	ALGOMA JCT 138 KV
18ALMA 138	ALMA
18ALME 138	ALMEDA 138 KV
18ALPE E 138	ALPENA E 138 KV
18ALPE W 138	ALPENA W 138 KV
18ALPE4I 138	ALPENA 4 INDUSTRAIAL 138 KV
18ALPE5I 138	ALPENA 5 INDUSTRIAL 138 KV
18ALPI 138	ALPINE 138 KV
18ALPI J 138	ALPINE JCT 138 KV
18AM BP 138	AMERICAN BUMPER 138 KV

18AM BPJ	138	AMERICAN BUMPER JCT 138 KV
18AMAS	138	AMASTEEL 138 KV
18AMBE 1	138	AMBER 1 138 KV
18AMBE 2	138	AMBER 2 138 KV
18ARGENT	138	ARGENTA
18ARGENT	345	ARGENTA
18ATLN2J	138	ATLANTA 138 KV
18ATLNTJ	138	ATLANTA JUNCTION
18AUBIK	138	AUBIL LAKE 138 KV
18AUBIKJ	138	AUBIL LAKE JCT 138 KV
18BACK	138	BACKUS 138 KV
18BACK J	138	BACKUS JCT 138 KV
18BAGL 1	138	BAGLEY 1 138 KV
18BAGL 2	138	BAGLEY 2 138 KV
18BANG	138	BANGOR 138 KV
18BARDDB	138	BARD ROAD B 138 KV
18BARDDW	138	BARD ROAD W 138 KV
18BARN	138	BARNUM 138 KV
18BARN J	138	BARNUM CREEK JCT 138 KV
18BARR	138	BARRY 138 KV
18BARR J	138	BARRY JCT 138 KV
18BASSK	138	BASS CREEK 138 KV
18BATAA1	138	BATAVIA 1 138 KV
18BATAVI	138	BATAVIA
18BATTK	138	BATTLE CREEK 138 KV
18BATTK	345	BATTLE CREEK 345 KV
18BAY 1	138	BAY ROAD 1 138 KV
18BAY 2	138	BAY ROAD 2 138 KV
18BEAL 2	138	BEALS ROAD 2 138 KV
18BEAL B	138	BEALS ROAD B 138 KV
18BEAL W	138	BEALS ROAD W 138 KV
18BEAVK	138	BEAVER CREEK 138 KV
18BECK	138	BECKER 138 KV
18BECK J	138	BECKER JCT 138 KV
18BEEC B	138	BEECHER B 138 KV
18BEEC W	138	BEECHER W 138 KV
18BEGO	138	BEGOLE 138 KV
18BELL	138	BELL ROAD 138 KV
18BENNN	138	BENNINGTON 138 KV
18BEVE B	138	BEVERIDGE B 138 KV
18BEVE W	138	BEVERIDGE W 138 KV
18BIL R	138	BIL MAR 138 KV
18BIL RJ	138	BIL MAR JCT 138 KV
18BINGMB	138	BINGHAM B 138 KV
18BINGMW	138	BINGHAM W 138 KV
18B-K X	138	B-K AUX 138 KV
18BLACN	138	BLACKMAN 138 KV
18BLCK 1	138	BLACK RIVER 1 138 KV
18BLCK 2	138	BLACK RIVER 2 138 KV
18BLCK 3	138	BLACK RIVER 3 138 KV
18BLCK B	138	BLACKSTONE B 138 KV
18BLCK W	138	BLACKSTONE W 138 KV
18BLENN1	138	BLENDON 1 138 KV
18BLENN2	138	BLENDON 2 138 KV
18BLIN 1	138	BLINTON 1 138 KV
18BLIN 2	138	BLINTON 2 138 KV

18BLUER 138	BLUEWATER 138 KV
18BLUERJ 138	BLUEWATER JCT 138 KV
18BLUES 138	BLUEGRASS 138 KV
18BLUESJ 138	BLUEGRASS JCT 138 KV
18B-M X 138	B-M AUXILIARY 138 KV
18BOXB 138	BOXBOARD 138 KV
18BOXB J 138	BOXBOARD JCT 138 KV
18BRADY 138	BRADLEY 138 KV
18BRDM 1 138	BOARDMAN 1 138 KV
18BRDM 2 138	BOARDMAN 2 138 KV
18BRDMB2 138	BOARDMAN B2 138 KV
18BRG&R 138	BRIGGS & STRATON 138 KV
18BRG&RJ 138	BRIGGS & STRATON JCT 138 KV
18BRICD 138	BRICKYARD 138 KV
18BRICDJ 138	BRICKYARD JCT 138 KV
18BRICR 138	BRICKER 138 KV
18BRICRJ 138	BRICKER JCT 138 KV
18BROAR1 138	BROADMOOR 1 138 KV
18BROAR3 138	BROADMOOR 3 138 KV
18BROAR4 138	BROADMOOR 4 138 KV
18BROGL 138	BROUGHWELL 138 KV
18BRON 138	BRONCO 138 KV
18BRON T 138	BRONCO T 138 KV
18BUCKK 138	BUCK CREEK 138 KV
18BUIC 1 138	BUICK 1 138 KV
18BUIC 2 138	BUICK 2 138 KV
18BULL B 138	BULLOCK B 138 KV
18BULL W 138	BULLOCK W 138 KV
18CALHN 138	CALHOUN
18CALHNJ 138	CALHOUN JCT 138 KV
18CAMET 138	CAMELOT 138 KV
18CAMETJ 138	CAMELOT LAKE JCT 138 KV
18CAMP 5 345	CAMPBELL 5 345 KV
18CAMP B 138	CAMPBELL B 138 KV
18CAMP P13.8	CAMPBELL PEAKER
18CAMP W 138	CAMPBELL W 138 KV
18CAMP1 345	CAMPBELL 345 KV
18CAMP1G16.0	CAMPBELL UNIT 1
18CAMP2 345	CAMPBELL SWITCHYARD 345 KV
18CAMP2G20.0	CAMPBELL UNIT 2
18CAMP3G18.0	CAMPBELL UNIT 3
18CANA 138	CANAL 138 KV
18CANA J 138	CANAL JCT 138 KV
18CANN 138	CANNON 138 KV
18CANN J 138	CANNON JCT 138 KV
18CART 138	CARTER 138 KV
18CART J 138	CARTER JCT 138 KV
18CEDRR 138	CEDAR SPRINGS 138 KV
18CEDRRJ 138	CEDAR SPRINGS JCT 138 KV
18CEME 138	CEMENT CITY 138 KV
18CEME J 138	CEMENT CITY JCT 138 KV
18CHAS 138	CHASE 138 KV
18CHICO 138	CHICAGO 138 KV
18CHICOJ 138	CHICAGO JCT 138 KV
18CHURL 138	CHURCHILL 138 KV
18CHURLJ 138	CHURCHILL JCT 138 KV

18CLAR	138	CLARE 138 KV
18CLAR J	138	CLARE JCT 138 KV
18CLEAT	138	CLEARWATER 138 KV
18CLEATJ	138	CLEARWATER JCT 138 KV
18CLEVD	138	CLEVELAND 138 KV
18CLEVDJ	138	CLEVELAND JCT 138 KV
18CLRM B	138	CLAREMONT B 138 KV
18CLRM W	138	CLAREMONT W 138 KV
18CLUB	138	CLUB 138 KV
18CLUB J	138	CLUB JCT 138 KV
18C-M X	138	C-M AUXILIARY 138 KV
18COBB B	138	COBB B 138 KV
18COBB W	138	COBB W 138 KV
18COBB1G	14.4	COBB 1G 14.4 KV
18COBB2G	14.4	COBB 2G 14.4 KV
18COBB3G	14.4	COBB 3G 14.4 KV
18COBB4G	18.0	COBB UNIT 4
18COBB5G	18.0	COBB UNIT 5
18COCHN	138	COCHRAN 138 KV
18COCHNJ	138	COCHRAN JCT 138 KV
18COLDR	138	COLDWATER 138 KV
18COLEK	138	COLE CREEK 138 KV
18COLEKJ	138	COLE CREEK JCT 138 KV
18COLNM	138	COLONY FARM 138 KV
18COLNMJ	138	COLONY FARM 138 KV
18CONV	138	CONVIS 138 KV
18CONV J	138	CONVIS JCT 138 KV
18CORNLB	138	CORNELL B 138 KV
18CORNLW	138	CORNELL W 138 KV
18COTTV	138	COTTAGE GROVE 138 KV
18COVE	345	COVERT 345 KV
18COVE1G	21.0	COVERT 1G 21 KV
18COVE1M	21.0	COVERT 1M 21 KV
18COVE2G	21.0	COVERT 2G 21 KV
18COVE2M	21.0	COVERT 2M 21 KV
18COVE3G	21.0	COVERT 3G 21 KV
18COVE3M	21.0	COVERT 3M 21 KV
18COVE4G	21.0	COVERT 4G 21 KV
18COVE5G	21.0	COVERT 5G 21 KV
18COVE6G	21.0	COVERT 6G 21 KV
18COWA	138	COWAN LAKE 138 KV
18COWA J	138	COWAN JCT 138 KV
18CROT B	138	CROTON B 138 KV
18CROT W	138	CROTON W 138 KV
18DAVI	138	DAVIS 138 KV
18DEAN	138	DEAN ROAD 138 KV
18DEJA	138	DEJA
18DEJA J	138	DEJA JCT 138 KV
18DELAY	138	DELANEY 138 KV
18DELH B	138	DELHI B 138 KV
18DELH W	138	DELHI W 138 KV
18DENS	138	DENSO JACKSON 138 KV
18DENS J	138	DENSO JACKSON JCT 138 KV
18DERB	138	DERBY 138 KV
18DERB J	138	DERBY JCT 138 KV
18DIEST	138	DIESEL TECH 138 KV

18DIESTJ	138	DIESEL TECH JCT 138 KV
18D-O X	138	D-O AUX 138 KV
18DORT B	138	DORT B 138 KV
18DORT W	138	DORT W 138 KV
18DOWCG1	138	DOW CORNING 1 138 KV
18DOWCG2	138	DOW CORNING 2 138 KV
18DOWLG	138	DOWLING 138 KV
18DOWLGJ	138	DOWLING JCT 138 KV
18DRAK 1	138	DRAKE 1 138 KV
18DRAK 2	138	DRAKE 2 138 KV
18DUFF	138	DUFFIELD 138 KV
18DUFF J	138	DUFFIELD JCT 138 KV
18DUPO	138	DUPONT 138 KV
18DUQUE	138	DUQUITE 138 KV
18DUTT	138	DUTTON 138 KV
18DUTT J	138	DUTTON JCT 138 KV
18E PAS	138	EAST PARIS 138 KV
18E TAS	138	EAST TAWAS 138 KV
18EAST	138	EASTON 138 KV
18EAST J	138	EASTON JCT 138 KV
18E-C X	138	E-C AUX 138 KV
18ECK1	138	ECKERT 138 KV
18EDENL	138	EDENVILLE 138 KV
18EDENLJ	138	EDENVILLE JCT 138 KV
18E-I X	138	E-I AUX 138 KV
18ELM	138	ELM STREET 138 KV
18ELMWD	138	ELMWOOD 138 KV
18EMME	138	EMMET 138 KV
18EMME W	138	EMMET W 138 KV
18ENGLL	138	ENGLISHVILLE 138 KV
18ENGLLJ	138	ENGLISHVILLE JCT 138 KV
18ENT1	138	ENTERPRISE 138 KV
18ERICON	138	ERICKSON 138 KV
18EURE	138	EUREKA 138 KV
18EVAR	138	EVART PRODUCTS 138 KV
18FARRD	138	FARR ROAD 138 KV
18FARRDJ	138	FARR ROAD JCT 138 KV
18FELC	138	FELCH ROAD 138 KV
18FILET	138	FILER CITY 138 KV
18FILETC	13.8	FILER CITY 13.8 KV
18FILLR	138	FILLMORE 138 KV
18FILLRJ	138	FILLMORE JCT 138 KV
18FOUNY1	138	FOUNDRY 1 138 KV
18FOUNY2	138	FOUNDRY 2 138 KV
18FOUR B	138	FOUR MILE B 138 KV
18FOUR W	138	FOUR MILE W 138 KV
18FOUR34	138	FOUR MILE 34 138 KV
18F-R X	138	F-R AUXILIARY 138 KV
18FTCU 1	138	FORT CUSTER 1 138 KV
18FTCU 2	138	FORT CUSTER 2 138 KV
18GAIN	138	GAINES 138 KV
18GAIN	345	GAINES 345 KV
18GALLR	138	GALLAGHER 138 KV
18GALLR	345	GALLAGHER 345 KV
18GALLRJ	345	GALLAGHER JCT 345 KV
18GARF B	138	GARFIELD B 138 KV

18GARF W 138	GARFIELD W 138 KV
18GAYDA 138	GAYLORD 138 KV
18GAYDB 138	GAYLORD 138 KV
18GAYL2G13.8	GAYLORD 2G 13.8 KV
18GAYL4G13.8	GAYLORD 4G 13.8 KV
18GAYL5G13.8	GAYLORD 5G 13.8 KV
18GAYLD1 138	GAYLORD 1 138 KV
18GAYLDM13.8	GAYLORD M 13.8 KV
18GLEAR 138	GLEANER 138 KV
18GLEARJ 138	GLEANER JCT 138 KV
18GM13 138	GM 138 KV
18GNDT1 138	GRAND TRAVERSE 1 138 KV
18GNDT1J 138	GRAND TRAVERSE 1 JCT 138 KV
18GNDT2 138	GRAND TRAVERSE 2 138 KV
18GNDT2J 138	GRAND TRAVERSE 2 JCT 138 KV
18GOSS 138	GOSS
18GOSS 345	GOSS
18GREED 138	GREENWOOD 138 KV
18GREEDJ 138	GREENWOOD JCT 138 KV
18GREYN3 138	GREY IRON 3 138 KV
18GREYN4 138	GREY IRON 4 138 KV
18GRNDC1 138	GRAND BLANC BOC 1 138 KV
18GRNDC2 138	GRAND BLANC BOC 2 138 KV
18GRODR 138	GRODI ROAD 138 KV
18GRODRJ 138	GRODI ROAD JCT 138 KV
18GROU 138	GROUT 138 KV
18GROU J 138	GROUT JCT 138 KV
18HACKT 138	HACKETT 138 KV
18HACKTJ 138	HACKETT JCT 138 KV
18HAGAN 138	HAGADORN 138 KV
18HAGANJ 138	HAGADORN JCT 138 KV
18HAGE 138	HAGER PARK 138 KV
18HAGE J 138	HAGER JCT 138 KV
18HALS B 138	HALSEY B 138 KV
18HALS W 138	HALSEY W 138 KV
18HAMPTO 345	HAMPTON
18HARDM 138	HARDY DAM 138 KV
18HARDMG7.50	HARDY DAM 7.5 KV
18HARI 138	HARING 138 KV
18HARI J 138	HARING JCT 138 KV
18HART8 138	HART 88 138 KV
18HART8J 138	HART 88 JCT 138 KV
18HAZE 1 138	HAZELWOOD 1 138 KV
18HAZE 2 138	HAZELWOOD 2 138 KV
18HEMP B 138	HEMPHILL B 138 KV
18HEMP W 138	HEMPHILL W 138 KV
18HEMP4B 138	HEMPHILL 4B 138 KV
18HENDT 138	HENDERSHOT 138 KV
18HENDTJ 138	HENDERSHOT JCT 138 KV
18HIGG 138	HIGGINS 138 KV
18HIGG 4 138	HIGGINS 4 138 KV
18HILLN 138	HILLMAN 138 KV
18HILLNC13.8	HILLMAN 13.8 KV
18HILLNJ 138	HILLMAN JCT 138 KV
18HMPHLD 120	HEMPHILL
18HODNL 138	HODENPLY 138 KV

18HODNLJ	138	HODENPYL JCT 138 KV
18HOLLD1	138	HOLLAND 1 138 KV
18HOLLD2	138	HOLLAND 2 138 KV
18HOLLD3	138	HOLLAND 3 138 KV
18HOTCS	138	HOTCHKISS 138 KV
18HOW1	138	HOW 138 KV
18HSC	138	HEMLOCK 138 KV
18HUDSL	138	HUDSONVILLE 138 KV
18HUDSLT	138	HUDSONVILLE JCT 138 KV
18HUGH	138	HUGHES ROAD 138 KV
18HULLT	138	HULL STREET 138 KV
18HULLTJ	138	HULL STREET JCT 138 KV
18INDURI	138	INDUSTRIAL 138 KV
18IOSC 1	138	IOSCO 1 138 KV
18IOSC 2	138	IOSCO 2 138 KV
18ISLA B	138	ISLAND ROAD B 138 KV
18ISLA W	138	ISLAND ROAD W 138 KV
18JAMEN	138	JAMESTOWN 138 KV
18JAMENJ	138	JAMESTOWN 138 KV
18JAMETI	138	JAMESSTREET 138 KV
18KALR	138	KALAMAZOO RIVER 138 KV
18KALR G	13.8	KALAMAZOO RIVER G 13.8 KV
18KARN 3	345	KARN UNIT 3
18KARN 4	345	KARN UNIT 4
18KARN B	138	KARN B 138 KV
18KARN W	138	KARN W 138 KV
18KARN3G	26.0	KARN UNIT 3
18KARN4G	26.0	KARN UNIT 4
18KARNBM	16.0	KARN BM 16 KV
18KARNWM	16.0	KARN WM 16 KV
18K-B X	138	K-B AUX 138 KV
18KENDK	138	KENDRICK 138 KV
18KENO	345	KENOWA 345 KV
18KENT 1	138	KENTWOOD 1 138 KV
18KENT 2	138	KENTWOOD 2 138 KV
18KEYS	138	KEYSTONE 138 KV
18KEYS	345	KEYSTONE 345 KV
18KIPP	138	KIPP ROAD 138 KV
18KRAF 1	138	KRAFT 1 138 KV
18KRAF 2	138	KRAFT 2 138 KV
18KRN1AG	16.0	KARN 1A GENERATOR
18KRN1BG	16.0	KARN 1B GENERATOR
18KRN2AG	16.0	KARN 2A GENERATOR
18KRN2BG	16.0	KARN 2B GENERATOR
18LACK	138	LACKS 138 KV
18LACK J	138	LACKS JCT 138 KV
18LAFYT	138	LAFAYETTE 138 KV
18LATIR	138	LATIMER 138 KV
18LATIRJ	138	LATIMER JCT 138 KV
18LATSON	138	LATSON
18LAWN	138	LAWNDALE 138 KV
18LAYT	138	LAYTON 138 KV
18LEON	138	LEONI 138 KV
18LETS	138	LETTS RD 138 KV
18LETS J	138	LETTS RD JCT 138 KV
18LEWIN	138	LEWISTON 138 KV

18LEWINJ 138	LEWISTON JCT 138 KV
18LINBG 138	LINDBERGH 138 KV
18LINCN 138	LINCOLN 138 KV
18LINCNC13.8	LINCOLN 13.8 KV
18LINCNJ 138	LINCOLN JCT 138 KV
18LIVP 138	LIVINGSTON P 138 KV
18LIVP1G13.8	LIVINGSTON 1G 13.8 KV
18LIVP2G13.8	LIVINGSTON 2G 13.8 KV
18LIVP3G13.8	LIVINGSTON 3G 13.8 KV
18LIVP4G13.8	LIVINGSTON 4G 13.8 KV
18LK CNT 138	LAKE COUNTY 138 KV
18LOOKS 138	LOOKING GLASS 138 KV
18LOOKSJ 138	LOOKING GLASS JCT 138 KV
18LORI 138	LORIN 138 KV
18LORI J 138	LORIN JCT 138 KV
18LOUD 138	LOUD 138 KV
18LOVEY 138	LOVEJOY 138 KV
18LOVEYJ 138	LOVEJOY JCT 138 KV
18LOWE 138	LOWELL 138 KV
18LOWE J 138	LOWELL JCT 138 KV
18LUDI2G20.0	LUDINGTON 2G 20 KV
18LUDI4G20.0	LUDINGTON 4G 20 KV
18LUDI6G20.0	LUDINGTON 6G 20 KV
18LUDITN 345	LUDINGTON 345 KV
18LVNS 138	LIVINGSTON 138 KV
18LVNS 345	LIVINGSTON 345 KV
18MALL 1 138	MALLEABLE 1 138 KV
18MALL 2 138	MALLEABLE 2 138 KV
18MANLS 138	MANLIUS 138 KV
18MANNG 138	MANNING 138 KV
18MANNG 345	MANNING 345 KV
18MANNGJ 345	MANNING JCT 345 KV
18MARQ 138	MARQUETTE 138 KV
18MARQ 1 138	MARQUETTE 1 138 KV
18MARSL 138	MARSHALL 138 KV
18MCGL 1 138	MCGULPIN 1 138 KV
18MCGL 2 138	MCGULPIN 2 138 KV
18MCGULP 138	MCGULPIN
18MCNA 138	MCNALLY 138 KV
18MCV 345	MIDLAND COGENERATION VENTURE
18MCV 3C13.8	MCV 3 GENERATOR
18MCV 4C13.8	MCV 4 GENERATOR
18MCV 5C13.8	MCV 5 GENERATOR
18MCV 6C13.8	MCV 6 GENERATOR
18MCV 7C13.8	MCV 7 GENERATOR
18MCV 8C13.8	MCV 8 GENERATOR
18MCV 9C13.8	MCV 9 GENERATOR
18MCV1 345	MCV 1 345 KV
18MCV12 138	MCV 1112 138 KV
18MCV138 138	MICHIGAN CO-GEN VENTURE 1 138 KV
18MCV14 138	MCV 1314 138 KV
18MCV2 345	MCV 2 345 KV
18MCV238 138	MICHIGAN CO-GEN VENTURE 2 138 KV
18MCV34 138	MCV 34 138 KV
18MCV56 138	MCV 56 138 KV
18MCV78 138	MCV 78 138 KV

18MCV9	138	MCV 910 138 KV
18MCVG0C13.8		MCV 10 GENERATOR
18MCVG1C13.8		MCV 11 GENERATOR
18MCVG2C13.8		MCV 12 GENERATOR
18MCVG3C13.8		MCV 13 GENERATOR
18MCVG4C13.8		MCV 14 GENERATOR
18MCVS1C22.0		MICHIGAN CO-GEN VENTURE 22 KV
18MEADB	138	MEADOWBROOKE 138 KV
18MEADBJ	138	MEADOWBROOKE JCT 138 KV
18MECOA	138	MECOSTA 138 KV
18MECOA1	138	MECOSTA 1 138 KV
18MECOA2	138	MECOSTA 2 138 KV
18MEDU	138	MEDUSA 138 KV
18MICH1G13.8		MICHIGAN POWER 1G 13.8 KV
18MICH2G13.8		MICHIGAN POWER 2G 138 KV
18MICHN	138	MICHIGAN 138 KV
18MICHNJ	138	MICHIGAN JCT 138 KV
18MICHR	138	MICHIGAN POWER 138 KV
18MICHV	138	MICHIGAN AVENUE 138 KV
18MILED	138	MILES ROAD 138 KV
18MILH	138	MILHAM 138 KV
18MILH 1	138	MILHAM 1 138 KV
18MILLT	138	MILLERS POINT 138 KV
18MIO	138	MIO
18MIO	2.50	MIO GENERATOR
18MIO	G2.50	MIO G 2.5 KV
18MIO 1	138	MIO B1 138 KV
18MONI	138	MONITOR 138 KV
18MOOR	138	MOORE ROAD 138 KV
18MOOR 1	138	MOORE ROAD 1 138 KV
18MOOR 2	138	MOORE ROAD 2 138 KV
18MORR B	138	MORROW B 138 KV
18MORR P13.8		MORROW P 13.8 KV
18MORR W	138	MORROW W 138 KV
18MULLS	138	MULLINS 138 KV
18MULLSJ	138	MULLINS JCT 138 KV
18MUSK N	138	MUSKEGON N 138 KV
18MUSK S	138	MUSKEGON S 138 KV
18N FIE	138	NORTHERN FIBRE 138 KV
18N FIEJ	138	NORTHERN FIBRE JCT 138 KV
18NBELG	138	NORTH BELDING 138 KV
18NCORA	138	NORTH CORUNNA 138 KV
18NCORAJ	138	NORTH CORUNNA JCT 138 KV
18NCRES	138	NORTH CRYTES 138 KV
18NEFFD	138	NEFF ROAD 138 KV
18NEFFDJ	138	NEFF ROAD JCT 138 KV
18NELSD	345	NELSON ROAD 345 KV
18NINE	138	NINETEEN MILE 138 KV
18NINE J	138	NINETEEN MILE JCT 138 KV
18NORTAS	138	NORTHEAST 138 KV
18OAKLD	138	OAKLAND 138 KV
18ODEN	138	ODEN
18OGEM	138	OGEMAW 138 KV
18OGEM J	138	OGEMAW JCT 138 KV
18OHMAD	138	OHMAN ROAD 138 KV
18OHMADJ	138	OHMAN ROAD JCT 138 KV

18OLDS3	138	OLDS 3 138 KV
18OLDS5	138	OLDS 5 138 KV
18ONEIDA	138	ONEIDA
18ONEIDA	345	ONEIDA
18OTSE	138	OTSEGO 138 KV
18OWOS	138	OWOSSO 138 KV
18PAGE	138	PAGE AVENUE
18PALI G	22.0	PALISADES G 22 KV
18PALISA	345	PALISADES
18PARKL	138	PARKVILLE 138 KV
18PARKLJ	138	PARKVILLE JCT 138 KV
18PARRD	138	PARR ROAD 138 KV
18PARSV	138	PARSHALLVILLE 138 KV
18PASA	138	PASADENA 138 KV
18PASA J	138	PASADENA JCT 138 KV
18PAVI	138	PAVILLION 138 KV
18PAVI J	138	PAVILION JCT 138 KV
18PERMT	138	PERE MARQUETTE 138 KV
18PERMT	345	PERE MARQUETTE 345 KV
18PIGNR	138	PIGEON RIVER 138 KV
18PISTG	138	PISTON RING 138 KV
18PISTGJ	138	PISTON RING JCT 138 KV
18PLASR	138	PLASTER 138 KV
18PLYM 1	138	PLYMOUTH 1 138 KV
18PLYM 2	138	PLYMOUTH 2 138 KV
18PLYM1G	13.8	PLYMOUTH 1 GENERATOR
18PLYM2G	13.8	PLYMOUTH 2 GENERATOR
18PLYM2M	13.8	PLYMOUTH 2M 13.8 KV
18PLYM3G	13.8	PLYMOUTH 3 GENERATOR
18PLYM4G	13.8	PLYMOUTH 4 GENERATOR
18PLYM4M	13.8	PLYMOUTH 4M 13.8 KV
18PLYM5G	13.8	PLYMOUTH 5 GENERATOR
18PLYM6G	13.8	PLYMOUTH 6 GENERATOR
18PLYM6M	13.8	PLYMOUTH 6M 13.8 KV
18PLYM7G	13.8	PLYMOUTH 7G 13.8 KV
18PLYM8G	13.8	PLYMOUTH 8G 13.8 KV
18PLYM9G	13.8	PLYMOUTH 9G 13.8 KV
18PLYWD	138	PLYWOOD 138 KV
18PLYWDJ	138	PLYWOOD JCT 138 KV
18PORT	138	PORTER 138 KV
18PORT J	138	PORTER JCT 138 KV
18PORTC	138	PORT CALCITE 138 KV
18PORTCG	13.8	PORT CALCITE G 13.8 KV
18PORTL	138	PORT SHELDON 138 KV
18P-R X	138	P-R AUXILIARY 138 KV
18PROGS	138	PROGRESS STREET 138 KV
18PROJ1	138	PROJECT 1 138 KV
18PROJ1G	13.8	PROJECT 1G 13.8 KV
18PRTSH	138	PORTSMITH 138 KV
18RACET	138	RACE STREET 138 KV
18RACETJ	138	RACE ST JCT 138 KV
18RAIS	138	RAISIN 138 KV
18RANS	138	RANSOM 138 KV
18REDWD	138	REDWOOD
18RENA1G	18.0	RENAISSANCE 1G 18 KV
18RENA2G	18.0	RENAISSANCE 2G 18 KV

18RENA3G18.0	RENAISSANCE 3G 18 KV
18RENA4G18.0	RENAISSANCE 4G 18 KV
18RENAS 345	RENAISSANCE 345 KV
18RICEK 138	RICE CREEK 138 KV
18RIFLV 138	RIFLE RIVER 138 KV
18RIGG B 138	RIGGSVILLE B 138 KV
18RIGG W 138	RIGGSVILLE W 138 KV
18RILEST 138	RILEY STREET 138 KV
18RIVE N 138	RIVERVIEW N 138 KV
18RIVE S 138	RIVERVIEW S 138 KV
18RIVR1 138	RIVERTON 1 138 KV
18RIVR1J 138	RIVERTOWN 1J 138 KV
18RIVR2 138	RIVERTON 2 138 KV
18RIVR2J 138	RIVERTOWN 2J 138 KV
18ROCKT 138	ROCKPORT 138 KV
18ROED 138	ROEDEL ROAD 138 KV
18ROED J 138	ROEDEL JCT 138 KV
18ROND 138	RONDO 138 KV
18ROOST 345	ROOSEVELT 345 KV
18SAGR B 138	SAGINAW RIVER B 138 KV
18SAGR W 138	SAGINAW RIVER W 138 KV
18SAGR1G0.48	SAGINAW RIVER 1 GENERATOR
18SAGR2G0.48	SAGINAW RIVER 2 GENERATOR
18SAGRR 13.8	SAGINAW RIVER 13.8 KV
18SAMA 1 138	SAMARIA 1 138 KV
18SAMA 2 138	SAMARIA 2 138 KV
18SANDN 138	SANDERSON 138 KV
18SANDNJ 138	SANDRSON JCT 138 KV
18SAVIE 138	SAVIDGE 138 KV
18SAVIEJ 138	SAVIDGE JCT 138 KV
18SCOTK 138	SCOTT LAKE 138 KV
18SCRES 138	SOUTH CRYTES 138 KV
18SEAME1 138	SEAMLESS EAST 1 138 KV
18SEAME2 138	SEAMLESS EAST 2 138 KV
18SEAMS 138	SEAMLESS 138 KV
18SEAMSJ 138	SEAMLESS JCT 138 KV
18SIMMS 138	SIMMONS 138 KV
18SIMMSJ 138	SIMMONS JCT 138 KV
18SIMPN 138	SIMPSON 138 KV
18SOLV 138	SOLVEY 138 KV
18SPAR1 138	SPARTAN 1 138 KV
18SPAR2 138	SPARTAN 2 138 KV
18SPAUG 138	SPAULDING 138 KV
18SPRU 138	SPRUCE ROAD 138 KV
18STAC 138	STACEY 138 KV
18STAC J 138	STACEY JCT 138 KV
18STAMT 138	STAMPING PLANT 138 KV
18STEES 138	STEEL CASE 138 KV
18STEESJ 138	STEEL CASE JCT 138 KV
18STERG 138	STERNBERG 138 KV
18STONT 138	STONEGATE 138 KV
18STONTT 138	STONGATE JCT 138 KV
18STOV 138	STOVER 138 KV
18STROH 138	STRONACH 138 KV
18STROH1 138	STRONACH 1 138 KV
18SUMM 1 138	SUMMERTON 1 138 KV

18SUMM 2	138	SUMMERTON 2 138 KV
18TALL	345	TALLMADGE 345 KV
18TALL A	138	TALLMADGE A 138 KV
18TALLN	138	TALLMAN 138 KV
18TALLR1	138	TALLMADGE R1 138 KV
18TALLR2	138	TALLMADGE R2 138 KV
18THET	138	THETFORD 138 KV
18THET1G	13.8	THETFORD
18THET2G	13.8	THETFORD
18THET3G	13.8	THETFORD
18THET4G	13.8	THETFORD
18THET5M	13.8	THETFORD 5M 13.8 KV
18THET7M	13.8	THETFORD 7M 13.8 KV
18THET8G	13.8	THETFORD 78 GENERATOR
18THET9G	13.8	THETFORD 9G 13.8 KV
18THETFR	345	THETFORD
18THETR	138	THETFORD 138 KV
18TIHA	138	TIHART 138 KV
18TINSN	138	TINSMAN 138 KV
18TINSNJ	138	TINSMAN JCT 138 KV
18TIPPA	138	TIPPY 138 KV
18TIPPAG	7.50	TIPPY AG 7.5 KV
18TIPPAM	138	TIPPY DAM 138 KV
18TITB	138	TITTABAWASSEE 138 KV
18TITB	345	TITTABAWASSEE 345 KV
18TOMPKN	345	TOMPKINS
18TOMPN	138	TOMPKINS 138 KV
18TROWG	138	TROWBRIDGE 138 KV
18TROWGJ	138	TROWBRIDGE JCT 138 KV
18TWILT	138	TWILIGHT 138 KV
18TWILTJ	138	TWILIGHT JCT 138 KV
18TWING	138	TWINING 138 KV
18TWING1	138	TWINING 1 138 KV
18UPJO 1	138	UPJOHN 1 138 KV
18UPJO 2	138	UPJOHN 2 138 KV
18UPJO 3	138	UPJOHN 3 138 KV
18VANAA	138	VANATTA 138 KV
18VANAAJ	138	VANATTA JCT 138 KV
18VANDL	138	VANDERBILT 138 KV
18VERGN	138	VERGENNES 138 KV
18VERGN	345	VERGENNES 345 KV
18VERO B	138	VERONA B 138 KV
18VERO W	138	VERONA W 138 KV
18VESTG	138	VESTABURG 138 KV
18VEVA	138	VEVAY 138 KV
18VROON	138	VROOMAN 138 KV
18WACK 1	138	WACKERLY 1 138 KV
18WACK 2	138	WACKERLY 2 138 KV
18WARN	138	WARNER 138 KV
18WARR	138	WARREN 138 KV
18WASHA	138	WASHTENAW 138 KV
18WAYLD	138	WAYLAND 138 KV
18WEAD	23.0	WEADOCK 23 KV
18WEAD B	138	WEADOCK BLUE
18WEAD P	13.8	WEADOCK PEAKER
18WEAD W	138	WEADOCK WHITE

18WEAD7G18.0		WEADOCK UNIT 7
18WEAD8G18.0		WEADOCK UNIT 8
18WEAL B	138	WEALTHY B 138 KV
18WEAL W	138	WEALTHY W 138 KV
18WEALH6	138	WEALTHY H6 138 KV
18WEXF B	138	WEXFORD B 138 KV
18WEXF W	138	WEXFORD W 138 KV
18WHIT 1	138	WHITE LAKE 1 138 KV
18WHIT 2	138	WHITE LAKE 2 138 KV
18WHIT B	138	WHITING B 138 KV
18WHIT W	138	WHITING W 138 KV
18WHIT1G14.4		WHITING 1G 14.4 KV
18WHIT2G14.4		WHITING 2G 14.4 KV
18WHIT3G15.5		WHITING 3G 15.5 KV
18WHITD	138	WHITE ROAD 138 KV
18WHITR	138	WHITTEMORE 138 KV
18WHTNGA	120	WHITING
18WILL	138	WILLOW 138 KV
18WILLD	138	WILLARD 138 KV
18WISE8	138	WISE 138 KV
18WSHTNJ	138	WASHTENAW JUNCTION
18ZEEL 1	345	ZEELAND 1 345 KV
18ZEEL 2	345	ZEELAND 2 345 KV
18ZEEL1G18.0		ZEELAND 1G 18 KV
18ZEEL2G18.0		ZEELAND 2G 18 KV
18ZEEL3G18.0		ZEELAND 3G 18 KV
18ZEEL4G18.0		ZEELAND 4G 18 KV
18ZEEL5G18.0		ZEELAND 5G 18 KV
19A-B-VN	120	ALLISON-BROCK-VENOY
19A-C-D	120	Arizona-Collins-Dayton
19ADAMS	120	ADAMS
19AGSTA1	120	Agusta1
19AGSTA2	120	Augusta
19AGSTAT	120	Agusta Tap
19AIRPT	120	Airport
19AKRON	120	AKRON
19ALAMO	120	Alamo
19ALFRD	120	Alfred
19ALISN	120	Allison
19ALPHA	120	Alpha
19ANITA	41.5	ANITA
19APACE	120	Apache
19ARCTC	120	Arctic
19ARIZA	120	Arizona
19ARWHD	120	Arrowhead
19ATLAN	120	Atlanta
19ATLAN	138	Atlanta
19AUBRN2	120	Auburn2
19AULEBT	120	Auburn Heights Tap
19B3N PS	220	B3N PS
19BADAX	120	BAD AXE
19BALTC	120	Baltic
19BAXTR	230	Baxter
19BECK	120	Beck
19BEMIS	120	Bemis
19BENET	120	BENNETT

19BENSN	120	Benson
19BERGN	120	Bergen
19BERLN	120	Berlin
19BFOOT	345	Blackfoot
19BISMK	120	BISMARCK
19BISMK	230	Bismarck
19BISMK	345	Bismarck
19BLMFD	120	Bloomfield
19BLMFD	230	Bloomfield
19BLRP1	26.0	Belle River PP 1
19BLRP2	26.0	Belle River PP 2
19BLRPP	345	BELLE RIVER POWER PLANT
19BLRPPP	345	Belle River PPP(peaker)
19BNSTNN	120	Brownstown Navarre - Brownstown (Navarre side)
19BNSTNN	230	Brownstown Navarre - Brownstown (Navarre side)
19BNSTNN	345	Brownstown Navarre - Brownstown (Navarre side)
19BNSTNS	120	Brownstown Superior - Brownstown (Superior side)
19BNSTNS	230	Brownstown Superior - Brownstown (Superior side)
19BNSTNS	345	Brownstown Superior - Brownstown (Superior side)
19BOYNE	120	Boyne
19BRAUN	120	Braun
19BROCK	120	Brock
19BRONC	120	Bronco
19BRSTL	120	Bristol
19BUNCE	120	Bunce Creek
19BUNCE	220	Bunce Creek
19BURNS2	120	Burns 2
19BYRON	41.5	BYRON
19CANIF	120	Caniff
19CANIF	345	Caniff
19CANIFP	120	CANIFF PHASE SHIFTER
19CARBN	120	Carbon
19CARBNT	120	Carbon Tap
19CATO	120	Cato
19CC15	15.5	Connors Creek 15
19CC16	15.5	Connors Creek 16
19CHTNT	120	Chestnut
19CICOT	120	Cicot
19CODY	120	Cody
19COLFX	120	Colfax
19COLFX	41.5	COLFAX
19COLNS	120	Collins
19COLRD1	120	Colorado 1
19COLRD2	120	Colorado 2
19COOPR	120	Cooper
19CORTL	120	Cortland
19COSMO	120	Cosmo
19COSTP	120	Cosmo Tap
19CREWD	120	Crestwood
19CROWN1	120	Crown1
19CUSTR	120	Custer
19CV-P-W	120	Coventry - Placid - Wixom Tap
19CVTRY	120	Coventry
19CVTRY	345	Coventry
19CYPRS	120	Cypress
19DAYTN	120	Dayton

19DAYTN	41.5	DAYTON
19DEAN12	120	Dean 12
19DEAN34	120	Dean 34
19DIESL	120	Diesel
19DIG	230	Dig
19DIGIA	41.5	DIGIA
19DIGTP	230	Dig Tap
19DORST	120	Dorsett
19DRAKE	120	DRAKE
19DREXL	120	Drexel
19DUVAL1	120	Duvall 1
19DUVAL2	120	Duvall 2
19DUVLT1	120	Duvall Tap 1
19DUVLT2	120	Duvall Tap 2
19ELM	120	Elm
19ELM	41.5	Elm41.6
19ELMTP	230	Elm Tap
19ENFPP	120	ENRICO FERMI POWER PLANT
19ENFPP	345	ENRICO FERMI POWER PLANT
19ENFPP	22.0	Fermi 2
19ERIN	120	Erin
19ESSEX	120	Essex Bus (Conners Creek Power Plant High Side)
19ESSEX	24.0	ESSEX
19EVRGN	120	Evergreen
19EXPLR1	120	Explorer 1
19EXPLR2	120	Explorer 2
19FAWN	120	Fawn
19FLINT	120	Flint
19FLMRE1	120	Filmore 1
19FLMRE2	120	Filmore 2
19FMTEC1	120	Formtech 1
19FMTEC2	120	Formtech 2
19FNDRY	120	Foundry
19FRISB	120	Frisbie
19GDNGS1	120	Gidings1
19GDNGS2	120	Gidings2
19GENDY	120	Gendy
19GENOA	120	Genoa
19GENOA	138	Genoa
19GOLF1	120	Golf 1
19GOLF2	120	Golf 2
19GRAYL1	120	Grayling 1
19GRAYL2	120	Grayling 2
19GRAYLT	120	Grayling Tap
19GRLSM	120	Great Lakes M
19GRNEC	120	Greenwood Energy Center (unit 1)
19GRNEC	345	Greenwood Energy Center (unit 1)
19GRNEC	26.0	Greenwood
19GRNECP	345	GreenwoodP (peaker)
19HAGER	120	Hager
19HAMLN	120	Hamlin
19HANCK	120	Hancock (high side peaker site)
19HANCK	41.5	HANCOCK
19HBHPP	120	HARBOR BEACH POWER PLANT
19HBHPP	13.8	Harbor Beach PP
19HBHPPP	120	Harbor Beach PPP(peaker)

19HINES	120	Hines
19HINES	230	Hines
19HOSTN1	120	Houston1
19HOSTN2	120	Houston2
19HUNTC	120	Hunters Creek
19HURHY	41.5	Huron Hydro
19IMPMP1	120	Imlay Pumping 1
19IMPMP2	120	Imlay Pumping 2
19I-N-RV	120	Ironton - Navarre - Riverview Tap
19IRNTN	120	Ironton
19JACOB	120	Jacob120
19JEFSN	120	Jefferson
19JEWEL	120	Jewel
19JEWEL	345	Jewell
19JEWEL3	230	Jewel 3
19JSLYN	120	Joslyn
19JUDD	120	Judd
19JUDD1	13.2	Judd #1
19JUDD2	13.2	Judd #2
19JUDD3	13.2	Judd #3
19JUDD4	13.2	Judd #4
19JUPTR	120	Jupiter
19KERN1	120	Kern 1
19KERN2	120	Kern 2
19KILGR	120	Kilgor
19KNTKY	120	Kentucky
19KOPNK	120	Koppernick
19LAPER	120	Lapeer
19LARK	120	Lark
19LARK	138	Lark
19LEBAR1	120	Lebaron 1
19LEBAR2	120	Lebaron 2
19LEE	120	Lee
19LEVAN	120	Levan
19LHPMP1	120	Lake Huron Pumping 1
19LHPMP2	120	Lake Huron Pumping 2
19LHPMPT	120	Lake Huron Pumping Tap
19LILY	120	Lily
19LINCN	120	Lincoln
19LNGLK1	120	Long Lake 1
19LNGLK2	120	Long Lake 2
19L-N-NW	120	Lincoln - Northeast - Northwest Tap
19LOGAN1	120	Logan 1
19LOGAN2	120	Logan 2
19LULU	345	Lulu site(now Majestic-Allen Jct-Monroe 3&4 tap)
19LUZON	120	LUZON
19MACK	120	Mack
19MACMB	120	Macomb
19MADRD	120	Madrid
19MADRD	345	Madrid
19MAJTC	345	Majestic
19MALRD	120	Mallard
19MALTA1	120	Malta 1
19MALTA2	120	Malta 2
19MALTA3	120	Malta 3
19MARON	120	Marion

19MAXWL1	120	Maxwell 1
19MAXWL2	120	Maxwell 2
19MCALY1	120	Mcauley 1
19MCALY2	120	Mcauley 2
19MEDNA	120	Medina
19MENLO	120	Menlo
19MIDTN	120	Midtown
19MOHIC1	120	Mohican 1
19MOHIC2	120	Mohican 2
19MON1	26.0	Monroe 1
19MON12	345	Monroe Power Plant - units 1 & 2
19MON12P	345	Monroe PPP(peaker)
19MON2	26.0	Monroe 2
19MON3	26.0	Monroe 3
19MON34	345	Monroe Power Plant - units 3 & 4
19MON4	26.0	Monroe 4
19MONPP	120	MONROE POWER PLANT
19MONTC	120	Montcalm
19MOPAR	120	Mopar
19MRY7	14.0	Marysville 7
19MRY8	14.4	Marysville 8
19MRYPP	120	MARYSVILLE POWER PLANT
19MUSTG1	120	Mustang 1
19MUSTG2	120	Mustang 2
19NAVAR	120	Navarre
19NAVAR	230	Navarre
19NBURG	120	Newburgh
19NEAST	120	Northeast (peaker site - 120kV)
19NEAST	230	Northeast
19NEAST	24.0	Northeast (peaker site - 24kV)
19NEASTS	120	Northeast Stub
19NILES	120	Niles
19NILEST	120	Niles Tap
19NOBLE	120	Noble
19NOLAN	120	Nolan
19NSTAR1	120	North Star
19NWEST	120	Northwest
19OAKLY	120	Oakley
19OKRDG3	120	Oakridge3
19OKRDG4	120	Oakridge4
19OLIVR	41.5	OLIVER
19OTAWA	120	Ottawa
19OTSGO	120	Otsego120
19PERU	120	Peru
19PHENX	120	Phoenix
19PIONR	120	PIONEER
19PLACD	120	Placid
19PLACD	345	Placid
19PLACD	41.5	PLACID
19POLRS	120	Polaris
19PONTC	345	Pontiac
19PONTC1	230	Pontiac
19PONTC2	120	Pontiac2
19PONTC3	120	Pontiac
19POPLR	120	Poplar
19POPLRT	120	Poplar Tap

19PRAXR	120	Praxair
19PRIZM	120	Prizm
19PROUD	120	PROUD
19PRZTP	120	Prizm Tap
19PUTNM	41.5	PUTNAM
19QUAKR	120	Quaker site (now Hancock-Drexel-Sunset tap)
19QUAKR	345	Quaker site (now Hancock-Drexel-Sunset tap)
19QUATP	345	QUAKER TAP
19RAMVL1	120	Ramville 1
19RAMVL2	120	Ramville 2
19RANGR	120	Ranger
19REDRN	120	Red Run
19REDRN	230	Red Run
19REMER1	120	REMER
19REMER2	120	Remer 2
19RESRC	120	Resource (City of Detroit waste to energy plant)
19ROBIN	120	Robin
19ROMLS	120	Romulus
19ROTUN	230	Rotunda
19RR1	120	Rouge Power Plant Unit 1 (mothballed)
19RR2	120	Rouge Power Plant Unit 2
19RR3	120	Rouge Power Plant unit 3
19RREQ	120	Rouge Power Plant EQUALIZER bus
19RRG1	18.0	River Rouge 1
19RRG2	18.0	River Rouge 2
19RRG3	18.0	River Rouge 3
19RUSH	120	RUSH
19RVRVW	120	Riverview
19SANDU	120	SANDUSKY
19SATRN	120	Saturn
19SC1	15.5	St. Clair 1
19SC123	120	St.Clair 1,2,3 -St.Clair Power Plant units 1,2&3
19SC123P	120	St. Clair(peaker)
19SC2	15.5	St. Clair 2
19SC3	15.5	St. Clair 3
19SC4	15.5	St. Clair 4
19SC45	120	St.Clair 4&5 - St.Clair Power Plant units 4 & 5
19SC6	120	St. CLAIR 6
19SC6	18.0	St. Clair 6
19SC7	18.0	St. Clair 7
19SEASD	120	Seaside
19SENCA	120	Seneca
19SEVLE1	120	Seville 1
19SEVLE2	120	Seville 2
19SHELD	120	Sheldon
19SHELDT	120	Sheldon Tap
19SHOAL	120	Shoal
19SKYLK1	120	Skylark 1
19SKYLK2	120	Skylark 2
19SLKRK	120	Selkirk
19SLOAN	120	SLOAN
19SLOCM	24.0	SLOCUM
19SNSET	120	Sunset
19SOFLD	120	Southfield
19SPKNE	120	Spokane
19SPORT1	120	Sport 1

19SPORT2	120	Sport 2
19SPRUC	120	Spruce
19S-SP-J	120	St. CLAIR-SPOKANE-JEWELL
19STANT	120	St.Antoine
19STCPP	220	St. Clair
19STCPP	345	St. CLAIR POWER PLANT
19STEPH	120	Stephens
19STEPH	230	Stephens
19STEPH	345	Stephens
19STERL	120	Sterling
19STERL	230	Sterling
19STOGA	345	Saratoga345
19STRFD	120	Stratford
19SUMTR	120	Sumpter
19SUNBD	120	Sunbird
19SUPER	120	Superior
19SUPER	41.5	SUPERIOR
19SWANC	120	Swan Creek
19S-WR-W	120	Superior - Willow Run - Wayne Tap
19TAMRK	120	Tamarack
19TAMRKT	120	Tamarack Tap
19TANDM	120	Tandem
19TARUS	120	Taurus
19TAYLR1	120	Taylor 1
19TAYLR2	120	Taylor 2
19TC7	15.5	Trenton Channel 7
19TC79	120	TRENTON CHANNEL 79
19TC8	120	TRENTON CHANNEL 8
19TC8	15.5	Trenton Channel 8
19TC9	22.0	Trenton Channel 9
19TCOLA	120	Tuscola
19TEMPS	120	Tempest
19TINKN1	120	Tieken 1
19TINKN2	120	Tieken 2
19TOPAZ1	120	Topaz 1
19TOPAZ2	120	Topaz 2
19TOWN1	120	Town 1
19TOWN2	120	Town 2
19TROY	120	Troy
19TULSA	120	Tulsa
19VENOY	120	Venoy
19VICTR	120	VICTOR
19VNDYK1	120	Van Dyke 1
19VNDYK2	120	Van Dyke 2
19VOYAG	120	Voyager
19WABSH	120	Wabash
19WALTN	120	Walton
19WALTZ	41.5	Waltz
19WAREN	120	Warren
19WAREN	230	Warren
19WARENS	120	Warren Stub
19WAYER	41.5	WAYER
19WAYNE	120	Wayne
19WAYNE	230	Wayne
19WAYNE	345	Wayne
19WDHVN1	120	Woodhaven 1

19WDHVN2 120	Woodhaven 2
19WHELR 120	Wheeler
19WHITR1 120	Whittier 1
19WHITR2 120	Whittier 2
19WILMT 41.5	WILMOT
19WIXOM 120	Wixom
19WIXOM 345	Wixom
19WLRUN 120	Willow Run
19WTRMN 120	Waterman
19WTRMN 230	Waterman
19WYNS6 120	City of Wyandotte, Sub 6
19WYOMG1 120	Wyoming 1
19WYOMG2 120	Wyoming 2
19YOST 120	Yost
19YUMA 120	Yuma
19ZACRY 120	Zachary
19ZEBRA 120	Zebra
19ZUGB 120	Zug B
203M 69.0	3M SUBSTATION 69 KV BUS
20AIRP R69.0	AIRPORT ROAD SUBSTATION 69 KV BUS
20ALBANY69.0	ALBANY SUBSTATION 69 KV BUS
20ALCAN 69.0	ALCAN SUBSTATION 69 KV BUS
20ANNVLJ69.0	ANNVILLE JUNCTION 69 KV TAP POINT
20ARGTM 138	ARGENTUM SUBSTATION 138 KV BUS
20ARGTM 69.0	ARGENTUM SUBSTATION 69 KV BUS
20ASAHIJ69.0	ASAHI JUNCTION 69 KV TAP POINT
20AVON 138	AVON SUBSTATION 138 KV BUS
20AVON 345	AVON SUBSTATION 345 KV BUS
20BACONJ69.0	BACON CREEK JUNCTION 69 KV TAP POINT
20BALLRD69.0	BALLARD SUBSTATION 69 KV BUS
20BARDSJ69.0	BARDSTOWN JUNCTION 69 KV TAP POINT
20BARREN 161	BARREN COUNTY SUBSTATION 161 KV BUS
20BARREN69.0	BARREN COUNTY SUBSTATION 69 KV BUS
20BASS 69.0	BASS SUBSTATION 69 KV BUS
20BAVARI 138	BAVARIAN SUBSTATION 138 KV BUS
20BEAM J69.0	BEAM JUNCTION 69 KV NODE
20BEATTY69.0	BEATTYVILLE EKPC SWITCHING SUBSTATION 69 KV
20BIGB J69.0	BIG BONE JUNCTION 69 KV TAP POINT
20BKR LN69.0	BAKER LANE SUBSTATION 69 KV BUS
20BLEV T69.0	BLEVINS VALLEY SUBSTATION 69 KV TAP POINT
20BLEV V69.0	BLEVINS VALLEY SUBSTATION 69 KV BUS
20BLIT C 161	BULLITT COUNTY SUBSTATION 161 KV BUS
20BLIT C69.0	BULLITT COUNTY SUBSTATION 69 KV BUS
20BLMFLD69.0	BLOOMFIELD SUBSTATION 69 KV BUS
20BNDSMJ69.0	BONDS MILL JUNCTION 69 KV TAP POINT
20BONNIE69.0	BONNIEVILLE EKPC SUBSTATION 69 KV BUS
20BOONE 138	BOONE SUBSTATION 138 KV BUS
20BOONE 69.0	BOONE SUBSTATION 69 KV BUS
20BOONEV69.0	BOONEVILLE SUBSTATION 69 KV BUS
20BOONSB 138	BOONESBORO NORTH KU SUBSTATION 138 KV
20BOONST 138	BOONESBORO NORTH KU SUBSTATION 138 KV TAP POINT
20BOONVJ69.0	BOONEVILLE JUNCTION 69 KV TAP POINT
20BOSTKU69.0	BOSTON KU SUBSTATION 69 KV BUS
20BOSTNJ69.0	BOSTON JUNCTION 69 KV NODE
20BOURNE69.0	BOURNE 69 KV NODE
20BOWEN 69.0	BOWEN SUBSTATION 69 KV BUS

20BRACKN69.0	BRACKEN COUNTY SWITCHING SUBSTATION 69 KV
20BRISTW69.0	BRISTOW SUBSTATION 69 KV BUS
20BRODHD69.0	BRODHEAD SUBSTATION 69 KV BUS
20BRONSJ69.0	BRONSTON JUNCTION 69 KV TAP POINT
20BTYV D69.0	BEATTYVILLE DISTRIBUTION SUBSTATION 69 KV BUS
20BTYVL 161	BEATTYVILLE SUBSTATION 161 KV BUS
20BURKSJ69.0	BURKESVILLE JUNCTION 69 KV NODE
20BWELLS69.0	BILL WELLS SUBSTATION 69 KV BUS
20BWELSJ69.0	BILL WELLS JUNCTION 69 KV TAP POINT
20CABN H69.0	CABIN HOLLOW SUBSTATION 69 KV BUS
20CAMPTN69.0	CAMPTON SUBSTATION 69 KV BUS
20CARTCJ69.0	CARTER CITY JUNCTION 69 KV TAP POINT
20CASEYC 161	CASEY COUNTY SUBSTATION 161 KV BUS
20CASEYC69.0	CASEY COUNTY SUBSTATION 69 KV BUS
20CEDRGR69.0	CEDAR GROVE SUBSTATION 69 KV BUS
20CHAPLJ69.0	CHAPLIN JUNCTION 69 KV TAP POINT
20CHARTR69.0	CHARTERS SUBSTATION 69 KV BUS
20CLAY V69.0	CLAY VILLAGE SUBSTATION 69 KV BUS
20CLAYCJ69.0	CLAY CITY JUNCTION 69 KV TAP POINT
20CLAYLJ69.0	CLAY LICK SUBSTATION 69 KV TAP POINT
20COBURG69.0	COBURG SUBSTATION 69 KV BUS
20COBURJ69.0	COBURG JUNCTION 69 KV TAP POINT
20COLESJ69.0	COLESBURG JUNCTION 69 KV TAP POINT
20COLKU169.0	COLUMBIA KU #1 SUBSTATION 69 KV BUS
20COLKU269.0	COLUMBIA KU #2 SUBSTATION 69 KV BUS
20COLMSV69.0	COLEMANSVILLE SUBSTATION 69 KV BUS
20COLUMB69.0	COLUMBIA SUBSTATION 69 KV BUS
20COOPER 161	COOPER SUBSTATION 161 KV BUS
20COOPER69.0	COOPER SUBSTATION 69 KV BUS
20CPR1 13.8	COOPER STATION UNIT 1 13.8 KV BUS
20CPR2 20.0	COOPER STATION UNIT 2 20 KV BUS
20CRESTN69.0	CRESTON SUBSTATION 69 KV BUS
20CRNSTN 138	CRANSTON SUBSTATION 138 KV BUS
20CROCKJ69.0	CROCKETT JUNCTION 69 KV TAP POINT
20CROOKJ69.0	CROOKSVILLE JUNCTION 69 KV TAP POINT
20CYNTH 69.0	CYNTHIANA EKPC SUBSTATION 69 KV BUS
20DALE 138	DALE SUBSTATION 138 KV BUS
20DALE 69.0	DALE SUBSTATION 69 KV BUS
20DALE1 13.8	DALE STATION UNIT 1 13.8 KV BUS
20DALE2 13.8	DALE STATION UNIT 2 13.8 KV BUS
20DALE3 13.8	DALE STATION UNIT 3 13.8 KV BUS
20DALE4 13.8	DALE STATION UNIT 4 13.8 KV BUS
20DARWJ 161	DARWIN THOMAS JUNCTION 161 KV TAP POINT
20DAVIS 69.0	DAVIS SUBSTATION 69 KV BUS
20DENNY 161	DENNY SUBSTATION 161 KV BUS
20DENNY 69.0	DENNY SUBSTATION 69 KV BUS
20DEVON 69.0	DEVON SWITCHING SUBSTATION 69 KV
20DOWNG 69.0	DOWNING SUBSTATION 69 KV BUS
20DURO J69.0	DURO JUNCTION 69 KV TAP POINT
20E BARD69.0	EAST BARDSTOWN SUBSTATION 69 KV BUS
20E PNKT69.0	EAST PINE KNOT SUBSTATION 69 KV BUS
20E SOMJ69.0	EAST SOMERSET SUBSTATION 69 KV TAP POINT
20EAG3 18.0	SPURLOCK STATION E.A. GILBERT UNIT 3 18 KV BUS
20EBERLE69.0	EBERLE SUBSTATION 69 KV BUS
20EBERLJ69.0	EBERLE JUNCTION 69 KV TAP POINT
20EBRNST69.0	EAST BERNSTADT EKPC SUBSTATION 69 KV BUS

20ELL PJ69.0	ELLIOTT COUNTY PRISON JUNCTION 69 KV TAP POINT
20ELLTVL69.0	ELLIOTTVILLE SUBSTATION 69 KV BUS
20ETOWN169.0	EKPC ELIZABETHTOWN #1 SUBSTATION 69 KV BUS
20ETOWN269.0	EKPC ELIZABETHTOWN #2 SUBSTATION 69 KV BUS
20F OAKJ69.0	FOUR OAKS JUNCTION 69 KV TAP POINT
20F OAKS69.0	FOUR OAKS SUBSTATION 69 KV BUS
20FALCON69.0	FALCON EKPC SUBSTATION 69 KV BUS
20FALLRK 161	FALL ROCK SUBSTATION 161 KV BUS
20FALLRK69.0	FALL ROCK SUBSTATION 69 KV BUS
20FALMKU69.0	FALMOUTH KU SUBSTATION 69 KV BUS
20FAWKES 138	FAWKES EKPC SUBSTATION 138 KV BUS
20FAYETT 138	FAYETTE SUBSTATION 138 KV BUS
20FAYETT69.0	FAYETTE SUBSTATION 69 KV BUS
20FLEMBG 138	EKPC FLEMINGSBURG SUBSTATION 138 KV BUS
20FLOYD 69.0	FLOYD SUBSTATION 69 KV BUS
20FLY-SF69.0	FLOYD-SOUTH FLOYD 69 KV TAP POINT
20FOXHOL 161	FOX HOLLOW SUBSTATION 161 KV BUS
20FOXHOL69.0	FOX HOLLOW SUBSTATION 69 KV BUS
20FRCKBJ69.0	FREDRICKSBURG JUNCTION 69 KV TAP POINT
20FRNCHB69.0	FRENCHBURG SUBSTATION 69 KV BUS
20FRTKNJ69.0	FORT KNOX JUNCTION 69 KV TAP POINT
20FRTKNX69.0	FORT KNOX SUBSTATION 69 KV BUS
20GALTN 138	GALLATIN COUNTY SUBSTATION 138 KV BUS
20GAPOFJ69.0	GAP OF RIDGE JUNCTION 69 KV TAP POINT
20GARRCO69.0	GARRARD COUNTY SUBSTATION 69 KV BUS
20GLENDL69.0	GLENDALE SUBSTATION 69 KV BUS
20GODDC169.0	GODDARD CAPACITOR BANK #1 69 KV BUS
20GODDC269.0	GODDARD CAPACITOR BANK #2 69 KV BUS
20GODDRD 138	GODDARD EKPC JUNCTION 138 KV TAP POINT
20GODDRD69.0	GODDARD EKPC SUBSTATION 69 KV BUS
20GOODNT69.0	GOODNIGHT SUBSTATION 69 KV BUS
20GORINJ69.0	GORIN PARK JUNCTION 69 KV TAP POINT
20GRAYSN69.0	GRAYSON AEP JUNCTION 69 KV TAP POINT
20GREENC 161	GREEN COUNTY SUBSTATION 161 KV BUS
20GREENC69.0	GREEN COUNTY SUBSTATION 69 KV BUS
20GRIFFJ69.0	GRIFFIN JUNCTION 69 KV TAP POINT
20GRIFFN69.0	GRIFFIN SUBSTATION 69 KV BUS
20GRNBR 69.0	GREENBRIAR SUBSTATION 69 KV BUS
20GRNBRJ69.0	GREENBRIAR JUNCTION 69 KV TAP POINT
20GRNHLJ 161	GREEN HALL JUNCTION 161 KV TAP POINT
20GRNTLK69.0	GRANTS LICK SUBSTATION 69 KV BUS
20GRSBRG69.0	GREENSBURG SUBSTATION 69 KV BUS
20HARGTJ69.0	HARGETT JUNCTION 69 KV TAP PINT
20HCAVKU69.0	HORSE CAVE KU SUBSTATION 69 KV BUS
20HDQTRS69.0	HEADQUARTERS SUBSTATION 69 KV BUS
20HEBRON 138	HEBRON SUBSTATION 138 KV BUS
20HELCHW69.0	HELECHAWA SUBSTATION 69 KV BUS
20HICK P69.0	HICKORY PLAINS SUBSTATION 69 KV BUS
20HIGHLD69.0	HIGHLAND SUBSTATION 69 KV BUS
20HIGHRK69.0	HIGH ROCK SUBSTATION 69 KV BUS
20HILDA 69.0	HILDA SUBSTATION 69 KV BUS
20HILLSB69.0	HILLSBORO SUBSTATION 69 KV BUS
20HODGEN69.0	HODGENVILLE EKPC SUBSTATION 69 KV BUS
20HOLLWJ69.0	HOLLOWAY JUNCTION 69 KV NODE
20HOLLWY69.0	HOLLOWAY SUBSTATION 69 KV BUS
20HOPE 69.0	HOPE SUBSTATION 69 KV BUS

20HTADMJ69.0	H.T. ADAMS JUNCTION 69 KV TAP POINT
20HTADMS69.0	H.T. ADAMS SUBSTATION 69 KV BUS
20HUNT1 69.0	HUNT #1 69 KV NODE
20HUNT2 69.0	HUNT #2 69 KV NODE
20HUNTFJ69.0	HUNT FARM JUNCTION 69 KV TAP POINT
20INDEX 69.0	INDEX EKPC SUBSTATION 69 KV BUS
20INDEXJ69.0	INDEX JUNCTION 69 KV TAP POINT
20INLD C 138	INLAND CONTAINER SUBSTATION 138 KV BUS
20JACKVJ 138	JACKSONVILLE JUNCTION 138 KV TAP POINT
20JBGALJ69.0	J.B. GALLOWAY JUNCTION 69 KV TAP POINT
20JEFFVL69.0	JEFFERSONVILLE SUBSTATION 69 KV BUS
20JELLCJ69.0	JELLICO CREEK JUNCTION 69 KV TAP POINT
20JELLCR69.0	JELLICO CREEK SUBSTATION 69 KV BUS
20JKCT1 13.8	J.K. SMITH STATION COMB. TURBINE 1 13.8 KV BUS
20JKCT2 13.8	J.K. SMITH STATION COMB. TURBINE 2 13.8 KV BUS
20JKCT3 13.8	J.K. SMITH STATION COMB. TURBINE 3 13.8 KV BUS
20JKCT4 13.8	J.K. SMITH STATION COMB. TURBINE 4 13.8 KV BUS
20JKCT5 13.8	J.K. SMITH STATION COMB. TURBINE 5 13.8 KV BUS
20JKCT6 13.8	J.K. SMITH STATION COMB. TURBINE 6 13.8 KV BUS
20JKCT7 13.8	J.K. SMITH STATION COMB. TURBINE 7 13.8 KV BUS
20JKCT8 13.8	J.K. SMITH STATION COMB. TURBINE 8 13.8 KV BUS
20JKCT9 13.8	J.K. SMITH STATION COMB. TURBINE 9 13.8 KV BUS
20JKCTA 13.8	J.K. SMITH STATION COMB. TURBINE 10 13.8 KV BUS
20JKCTB 13.8	J.K. SMITH STATION COMB. TURBINE 11 13.8 KV BUS
20JKCTC 13.8	J.K. SMITH STATION COMB. TURBINE 12 13.8 KV BUS
20JKCTD 13.8	J.K. SMITH STATION COMB. TURBINE 13 13.8 KV BUS
20JKCTE 13.8	J.K. SMITH STATION COMB. TURBINE 14 13.8 KV BUS
20JKSMIT 138	J.K. SMITH SUBSTATION 138 KV BUS
20JKSMIT 345	J.K. SMITH SUBSTATION 345 KV BUS
20JKSMIT69.0	JK SMITH DIST. SUBSTATION 69 KV BUS
20JMSTNJ 161	JAMESTOWN JUNCTION 161 KV TAP POINT
20JNYWLJ69.0	JENNY WILEY JUNCTION 69 KV TAP POINT
20JTCH T69.0	JOE TICHENOR SUBSTATION 69 KV TAP POINT
20JTCHNR69.0	JOE TICHENOR SUBSTATION 69 KV BUS
20KARGLE69.0	KARGLE SUBSTATION 69 KV BUS
20KEAVJ169.0	KEAVY SUBSTATION 69 KV TAP POINT #1
20KEAVJ269.0	KEAVY SUBSTATION 69 KV TAP POINT #2
20KEAVY 69.0	KEAVY SUBSTATION 69 KV BUS
20KEITH 69.0	KEITH SUBSTATION 69 KV BUS
20KNOBLK69.0	KNOB LICK SUBSTATION 69 KV BUS
20LAURHY13.8	LAUREL HYDRO UNIT 13.8 KV BUS
20LAURIJ69.0	LAUREL INDUSTRIAL JUNCTION 69 KV TAP POINT
20LAURLC 161	LAUREL COUNTY SUBSTATION 161 KV BUS
20LAURLC69.0	LAUREL COUNTY SUBSTATION 69 KV BUS
20LAURLD 161	LAUREL HYDRO SUBSTATION 161 KV BUS
20LEBANJ69.0	LEBANON JUNCTION 69 KV TAP POINT
20LEESLK69.0	LEES LICK SUBSTATION 69 KV BUS
20LEON 69.0	LEON EKPC SUBSTATION 69 KV BUS
20LIBCHJ69.0	LIBERTY CHURCH JUNCTION 69 KV TAP POINT
20LIBERT 161	LIBERTY JUNCTION SUBSTATION 161 KV BUS
20LIBERT69.0	LIBERTY JUNCTION SUBSTATION 69 KV BUS
20LIBTKU69.0	LIBERTY KU SUBSTATION 69 KV BUS
20LNCSTR69.0	LANCASTER EKPC SUBSTATION 69 KV BUS
20LONDON 161	EKPC LONDON SUBSTATION 161 KV BUS
20LONDON69.0	EKPC LONDON SUBSTATION 69 KV BUS
20LORETT69.0	LORETTO SUBSTATION 69 KV BUS

20LOVEHY 138	LOVE HYDRO STATION 138 KV BUS
20LOVEHY4.16	LOVE HYDRO STATION 4.16 KV BUS
20LOWGPT69.0	LOW GAP SUBSTATION 69 KV TAP POINT
20LYMANJ69.0	LYMAN B. WILLIAMS JUNCTION 69 KV TAP POINT
20MAGGRD69.0	MAGGARD SUBSTATION 69 KV BUS
20MAGNOL69.0	MAGNOLIA SUBSTATION 69 KV BUS
20MAGOFN69.0	MAGOFFIN COUNTY SWITCHING SUBSTATION 69 KV
20MAPLSJ69.0	MAPLESVILLE JUNCTION 69 KV TAP POINT
20MAR IJ 161	MARION CO IND PARK JUNCTION 161 KV TAP POINT
20MARETB69.0	MARETBURG SUBSTATION 69 KV BUS
20MARETJ69.0	MARETBURG JUNCTION 69 KV TAP POINT
20MARIBJ69.0	MARIBA JUNCTION 69 KV TAP POINT
20MARION 161	MARION COUNTY SUBSTATION 161 KV BUS
20MAYSVJ 138	MAYSVILLE INDUSTRIAL JUNCTION 138 KV TAP POINT
20MAYTNJ 138	MAYTOWN JUNCTION SUBSTATION 138 KV BUS
20MAYTNJ69.0	MAYTOWN JUNCTION 69 KV TAP POINT
20MAYTWN69.0	MAYTOWN SUBSTATION 69 KV BUS
20MAZIE 69.0	MAZIE SUBSTATION 69 KV BUS
20MCCRE 69.0	MCCREARY COUNTY SUBSTATION 69 KV BUS
20MCKEE 69.0	MCKEE SUBSTATION 69 KV BUS
20MCKNYJ69.0	MCKINNEY'S CORNER JUNCTION 69 KV TAP POINT
20MCKVKU69.0	MACKVILLE KU SUBSTATION 69 KV BUS
20MDLCKJ69.0	MIDDLE CREEK JUNCTION 69 KV TAP POINT
20MILBRG69.0	MILLERSBURG SUBSTATION 69 KV BUS
20MIL-CJ69.0	MILLERSBURG-CARLISLE JUNCTION 69 KV NODE
20MNCHST69.0	MANCHESTER EKPC SWITCHING SUBSTATION 69 KV
20MONTIC69.0	MONTICELLO EKPC SUBSTATION 69 KV BUS
20MONTVA69.0	MONTICELLO TVA SUBSTATION 69 KV BUS
20MRCR I69.0	MERCER COUNTY IND. SUBSTATION 69 KV BUS
20MT OLJ69.0	MOUNT OLIVE JUNCTION 69 KV TAP POINT
20MT OLV69.0	MOUNT OLIVE SUBSTATION 69 KV BUS
20MUNFKU69.0	MUNFORDVILLE KU SUBSTATION 69 KV BUS
20MUNFVL69.0	MUNFORDVILLE EKPC SUBSTATION 69 KV BUS
20MUNK 69.0	MUNK SUBSTATION 69 KV BUS
20MUNK J69.0	MUNK JUNCTION 69 KV TAP POINT
20MURPHY69.0	MURPHYSVILLE SUBSTATION 69 KV BUS
20N SPR 69.0	NORTH SPRINGFIELD SUBSTATION 69 KV BUS
20NANCY 69.0	NANCY SUBSTATION 69 KV BUS
20NCASTL69.0	NEW CASTLE SUBSTATION 69 KV BUS
20NCHLSV69.0	NICHOLASVILLE EKPC SUBSTATION 69 KV BUS
20NELSON69.0	NELSON COUNTY SUBSTATION 69 KV BUS
20NEWBY169.0	NEWBY SUBSTATION 69 KV BUS NO.1
20NEWBY269.0	NEWBY #2 69 KV NODE
20NEWFND69.0	NEWFOUNDLAND SUBSTATION 69 KV BUS
20NLSNVJ69.0	NELSON VALLEY JUNCTION 69 KV TAP POINT
20NORWD 69.0	NORWOOD SUBSTATION 69 KV BUS
20NORWDJ69.0	NORWOOD JUNCTION 69 KV NODE
20NRWDKU69.0	NORWOOD EKPC-KU 69 KV N.O. TIE POINT
20OAKD J69.0	OAKDALE JUNCTION 69 KV TAP POINT
20OAKH J69.0	OAK HILL JUNCTION 69 KV TAP POINT
20OKLY N69.0	OAKLEY NOEL SUBSTATION 69 KV BUS
20OWEN C69.0	OWEN COUNTY SUBSTATION 69 KV BUS
20OWENJ169.0	OWEN COUNTY JUNCTION 69 KV TAP POINT 1
20OWNSIJ69.0	OWENS ILLINOIS SUBSTATION 69 KV TAP POINT
20OWVLKU69.0	OWINGSVILLE KU SUBSTATION 69 KV BUS
20PARIS 138	PARIS KU SUBSTATION 138 KV BUS

20PARISJ 138	PARIS KU SUBSTATION 138 KV TAP POINT
20PARKWY69.0	PARKWAY SUBSTATION 69 KV BUS
20PATTRJ69.0	PATTON ROAD JUNCTION 69 KV NODE
20PCTLSJ69.0	PACTOLUS JUNCTION 69 KV TAP POINT
20PEASTK69.0	PEASTICKS SUBSTATION 69 KV BUS
20PELFRE69.0	PELFREY SUBSTATION 69 KV BUS
20PENN 69.0	PENN SUBSTATION 69 KV BUS
20PERRVL69.0	PERRYVILLE SUBSTATION 69 KV BUS
20PEYTON69.0	PEYTONS STORE SUBSTATION 69 KV BUS
20PHIL 69.0	PHIL SUBSTATION 69 KV BUS
20PINEGJ69.0	PINE GROVE JUNCTION 69 KV TAP POINT
20PITTSB 161	PITTSBURG KU SUBSTATION 161 KV BUS
20PLSGRV69.0	PLEASANT GROVE SUBSTATION 69 KV BUS
20PLUMV 138	PLUMVILLE SUBSTATION 138 KV BUS
20PLUMV 69.0	PLUMVILLE SUBSTATION 69 KV BUS
20PNKNOT69.0	PINE KNOT SUBSTATION 69 KV BUS
20POWELL 138	POWELL COUNTY SUBSTATION 138 KV BUS
20POWELL 161	POWELL COUNTY SUBSTATION 161 KV BUS
20POWELL69.0	POWELL COUNTY SUBSTATION 69 KV BUS
20PPG 69.0	P.P.G SUBSTATION 69 KV BUS
20PPG J 69.0	P.P.G JUNCTION 69 KV TAP POINT
20PRSTNJ69.0	PRESTON JUNCTION 69 KV TAP POINT
20PULASJ 161	PULASKI COUNTY SUBSTATION 161 KV TAP POINT
20PULASK 161	PULASKI COUNTY SUBSTATION 161 KV BUS
20PULASK69.0	PULASKI COUNTY SUBSTATION 69 KV BUS
20RECTVL69.0	RECTORVILLE SUBSTATION 69 KV BUS
20REDBSH69.0	REDBUSH SUBSTATION 69 KV BUS
20RENAKR 138	RENAKER SUBSTATION 138 KV BUS
20RENAKR69.0	RENAKER SUBSTATION 69 KV BUS
20REVLKU69.0	REVELO KU SUBSTATION 69 KV BUS
20ROGV J69.0	ROGERSVILLE JUNCTION 69 KV
20ROWAN 138	ROWAN CO SUBSTATION 138 KV BUS
20ROWAN 69.0	ROWAN CO SUBSTATION 69 KV BUS
20RSPREJ69.0	RUSSELL SPRINGS JUNCTION 69 KV TAP POINT
20RSPREK69.0	RUSSELL SPRINGS EKPC SUBSTATION 69 KV BUS
20RSPRKU69.0	RUSSELL SPRINGS KU SUBSTATION 69 KV BUS
20RUSSCO 161	RUSSELL COUNTY SUBSTATION 161 KV BUS
20RUSSCO69.0	RUSSELL CO SUBSTATION 69 KV BUS
20RUSSEL 161	RUSSELL COUNTY JUNCTION 161 KV TAP POINT
20S FLYD69.0	SOUTH FLOYD SUBSTATION 69 KV BUS
20S FORK69.0	SOUTH FORK SUBSTATION 69 KV BUS
20S OAKH 161	SOUTH OAK HILL SUBSTATION 161 KV BUS
20S PARK 138	STANLEY PARKER SUBSTATION 138 KV BUS
20S PARK69.0	STANLEY PARKER SUBSTATION 69 KV BUS
20S SPRJ69.0	SOUTH SPRINGFIELD JUNCTION 69 KV TAP POINT
20SALEMJ69.0	SALEM JUNCTION 69 KV TAP POINT
20SALOMJ 161	SALOMA SUBSTATION 161 KV TAP POINT
20SALT L46.0	SALT LICK SUBSTATION 46 KV BUS
20SANDGJ69.0	SAND GAP SUBSTATION 69 KV TAP POINT
20SANDLK69.0	SAND LICK SUBSTATION 69 KV BUS
20SCORBN69.0	SOUTH CORBIN SUBSTATION 69 KV BUS
20SEWLTJ69.0	SEWELLTON JUNCTION SUBSTATION 69 KV BUS
20SHEPVJ69.0	SHEPHERDSVILLE JUNCTION 69 KV TAP POINT
20SHEPVL69.0	SHEPHERDSVILLE SUBSTATION 69 KV BUS
20SHLBC269.0	SHELBY COUNTY CAPACITOR BANK #2 69 KV BUS
20SHLBYC 161	SHELBY COUNTY SUBSTATION 161 KV BUS

20SHLBYC69.0	SHELBY COUNTY SUBSTATION 69 KV BUS
20SHOPVL69.0	SHOPVILLE SUBSTATION 69 KV BUS
20SIDEV 69.0	SIDEVIEW SUBSTATION 69 KV BUS
20SINAI 69.0	SINAI SUBSTATION 69 KV BUS
20SJESSJ69.0	SOUTH JESSAMINE JUNCTION 69 KV TAP POINT
20SKAGGS 138	SKAGGS SUBSTATION 138 KV BUS
20SKAGGS69.0	SKAGGS SUBSTATION 69 KV BUS
20SLAT 69.0	SLAT SUBSTATION 69 KV BUS
20SMTHVJ69.0	SMITHERSVILLE JUNCTION 69 KV TAP POINT
20SNOW 69.0	SNOW SUBSTATION 69 KV BUS
20SNOWJ 69.0	SNOW JUNCTION 69 KV TAP POINT
20SOMERS69.0	SOMERSET SUBSTATION 69 KV BUS
20SOMRKU69.0	SOMERSET SUBSTATION 69 KV BUS NODE--KU TIES
20SPLK1 22.0	SPURLOCK STATION UNIT 1 22 KV BUS
20SPLK2 22.0	SPURLOCK STATION UNIT 2 22 KV BUS
20SPLK4 18.0	SPURLOCK STATION UNIT 4 18 KV BUS
20SPRKJ169.0	STANLEY PARKER JUNCTION #1 69 KV NODE
20SPRKJ269.0	STANLEY PARKER JUNCTION #2 69 KV NODE
20SPURLK 138	SPURLOCK SUBSTATION 138 KV BUS
20SPURLK 345	SPURLOCK SUBSTATION 345 KV BUS
20SS-61569.0	SOMERSET SOUTH EKPC-KU 69 KV N.O. TIE POINT
20SSHADE 161	SUMMERSHADE SUBSTATION 161 KV BUS
20SSHADE69.0	SUMMERSHADE SUBSTATION 69 KV BUS
20SSHADT 161	SUMMERSHADE TAP 161 KV NODE
20SSPJTH69.0	SUMMERSHADE-PATTON ROAD JUNCTION-TEMPLE HILL 69 KV
20STANTN69.0	STANTON SUBSTATION 69 KV BUS
20STEPHN69.0	STEPHENSBURG SUBSTATION 69 KV BUS
20SUBLET69.0	SUBLETT SUBSTATION 69 KV BUS
20SUBLTJ69.0	SUBLETT JUNCTION 69 KV NODE
20SULPHR69.0	SULPHUR CREEK SUBSTATION 69 KV BUS
20SUMMRV69.0	SUMMERSVILLE SUBSTATION 69 KV BUS
20TAYCTP 161	TAYLOR CO KU SUBSTATION 161 KV TAP POINT
20TAYLOR 161	TAYLOR COUNTY JUNCTION 161 KV TAP POINT
20TFJ 138	THREE FORKS JUNCTION 138 KV TAP POINT
20TGOOCH69.0	TOMMY GOOCH SUBSTATION 69 KV BUS
20THARP 69.0	THARP SUBSTATION 69 KV BUS
20THELMA69.0	THELMA SUBSTATION 69 KV BUS
20THLNKJ69.0	THREE LINKS JUNCTION SWITCHING SUBSTATION 69 KV
20THLNKS69.0	THREE LINKS SUBSTATION 69 KV BUS
20TMPLHL69.0	TEMPLE HILL SUBSTATION 69 KV BUS
20TRAPP 69.0	TRAPP SUBSTATION 69 KV BUS
20TRKYFJ69.0	TURKEY FOOT JUNCTION 69 KV TAP POINT
20TUNHIL69.0	TUNNEL HILL SUBSTATION 69 KV BUS
20TUNHLJ69.0	TUNNEL HILL JUNCTION 69 KV TAP POINT
20TYNER 161	TYNER SUBSTATION 161 KV BUS
20TYNER 345	TYNER SUBSTATION 345 KV BUS
20TYNER 69.0	TYNER SUBSTATION 69 KV BUS
20UN CTY 138	UNION CITY SUBSTATION 138 KV BUS
20UPTONJ69.0	UPTON JUNCTION 69 KV TAP POINT
20VANARS69.0	VAN ARSDELL SUBSTATION 69 KV BUS
20VOLGA 69.0	VOLGA SUBSTATION 69 KV BUS
20W BARD69.0	WEST BARDSTOWN SUBSTATION 69 KV BUS
20W LIB 69.0	WEST LIBERTY SUBSTATION 69 KV BUS
20W LOND69.0	WEST LONDON SUBSTATION 69 KV BUS
20W NCVJ69.0	WEST NICHOLASVILLE JUNCTION 69 KV TAP POINT
20W SOMR69.0	WEST SOMERSET SUBSTATION 69 KV BUS

20WALNGR69.0	WALNUT GROVE SUBSTATION 69 KV BUS
20WARNCK69.0	WARNOCK SUBSTATION 69 KV BUS
20WAYNE 69.0	WAYNE COUNTY SUBSTATION 69 KV BUS
20WAYNEJ69.0	WAYNE COUNTY JUNCTION 69 KV NODE
20WBARDJ69.0	WEST BARDSTOWN SWITCHING SUBSTATION 69 KV
20WBER J69.0	WEST BEREA JUNCTION 69 KV NODE
20WBEREA 138	WEST BEREA SUBSTATION 138 KV BUS
20WBEREA69.0	WEST BEREA SUBSTATION 69 KV BUS
20WCOLMB69.0	WEST COLUMBIA SUBSTATION 69 KV BUS
20WCOLMJ69.0	WEST COLUMBIA JUNCTION 69 KV TAP POINT
20WHITLY69.0	WHITLEY CITY SUBSTATION 69 KV BUS
20WIBORJ69.0	WIBORG SUBSTATION 69 KV TAP POINT
20WINDSR69.0	WINDSOR SUBSTATION 69 KV BUS
20WLMSTN69.0	WILLIAMSTOWN SUBSTATION 69 KV BUS
20WMSMTH69.0	WM SMITH SUBSTATION 69 KV BUS
20WOODLN69.0	WOODLAWN SUBSTATION 69 KV
20WOOSLY69.0	WOOSLEY SUBSTATION 69 KV BUS
20WYOMNG69.0	WYOMING SUBSTATION 69 KV BUS
20ZACHAR69.0	ZACHARIAH SUBSTATION 69 KV BUS
20ZILLCJ69.0	ZOLLICOFER JUNCTION 69 KV TAP POINT
20ZULAJ269.0	ZULA JUNCTION #2 69 KV NODE
21WHEATL 345	Enron Wheatland (CIN) High Side 345kV
21WHTLD313.8	Enron Wheatland (CIN) Combustion Turbine #3
21WHTLD413.8	Enron Wheatland (CIN) Combustion Turbine #4
22WHEATL 345	Enron Wheatland (IPL) High Side 345kV
22WHTLD113.8	Enron Wheatland (IPL) Combustion Turbine #1
22WHTLD213.8	Enron Wheatland (IPL) Combustion Turbine #2
23VERM 113.8	Vermillion 1 13.8kV
23VERM 213.8	Vermillion 2 13.8kV
23VERM 313.8	Vermillion 3 13.8kV
23VERM 413.8	Vermillion 4 13.8kV
23VERM M 345	Vermillion M 345kV
23VERML113.8	Vermillion Gen 1 13.8kV
23VERML213.8	Vermillion Gen 2 13.8kV
23VERML313.8	Vermillion Gen 3 13.8kV
23VERML413.8	Vermillion Gen 4 13.8kV
23VERML513.8	Vermillion Gen 5 13.8kV
23VERML613.8	Vermillion Gen 6 13.8kV
23VERML713.8	Vermillion Gen 7 13.8kV
23VERML813.8	Vermillion Gen 8 13.8kV
24BEVERL 345	Beverly
25BUCHAN 138	Buchanan
26FOOTHL 345	Foothills
26ZELDA 345	Zelda
27CORNU 765	Cornu
DUMM 138	DUMMY BUS FOR PTI USE ONLY
JEWEL1 230	Jewel1
RA TAP 138	Reactive Metals Tap 138kV
S8-AT-T 345	Ashtabula No. 8 TR 345/138 kV
SP138-Q2 138	Spruce Q2 138kV bus
SP138-Q4 138	Spruce Q4 138kV bus
SPKNE 230	Spokane230

EAST KENTUCKY POWER COOPERATIVE, INC.

PSC CASE NO. 2005-00207

INFORMATION REQUEST RESPONSE

COMMISSION'S FIRST DATA REQUEST DATED 8/18/05

ITEM 22

RESPONSIBLE PARTY: MARY JANE WARNER

REQUEST: Refer to the ICF report at page 12. The report mentions that East Kentucky Power has operating procedures that reduce but do not entirely eliminate potential contingency overloads to lines, such as the Salmons / K30 69 kV line. Provide a discussion of how East Kentucky Power will handle those lines and/or other equipment identified in its power flow, short circuit or transient stability studies that are subject to contingency overload conditions.

RESPONSE: As indicated in the Response to Item #16 of this Data Request, EKPC has requested CAI to update the power flow studies with all of EKPC's refinements to its proposed Plan. EKPC and CAI have reviewed the results of these studies. See Exhibit 16-2 for a discussion of the overloads that show up in CAI's latest study. With the exception of one line (Etown-Kargle 69 kV) all overloaded facilities identified in CAI's latest power flow analysis are either pre-existing issues or have been addressed by an increase in ratings. The Etown-Kargle 69 kV line overload will be addressed by a separate ongoing EKPC study.

No potential problems were identified in the short-circuit or transient-stability analyses.

EAST KENTUCKY POWER COOPERATIVE, INC.

PSC CASE NO. 2005-00207

INFORMATION REQUEST RESPONSE

COMMISSION'S FIRST DATA REQUEST DATED 8/18/05

ITEM 23

RESPONSIBLE PARTY: MARY JANE WARNER

REQUEST: Refer to the ICF report at page 13. The report states that East Kentucky Power's studies indicated that there could be some transmission element overloads on Cinergy's, Hoosiers Energy's, and TVA's transmission systems as a direct result of its proposed plan. Provide a discussion of any actions that East Kentucky Power has undertaken to inform the affected companies of the potential problems and of any actions that East Kentucky Power will undertake to alleviate these potential problems.

RESPONSE: EKPC disagrees that EKPC/CAI's studies indicate that there could be some transmission overloads on the Cinergy, Hoosier Energy, or TVA systems as a direct result of the proposed Plan. The 1st Addendum Study performed by CAI did show some overloads in these systems with EKPC's proposed Plan. These are facilities that were not identified and addressed in CAI's original January 27, 2005 report, because CAI expanded the monitored area for the 1st Addendum study. Furthermore, this Addendum did not provide results without EKPC's proposed Plan. After reviewing the facilities in question, we conclude that these are pre-existing overloads that are not caused by the EKPC proposed Plan and therefore need not be addressed by EKPC.

EAST KENTUCKY POWER COOPERATIVE, INC.

PSC CASE NO. 2005-00207

INFORMATION REQUEST RESPONSE

COMMISSION'S FIRST DATA REQUEST DATED 8/18/05

ITEM 24

RESPONSIBLE PARTY: DAVID EAMES

REQUEST: Refer to the ICF report at page 21. The report mentions that East Kentucky Power's reserve margin for each of its winter peak demand periods from 2008 to 2010 is below 5 percent. Provide a discussion of East Kentucky Power's plans for addressing a reserve margin of this magnitude.

RESPONSE: East Kentucky Power Cooperative designs its system to meet summer peak plus reserves. The summer reserve margin is typically in the range of 12% to 18%. For winter peak, EKPC buys supplemental power and options from the market to increase its reserves to approximately 12%.

EAST KENTUCKY POWER COOPERATIVE, INC.

PSC CASE NO. 2005-00207

INFORMATION REQUEST RESPONSE

COMMISSION'S FIRST DATA REQUEST DATED 8/18/05

ITEM 25

RESPONSIBLE PARTY:

REQUEST: Provide a copy of the "EPRI-GTC Project Report: Standardized Methodology for Siting Overhead Electric Transmission Lines."

RESPONSE: The requested report is attached as **Exhibit 25-1**.

EPRI – GTC Project Report

Standardized Methodology for Siting Overhead Electric Transmission Lines

CHAPTER 1: INTRODUCTION

This technical report documents Georgia Transmission Corporation's (GTC) methodology for siting overhead electric transmission lines. From the initial project scope provided by GTC's Electric Systems Planning to the determination of a Preferred Route, this methodology was developed to improve GTC siting process including data collection, analysis, identification of the project study area and selection of Preferred Routes for overhead electric transmission lines. As a result of this improved methodology, current Geographic Information System (GIS) technology and statistical evaluation methods were integrated into the siting process to create a powerful analytical tool.

This report is organized in six chapters. Chapter 2 provides a detailed description of the Siting Methodology and the GIS Siting Model. Chapter 3 presents a Siting Case Study using the GIS Siting Model. Chapter 4 describes the project timeline. Chapter 5 presents Future Initiatives and the Conclusions are discussed in Chapter 6.

Need for the Project

In the United States, increasing population and continued growth in demand for electricity require the construction of thousands of miles of new overhead electric transmission lines in the next decade. However, routing these lines has become increasingly difficult as environmental regulations have become more stringent and advocacy groups with divergent priorities have become more active. Electric utilities have been criticized for leaving consumers out of the decision-making process and for relying on the power of eminent domain as a means of land acquisition.

To address these issues, the Electric Power Research Institute (EPRI) and Georgia Transmission Corporation initiated a project in 2002 to improve GTC's current Overhead Electric Transmission Line Siting Methodology. To ensure that all aspects of the siting methodology were addressed in a systematic, impartial manner, a team of internal staff and external consultants was formed. This project team consisted of GIS consultants from the academic community and the private sector, NEPA compliance and legal experts, and staff from GTC and other electric utility companies' environmental, engineering, and land acquisition departments. (See Appendix A: EPRI-GTC Overhead Electric Transmission Line Siting Methodology Project Team)

The objective of this project was to develop an Overhead Electric Transmission Line Siting Methodology that is comprehensive, consistent and defensible. As described in this report, this process enables GTC to standardize and improve each level of its siting methodology. By using GIS technology, the new methodology combines information that is important in reviewing, analyzing and documenting alternative locations for overhead electric transmission lines.

GTC will use the decision and selection criteria developed and tested during this project to carefully and consistently examine all phases of the Overhead Electric Transmission Line Siting Methodology. Using this methodology gives GTC a process that is scientifically rigorous, peer reviewed and tested on multiple overhead electric transmission line projects. As a result, GTC is better prepared to explain, justify and defend its transmission line siting decisions to a broad range of stakeholders, including: legislative, regulatory, and other public and non-governmental entities.

In addition, this process standardizes GTC's core routing and siting business practice. It provides opportunities for GTC to evaluate a range of alternative routes that represent both corporate values and community concerns. Standardization fosters sound siting decisions by developing decision and selection criteria that are more objective and uniform. The values developed through internal and external stakeholder consensus building can then be applied to these rules. These criteria and values enable the effects of each alternative route to be examined and compared more consistently and objectively. In addition, standardization of the process provides consistency in data acquisition and use. This in turn, maintains a level of accuracy that helps officials identify, analyze and select routes that are more economically acceptable, by avoiding locations that are difficult to permit or mitigate. Thus, under the GTC methodology, the preferred alternative route produced by this process is more defensible because it is based on a rationale that links decisions to consequences.

A frequent criticism of electric utilities is that their siting processes fail to engage the perspectives of diverse communities at a point in the process where public input makes a meaningful difference. In response to this criticism, the project team identified external stakeholder participation as a critical factor in designing the methodology. GTC held five stakeholder meetings to explain the project and to solicit and documents views and values. More than 400 individuals from federal and state agencies, elected officials, citizens' groups, natural resource and land conservation organizations, as well as other electric utility companies were invited to participate in the various workshops for identifying, calibrating, and weighting the route criteria.

Overview of the Siting Methodology and the GIS Siting Model

The EPRI-GTC Overhead Electric Transmission Line Siting Methodology is based on land suitability analysis techniques that were developed by Ian McHarg in the early 1970's. This methodology combines data layers into a comprehensive surface that identifies areas of opportunity and constraint. The McHarg process is the preferred methodology for siting a variety of facilities, including: shopping centers, subdivisions, and linear utility corridors. However, contemporary applications extend the procedures by employing new technologies such as GIS, visual simulation, and Global Positioning Systems (GPS).

The basis of the Overhead Electric Transmission Line Siting Methodology is the application of analytic methods for comparing various decision-making criteria. It relies on GIS technology to provide a modeling environment for structuring all the factors. Because of its power and flexibility, a GIS Siting Model provides the tools and techniques for managing all of the necessary data, producing Macro and Alternative Corridors, generating statistics on Alternatives Routes, and creating graphics depicting each scenario. Within this model, siting features are ranked and data layers are weighted using the Delphi Process and the Analytical Hierarchy Process (AHP) respectively. (See Appendix B: Glossary of Technical Terms)

Because the methodology is implemented using GIS, it must be explicit about what data are to be considered and how the data will be combined. The structured nature of the methodology helps ensure that it will be consistently applied across projects, locations, and by different siting teams. To be successful and defensible, it is important that all information and assumptions used in choosing a Preferred Route and avoiding less suitable alternatives are available and that the decision is well documented and reproducible. (See Appendix C: Geographic Information Systems Metadata)

A number of factors influence the suitability of a particular location for siting an overhead electric transmission line, including housing density, wetlands and land cover. The project team began by identifying a comprehensive list of factors to be considered in siting overhead electric transmission lines. These factors were reviewed, evaluated, modified and weighted by two groups of stakeholders. External stakeholders included representatives from neighborhood groups, natural resource and land conservation organizations,, and regulatory agencies. A second group of stakeholders was comprised of transmission line routing professionals from Georgia Transmission Corporation, Georgia Power Company (GPC) and MEAG that form the Georgia Integrated Transmission System (ITS). A set of values and weights for the GIS database features and layers was developed during two-day workshops with each stakeholder group.

CHAPTER 2: SITING METHODOLOGY PHASES

The project team identified several major issues in GTC's current siting methodology. These issues included impacts to existing and proposed development, cultural resources, and sensitive biotic resources. To address these issues, the project team identified three important phases in an Overhead Electric Transmission Line Siting Methodology. These phases are

- Phase 1-Macro Corridor Generation
- Phase 2-Alternative Corridor Generation
- Phase 3-Alternative Route Analysis and Evaluation

During Phase 1 land cover data derived from satellite imagery, consisting of 30-meter grid cells, and existing statewide databases i.e. roads, slope, and existing overhead electric transmission lines are used to generate Macro Corridors between two endpoints determined by Electric Systems Planning. Because the Macro Corridors parallel or collocate along existing linear facilities or cross largely undeveloped areas, they are expected to include the most suitable areas for locating Overhead Electric Transmission Lines. The outside limits of the Macro Corridors become the boundaries of the project study area.

In Phase 2 Alternative Corridors are developed within the Macro Corridors. During this phase one-foot aerial photography is acquired and digital orthophotography is produced. More detailed digital data is collected, i.e. wetlands, floodplains and land use/land cover, and entered into the GIS database. This more detailed data is used to identify four distinct types of alternative corridors based on feedback from stakeholder input.

In Phase 3 the siting team identifies a set of Alternative Routes within the Alternative Corridors. Each route is then scored using a standard set of evaluation criteria and compared. The preferred route is selected on the basis of this comparison. As the project progresses from Macro Corridor generation to Alternative Route analysis and evaluation, the methodology uses more detailed data to refine the route selection.

PHASE 1: MACRO CORRIDOR GENERATION

After reviewing GTC's existing study area delineation practices, the project team developed a new technique for determining project boundaries. This technique, termed Macro Corridor Generation, departs from a more traditional siting process where boundaries of the project study area are determined by four major criteria:

1. The distance between termini i.e. generator-substation
2. The natural and man-made physical barriers i.e. major rivers or interstates
3. The administrative barriers i.e., military bases or wilderness areas
4. Budgets/schedules for data collection

Macro Corridor generation was chosen to replace this method of study area delineation because of costs and time constraints and a more detailed consideration of feasible routes. The availability of inexpensive and/or free off-the-shelf digital data and sophisticated GIS modeling eliminates unnecessary data collection and data processing.

Development of Macro Corridors is based on satellite imagery derived land cover products and other off-the-shelf digital data. The GIS Siting Model identifies corridors that minimize impacts to the built and the natural environment. In many cases, paralleling existing transmission lines or paralleling existing road rights-of-way can minimize impacts to these resources. The GIS Siting Model eliminates those areas where there is no viable option for building a transmission line. The Macro Corridors define the area where orthophotography and other detailed data collection and analysis will occur in Phase 2.

Macro Corridor Model Testing

The Macro Corridor Phase of the GIS Siting Model was calibrated by testing the Macro Corridor methodology on completed GTC overhead transmission line projects. Twelve projects were selected for the test because they were representative of the landscape characteristics within the State of Georgia. In addition the projects were chosen because they were sited on schedule, within budget, and with minimal impacts to the built and natural environment.

Using satellite imagery and other off the shelf data, suitability grids were generated for each completed project. The suitability grid generated for these tests covered 100 percent of the study area on each project. The boundaries of the Macro Corridors were determined by identifying the percentage of the suitability grid that consistently included all alternative routes that had been generated during the route selection process on the completed projects.

Superimposing the alternative routes from the test projects on the new suitability grid showed that all alternative routes fell with the first five percent of the numeric values of the suitability grid. The suitability grids on new projects will be reviewed in order to validate the numeric value essential to generating consistent Macro Corridor boundaries.

Macro Corridor Data Layers

Project Macro Corridor Generation uses existing digital data layers that allow for the quick identification of the project area. These existing datasets include land cover derived from Landsat satellite imagery, a Digital Elevation Model (DEM), existing roads from the Geographic Data Technologies (GDT) and overhead electric transmission lines from the Georgia Integrated Transmission System (ITS) dataset. The suitability of these features is ranked for cross-country, road parallel, and existing transmission line rebuild/parallel routes.

The source layer for the Macro Corridor GIS dataset is Landsat satellite imagery that was developed by NASA and is maintained by the United States Geological Survey (USGS). The USGS collects current imagery through a satellite system that orbits the earth, collecting electromagnetic energy reflected from the surface. The satellite repeats its data collection every 16-days. These data have a minimum ground resolution of 30 meters and a single image covers approximately 180km2. The scanner collects data from seven different bands of the electromagnetic spectrum including visible light and, infrared and thermal infrared reflectance. (See Figure 2.1: Raw Landsat Imagery) These raw data are typically classified into 15-30 land cover classes based on the Anderson Land Use/Land Cover Classification Level II. (See Figure 2.2:Anderson Level II Landsat Imagery Classification) Although this land cover data are much coarser in resolution than aerial photographs, it is fairly inexpensive to obtain and can be updated regularly at a relatively low cost. A number of national land cover datasets are widely available at no charge. However, it is important to note that there is a lag time between availability of national land cover products and the dates of the original imagery. It is important to assess whether the land cover data are timely. For Georgia the available datasets include a 1988 land cover may developed by the Georgia Department of Natural Resources, 1992 National Land Cover Dataset (NLCD) developed by the USGS, and a 1998 land cover map developed by USGS GAP Analysis Program. The 2001 NLCD is currently under development.

In addition, each state is being mapped as part of the National Gap Analysis Program (GAP). According to the GAP mission statement, the United States Geological Service (USGS) provides regional, state, and national assessments of the conservation status of native vertebrate species and natural land cover types of the United States. A number of states are beginning to generate their own versions of land use/land cover datasets for planning and monitoring. In Georgia the land use/land cover dataset was developed by the Georgia GAP Program from 1998 Landsat imagery and the Georgia Land Use Trends Project (GLUT) which tracks and analyzes changes in Georgia's land use over the past 25 years. It uses an Anderson Land Use/Land Cover Level II Classification that includes 18 classes. These data are available for a minimal cost from the Georgia GIS Clearinghouse. (See Figure 2.3: Land Use/Land Cover Dataset) The Clearinghouse provides access to GIS resources of Georgia for use by government, academia, and the private sector.

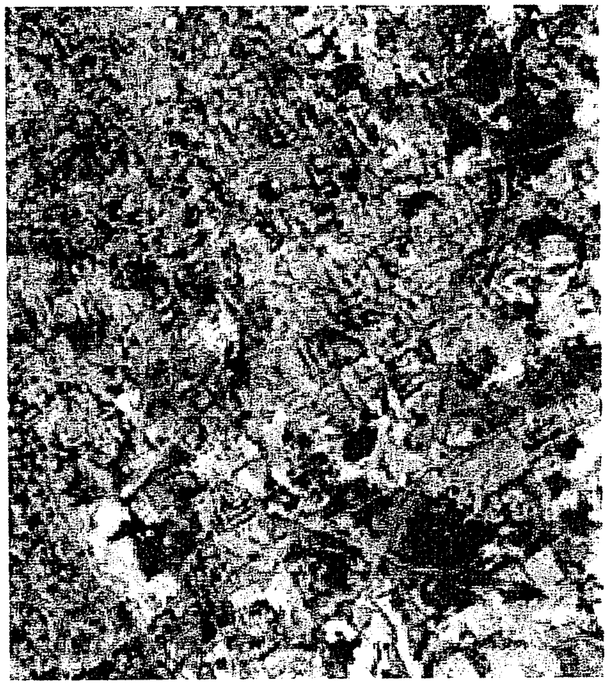


Figure 2.1
Phase 1: Macro Corridor Generation
Raw Landsat Imagery

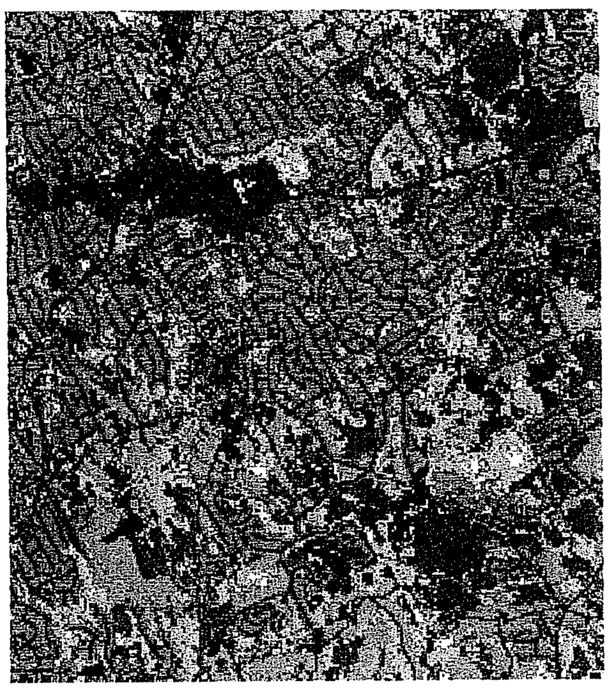


Figure 2.2
Phase 1: Macro Corridor Generation
Anderson Level II Landsat Imagery Classification

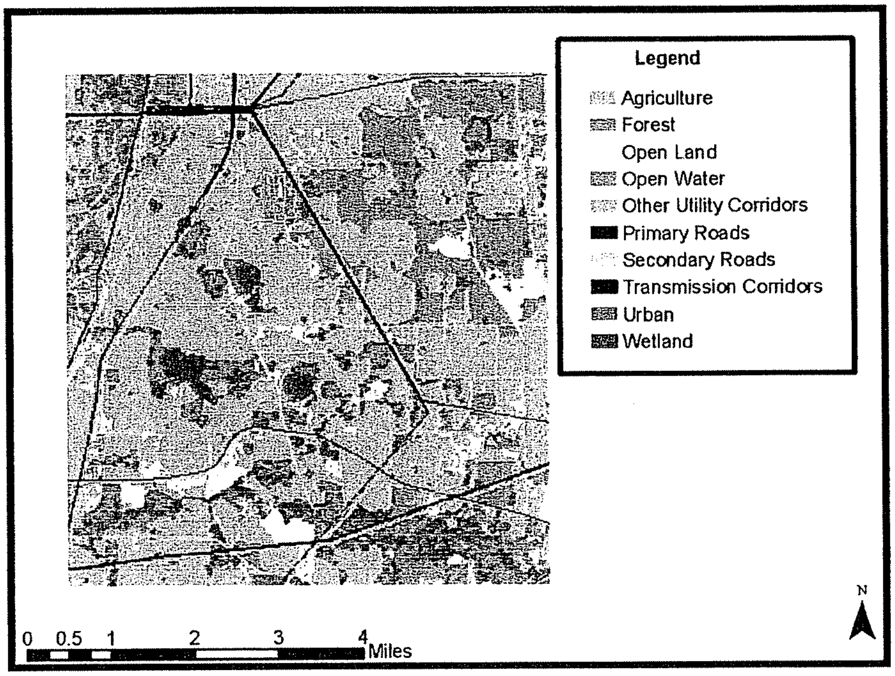


Figure 2.3
Phase 1: Macro Corridor Generation
Land Use/Land Cover Dataset

In addition to these digital datasets, the project team identified areas that were significant barriers to constructing an overhead electric transmission lines and should be avoided during transmission line siting. These "Avoidance Areas" include locations where routes are prohibited either by physical barriers, administrative regulations, or where there would be significant permitting delays. These areas include National Register of Historic Places (NRHP), historic or archeological districts, airports, EPA Superfund sites, military bases, National and State Parks, non-spannable water bodies, United States Forest Service (USFS) Wilderness Areas, National Wildlife Refuges (NWR), mines and quarries, Wild and Scenic Rivers, and Sites of Ritual Importance. Data for most of these Avoidance Areas are currently available in a GIS format.

Macro Corridor Avoidance Areas
The first step in the Macro Corridor development process is to remove all the Avoidance Areas from the Macro Corridor database. Eliminating these Avoidance Areas prohibits the proposed Macro Corridor from crossing places identified by internal and external stakeholders as requiring maximum protection.

Macro Corridor Scenarios and Weights
To locate the Macro Corridors in the most suitable areas, the project team identified three Macro Corridor GIS Siting Model scenarios:

1. Rebuilding or paralleling existing transmission lines,
2. Paralleling existing road rights-of-way, and,
3. Crossing undeveloped land (cross-country)

Next, a weighting system was designed to identify areas where overhead electric transmission line development is most or least suitable. A suitability value is assigned to each GIS feature in the Macro Corridor GIS database. The assigned values range from 1 – 9 reflecting the suitability of each grid cell. A value of 1 identifies an area of greatest suitability and 9 an area of least suitability. A feature is suitable if a transmission corridor through it is feasible with little impact, for example, open land. A feature is considered unsuitable if a transmission line going through it would have some adverse consequences, such as steep terrain or densely populated areas. Numbers between 1 and 9 are used to represent intermediate degrees of suitability.

Description of Suitability Values

Areas that have High Suitability for an Overhead Electric Transmission Line (1, 2, 3) - These are areas that do not contain known sensitive resources or physical constraints, and therefore should be considered as suitable areas for the development of Macro Corridors. Examples might include open land, pasture, or rebuilding an existing transmission line.

Moderate Suitability for an Overhead Electric Transmission Line (4, 5, 6) - These are areas that contain resources or land uses that are moderately sensitive to disturbance or that present a moderate physical constraint to overhead electric transmission line construction and operation. Resource conflicts or physical constraints in these areas can generally be reduced or avoided using standard mitigation measures. Examples might include primary road crossings.

Low Suitability for an Overhead Electric Transmission Line (7, 8, 9) - These are areas that contain resources or land uses that present a potential for significant impacts that cannot be readily mitigated. Locating a transmission line in these areas would require careful siting or special design measures. Examples might include wetlands or dense urban areas. Note that these areas can be crossed but it is not desirable to do so if other alternatives are available.

LAND COVER CLASSIFICATION	SOURCE	X-COUNTRY	ROADS	T/Ls
Open Water	LANDSAT	7	7	7
Secondary Roads	LANDSAT	5	1	5
Other Utility Corridors	LANDSAT	5	5	5
Urban	LANDSAT	9	9	9
Open Land	LANDSAT	1	2	2
Surface Mining/ Rock Outcrop	LANDSAT	9	9	9
Forest	LANDSAT	1	2	2
Agriculture	LANDSAT	1	2	2
Wetland	LANDSAT	9	9	9
Transmission Corridors	ITS*	5	5	1
Primary Roads	GDT**	5	1	5
Interstate	GDT	9	9	9
Slopes > 30 degrees	USGS	9	9	9
Avoidance Features				
Airports	GDT			
Military Facilities	GDT			
NRHP Listed Historic Structures	NPS			
NRHP Listed Historic Districts	NPS			
NRHP Listed Archaeology Sites	NPS			
NRHP Listed Archaeology District	NPS			
State and National Park Interiors	NPS			
Non-spannable Water Bodies	USGS			
Wildlife Refuges	GA DNR			
USFS Wilderness Areas	GA DNR			
EPA Superfund Site	EPA			
Mines and Quarries	LANDSAT			
* Georgia Integrated Transmission System				

Table 2.1
Phase 1: Macro Corridor Generation
Macro Corridor GIS Database Values

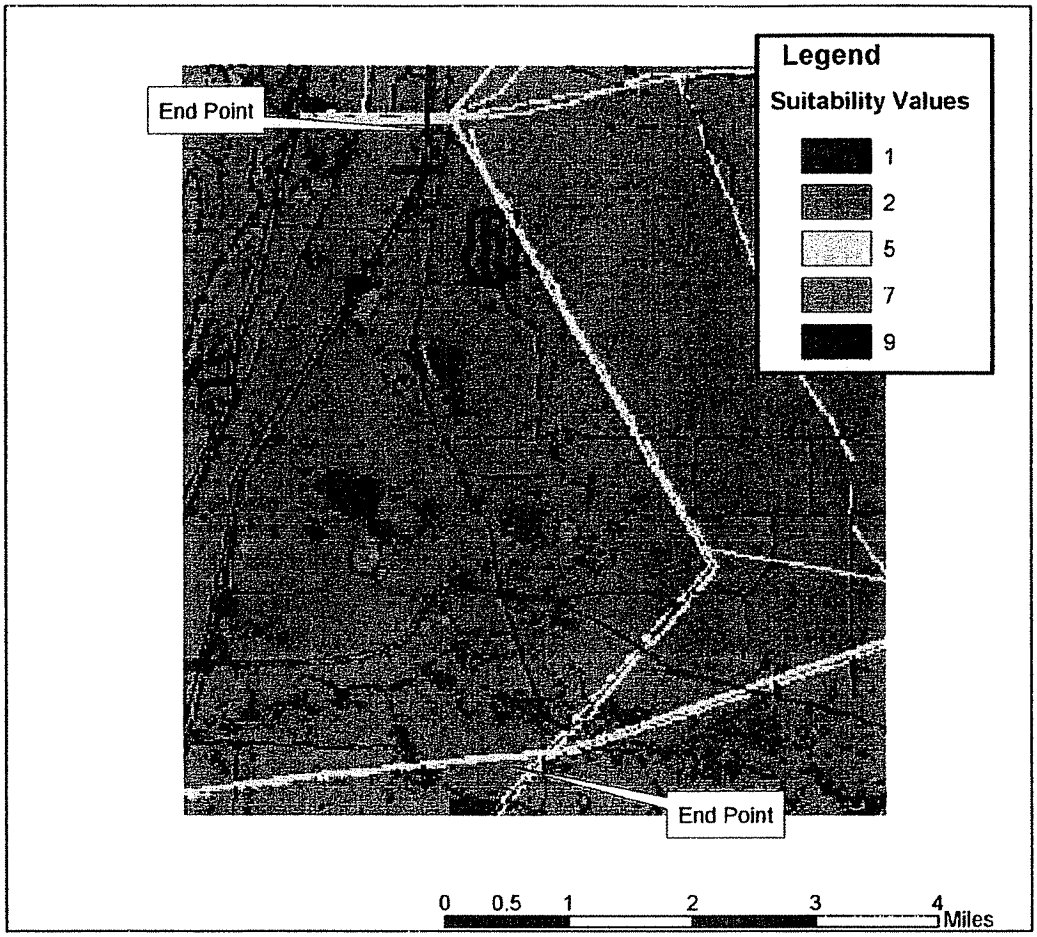


Figure 2.4
Phase 1: Macro Corridor Generation
Composite Suitability Surface

Macro Corridor Composite Suitability Surface

Once all the data for the project area are collected, entered into the Macro Corridor GIS database, and numeric values assigned to each feature, a composite suitability surface is created for the entire study area. The purpose of the composite suitability surface is to provide an overview of the study area. Each grid cell in the composite suitability surface is assigned the ranking associated with its underlying land cover type (See Figure 2.4: Composite Suitability Surface). A separate suitability surface is developed for each of the three types of routes:

1. Rebuilding or paralleling existing transmission lines
2. Paralleling existing road rights-of-way
3. Crossing undeveloped land (cross-country)

The Macro Corridor GIS Siting Model uses a "Least Cost Path" (LCP) algorithm to work its way across each of the three composite suitability surfaces. Figure 2.5, the Least Cost Path Calculation Diagram illustrates the operation of the LCP algorithm. If the transmission line must go from Point A to Point B, the LCP algorithm will find the path across the accumulated surface (represented by suitability values in the grid cells) that minimizes the sum of the values along that route. Any other path will result in a larger suitability sum and therefore be less optimal. For example, the "optimal" route indicated in green has a suitability sum of 21 (3+1+6+1+7+3) compared to a sum of 35 (3+8+20+1+3) for the most direct route. The lower sum indicates higher overall suitability of the green route. (See Appendix D: GIS Siting Model Techniques)

The sum of the LCP calculation is a function of the number of cells crossed (distance) and the values in the individual cells. The path will turn to avoid less preferred or Avoidance Areas (high "cost" cells), but still follow the most direct path possible. Note that, if all the cells have the same score, the resulting path between the two points would be a straight line.

Start Point

4	5	7	6	
14	20	10		2
8	4	20		9
6	8		12	10
		8	2	4

End Point

Figure 2.5
Phase 1: Macro Corridor Generation
Least Cost Path Calculation Diagram

Numeric Analysis and "Least Cost Path" Areas
Numeric analysis assigns a suitability value from 1-9 to each of the Features in the Macro Corridor GIS database. These values are assigned to each of three composite suitability surfaces based on subsets of the criteria layers: rebuilding or paralleling existing transmission lines, paralleling existing road rights-of-ways, and crossing undeveloped lands. Then, GTC's GIS siting software, Corridor Analyst™ uses standard routing algorithms to identify the areas of "avoidance and opportunities" on each of the three composite suitability surfaces. The software begins at the designated starting point and adds one grid cell at a time by adding an adjacent cell with the lowest suitability score until it reaches the endpoint.

Generating Macro Corridors from the Composite Suitability Surface
After the three Composite Suitability Surfaces are generated, a histogram is developed for each surface. This histogram shows the cumulative value of each of the grid cells within the project

study area. It is used to identify the most suitable areas for each of the three Macro Corridors scenarios: rebuilding or paralleling existing transmission lines, paralleling existing road rights-of-ways, and, crossing undeveloped lands (cross-country). (See Figures 2.6: Existing Transmission Line Macro Corridor, Figure 2.8: Roadside Macro Corridor, and Figure 2.10: Cross Country Macro Corridor) In each scenario, the Macro Corridor boundary is determined by the first statistical break in its histogram. A statistical break occurs when the grid cell value, as shown on the X-axis of the histogram, abruptly decreases.

To validate this method, Macro Corridor boundaries were tested on 12 projects and the statistical break occurred within the first 1 and 5 percent of the grid cell value. In Figures 2.7: Existing Transmission Line Macro Corridor Histogram, Figure 2.9: Roadside Macro Corridor Histogram, and Figure 2.11: Cross Country Macro Corridor Histogram, the X-axis represents "grid cell values" and the Y-axis represents the "number of grid cells" These figures show that a statistical break occurs after two percent on the X-axis, the grid cells values. This two percent area is the area of greatest suitability for Macro Corridor Generation. The variable-width Macro Corridors may have a width of as much as a mile or greater for segments that have substantial length through areas of high suitability, while still allowing enough width in the low suitability areas for the right-of-way requirements of the project.

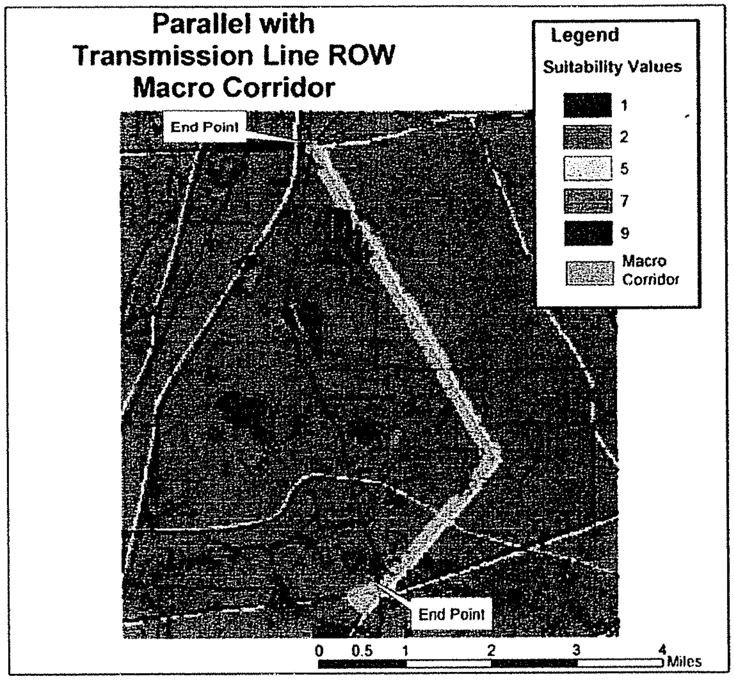


Figure 2.6
Phase 1: Macro Corridor Generation
Existing Transmission Line Macro Corridor

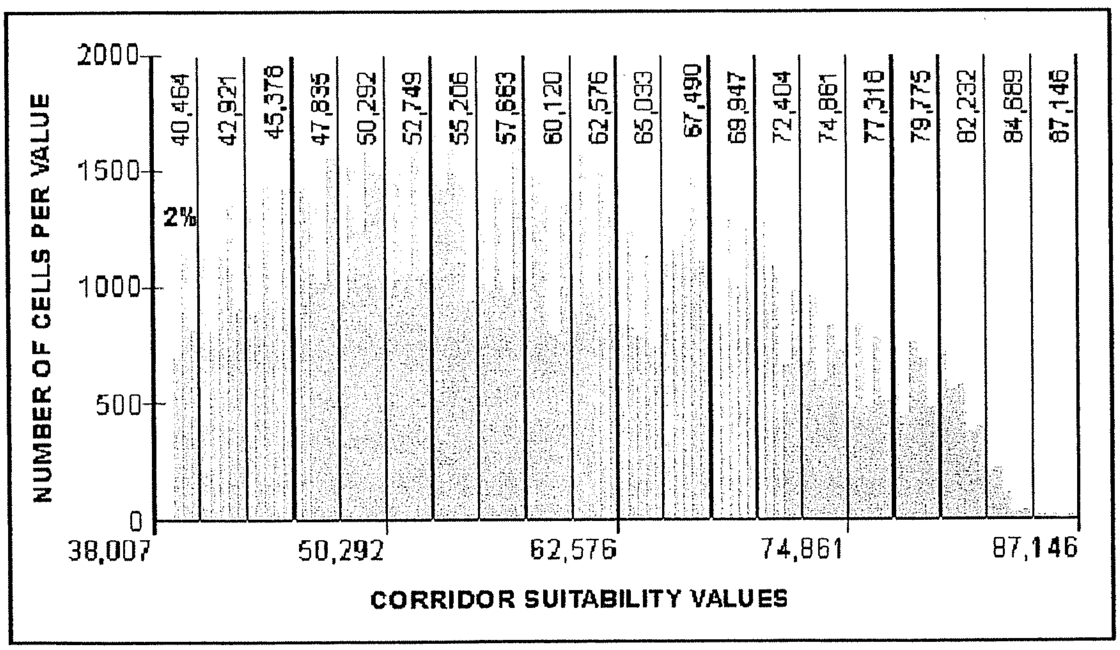


Figure 2.7
Phase 1: Macro Corridor Generation
Existing Transmission Line Macro Corridor Histogram

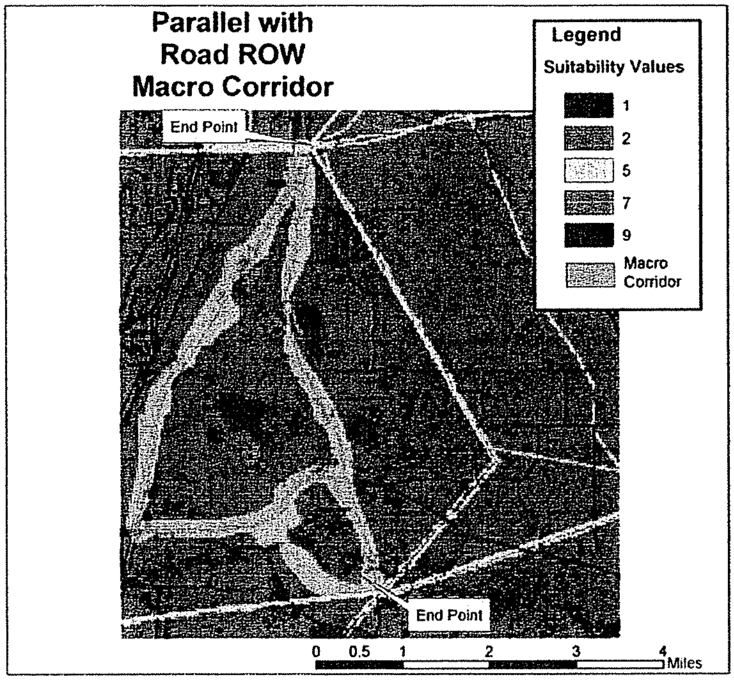


Figure 2.8
Phase 1: Macro Corridor Generation
Roadside Macro Corridor

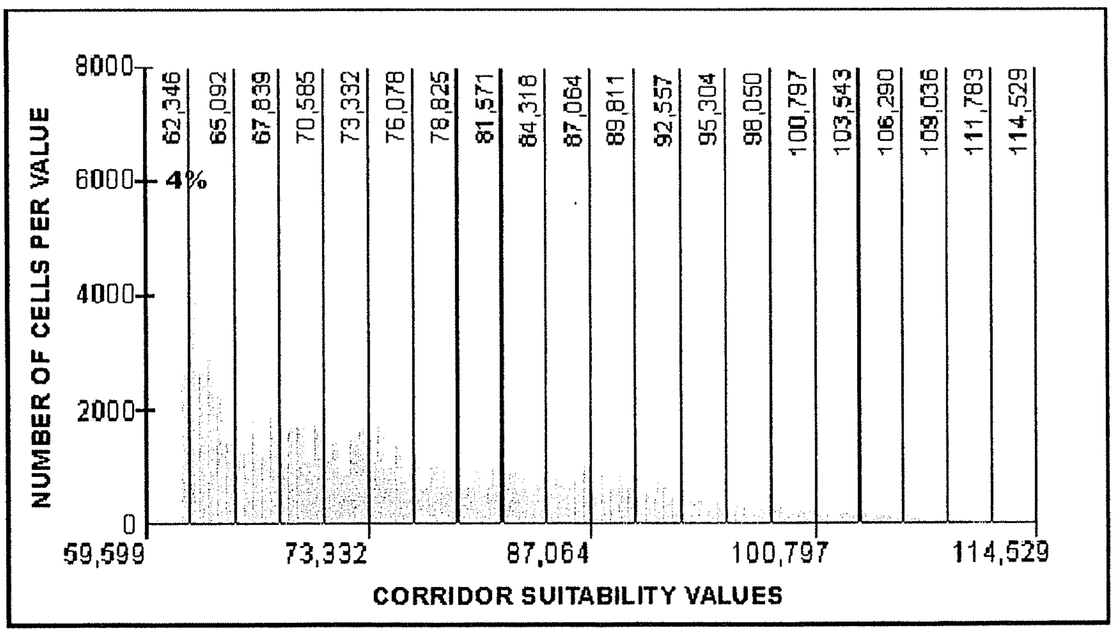


Figure 2.9
Phase 1: Macro Corridor Generation
Roadside Macro Corridor Histogram

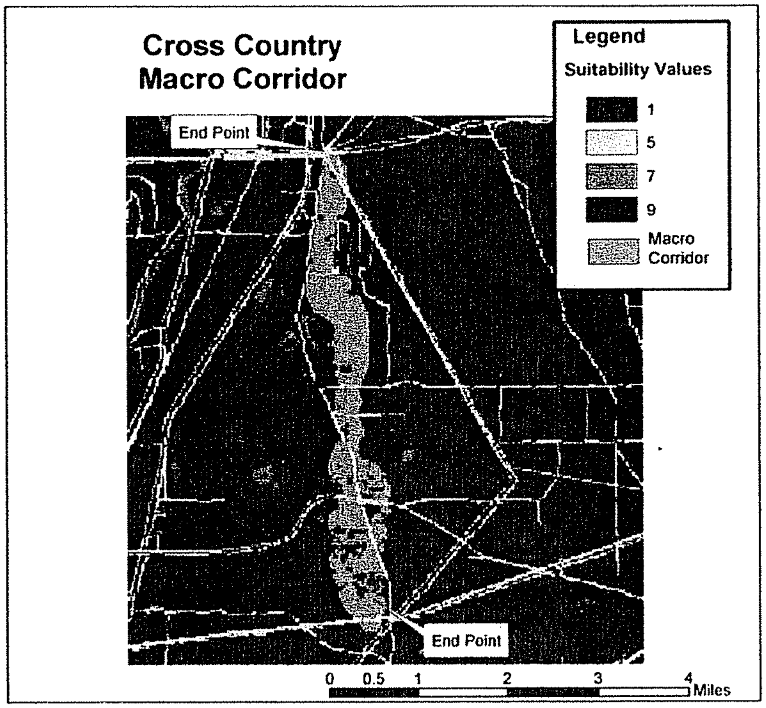


Figure 2.10
Phase 1: Macro Corridor Generation
Cross Country Macro Corridor

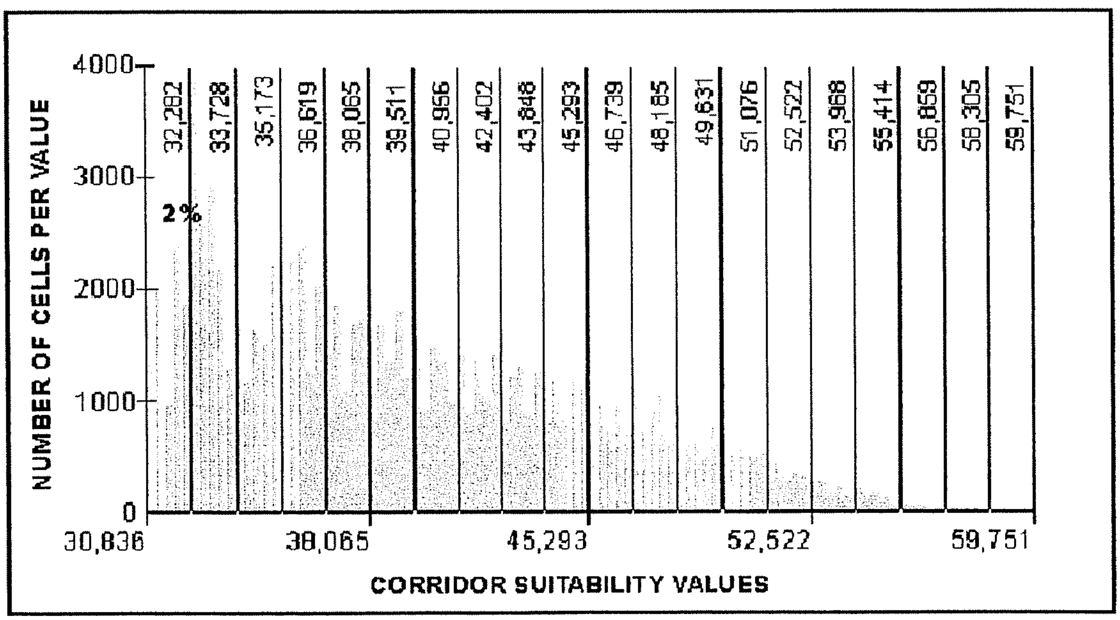


Figure 2.11
Phase 1: Macro Corridor Generation
Cross-Country Macro Corridor Histogram

Macro Corridor Composite

After the most suitable area of each Macro Corridor is identified, the three corridors are merged into one final Macro Corridor Composite Suitability Surface (See Figure 2.12 – Final Macro Corridor Composite Suitability Surface).

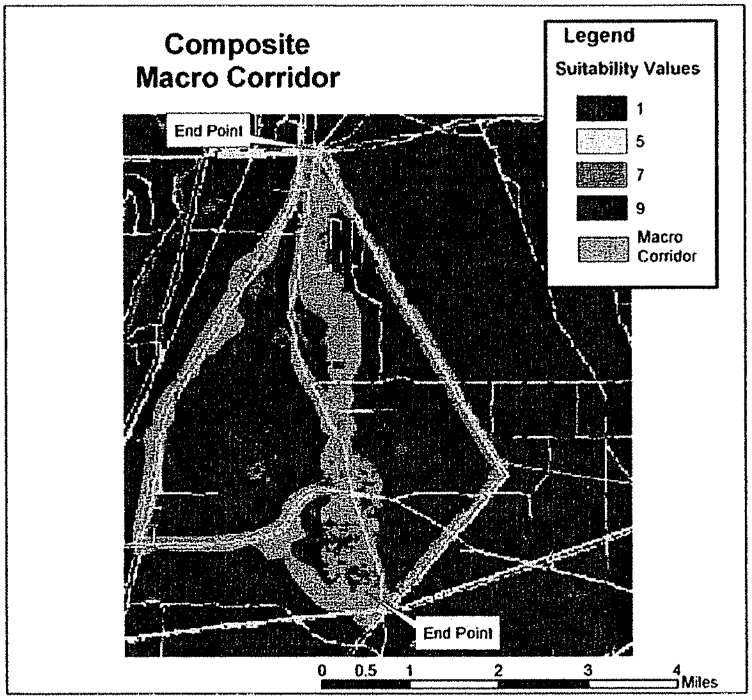


Figure 2.12
Phase 1: Macro Corridor Generation
Final Macro Corridor Composite Suitability Surface
Combined Parallel Existing Transmission Lines Macro Corridor, Parallel Roadside Macro Corridor, and Cross Country Macro Corridor

PHASE 2: ALTERNATIVE CORRIDOR GENERATION

In Phase 1, the outer limits of the Macro Corridors Composite Suitability Surface were used to define the project study boundaries and to generate a final Macro Corridor Composite Surface. During Phase 2 four Alternative Corridors were generated within the Macro Corridor boundaries. With input from stakeholders, the project team decided to standardize the alternatives for transmission line corridor selection by

- Protecting people places and cultural resources (Built Environment Perspective)
- Protecting water resources, plants and animals (Natural Environment Perspective)
- Minimizing costs and schedule delays (Engineering Requirements Perspective)
- A composite of the Built, Natural and Engineering alternatives (Simple Combined Perspective)

Alternative Corridor Data Collection

Following Macro Corridor Generation, additional data are collected to produce Alternative Corridors within the Macro Corridors. The data are collected and/or derived from several sources. Some data layers are gathered from existing ("off-the-self") data warehouses, while others are created specifically for each project based on aerial photo interpretation. For example, roads, interstates, and railways are purchased from a data provider who ensures updates of these features every year. Some datasets are created and maintained by GTC or by the ITS. However, just as in the Macro Corridor Phase of the EPRI-GTC Methodology, some of the data for Alternative Corridor Generation must be derived. For example, USGS DEMs are acquired as "off-the-self" data, but slope must be derived from the DEMs to be included in the model.

The Land Use/Land Cover Map used in the Macro Corridor Phase is not detailed or accurate enough to define Alternative Corridors. Instead, more detailed datasets are developed for Land Use/Land Cover and Intensive Agriculture from digital orthophotography. This orthophotography is used to "derive" data for the building dataset. Although buildings are identified in the orthophotography, the buildings themselves are not used in Alternative Corridor Phase of the GIS Siting Model. Instead, building density, building proximity, and building buffers are derived from the building dataset using standard functionality commonly available in GIS software. Then, the derived datasets are inserted into the GIS Siting Model.

Alternative Corridor Database

The GIS database for the Alternative Corridor Phase can be thought of on three levels (See Figure 2.13: GIS Siting Model Data Tiers) At the lowest level is Tier 1 which consists of Features that are important in siting a transmission line, i.e. slope, building density or wetlands. The Tier 1 Features contains grid cells that are assigned a value ranging from 1 – 9.and cover the entire study area. Tier 1 Features may include distinct categories such as overhead electric transmission lines, roads, and railroads or may represent numerical ranges, such as the building density.

The second level (Tier 2) similar Features are grouped into Data Layers, i.e. Land Cover contains managed pine, forests, row crops, open land and developed land. At the highest level, Tier 3, the Data Layers are grouped into three Perspectives: Built Environment, Natural Environment, and Engineering Requirements. Each Perspective reflects distinct stakeholder viewpoints on critical siting issues.

LEGEND	AVOIDANCE AREAS	BUILT ENVIRONMENT	NATURAL ENVIRONMENT	ENGINEERING REQUIREMENTS
	NRHP Listed Archaeology Sites	**Proximity to Buildings**	**Floodplain**	**Linear Infrastructure**
AVOIDANCE AREAS	NRHP Listed Archaeology Districts	Background	Background	Rebuild Existing Transmission Lines
TIER 3 - PERSPECTIVES	NRHP Listed Historic Districts	900-1200	100 Year Floodplain	Parallel Existing Transmission Lines
TIER 2 - DATA LAYERS	NRHP Listed Historic Structures	600-900	**Streams/Wetlands**	Parallel Roads ROW
TIER 1 – FEATURES	NRHP Eligible Historic Districts	300-600	Background	Parallel Gas Pipelines
	EPA Superfund Sites	0-300	Streams < 5cfs	Parallel Railway ROW
	Airports	**Eligible NRHP Historic Structures**	Non-forested Non-Coastal Wetlands	Background
	Military Facilities	Background	Rivers/Streams > 5cfs	Future GDOT Plans
	Mines & Quarries	900 – 1200	Non-forested Coastal Wetlands	Parallel Interstates ROW
	Buildings + Buffers	600 – 900	Trout Streams (50' Buffer)	Road ROW
	School Parcels (K – 12)	300 – 600	Forested Wetlands + 30' Buffer	Scenic Highways ROW
	Day Care Parcels	0 – 300	**Public Lands**	**Slope**
	Church Parcels	**Building Density**	Background	Slope 0-15%
	Cemetery Parcels	0 - 0.5 Buildings/Acre	WMA - Non-State Owned	Slope 15-30%
	Non-Spannable Water Bodies	0.5 - 0.2 Buildings/Acre	Other Conservation Land	Slope >30%
	Wild & Scenic Rivers	0.2 - 1 Buildings/Acre	USFS	**Intensive Agriculture**
	Wildlife Refuge	1 - 4 Buildings/Acre	WMA - State Owned	Background
	USFS Wilderness Areas	4 - 25 Buildings/Acre	**Land Cover**	Fruit Orchards
	National & State Parks	Proposed Development	**Open Land, Pastures, Scrub/Shrub**	Pecan Orchards
	County & City Parks	Background	Managed Pine Plantations	Center Pivot Agriculture
	Sites of Ritual Importance	Proposed Development	Row Crops and Horticulture	
		Spannable Lakes and Ponds	Developed Land	
		Background	Hardwood/Natural Coniferous Forests	
		Spannable Lakes and Ponds	**Wildlife Habitat**	
		Land Divisions	Background	
		Edge of field	Species of Concern Habitat	
		Land lots	Natural Areas	
		Background		
		Land Use		
		Undeveloped		
		Non-Residential		
		Residential		

Figure 2.13
PHASE 2 Alternative Corridor Generation
GIS Siting Model Data Tiers

Avoidance Areas

The first step in the Alternative Corridor Generation Phase is to remove all Avoidance Areas from the Alternative Corridor database. Removing these sensitive areas from consideration protects them during the Alternative Corridor site selection process.

As previously stated in the Macro Corridor Phase, Avoidance Areas are not suitable for locating overhead electric transmission lines. The GIS Siting Model will avoid these areas except in specific situations. One example of such an exception is where a road right-of-way is adjacent to a military base. The existence of the road "trumps" the military base as an Avoidance Area by weighting the roadside edge grid cells as suitable for as a transmission line corridor.

The internal and external stakeholder groups identified the Avoidance Areas in Table 2.2.

Phase 2: Alternative Corridor Generation
Avoidance Areas
Table 2.2

AVOIDANCE AREAS
NRHP Archaeology Districts
NRHP Archaeology Sites
NRHP Historic Districts
NRHP Structures
Eligible NRHP Districts
EPA Superfund Sites
Airports
Military Facilities
Mines and Quarries
Building and Buffers
School Parcels
Day Care Parcels
Church Parcels
Cemetery Parcels
Non-Spannable Water Bodies
Wild and Scenic Rivers
Wildlife Refuges
USFS Wilderness Areas
National and State Parks
County and City Parks
Sites of Ritual Importance

Tier 1- Feature Value Calibration

The project team decided to normalize the Tier 1 Features within each Data Layer. Stakeholders were asked to calibrate the Features in a Delphi Process. This collaborative process involves iterative discussion and structured input designed to assist each stakeholder groups in reaching consensus as they calibrated the Feature maps.

The suitability of each Feature was calibrated on a common 1 (most suitable) to 9 (least suitable) scale. Putting Features into a common 1-9 scale allows the Data Layers to be mathematically combined without being distorted by differences in measurement scale. For example, if one foot is measured as 30.48 centimeters rather than 12 inches the larger number would give it more weight in any mathematic operations even thought the physical length is the same. Putting all of the data on the same scale allows the data to be combined into Data Layers and compared. These Feature Calibrations were developed through stakeholder input. (See Appendix D GIS Siting Model Techniques and Appendix E: Phase 2-Alternative Corridor Model: Delphi Feature Calibrations)

For example, a new overhead electric transmission line right-of-way that parallels an existing transmission line was considered more suitable than one that parallels a scenic highway. Therefore, those areas adjacent to the existing transmission line would receive a 1, while those adjacent to the scenic highway would receive a 9. Characterizing suitability for slope for an overhead electric transmission line is another example. Stakeholders assigned a 1 (most suitable) to slopes between 0 and 15 percent, a 5.5 (fairly neutral) to slopes between 15 and 30 percent and a 9 (least suitable) to slopes greater than 30 percent.

Tier 2 - Data Layer Weighting

In the second tier, the Data Layers were weighted as to their relative importance using the Analytical Hierarchy Process (AHP). This collaborative procedure involves pairwise comparison among the set of Feature maps to determine the relative importance of each map layer. The result is the derivation of an importance weight assigned to each map layer. (See Appendix F: Phase 2-Alternative Corridor Model AHP Percentages by Data Layer) Once weighted, the Data Layers are combined to form a group perspective. The stakeholders and the project team developed the Data Layer weights. These weights reflect the importance of each Data Layer in the Overhead Electric Transmission Line Siting.Methodology.

Tier 3 - Perspectives

In Tier 3, individual Data Layers were combined to form three distinct perspectives. These Perspectives were the Built Environment, Natural Environment, and Engineering Requirements. The Built Environment Perspective recognized that in recent years, the most significant opposition to overhead electric transmission lines came from residential neighborhoods and over special places of value to the community (such as proximity to existing and proposed buildings or historic sites). The Natural Environment Perspective sought to minimize the disturbance to ecological resources and natural habitat. The Engineering Requirements Perspective focused on minimizing the cost of construction by seeking the shortest path, while avoiding areas that pose significant construction obstacles. The Simple Combination Perspective places an equal weighting on the Built Environment, Natural Environment and Engineering Requirements Perspectives to form a composite perspective.

Within each Perspective the Data Layers in that group are emphasized. However, Data Layers from other Perspectives must be included, so that the model does not completely ignore those factors. For example, the model must account for the location of houses even when emphasizing the Natural Environment Perspective.

These four different perspectives produce a set of distinct Alternative Corridors that are evaluated and compared prior to developing Alternative Routes. The weighted Data Layers are combined to create a Perspective that reflects the "Optimal Path" for each Alternative Corridor. This "Optimal Path" is the most suitable route because it receives the lowest score that represents the route with the least impact considering that Perspective. Figure 2.14: Delphi Calibrations and Analytical Hierarchy Weightings illustrate the 1 to 9 calibration of the Feature Values established by the Delphi Process. The Layer Weights that were developed using the Analytical Hierarchy Process are show as percentages beside each Feature and Data Layer (See Figure 2.14: Delphi Calibrations and Analytical Hierarchy Weightings.)

- SITING MODEL
- AVOIDANCE AREAS
- PERSPECTIVES
- LAYERS
- AHP PERCENTAGES
- FEATURES
- DELPHI RANKS

Delphi Calibrations and Analytical Hierarchy Weightings

Figure 2.14

AVOIDANCE AREAS
NRHP-Listed Archaeology Sites
NRHP-Listed Archaeology Districts
NRHP-Listed Historic Districts
NRHP-Listed Historic Structures
NRHP-Eligible Historic Districts
EPA Superfund Sites
Airports
Military Facilities
Mines & Quarries
Buildings + Buffers
School Parcels (K – 12)
Day Care Parcels
Church Parcels
Cemetery Parcels
Non-Spannable Water Bodies
Wild & Scenic Rivers
Wildlife Refuge
USFS Wilderness Areas
National & State Parks
County & City Parks
Sites of Ritual Importance

BUILT ENVIRONMENT	
Proximity to Buildings	**11.5%**
Background	1
900-1200	1.8
600-900	2.6
300-600	4.2
0-300	9
Eligible NRHP Historic Structures	**13.9%**
Background	1
900 – 1200	2.8
600 – 900	3.6
300 – 600	5.2
0 – 300	9
Building Density	**37.4%**
0 - 0.5 Buildings/Acre	1
0.5 - 0.2 Buildings/Acre	3
0.2 - 1 Buildings/Acre	5
1 - 4 Buildings/Acre	7
4 - 25 Buildings/Acre	9
Proposed Development	**6.3%**
Background	1
Proposed Development	9
Spannable Lakes and Ponds	**3.8%**
Background	1
Spannable Lakes and Ponds	9
Land Divisions	**8.0%**
Edge of Field	1
Land Lots	7.9
Background	9
Land Use	**19.1%**
Undeveloped	1
Nonresidential	3
Residential	9

ENGINEERING	
Linear Infrastructure	**48.3%**
Rebuild Existing Transmission Lines	1
Parallel Existing Transmission Lines	1.4
Parallel Roads ROW	3.6
Parallel Gas Pipelines	4.5
Parallel Railway ROW	5
Background	5.5
Future GDOT Plans	7.5
Parallel Interstates ROW	8.1
Road ROW	8.4
Scenic Highways ROW	9
Slope	**9.1%**
Slope 0-15%	1
Slope 15-30%	5.5
Slope >30%	9
Intensive Agriculture	**42.6%**
Background	1
Fruit Orchards	5
Pecan Orchards	9
Center Pivot Agriculture	9

NATURAL ENVIRONMENT	
Floodplain	**6.2%**
Background	1
100-Year Floodplain	9
Streams/Wetlands	**20.9%**
Background	1
Streams < 5cfs+ Regulatory Buffer	5.1
Non-forested Non-Coastal Wetlands	6.1
Rivers/Streams > 5cfs+ Regulatory Buffer	7.4
Non-forested Coastal Wetlands	8.4
Trout Streams (50' Buffer)	8.5
Forested Wetlands + 30' Buffer	9
Public Lands	**16.0%**
Background	1
WMA - Non-State-Owned	4.8
Other Conservation Land	8.3
USFS	8
WMA – State-Owned	9
Land Cover	**20.9%**
Open Land, Pastures, Scrub/Shrub, etc.	1
Managed Pine Plantations	2.2
Row Crops and Horticulture	2.2
Developed Land	6.5
Hardwood/Natural Coniferous Forests	9
Wildlife Habitat	**36.0%**
Background	1
Species of Concern Habitat	3
Natural Areas	9

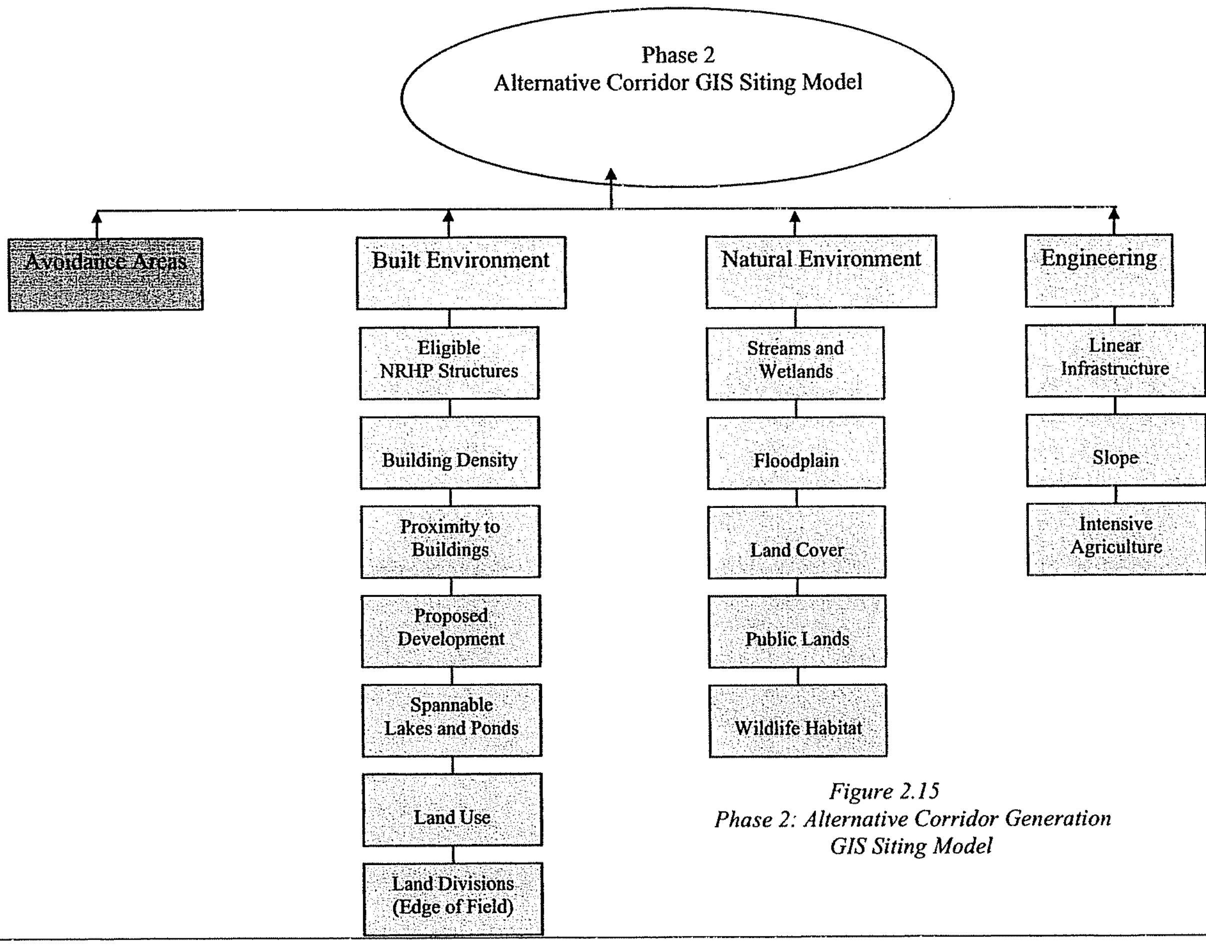


Figure 2.15
Phase 2: Alternative Corridor Generation GIS Siting Model

Built Environment Perspective
During the last two decades conflicts have increased over siting new overhead electric transmission lines. Communities reacting against new infrastructure have created some of the conflicts. In other cases, conflicts have resulted from trying to balance environmental impacts and property rights. Regardless of the motivation, citizen opposition can cause significant delays to a project. The purpose of the Built Environment Perspective is to select routes that avoid or minimize impacts to communities.

As shown in Figure 2.16, Built Environment Perspective, Building Locations are a critical component of this perspective. All buildings are buffered and treated as an Avoidance Area. In the Built Environment Layer Group additional protection is provided to building avoidance areas by adding 300 foot proximity zones. As one approaches a building Avoidance Area, each 300-foot proximity zone becomes increasingly less suitable.

The Built Environment Perspective also considers clusters of buildings, such as subdivisions or urban neighborhoods by assigning a higher weight making area less preferable for an overhead electric transmission line. Therefore, it is difficult for the line to go through a dense urban area, even if it skirts individual isolated buildings. Listed National Landmark sites, National Register sites, traditional cultural sites, and eligible historic districts and their properties are treated as "Avoidance Areas" providing maximum protection. In Georgia, a 1,500-foot Adverse Potential Effect (APE) buffer is created around Listed and Eligible NRHP structures.

Stakeholders requested that land use be emphasized in the procedure. The project team created three land use categories in the Land Use Layer: residential, non-residential developed and undeveloped. Residential land is the least preferred and undeveloped land is the most preferred from this perspective. The Proposed Development Layer anticipates future development that cannot be identified on an aerial photograph by including all projects i.e. subdivisions, commercial developments, public facilities, etc. that have been filed with the relevant local government. This information assists the project siting team in avoiding development that has been permitted but not constructed.

One of the most suitable areas for an overhead electric transmission line is along a property line of an undeveloped parcel. Land lot lines, comparable to section lines in the West, and edges of fields identified on aerial imagery are included in the Land Division Layers are preferred to other locations because often they are associated with property boundaries. Spannable Lakes and Ponds are included in the Built Environment Perspective because they are considered amenity features that are less preferred than other areas. Table 2.3 shows the weights associated with each layer.

Taken together these Layers capture the salient features of the Built Environment Perspective. The Built Environment Perspective Alternative Corridors will avoid developed areas whenever possible. Table 2.3 identifies the relative importance applied to the seven map layers forming the Built Environment Perspective. Note that building density has the most influence (37.4%) and is nearly twice as important as land use considerations. As previously discussed, the AHP process involving group collaboration with stakeholders determined the weights. The AHP process is described in Appendix D: GIS Siting Model Techniques)

Table 2.3.
Phase 2: Alternative Corridor Generation
Built Environment Perspective Data Layer Weights

Data Layer	**Layer-Weights**
Proximity to Buildings	11.5 %
Eligible NRHP Structures	13.9 %
Building Density	37.4 %
Proposed Development	6.3 %
Spannable Lakes and Ponds	3.8 %
Land Divisions	8.0 %
Land Use	19.1 %

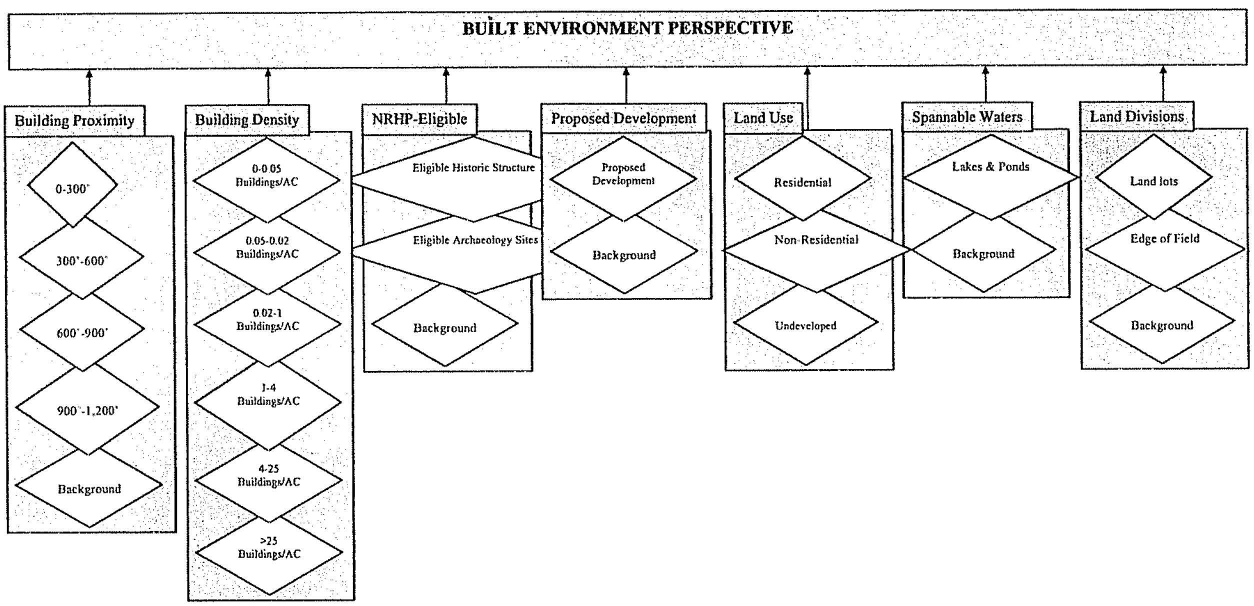


Figure 2 16
Phase 2: Alternative Corridor Generation
Built Environment Perspective

Natural Environment Perspective

The Natural Environment Perspective seeks to minimize the effects from overhead electric transmission lines construction and maintenance on sensitive natural resources. Federal and state environmental regulations require the identification and protection of environmentally sensitive areas. At the federal level, environmental laws include wetland protection under the Clean Water Act and protection of endangered animal and plant species under the Endangered Species Act. State regulations protect riparian buffer via the state of Georgia's Erosion and Sedimentation Control Act and the Metropolitan River Protection Act. In addition, the Georgia Department of Natural Resources monitors a number of listed endangered plant and animal species. This list includes state candidate species that require additional concern beyond those listed under federal law. Environmental permits are required from a variety of levels of government including federal, state and local.

Because of their span length and the small footprint for structure placement, overhead electric transmission line construction and maintenance activities generally have minor impacts on the natural environment. However, there are two areas of concern that must be accounted for during data collection: habitat fragmentation and the encroachment on environmentally sensitive areas. These concerns can be avoided by minimizing the amount of the transmission line rights-of-way located in environmentally sensitive undeveloped areas.

This perspective includes five data layers: public lands, streams and wetlands, floodplains, land cover, and, wildlife habitat. Although some Public Lands such as State and National Parks, city and county parks, Wild and Scenic Rivers, United States Forest Service (USFS) Wilderness Areas, and Wildlife Refuges were included as Avoidance Areas, the remainder have been included as part of the Natural Environment Perspective. (See Table 2.4) Inclusion in this perspective ensures that impacts to these areas would be considered in the routing process.

Many agencies have developed data layers that can be used in the planning of overhead electric transmission line routes. The commonly available datasets include: United States Fish and Wildlife's (USFW) National Wetland Inventory (NWI), Federal Emergency Management Agency's (FEMA) floodplain maps and U S Geological Survey's (USGS) National Hydrological Dataset. State Heritage programs often provide some level of information on the distribution of threatened and endangered species within a state. However, this information is limited because few comprehensive surveys have been completed for these plants and animals. It is important to note that although these datasets have been developed with high standards they were produced at a scale much larger than the width of a transmission line and also may not be updated frequently enough to capture changes in the landscape. Therefore, it is always necessary to ground truth the proposed route to be certain nothing was inadvertently overlooked. (See Figure 2.17: Natural Environment Perspective)

To minimize impacts to streams and wetlands during overhead electric transmission line construction and maintenance, it is critical to collect accurate data about their location and characteristics during the routing step. In the Streams and Wetlands data layer, information is collected on streams. Forested wetlands and non-forested coastal wetlands also are included in the Data Layer. Streams with flows greater than 5 cfs create construction and maintenance access problems. In Georgia, trout streams are protected with a 100-foot vegetative buffer (50 feet either side of the stream). Clearing for an overhead electric transmission line right-of-way in forested wetlands causes adverse impacts to the wetlands by removing the tree canopy. The absence of tree canopy increases water temperatures in the wetland and may contribute to sedimentation. Non- forested coastal wetlands were included in this category because of construction and construction and maintenance access problems.

FEMA Q3 Flood information is used for the Floodplain delineation, because NEPA regulations prohibit steel tower structures being located in a floodplain because they can trap debris and obstruct the flow.

Land Cover data are digitized from orthophotography and includes the following land cover types: managed pine, row crops and horticulture, hardwood mixed and natural forests, open land, and developed lands. Other categories in the Land Cover Data Layer include land use information, such as transportation; utility rights-of-way; low intensity urban; high intensity urban; clear cut/sparse vegetation; quarries/strip mines; rock outcrops; deciduous forest; mixed forest; evergreen forest; golf courses; pasture; row crop; forested wetland; coastal marsh; and non-forested wetland.

In Georgia, the difficulty in acquiring timely and accurate data on threatened and endangered species is a significant problem. For this project, the Threatened and Endangered Habitat Data Layer is used to represent the location of terrestrial endangered species and the Natural Area Data Layer is used as a surrogate for listed plant species. Both of these Data Layers come from the Georgia GAP analysis program. These Data Layers include potential distribution of terrestrial vertebrate and a map of natural vegetation.

Table 2.4.
Phase 2: Alternative Corridor Generation
Natural Environment Perspective Data Layer Weights

Data Layer	**Layer-Weights**
Public Lands	16.0 %
Streams/ Wetlands	20.9 %
Floodplain	6.2 %
Land Cover	20.9 %
T&E Species Habitat	36.0 %

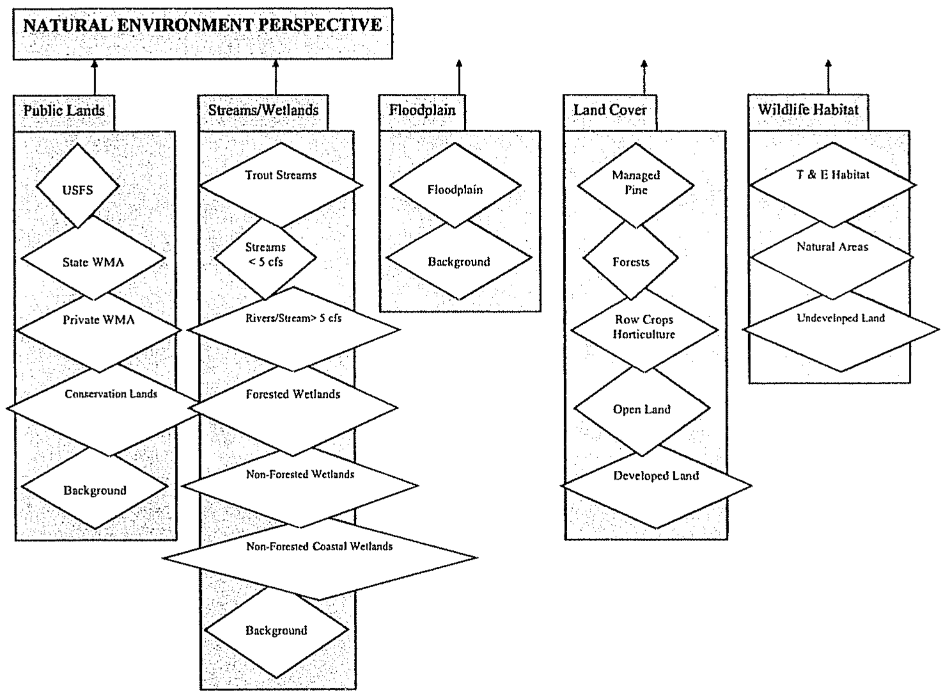


Figure 2.17
Phase 2: Alternative Corridor Generation
Natural Environment Perspective

Engineering Requirements Perspective
The criteria in this perspective focused on the engineering requirements for routing, constructing, and maintaining overhead electric transmission lines. Engineering stakeholders included engineers and scientists from utilities and state agencies involved in site selection for linear facilities. The group was selected to provide specific knowledge regarding the co-location of power lines with other linear features, including pipelines, roadways and other power lines. Within this perspective there are three data layers: Linear Infrastructure, Slope, and Intensive Agriculture. (See Table 2.5)

If the Data Layers were equally suitable, the engineering solution would be a straight line connecting the two endpoints. Since this rarely occurs, the Engineering Requirements Perspective utilizes the Data Layer suitability information to represent actual conditions. Categories in the Linear Infrastructure Data Layer include rebuilding existing transmission lines or paralleling (co-locating) with other linear infrastructure.

Table 2.5
Phase 2: Alternative Corridor Generation
Engineering Requirements Perspective Data Layer Weights

Data Layer	Layer-Weights
Linear Infrastructure	48.3 %
Slope	9.10 %
Intensive Agriculture	42.6 %

The most cost effective solution with the least impact to the natural and cultural resources is rebuilding an existing transmission line in its existing right-of-way. In the Linear Infrastructure Data Layer, the stakeholders ranked the rebuild alternative as the most suitable alternative. Paralleling (co-locating with) existing linear facilities is primarily driven by construction and maintenance access and cost considerations. The ability to reduce corridor width by paralleling an existing transmission line or road decreases the acreage needed for rights-of-way easements. In addition, the ability to access transmission line right-of-way for construction and maintenance is significantly improved by availability of existing transmission line right-of-way access roads. Paralleling existing linear features places new utility transmission lines in areas where natural resources have previously been disturbed. Additionally, paralleling any existing facilities decreases cost for construction of the new line by minimizing the amount of land required for the new power line corridor thereby reducing the land acquisition costs. Paralleling also reduces the power line cost by minimizing the cost required to clear the corridor needed for the new line. In the Engineering Requirements Perspective, paralleling (co-locating) other linear facilities is ranked as the "second most suitable place to be".

Another engineering consideration is Slope. Slopes less than 15 percent are most suitable for the construction and maintenance of an overhead electric transmission line. Slopes of 16- 30 percent pose a moderate constraint by increasing construction costs and having a greater chance of erosion. Slopes greater than 30 percent should be avoided if possible because of the high costs of construction and maintenance. Construction costs in these areas are significantly greater due to soil stabilization requirements, equipment constraints, and environmental permits, i.e. crossing permits, mitigation requirements. Some extreme cases may require construction and maintenance work to be performed from the air.

Three types of agriculture that pose significant engineering constraints are included in the Intensive Agriculture Data Layer: center pivot irrigation, pecan orchards, and, fruit orchards. Avoiding these areas provides an opportunity to minimize the cost of affecting expensive orchards and agricultural irrigation facilities. (See Figure 2.18: Engineering Requirements Perspective)

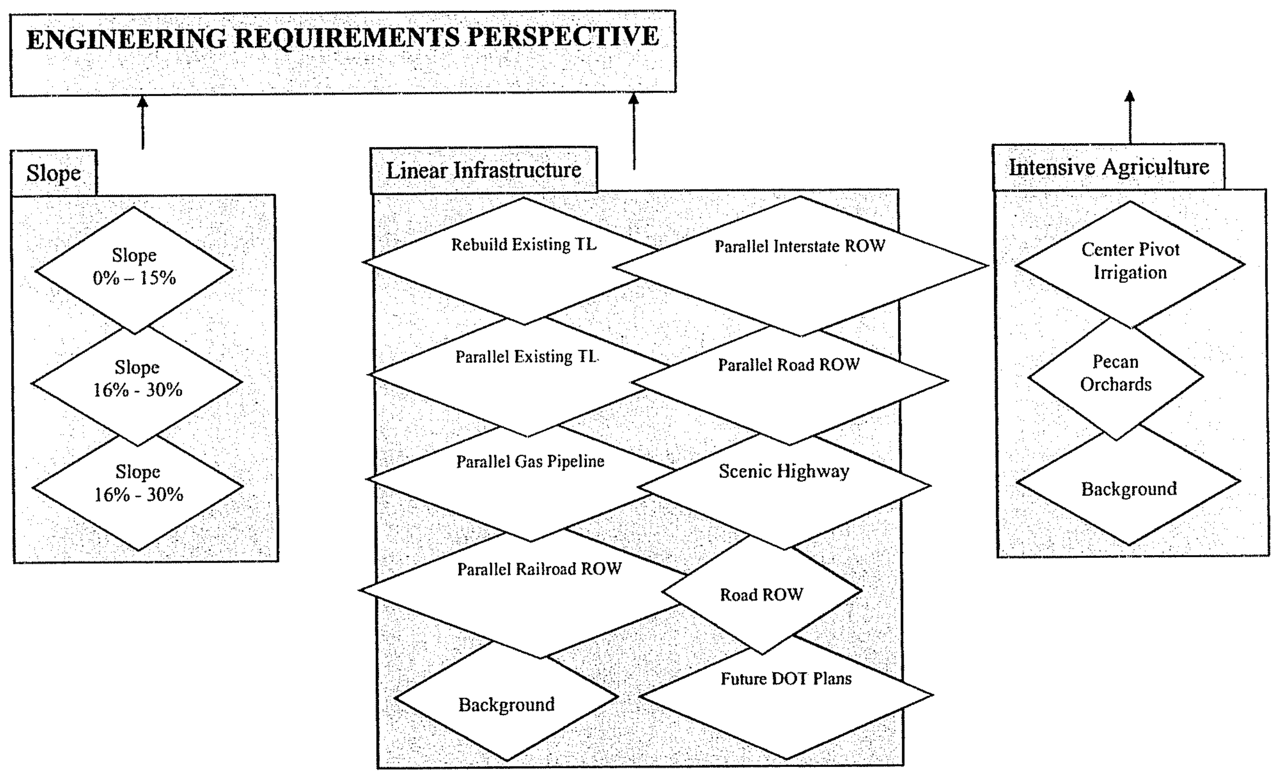
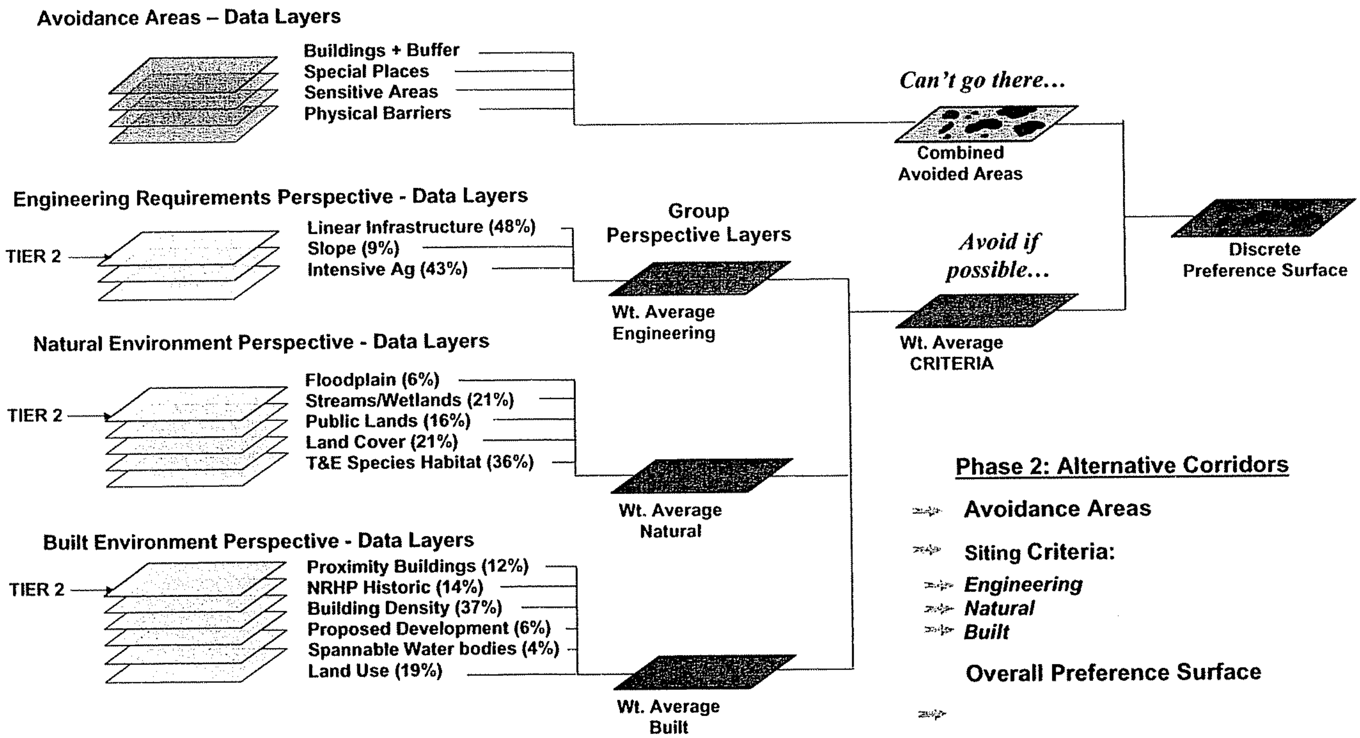


Figure 2.18
Phase 2: Alternative Corridor Generation
Engineering Requirements Perspective

Phase 2: Alternative Corridor GIS Data Layers

Figure2 19



Least Cost Path Algorithm
As in the Macro Corridor Generation Phase, the LCP procedure is used to identify the most suitable corridor for each of the three perspectives. As discussed in Appendix D, the LCP approach involves three basic steps:

1. Deriving a *discrete preference* surface
2. Calculating an *accumulated preference* surface
3. Determining the "*Optimal Path*" respecting the spatial distribution of the relative preferences for locating an overhead electric transmission line

By far, the most critical step is the first one. This step identifies the relative preference for locating an overhead electric transmission line at any location within a perspective. A series of Features are calibrated on a scale of 1= most suitable through 9= least suitable. The calibrated Features are combined to form Data Layers;. The Data Layers are weight-averaged to reflect the relative importance of the different perspectives.

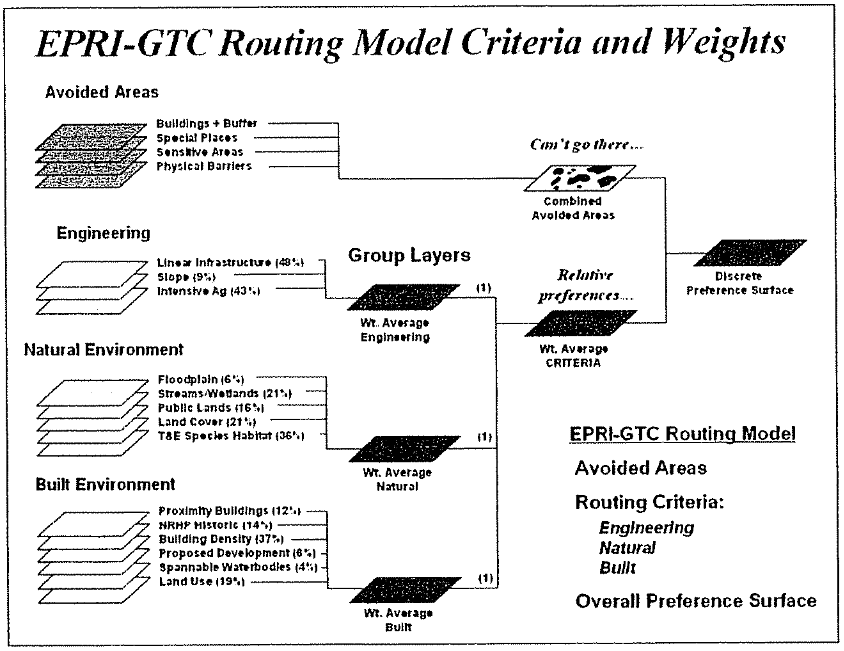


Figure 2.20
Phase 2: Alternative Corridor Generation
Data Layer Features are calibrated and weighted to derive a map of the relative preference for locating the Alternative Corridors

In practice, three tiers of weights are applied—Tiers 1 for the Feature Calibration, Tier 2 for the Data Layer Weighting within each Group Perspective (Built, Natural, Engineering) and Tier 3 for reflecting the relative importance among the Group Perspectives. A map of areas to absolutely avoid is combined with the weighted criteria map to characterize the relative "goodness" of routing an overhead electric transmission line at every location in the project area, as depicted by the Discrete Preference Surface. (See the right side of Figure 2.20)

The second step in the LCP procedure uses this information to calculate the most suitable corridor for each perspective . The result is an Accumulation Preference Surface that simulates routing of a transmission line from a starting location to all other locations in a project area. The final step identifies the "path of least of resistance" along the accumulated cost surface that minimizes the less preferred areas that are crossed along a route connecting the starting and ending locations. This route identifies the "Optimal Path", as any other path incurring more "less preferred crossing" (sub-optimal). This route is derived by identifying the steepest down hill path from the end point to the bottom of the accumulated cost surface. (See Figure 2.21: Optimal Path)

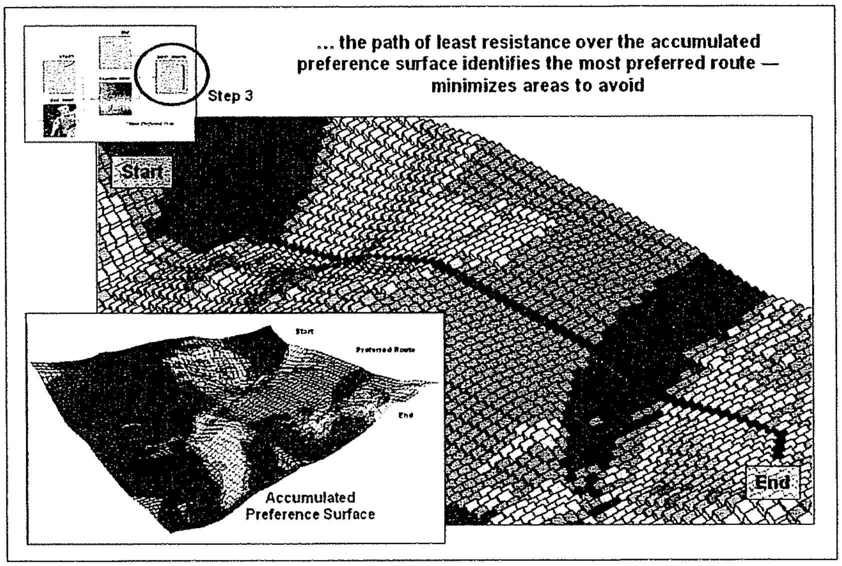


Figure 2.21
Phase 2: Alternative Corridor Generation
The optimal path from anywhere in a project area is identified by the steepest downhill path over the accumulated cost surface

A corridor of optimality can be generated by identifying the next best route, then the next best and so on. In practice, however, a more efficient procedure is to add the accumulation surfaces from both the starting and endpoints as shown in Figure 2.22: Sum of Accumulated Surfaces. The result is a surface that identifies the total cost of forcing an optimal path through every location in the project area.

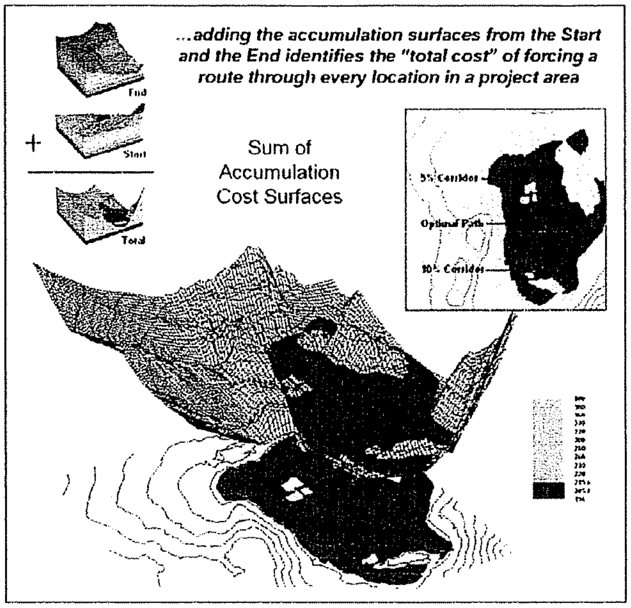


Figure 2.22
Phase 2: Alternative Corridor Generation
The sum of accumulated surfaces is used to identify corridors as low points on the total accumulated surface

The series of lowest values on the total accumulation surface (valley bottom) identifies the best route. The valley walls depict increasingly less optimal areas. The red areas in Figure 2.22 identify all locations that are within 5 percent of the "Optimal Path". The green areas indicate 10 percent sub-optimality.

The corridors are useful in delineating boundaries for detailed data collection, such as high-resolution aerial photography and parcel ownership records. The detailed data within the Alternative Corridor is helpful in making slight adjustments in identifying Alternative Routes within each of the perspectives.

Generating Alternative Corridors from the Composite Suitability Surface
As in the Macro Corridor Phase, a histogram is generated and interpreted. In the case of Alternative Corridor Generation, it is run on surfaces for each of the Built Environment, Natural Environment and Engineering Requirements Perspectives. The histogram is used to choose the corridors for each of the three perspectives. The boundaries of these corridors are chosen by the first statistical break in the histogram. Typically, the statistical break occurs between 1 and 5 percent. The Alternative Corridors are shown in Figures 2.23: Built Environment Alternative Corridor, Figure 2.25: Engineering Requirement Alternative Corridor, Figure2.27: Natural Environment Alternative Corridor, and Figure 2.29: Simple Average Alternative Corridor and the histogram illustrate that these breaks occur between 1 and 5 percent in Figure 2.24: Built Environment Alternative Corridor Histogram, Figure 2.26: Engineering Requirement Alternative Corridor Histogram, Figure 2.28: Natural Environment Alternative Corridor Histogram and Figure 2.30: Simple Average Alternative Corridor Histogram.

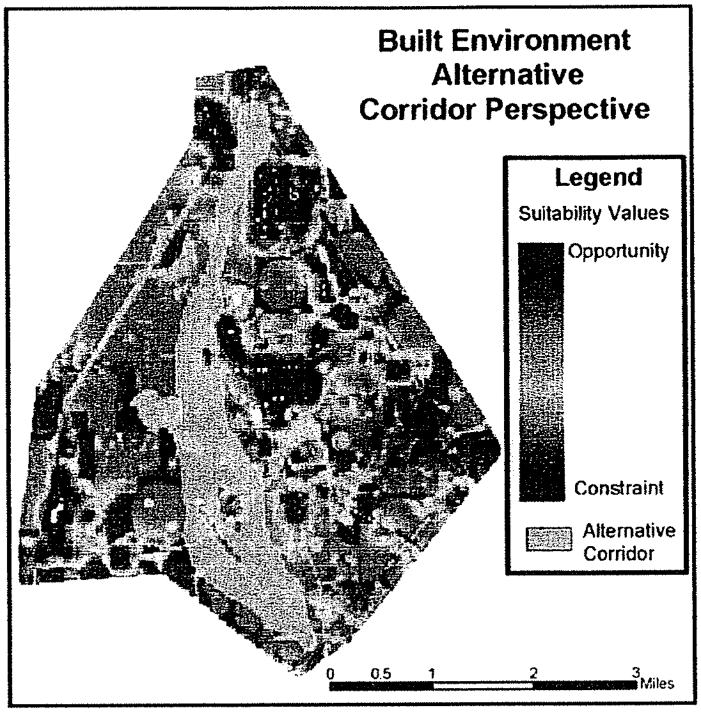


Figure 2.23
Phase 2: Alternative Corridor Generation
Built Environment Alternative Corridor

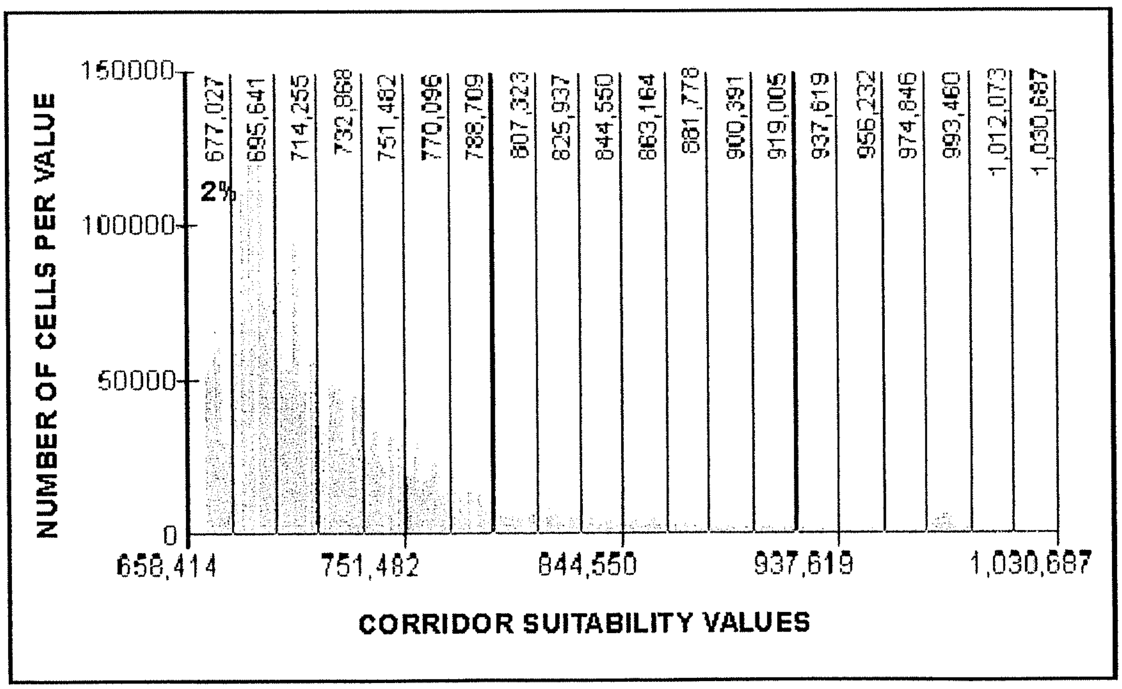


Figure 2.24
Phase 2: Alternative Corridor Generation
Built Environment Alternative Corridor Histogram

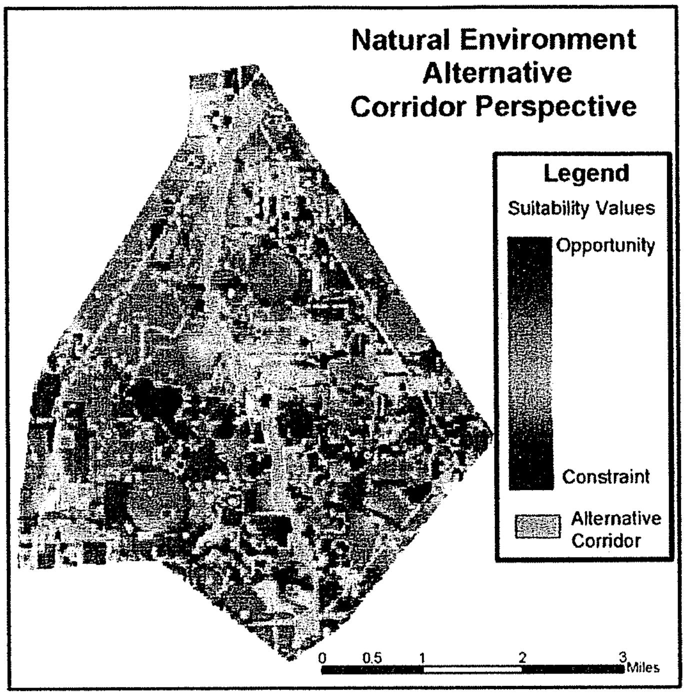


Figure 2.25
Phase 2: Alternative Corridor Generation
Natural Environment Alternative Corridor

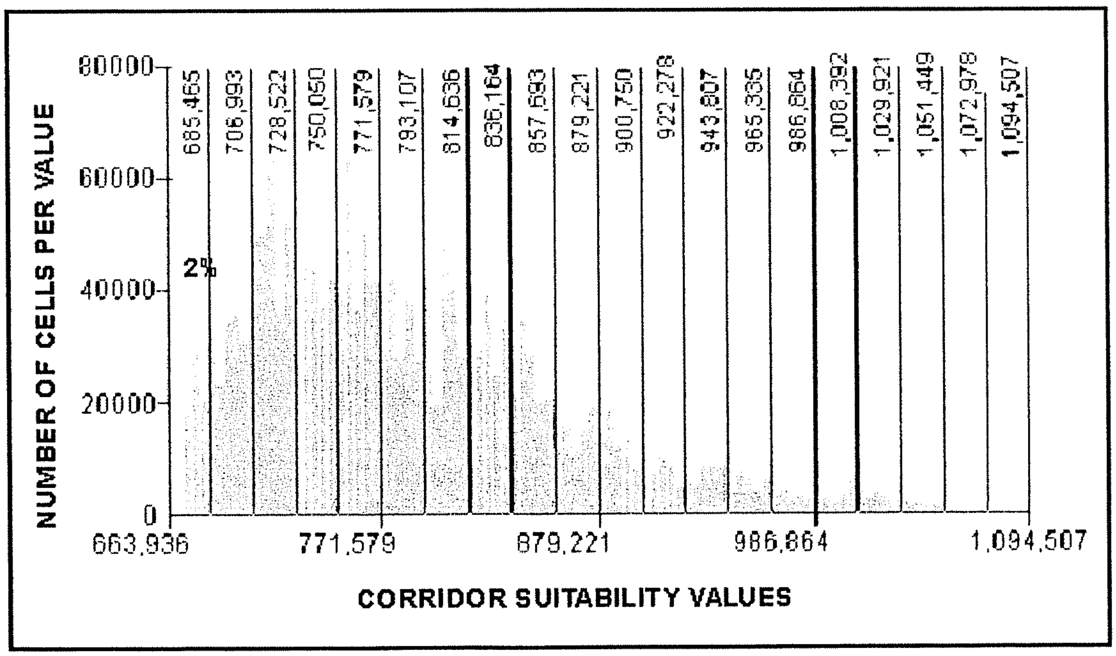


Figure 2.26
Phase 2: Alternative Corridor Generation
Natural Environment Alternative Corridor Histogram

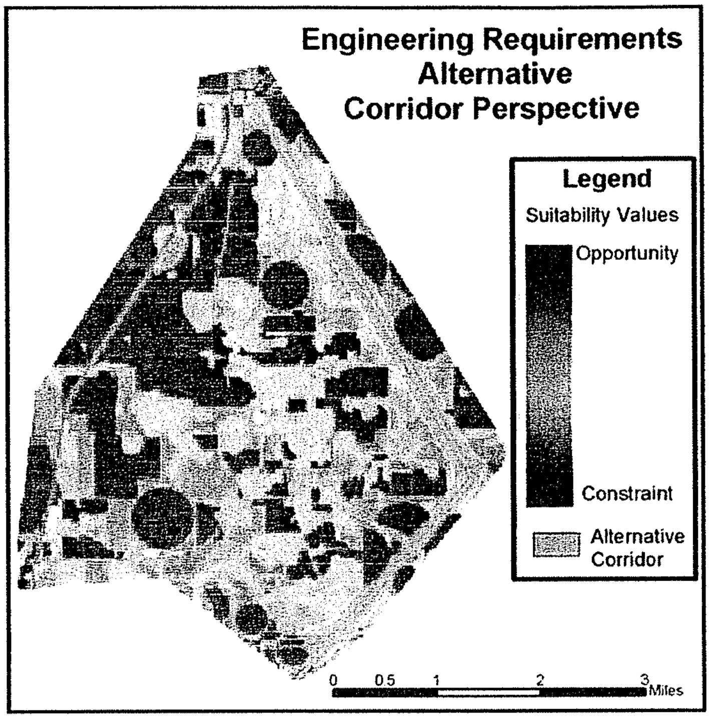


Figure 2.27
Phase 2: Alternative Corridor Generation
Engineering Requirement Alternative Corridor

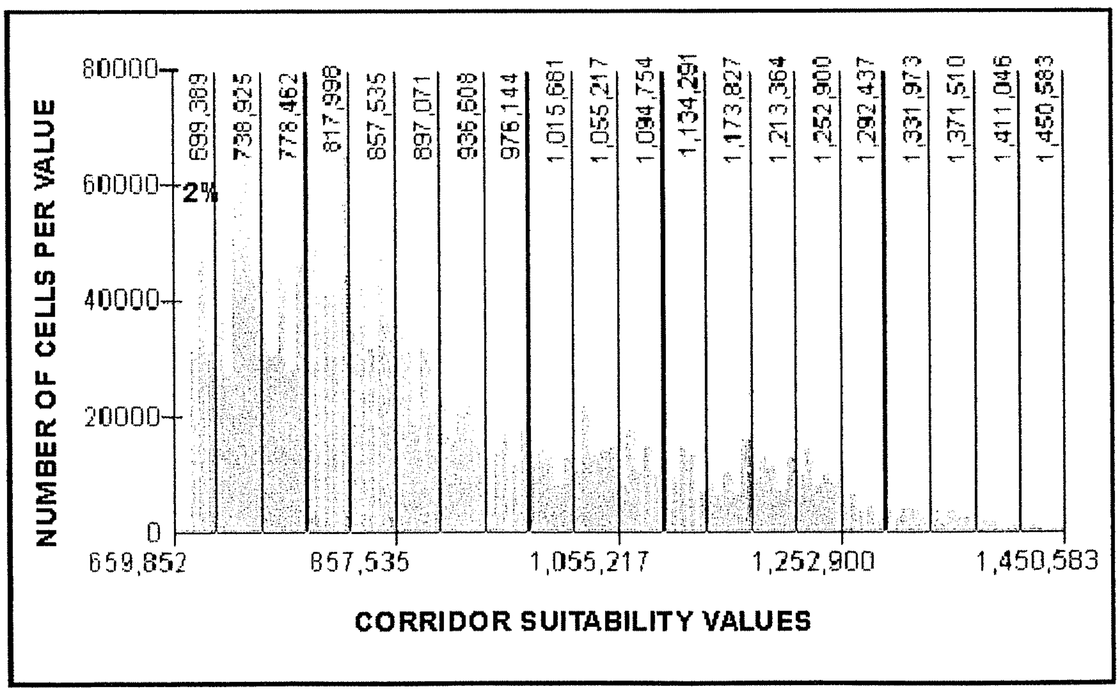


Figure 2.28
Phase 2: Alternative Corridor Generation
Engineering Requirement Alternative Corridor Histogram

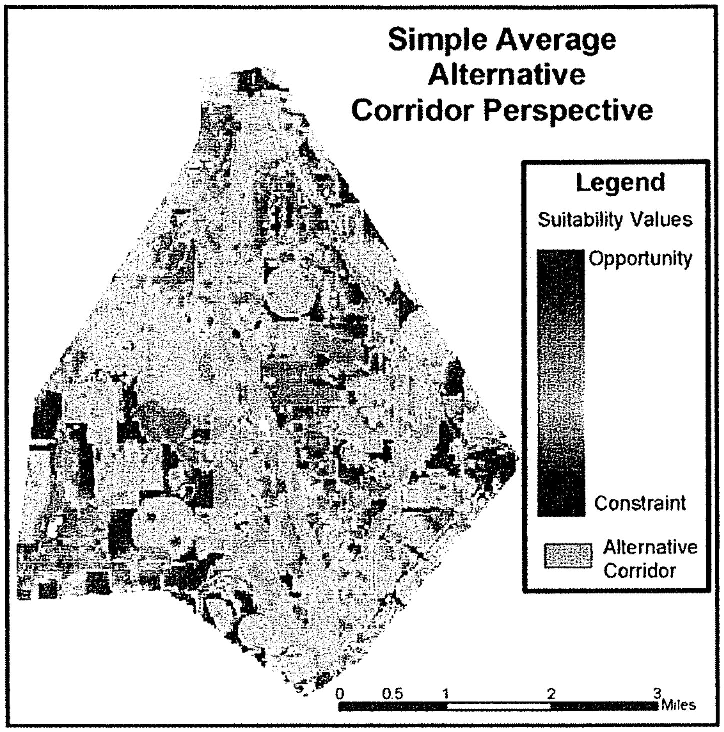


Figure 2.29
Phase 2: Alternative Corridor Generation
Simple Average Alternative Corridor

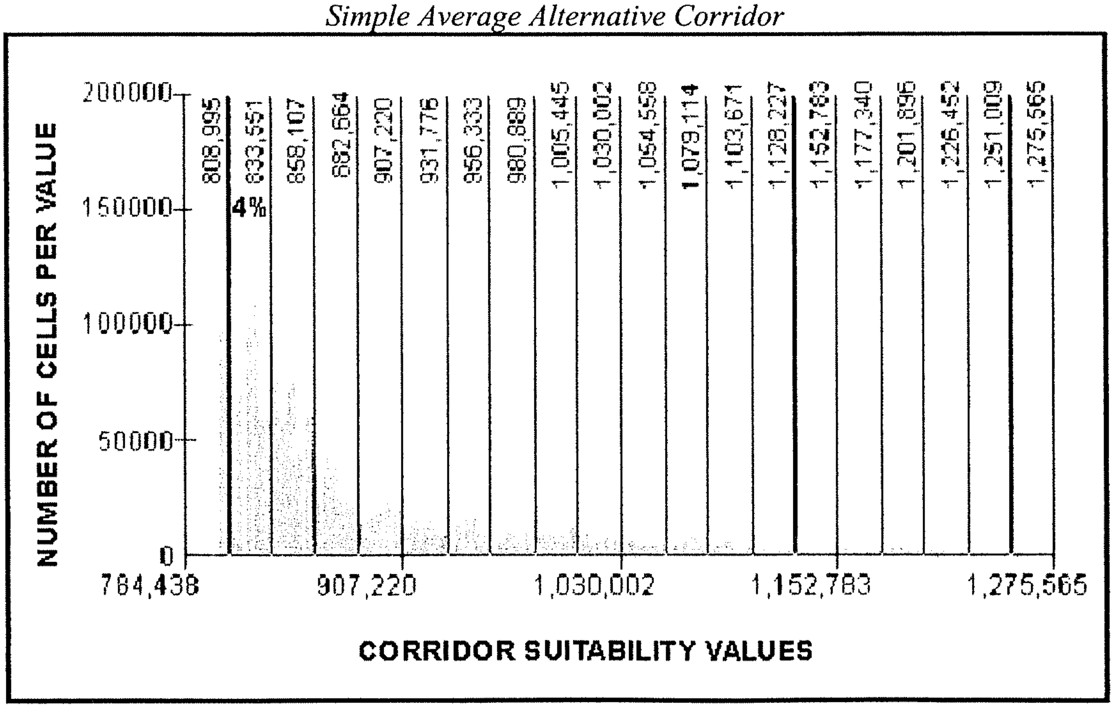


Figure 2.30
Phase 2: Alternative Corridor Generation
Simple Average Alternative Histogram

Alternative Corridor Weighting and Simple Average Corridor

Alternative Corridors are generated by emphasizing the different Perspectives. (Figure 2.31 – Alternative Corridor Generation Diagram). Emphasis is achieved by combining the three preference surfaces with a weighted average in which one of the Perspectives is considered five times more important than the other two. The testing of weight averaging on various projects demonstrated that the weighting of five times was most effective in emphasizing one Perspective over the others while still retaining some influence from the other two Perspectives.

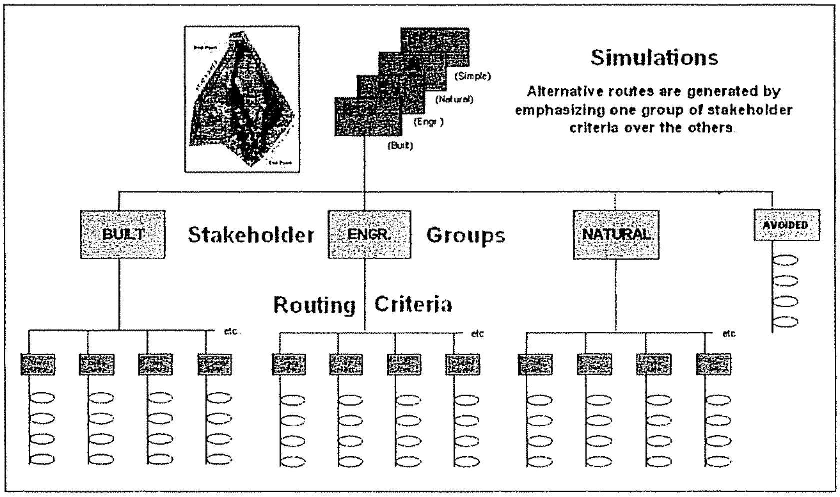


Figure 2.31
Phase 2: Alternative Corridor Generation Diagram
A conceptual diagram showing how Alternative Corridors are generated by systematically emphasizing different Perspectives

The result is three different corridors as shown in Figure 2.31. In this figure, the Built Environment corridor was generated by weighting the Built Perspective Data Layers five times more than the Natural and Engineering Perspectives. In a similar manner, Engineering and Natural emphasized alternatives are over-weighted to identify distinct solutions that respond to each Perspective.

In addition to the corridors generated for each Perspective, a simple average preference surface is used to establish a consistent base line for all three Perspectives. The Alternative Corridors are combined to identify the optimal "decision space" for locating an overhead electric transmission line considering the different siting perspectives. A proposed route venturing outside the combined Alternative Corridors is sub-optimal from all three Perspectives and would need to be justified by extenuating factors not included in the model's set of map criteria.

PHASE 3: ALTERNATIVE ROUTE ANALYSIS AND EVALUATION

Alternative Route Generation

In Phase 2, the LCP algorithm was run to generate Alternative Corridors for each of the three perspectives emphasizing: Built, Natural, Engineering factors and an overall Simple Combination of all three. This algorithm generates a 15-foot wide "Optimal Path" (the size of one grid cell) in each Corridor. (See Figure 2.32 Alternative Routes within Alternative Corridors) As with the other two phases, additional detailed data are collected for areas within the Alternative Corridors. Property lines are identified and building centroids that were digitized during the Phase 2 Alternative Corridor are classified by types: occupied house, commercial building, or industrial building. These additional data are entered into the GIS Siting Model. These data aid the project team in refining the "Optimal Path" within each of the Alternative Corridors. By waiting until these Alternative Corridors have been identified before collecting this very detailed data, the total time and cost to the project are greatly reduced.

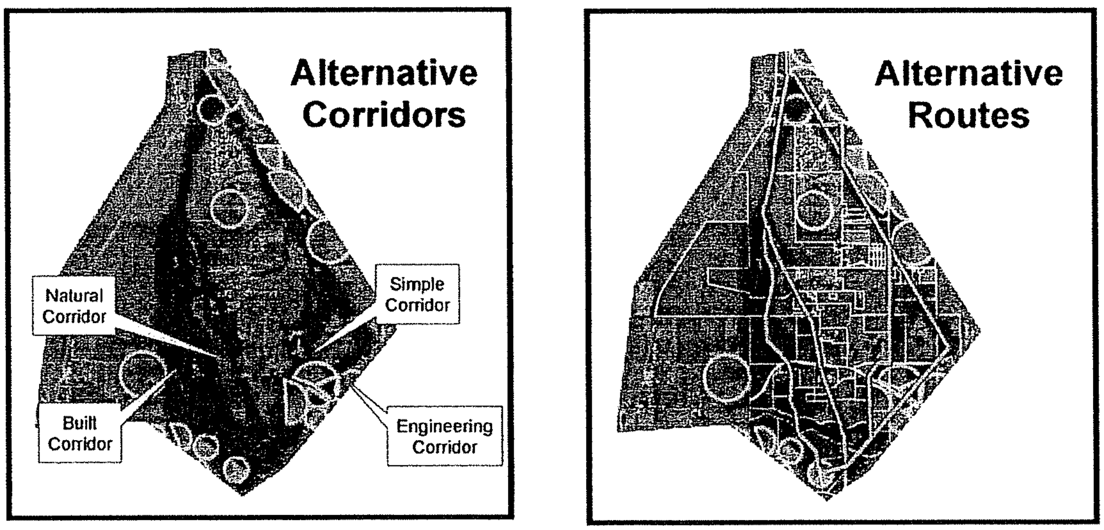


Figure 2.32
Phase 3: Alternative Route Generation
Alternative Routes within Alternative Corridors"

Right-of-Way Considerations

Because the width of the "Optimal Path" is 15 feet, it is too narrow for meaningful analysis of the Alternative Routes by the current GIS Siting Model. To increase the "Optimal Path" from 15 feet (width of one grid cell) to the right-of-way width for the voltage of the project, additional grid cells must be added to each side of the "Optimal Path'. This refinement creates an "Optimal Route". For example, the width of the "Optimal Route" for a 500 kV (kilovolt) transmission line would require a width of 12 grid cells to form a 180-foot right-of-way.

Map Overlay Analysis

The route evaluation process is designed to provide necessary information to a team of siting professionals. Staff from the areas of engineering, land acquisition and environmental evaluates the advantages and disadvantages of the Alternative Routes and selection of the Preferred Route. Their evaluation includes an extensive set of siting criteria as well as summaries of Data Layers (preferences layers) using map overlay analysis, spreadsheet processing, interactive geo-queries, and other quantitative and qualitative metrics. Variations between the Built Environment Perspective, Natural Environment Perspective, and Engineering Requirements Perspective (preference surface alternatives) can be illustrated to the project siting team by using this Map Overlap Analysis. (See Figure 2.33: Map Overlay Analysis)

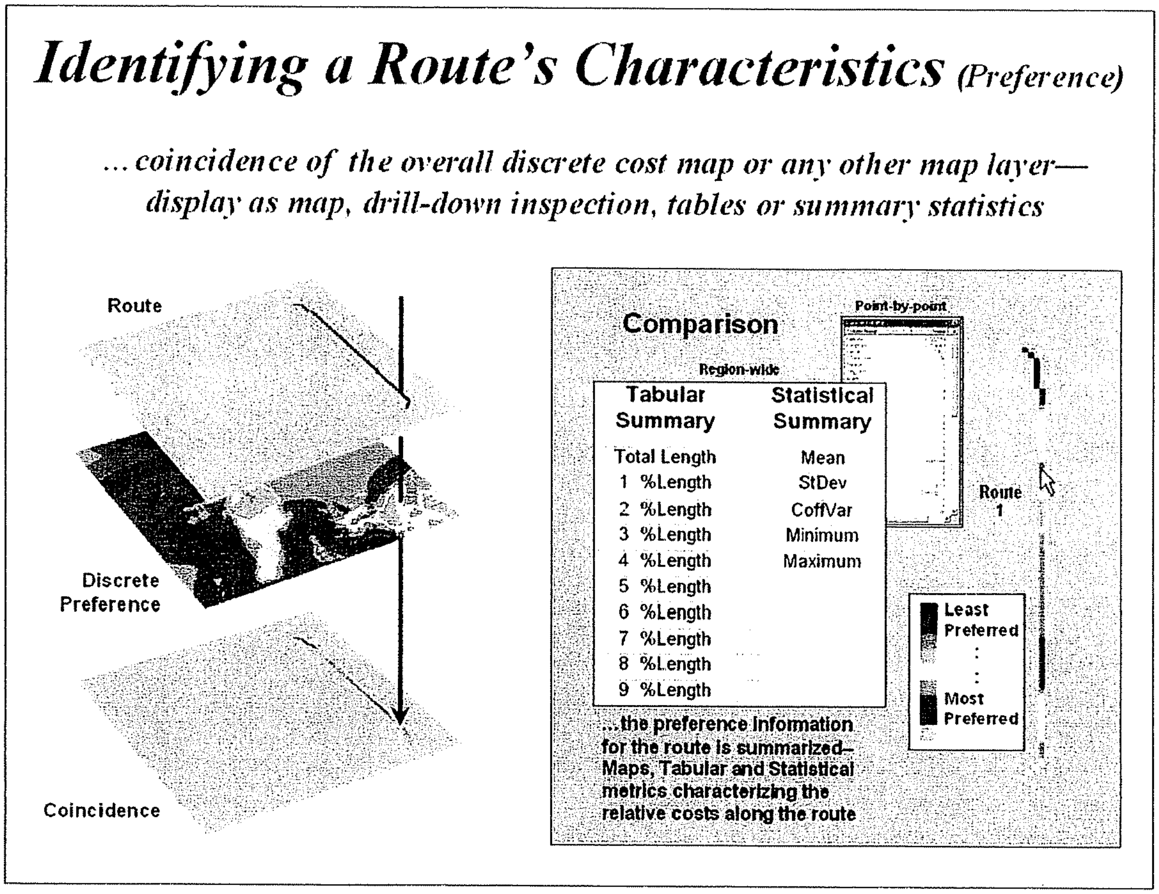


Figure 2.33
Phase 3: Alternative Route Generation
Map Overlay Analysis is used to summarize the relative siting preference along an Alternative Route.

In analyzing a composite Alternative Route, the GIS Siting Model isolates the evaluation criteria for all Data Layers. The results can be reported in a variety of formats: as a map display, as an inspection of "drill-down data", as a graphic or as summary statistics. For example, the hypothetical route in Figure 2.33 shows that only a small stretch at the top of the route crosses a "least preferred" area (red), while the majority of the route crosses moderate to most preferred areas (green).

In a similar manner, a siting team member can "click" at any location along the route and pop-up a table listing preference conditions on any of the other active map layers. This interactive geo-query feature facilitates rapid retrieval of information supporting siting team discussions. In addition to graphical display, interactive geo-query of evaluation criteria, metrics summarizing individual segments and/or Alternative Routes are available as a spreadsheet table.
Table 2.6, Tabular Summary of Alternative Routes, shows an example spreadsheet of summary information (rows) for several Alternative Routes (columns). Corridor Analyst™ software is used to summarize the evaluation metrics in terms of counts for the siting team discussion of relative lengths, and acres of easement.

Tabular Summary of Alternative Routes

	A	B	C	D	E	F	G
1	DATA						
2	FOR ALL ROUTES						
3	Built	Route A	Route B	Route C	Route D	Route E	Route F
4	Feature	Value	Value	Value	Value	Value	Value
5	Relocated Residences (within 75' Corridor)	00	00	10	00	10	00
6	*Normalized*	05	05	10	05	10	05
7	Proximity to Residences (300')	5.0	37.0	10.0	9.0	14.0	10.0
8	*Normalized*	02	12	04	03	05	03
9	Proposed Developments	50	00	00	00	00	00
10	*Normalized*	10	10	10	10	10	10
11	Proximity to Commercial Buildings (300')	00	00	00	00	00	00
12	*Normalized*	10	10	10	10	10	10
13	Proximity to Industrial Buildings (300')	10	0.0	0.0	0.0	3.0	3.0
14	*Normalized*	05	03	03	03	10	10
15	School, DayCare, Church, Cemetery, Park Parcels (#)	00	00	0.0	00	00	00
16	*Normalized*	10	10	10	10	10	10
17	NRHP Listed/Eligible Struct./Districts (1500' from edge of R/W)	2.0	10	00	00	00	00
18	Normalized	10	07	0.3	0.3	0.3	0.3
19	Natural						
20	Natural Forests (Acres)	12	64	59	70	96	107
21	*Normalized*	02	07	07	08	10	11
22	Stream/River Crossings	40	50	40	40	60	60
23	*Normalized*	17	20	17	17	23	23
24	Wetland Areas (Acres)	20	13	54	53	69	75
25	*Normalized*	04	04	10	10	12	13
26	Floodplain Areas (Acres)	00	00	0.0	0.0	0.0	00
27	*Normalized*	10	10	10	10	10	10
28	Engineering						
29	Length (Miles)	56	57	61	64	65	67
30	*Normalized*	30	31	32	34	34	35
31	Miles of Rebuild with Existing T/L*	00	0.0	00	0.0	00	00
32	*Normalized*	10	10	10	10	10	10
33	Miles of Co-location with Existing T/L*	55	57	31	39	04	12
34	*Normalized*	10	11	07	08	02	03
35	Miles of Co-location with Roads*	35	04	58	52	66	67
36	*Normalized*	06	02	09	09	10	11
37	Number of Parcels	12.0	30.0	25.0	28.0	20.0	21.0
38	*Normalized*	07	16	15	15	11	12
39	Total Project Costs	164	170	182	187	134	200
40	*Normalized*	19	20	21	21	22	22

Evaluation Metrics

- ✓Relocated Residences
- ✓Proximity to Residences
- ✓Proposed Developments
- ✓Proximity to Commercial Buildings
- ✓Proximity to Commercial Buildings
- ✓School, Daycare. Church, Cemetery, Park Parcels
- ✓NRHP Listed/Eligible Structures/Districts
- ✓Natural Forests
- ✓Stream/River Crossings
- ✓Wetland Areas
- ✓Floodplain Areas
- ✓Total Length
- ✓Miles of Rebuild
- ✓Miles of Co-location
- ✓Number of Parcels
- ✓Total Project Costs

Table 2.6
Phase 3: Alternative Route Generation
Spreadsheet statistics summarizing evaluation criteria for Alternative Routes

Metrics, such as the number of relocated residences or length of the route passing through natural forests, are used to guide discussions comparing the advantages and disadvantages of the Alternative Routes. These discussions help organize and focus the siting team's review, as well as provide ample opportunity for free exchange of expert experience and opinion.

Qualitative Expert Judgment

The project team uses evaluation metrics are normalized and assigned weights developed using

AHP to derive a relative score for each Alternative Route. (See Appendix G: Phase 2-Alternative Corridor Weighting: AHP Pairwise Comparison Questions) The scores are combined for the three Perspectives (Built Environment Perspective, Natural Environment Perspective and Engineering Requirements Perspective,) and then totaled for an overall score. The numerical score provides an objective reference for comparing Alternative Routes and stimulates discussion of their relative merits.

The left side of Table 2.7, Evaluating Alternative Routes, shows the translation of the "raw" evaluation metrics to a normalized and weighted score. In this example the sub-criteria for each Perspective are assigned relative weights. For example, the Built Environment Perspective consideration of Relocated Residences is considered much more important (40 percent) than the consideration of close Proximity to Industrial Buildings (2 percent). The three perspectives are equally weighted (33 percent) in this example, but could reflect preferential treatment if a routing situation was thought to be more sensitive to the Built Environment Perspective, Natural Environment Perspective, or to the Engineering Requirement Perspective.

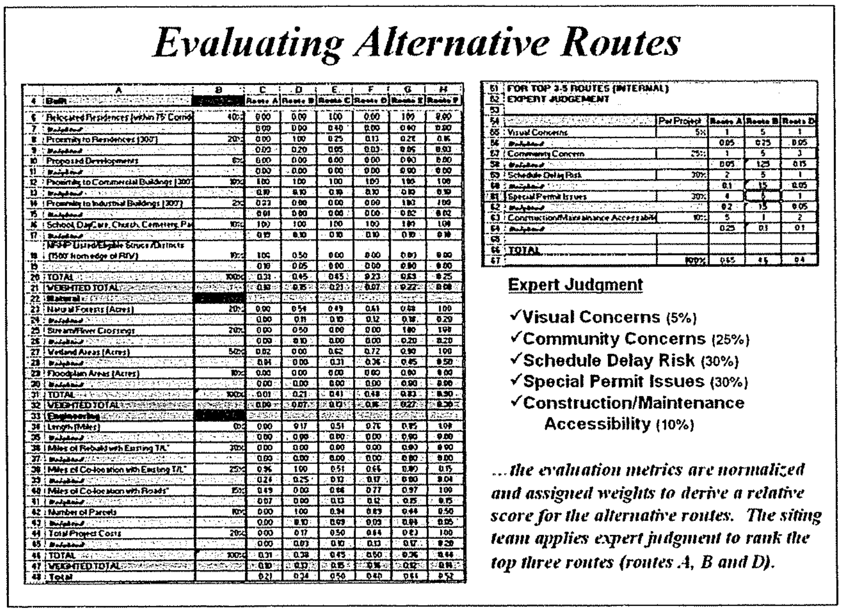


Table 2.7
Phase 3: Alternative Route Generation
Expert judgment is applied to the top three routes to identify their relative rankings

Selecting the Preferred Route

The final step in the evaluation process applies expert judgment for ranking the top Alternative Routes. (See Appendix H: Phase 3: Preferred Route Weighting AHP Pairwise Comparison Questions) Each of the siting team members ranks the top scoring routes based on their expert experience and opinion of several important considerations-visual concerns, community concerns, schedule delay risk, special permit issues, construction and maintenance accessibility, and environmental justice. (See Appendix I: Environmental Justice) The considerations are assigned relative importance weights (5, 25, 30, 30, and 10 percent respectively) and the