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Sulphur Springs Valley Electric Cooperative, Inc.

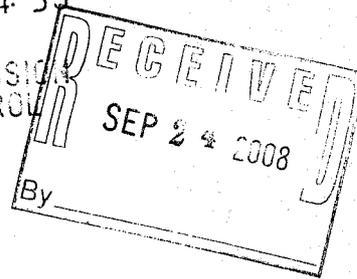
A Touchstone Energy Cooperative

RECEIVED

September 22, 2008

Mike Gleason  
Arizona Corporation Commission, Chairman  
Commissioners Wing  
1200 West Washington, Second Floor  
Phoenix Arizona 85007

2008 SEP 26 P 4: 35  
AZ CORP COMMISSION  
DOCKET CONTROL



Dear Commissioner Gleason,

Sulphur Springs Valley Electric Cooperative, Inc would like to present this documentation regarding the Sonoita Reliability Project, which is a planned electric system improvement project for the Sonoita, Elgin, Canelo and Patagonia communities of Santa Cruz County, Arizona.

In the past few months, your office was copied by one or more SSVEC members with concerns regarding aspects of this project. SSVEC assures you that we are communicating with our members - since the commencement of this project in March of 2008, we have sent three letters to all members receiving service in the area, held two local community meetings, attended many other small group or individual meetings, met with a community liaison committee and answered numerous requests for information. SSVEC understands the apprehension our members have expressed, and are diligently working to address all reasonable concerns presented.

SSVEC has a large number of members in these communities who support the Sonoita Reliability Project and are encouraging construction of the 69kV sub-transmission line and substation as an improvement to their electric service quality; however we are doing our best to communicate and understand the position of those in opposition. We do believe we are making progress.

The document enclosed is SSVEC's latest letter to all the members in the Sonoita area, and addresses the concerns presented in the aforementioned meetings/correspondence. We hope this demonstrates that SSVEC is truly going the extra mile to provide solid and accurate information regarding the project, to dispel negative and inaccurate rumors, and most importantly to continue communicating with all of our members.

SSVEC is an electric cooperative and is governed by member-elected Directors. These Directors live in Santa Cruz and Cochise County, and are committed to representing their respective members and making decisions in the best interest of SSVEC. This Board has been continually informed of progress and activities related to this project.

SSVEC understands your time is valuable; therefore no additional letters or information regarding this project will be sent unless requested by you, or someone from your office. At any time you wish for additional information please do not hesitate to contact me directly at 520-384-5471. Thank you for your time and consideration.

Sincerely,

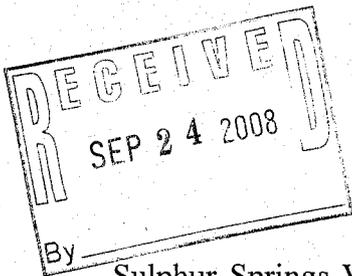
Deborah White, SR/WA  
Right of Way Services Manager

Arizona Corporation Commission

DOCKETED

SEP 26 2008





Sulphur Springs Valley Electric Cooperative, Inc.

A Touchstone Energy® Cooperative

Sulphur Springs Valley Electric Cooperative is continuing progress on the Sonoita Reliability Project and has received much feedback from the community through SSVEC hosted community meetings, email, telephone calls, written correspondence and presentations to our Board of Directors. Some responses have been supportive of SSVEC's intention to improve reliability in the area. Others are opposed to the project overall and still others opposed to certain portions of the project. SSVEC appreciates all who have contributed comments and assures you that we have listened to all concerns presented.

The intent of this letter is to respond to as many of the questions as practical in a general format for the benefit of all members in the area. Questions and comments have been categorized below with responses intended for general readership. Detail is presented where beneficial to dispel the rumor, correct misconceptions or non-fact, and to encourage communications that will move the project and the community forward in a cohesive manner.

On July 22, 2008, SSVEC presented to the community the Sonoita Reliability Project. This presentation identified the need for the project, along with relevant history, technical data, design criteria, routing criteria, and future plans. The presentation has been posted on SSVEC's website [www.ssvvec.org](http://www.ssvvec.org) and is included as an attachment to this letter.

**PROJECT NEED:**

One recurring statement from the community about the Project is that a *“clear purpose and need has not been presented”*.

In the Sonoita Reliability Project (SRP) Presentation the timeline indicates that SSVEC identified the potential for reliability concerns in the Sonoita/Patagonia/Elgin areas as early as 1980. Subsequently every two to three years this area, along with the remainder of the SSVEC electrical system, is analyzed for performance, reliability, and improvement requirements as per SSVEC's Construction Work Plan Studies. The 2005 and 2007 studies have identified this project as a 'priority need' for upgrade.

From the SRP Presentation, the graph titled “Increasing Load vs. Capacity” is a representation of the capacity limitations on the Huachuca Substation located at the Junction of Highway 90 and Highway 82 in Whetstone. The Huachuca substation is the source for all of the power from the Highway Junction to Rain Valley, Elgin, Sonoita, Canelo, and Patagonia, which is more than 2400 services over 360 miles of power line.

The graph indicates the consumer usage (load) demand has more than tripled since 1980. This consumer usage not only represents the addition of new customers to the power line, but the increase of products with a higher requirement of electrical use, such as air conditioning units, heat pumps, electric ranges, furnaces, water heaters, plasma televisions, computers, etc. All of these components have factored in the substation reaching its maximum capacity rating.



You may notice in 1996, the substation capacity increased from 3.75MW to 7.0MW; this capacity increase came from an upgrade of the substation transformer. ***“Why then, cannot SSVEC upgrade the substation transformer again?”*** A reasonable question, however, the substation is not the only component on this line at capacity – the other is the conductor (wire).

The conductor on the ‘feeder’ (main primary line) is sized in relation to the capacity rating of the substation, therefore the conductor which serves this geographical area is also at its maximum capacity. As SSVEC’s Manager of Engineering analogized, this conductor is like a garden hose, and no matter how large a pressure tank (substation transformer) you install at the source, the hose will still only allow a limited amount of water to flow out the end. This limitation in electric terms means low voltage which may cause damage to motors, appliances, and other electronic devices.

The substation and conductor could be upgraded; however there is one other major factor regarding the feeder which creates significant issues in maintaining reliable service to this community – the feeder length.

At over 360 miles of total length, this feeder (V-7) is a radial line which extends out of the Huachuca substation voltage source and does not connect, or loop, with another voltage source. All of the power on the feeder comes directly from the substation and if the substation fails, all customers on the feeder will lose electric power.

The V-7 feeder traverses a diverse landscape of open plains, rolling hills, dense oak forests, pine forests, and rugged mountains. Miles of line travel through remote areas to serve small communities or even just one customer, and outages may be long because of the time required to access and patrol the line looking for a fault location.

In addition to complete outages, consumers on V-7 experience numerous ‘blinks’, voltage dips/surges, and other transient power issues. Although these types of issues are considered normal in the industry, they are abnormally high on this feeder because of the vast length of line, which is abnormal in the industry.

As the graph titled “V-7 Feeder Outages per Year and Length in Miles as Compared to all SSVEC Feeders” shows, this feeder configuration is not typical per SSVEC standards. Typical electrical substations have a minimum of three to four feeders and are designed with length limitations for better service quality.

Therefore, the purpose of the Sonoita Reliability Project is to provide a solution to the current reliability issues affecting the V-7 feeder, the necessity of which has been clearly identified. The recommended solution to install a substation in the Sonoita area would eliminate the long radial length of the V-7 feeder and establish four separate, and shorter, feeders. Each of the four feeders would then be:



- a. individually operated at the substation, with separate voltage regulators to adequately control the distribution line voltages for the type of community load on each feeder.
- b. sectionalized individually, meaning that if an outage occurs on one feeder, it will not interrupt any of the consumers on the other feeders; this will improve not only the number of consumers interrupted, but the duration of the outages as well.
- c. 'looped' together where possible to reduce outages, meaning that portions of an interrupted feeder may be transferred to another feeder so power availability is continued to consumers while repairs are being made at an outage location.

These factors will ensure long-term quality of service to all of SSVEC consumers in the Sonoita/Elgin/Patagonia areas.

### PROJECT HISTORY 1991-1993:

The recommendation of a substation within the Sonoita area is not new to SSVEC, or to the Community, as this same proposal was introduced in July 1991. In a letter to members the Executive Vice-President and General Manager of SSVEC, stated:

*"The steady growth of the Patagonia, Sonoita and Elgin areas, along with customers' expectations of increased reliability of service, requires that we begin exploring construction of new facilities to serve your area. Based upon our projections, this will require building approximately 25 miles of new 69kV sub-transmission line plus a new low-profile distribution substation. Although we have obtained rights-of-way and a substation site over past years in anticipation of the day additional facilities are required, only conceptual plans exist at this time. We anticipate actual construction will be in the 1993-1995 time frame.*

*The substation which provides distribution service to your area is located at the intersection of Highways 82 and 90. Your service is provided over what is known as a "radial" line. This means that your electricity has only a single path (line) to arrive at your home, and anything that happens to this line affects everyone. More highly populated areas, such as cities, are served by "loop circuits" which give the utility two or more routes in which to provide electricity. As a result, service is generally more reliable."*

Currently, SSVEC has received several statements referencing the project during the time frame from 1991 – 1993, most specifically questions regarding a 'loop' system, and accusation that recommendations from that period are not currently being considered.

In reviewing the associated documents, SSVEC found no evidence of consideration for a 69kV sub-transmission line 'loop' on the project. A looped 69kV sub-transmission line would require more easements, more line and millions more in additional costs. There is documentation, as SSVEC is currently advising, of distribution feeder 'loops' which would increase the reliability



by allowing electricity to be served in different directions due to ties made between feeders. Distribution loops are possible in the Sonoita area once the new substation is built. Furthermore SSVEC does intend to tie the existing V-7 feeder from Huachuca Substation to the new Sonoita Substation for back-up capabilities.

During the 1991-1993 time frame, an Advisory Committee was established *“as a representative voice for the general Cooperative membership and particularly the members in the areas to be affected by the system upgrade.”* The Advisory Committee met a total of five times between August 1992 and August 1993 and discussed several alternative options for the 69kV sub-transmission line routing; however there was **no** agreement and/or recommendation on one particular route reached by the Advisory Committee.

#### **OPTIONS TO IMPROVE RELIABILITY ANALYSIS:**

As performed in 1991-1993 and again in 2007, SSVEC evaluated and compared several options to improve overall reliability in the Sonoita/Patagonia/Elgin area. The solution for quality and reliable service for the area is to construct a substation within the load center, which is in Sonoita.

#### **NEW SUBSTATION SITE:**

As identified in the timeline, as well as the July 22<sup>nd</sup> presentation, SSVEC obtained a substation property in 1982 within the Sonoita Hills Subdivision. This particular parcel has long been identified as SSVEC property, and as a ‘Future Substation Site’. However, upon receipt of a petition from the community regarding their opposition to a substation in the neighborhood, and after careful evaluation of the site location, SSVEC had the opportunity to obtain another property in an area of more industrial/commercial land use. The new location will allow the substation to be concealed from residential neighborhoods, and will be constructed to meet the current need of the community, as well as for future needs as consumer usage and growth occurs. Community feedback to this compromise by SSVEC has been very positive.

#### **69 kV SUB-TRANSMISSION LINE:**

As part of the solution, the new substation must be connected to SSVEC’s 69kV sub-transmission system. Three options were analyzed as presented below. SSVEC has selected first option as most advantageous.

1. Construct new 69kV sub-transmission line in existing SSVEC right of way on San Ignacio del Babocomari Land Grant and in Sonoita Hills: Components such as narrow-profile mono-poles dyed a color complementary to the landscape, reduced glare conductor, longer spans to be used for reduced visual impact were considered. Advantages include utilization of an expansive length of previously acquired easement; an expedient construction capability; creative design options. Disadvantages include



acquisition of additional easements due to relocation of substation property; alignment through residential subdivisions. Approximately 23 miles of 69kV sub-transmission construction cost is about \$4.2 million.

2. Upgrade existing feeder line along Highway 82 and Elgin Road: The existing line would be replaced in the same location with a new sub-transmission line and distribution line on the same mono-pole structure. Advantages include keeping the new line in the same corridor, resulting in a modified visual impact of a new line in the same location. Disadvantages are the rebuild would be slow, expensive and dangerous to workers as the work would have to be performed while lines are energized; acquisition of right-of-way from more than 80 landowners as existing right-of-way does not include sub-transmission line rights, and as the majority of this route was designated a part of the 2000 Las Cienegas National Conservation Area, 42,000 acres of protected public lands managed by the Bureau of Land Management, special permitting conditions may apply. These factors combine to make this the most expensive overhead option with construction costs for approximately 23 miles at about \$6.8 million. Right-of-way acquisition/permitting costs were not factored into this estimate.
  
3. Underground 69kV sub-transmission: SSVEC investigated the possibility of using 69kV underground sub-transmission line. Though this seems to be a simple solution, especially as many residential customers have opted to install underground distribution line; however installing an underground sub-transmission line is a very complex issue. Following are significant issues involved:
  - a. The insulated cables used in underground sub-transmission require one, sometimes two, sizable trenches which leads to greater environmental disturbances. Concrete vaults or manholes up to 24' x 40' in size are required at regular intervals along the trench; depending on terrain every 900' to 2,000'.
  - b. Underground electrical conductors produce heat, from 167°F to 266°F, for efficient operation heat must be carried away from the conductors (air performs this function for overhead lines). As saturated soils conduct heat more easily than soils with air pockets or dry places, the soil nearest the underground line must not be allowed to dry out. Concrete 'caps' are poured around the conductors and the soils in the trench require a special backfill material that is thermally designed to move heat away from the line.
  - c. The right of way must be kept clear of any vegetation due to possible interference by root systems, and to avoid removal of soil moisture, which is necessary to cool the cables.
  - d. Studies have indicated the lifespan of underground conductors is estimated to be about half of overhead conductors.
  - e. Failures in underground transmission lines are infrequent; however, when they occur they are extremely costly, disruptive and time intensive to repair. Line outages can last for weeks or even months before final repairs are made.
  - f. Installation cost of underground transmission ranges from four to ten times as much as overhead. The SRP estimate for an overhead 69kV sub-transmission/distribution



underbuild line cost along route 'Option 3' is \$378,000 *per mile*; an estimate for 69kV underground sub-transmission was obtained for route 'Option 3' at \$2.48 million *per mile* – which is 6.5 times as much as the overhead. Additional costs incurred with terrain limitations such as rocky soil, drainage ways, and areas of heavy vegetation were not factored in this estimate.

## ALTERNATE ROUTE ANALYSIS:

### TEP ALTERNATIVE:

Route alternatives previously considered in 1991-1993, were once again reviewed for availability and viability in 2007. These alternatives involved the San Ignacio del Babocomari Land Grant (SIDB), a private property owned by a large family partnership, upon which SSVEC already encumbered with an easement in 1982. At least two options 'recommended' during the 1991-1993 period involved additional encumbrance of the SIDB, one would lie adjacent to the South boundary from Huachuca City to the Southwest corner of the SIDB; the other would lie adjacent to the Tucson Electric Power (TEP) transmission line which serves Fort Huachuca Military Reservation.

The SIDB South boundary option was dismissed due to its distant location to the existing and proposed substation properties.

The TEP option was explored in depth and involves the TEP 46kV sub-transmission line which was constructed in the 1940's and traverses through the SIDB. Several issues were identified with this alternative:

1. The 46kV power line serves the Fort Huachuca Military Reservation and does not have enough capacity available for a substation to carry the additional load of the Sonoita/Elgin/Patagonia areas.
2. Negotiations with TEP for 'shared-use' of poles along the 46kV route were unfruitful. Furthermore, if a shared-use agreement were to be considered, the contractual obligations would likely take years to legally establish rights/responsibilities for ownership interests, taxation, service back-up, maintenance duties, etc. As TEP is a for-profit investor-owned utility, and SSVEC is a non-profit member-owned cooperative, the proceeds from the sale of electricity from these lines are a significant hurdle with contract negotiation/preparation.
3. TEP is bound through their Certificate of Convenience and Necessity by a special bonding arrangement which strictly limits their ability to serve outside two counties. TEP's management, in 1993 and more recently in 2007, indicated a joint project may violate their bonding agreement.
4. Establishment of SSVEC's new 69kV sub-transmission line adjacent to the TEP line would require additional rights-of-way from the SIDB partnership. This proposal has gone through the negotiation process and has been abandoned.



#### SOLAR ALTERNATIVE:

Use of alternative energy sources such as solar has been suggested by the community to replace the need for the SRP. One comment *"I think you (SSVEC) need to learn to think outside the box. With more support for solar panels at home sites maybe we wouldn't need the extra line"* may be addressed by the fact that SSVEC currently has two active solar photovoltaic (PV) promotion programs. SSVEC is currently installing 24 kW, grid-connected, solar electric systems on 41 schools in the service area including Elgin School, Patagonia Elementary, and Patagonia High Schools. When complete, this program will have installed nearly one megawatt (MW) of solar energy in the community. Details on this program are available at [www.ssvec.org](http://www.ssvec.org) in the online Currents Excerpts for July 2008.

SSVEC also offers the SunWatts program to members. Details of the program are available at [www.ssvec.org](http://www.ssvec.org) in the column on the left side of the homepage. This program has been available since 2005 though response from members has been lackluster. To date we have record of only nine members out of 2,400 services in the Sonoita/Patagonia area taking advantage of the program.

Another comment *"I request that you (Arizona Corporation Commission (ACC)) require SSVEC to fulfill its obligation to purchase or provide 15% of its electric power from alternate energy sources"* indicates misinterpretation of the regulatory mandates by the ACC regarding renewable energy requirements. Investor owned utilities such as TEP and Arizona Public Service are required by the ACC to have 15% of their generation assets provided by renewable energy sources by 2025. Cooperatives are not required to have a fixed percentage of their assets in renewable energy, but must submit a plan to use funds collected from customers to advance renewable energy. SSVEC submitted its plan, with a budget to fund rebates for residential and commercial programs, which was accepted by the ACC. The program approved by the ACC has 45% of the funds collected to pay for the PV for School project, 20% for Residential rebates, 13% for Commercial rebates, 15% for the loan fund, and the balance for supporting R&D, advertising, and administration. The complete Renewable Energy Surcharge and Tariff (REST) program is filed with the ACC. Again, this program has been available since 2005, and SSVEC records indicate only 9 members out of 2,400 services in the Sonoita/Elgin/Patagonia are taking advantage of the program.

*"SSVEC should investigate the installation of a 'Solar Farm' to provide power to the substation instead of installing more 'ugly poles' and '...trashing our landscape'"* are comments received by SSVEC. Large grid-connected solar systems are definitely becoming more prevalent in the US due to mandated requirements for renewable energy. However the installation of a utility solar farm requires significant investment in real estate and equipment, but may not provide the return the Sonoita community is expecting.

The substation being planned for Sonoita has a transformer size of 14MW (mega-watt) on a parcel of land approximately 2.5 acres in size. A 10MW solar farm would require approximately



100 acres of land in which to install thousands of solar panels. A typical 10MW system, for installation only, no land purchase, costs approximately \$70 - \$80 million.

A significant aspect of solar farms is they still **require a connection to a sub-transmission line** in order to feed power to a substation. Furthermore solar farms at this time, are not fully sustaining energy service, but are typically used as a support for the 'grid' electric system. Therefore this alternative would not alleviate the need for the sub-transmission line to Sonoita.

SSVEC supports renewable energy programs as presented above, and may in the future invest in this type of renewable energy support to its electric system; however this type of expenditure does not seem appropriate at this time and it is certainly not an alternative to the SRP.

SSVEC has entertained several proposals for large renewable energy systems in its service territory and is open to discussing any specific proposals for grid-connected renewable energy projects that members of the Sonoita community might present.

#### SAN IGNACIO DEL BABOCOMARI LAND GRANT ALTERNATIVE:

As indicated in the Sonoita Reliability Project Presentation timeline, in March 2006 SSVEC and the Babacomari Ranch Company, LLLP (the Ranch) entered into litigation to resolve claims against SSVEC's 1982 easement across the SIDB. After 2-½ years of legal proceedings, SSVEC and the Ranch came to a private settlement of the litigation on June 30, 2008. As the Babacomari Ranch is **privately owned**, the decisions made by the landowners are not subject to community involvement as a public lands suit may provide. SSVEC respects the decisions made by the Ranch, therefore **no further litigation or negotiation** is anticipated.

AS SSVEC REVIEWED THE ALTERNATIVES AND OPTIONS PREVIOUSLY ADDRESSED, IT IDENTIFIED THE MOST REASONABLE DECISION IS TO USE THE EXISTING 1982 EASEMENT ALONG THE SIDB FOR CONSTRUCTION OF THE 69kV SUB-TRANSMISSION LINE AND CONSTRUCT THE SUBSTATION IN THE NEW LOCATION WITHIN THE INDUSTRIAL AREA OF SONOITA.

#### ROUTE OPTIONS IN THE SONOITA AREA:

Perhaps the most contentious and emotional issue on the SRP is routing of the 69kV sub-transmission line from the San Ignacio del Babocomari Land Grant to the planned substation site.

As introduced in the July 22<sup>nd</sup> SRP Presentation, SSVEC identified four options meeting specific criteria for placement of the 69kV sub-transmission line off the SIDB. The four route options are shown on the enclosed map "69kV Sub-Transmission Route Options (from San Ignacio del Babocomari Land Grant)", sent to neighborhood members for the August 13<sup>th</sup> meeting. Subsequent to the August 13<sup>th</sup> meeting, SSVEC has narrowed the option considerations to a



modified Route 1, **now 1A**, and Route 3 (see map "Option Considerations: Route 1A and Route 3"). Following is a detailed synopsis of each option pro's and con's:

Option 1A:

Pros: Use of existing corridor where impact of roadway use is already established

1. The Community has stated "***put the line along the highway, where people expect to see power lines***" and "***There is already a power line along Highway 83***".

Cons: No existing overhead power-line on north/south alignment, additional impact

1. On the North/South portion of Highway 83, where it travels north from the SIDB boundary, there is **no overhead power line existing**.
2. The power line only exists on that portion of Highway 83 running East/West as an extension of Lower Elgin Road. The East/West portion will be used for the 69kV line upgrade into the new substation.

Alignment on ridge of hill – high visibility to community / visitors

1. On the North/South portion of Highway 83, where it travels north from the SIDB boundary, the ridge is the **second highest hill** in the Sonoita community at about 4970' in elevation.
  - a. The next highest ridge is at about 5000', which is approximately one-mile west along the Babocomari Land Grant boundary.
2. Installation of 69kV poles running parallel along this ridge will put the **entire pole line along the skyline** and in view of nearly the whole Sonoita community.

No designated corridor for utilities in the right of way

1. The Highway 83 right of way is fairly narrow (from 30' to 60') along this portion; therefore the power line would require placement on private properties on the route. As the majority of these properties are lots of 3 acres or less and oddly shaped, limiting their development capability, the additional easement on each lot creates less usable area on the lot for development.

Additional impact to the Las Cienegas National Conservation Area (LCNCA)

1. The modification of Route 1 to Route 1A, adds an additional limitation to the construction of the power line. Although SSVEC has an existing overhead distribution line in this area, it was 'grandfathered' in at the time of the 2000 signing of the LCNCA, and to upgrade this distribution line to a 69kV sub-transmission line will require re-application to the federal management of the LCNCA.

Residential neighborhood

1. The Sonoita Estates neighborhood has a higher density of existing build-out. Due to the power line location prominent along the ridge line, this entire



neighborhood will be impacted, along with the Rancho Vista area, and a portion of the Sonoita Hills Subdivision.

### Option 3:

#### Pros: Use of established and designated utility easements

1. SSVEC obtained a 50' easement along the northern boundary of the SIDB in 1982; however in 2008 a portion of this segment of easement was modified to offset the boundary line a distance of 170 feet to provide additional clearance from those homes constructed near the boundary.
2. Designated easements for utilities within the Sonoita Hills Subdivision have been established since the late 1960's.
3. SSVEC obtained additional electric easements for the Buchanan Substation property.

#### Use of existing corridor where impact of power lines is already established

1. That portion of Option 3 within the Sonoita Hills Subdivision has an existing overhead distribution line utilizing nearly 100% of the easement. The new 69kV line would fully replace this line (old poles removed, wire line transferred to new poles).

#### Adjacent to SSVEC property

1. SSVEC obtained the Buchanan property in 1982. Although it has relocated the substation to another property in an industrial/commercial land use area, this site will remain under SSVEC ownership.

#### Parallel with parcel lines

1. The 69kV line would be installed parallel to existing parcel lines, therefore minimizing impact on full usage of property.
2. Furthermore, the Sonoita Hills Subdivision has a setback covenant requiring a minimum of 50 feet from the property line for any structural improvements by the landowner.
  - a. SSVEC's usage of the easement would impact only 25 feet of the property, leaving an additional 25 feet of setback requirement to be met by the landowner.
  - b. The covenant, and SSVEC, does not restrict usage of the easement for other purposes which do not require structures (grazing, gardening, landscaping, etc.)

#### Existing road for access

1. Improved roadways exist within the Sonoita Hills subdivision which would allow for convenient access to construct and maintain the power lines.
2. Access for that portion of Option 3 along the SIDB will be obtained through the Sonoita Hills easements, as well as by existing roads on the Babacomari Ranch. **SSVEC will not create a 'road' along the Ranch boundary to be used for maintenance or to be used by the public.**



Alignment lower on hill and in drainage valley

1. On the SIDB portion of Route 3, where it travels Westerly from the SIDB/Highway 83 intersection, the 69kV sub-transmission line will run perpendicular to the ridge lines along the Southern boundary of the Sonoita community. This perpendicular alignment will shield the entire power line from full view of the community by allowing it to drop from view into valleys along the corridor. Instead of seeing all poles along a ridge line, only poles on top of each ridge being crossed will be seen by the community at large.
2. In that portion of Route 3 where it travels North from the SIDB boundary, the 69kV poles will run parallel with a ridge – however the easement is near the bottom of the ridge, in a valley, which lowers the pole line from view against the skyline, and from the whole Sonoita community.
3. The elevation along this easement in Sonoita Hills is from about 4925 feet to 4800 feet, more than a **full pole height lower** than in Option 1A.

Cons: Residential neighborhood

1. The Sonoita Hills neighborhood has a lower density of existing build-out and the lot sizes are 4 acres or larger, with a symmetrical shape, allowing more options for development capability – but with the power line location low along the ridge line, and in the valley, this segment of the Sonoita Hills neighborhood will be impacted..

Of the four options, SSVEC identified “Option 3” as the ‘most logical route’ for the 69kV sub-transmission line in the July 22<sup>nd</sup> Sonoita Reliability Project Presentation. In review of the criteria shown above, SSVEC stands by the identification that Option 3 is the best route choice, with the **least impact on the entire Sonoita community**.

The most obvious disadvantage of all of these routes is their location within residential subdivisions. According to Santa Cruz County zoning maps, all options, including any of the former alternatives suggested by the community, will impact residential zoned lands and areas that are established neighborhoods. Impact to a residential neighborhood is unavoidable; however SSVEC is committed to minimize the effect of the 69kV sub-transmission line on these properties as much as possible.

For the August 13<sup>th</sup> presentation, SSVEC calculated estimated costs of each route based upon design factors such as length of route, number of in-line poles, number of angle poles, types of poles used, and basic terrain considerations (titled “Design Cost Comparisons per Option”). As the actual design for this project has not been completed, these are rough material and construction costs.

In the next few weeks however, decisions on this project will require finalization in order to achieve SSVEC’s initiative for this solution to be in place by early 2010.



## ENVIRONMENTAL EVALUATION:

In preparation for use of the SIDB easement, SSVEC performed environmental assessments such as cultural and biological studies along the right of way. These studies concluded that no threatened or endangered species exist in the project area, and that the project may proceed with no further need of archeological or biological review. However, threatened and endangered species are not the only consideration for wildlife impact; avian protection is a significant design factor with this project. Furthermore SSVEC will take great care in design considerations to avoid disturbance to irreplaceable native vegetation such as oak forests and riparian areas, and, as part of the project, disturbance and/or clearing of the right-of-way will be re-seeded with native grasses upon completion of construction; this is intended to retain the natural grasslands character of the easement, and reduce the invasion of noxious weed species.

Currently SSVEC is proceeding with preparations of the SIDB easement for engineering design of the 69kV sub-transmission line. These preparations include minimal clearing of the SIDB easement – which is not a new occurrence either. SSVEC shares the SIDB easement with Qwest Communications who in 1991 significantly cleared and disturbed the easement with the installation of an underground fiber-optic line. This includes that portion of the SIDB easement lying adjacent to the Appleton-Whittell Research Ranch, which has recently submitted a letter expressing their concerns.

SSVEC respects and appreciates the importance of research conducted by the Research Ranch. However as previously mentioned this segment of the SIDB adjacent to the Research Ranch has been significantly disturbed at least once, and maybe twice, in the past 40 years by installation of standard telephone lines and fiber-optic lines. Furthermore, access pathways adjacent to the fence boundaries continue to be used for maintenance of the telephone facilities. SSVEC's disturbance to the SIDB easement would have no greater impact than the telephone installation, and the 69kV sub-transmission line itself should have no impact on cross-fence comparisons of range habitat.

## HEALTH AND SAFETY:

SSVEC understands the community's concerns regarding environmental factors such as safety and health issues. SSVEC designs and constructs its facilities in compliance with the National Electric Code, the National Electric Safety Code, and other industry standards. Design considerations include protective equipment on the lines and appropriate grounding techniques on poles which greatly reduce possibilities for fire hazards on the sub-transmission route.

The study of Electromagnetic Fields (EMF) began in the 1970's and continues today. SSVEC encourages you to visit these informative websites to learn more about this issue:

World Health Organization - [www.who.int](http://www.who.int)



Electric Power Research Institute - [www.epri.com](http://www.epri.com)

National Institute of Environmental Health Services - [www.niehs.nih.gov](http://www.niehs.nih.gov)

#### IMPACT ON PROPERTY:

The environmental impact to property by construction of a power line will be minimized by: utilizing mono-pole structures that require minimal ground disturbance for installation; locating structures in positions that reduce interference with existing views from homes; locating power lines along property lines to minimize impact on property use; using materials such as concrete, steel, or fiberglass with higher strength and longer life spans to reduce bending and warping, as well as property disturbance due to maintenance 'trips' along the right of way.

#### POSSIBLE USES OF THE BUCHANAN SITE

Several members asked about SSVEC's intentions for the Buchanan site given that a new substation site will be used. SSVEC intends to maintain ownership of the Buchanan site. SSVEC would entertain proposals from the community for use of this facility.

#### COST TO MEMBERS:

The Sonoita Reliability Project is currently funded through SSVEC's System Improvement loan through the Cooperative Finance Corporation. The SRP project is funded at \$7.9 million; this loan will be repaid over a period of time through rates collected from all SSVEC members throughout the entire service area. Therefore SSVEC has a responsibility to evaluate project needs, alternatives, and design based on sound engineering and economics acceptable to all the cooperative's members.

#### MYTHS AND RUMORS:

Finally, SSVEC would like to address some of the 'myths' being circulated regarding the Sonoita Reliability Project:

1. The 69kV sub-transmission line and substation is *'overkill'* for the small community of Sonoita – ***“SSVEC is planning the line at this time to serve the Rosemont Mine”***.
  - a. This statement is untrue. First, the 69kV voltage is standard on SSVEC's electric system for connecting its distribution substations which serve all of its communities – even very small rural areas such as San Simon or Elfrida.
  - b. Second the Rosemont Mine is not within SSVEC's service territory, thus is not eligible for service from SSVEC.

2. ***“SSVEC is planning to send power to Mexico via this 69kV sub-transmission line”***.



- a. This statement is untrue – SSVEC has no intentions of serving power to Mexico.
  - b. The 69kV sub-transmission line does not have the capacity for large wholesale transactions.
3. ***“SSVEC previously planned a ‘loop’ system which is now no longer planned.”***
- a. A 69kV ‘loop’ system has **NEVER** been planned for this project. A ‘loop’ system would require not only a new 69kV line coming from Huachuca City to the substation, but **ALSO** a 69kV line coming from Whetstone to the substation – basically creating a ‘loop’ or circle around the entire Sonoita area.
  - b. As stated herein, however, there will be distribution ‘loops’ between the new feeders out of the Sonoita substation. Furthermore SSVEC does intend to tie the existing V-7 feeder from Huachuca Substation to the new Sonoita Substation for back-up capabilities.
4. ***“SSVEC is refusing to meet with a Community Committee”***
- a. This statement is untrue – however, SSVEC delayed meeting with a Committee earlier in 2008 until representation has been determined – SSVEC is committed to discussing this project with **ALL** its members and is concerned that some interests may not be fully represented at this time. SSVEC has recently been advised by this Committee that it *“is not empowered to negotiate for the community, only to facilitate discussions between the cooperative and the community”*.
  - b. SSVEC held a meeting with the Community Committee on September 12, 2008. Agenda items included several of the issues discussed herein, and were covered in great detail. SSVEC entrusts the Committee will present the cooperative dialog held in this meeting to the Community.
5. ***“This project is being sponsored and PAC’D and rushed through by developers that want to build here without any moral concerns and appreciation for the environmental destruction of this special place...”***
- a. As indicated at the beginning of this letter, this project has been initiated by SSVEC to improve the quality and reliability of service to the Sonoita/Elgin/Patagonia areas. Service which is marginal and deteriorating as consumer usage increases; SSVEC has an obligation to maintain appropriate electric service to its communities.
  - b. This project is not ***‘promoting growth’***, nor permitting ***‘unplanned development’***. The community has a much stronger voice regarding development of the area with the Santa Cruz County Planning and Zoning Department, which regulates zoning density, and permitted uses of lands.



6. ***“The proposed line would run right along the edge of the Audubon Research Ranch. Damage from work already begun has negative impacted at least 40 long-term research projects, and one project has already been cancelled.”***
  - a. First, SSVEC has not been notified by the Audubon Appleton-Whittell Research Ranch that 40 **projects** have been affected; the Audubon has indicated that 40 **years** of data accumulation on one particular type of research, namely cross-fence comparisons, may be affected.
  - b. However, as mentioned herein, the easement area is shared with Qwest Communications who in 1991 significantly cleared and disturbed the easement with the installation of an underground fiber-optic line, and continues with maintenance travel disturbance along the easement. SSVEC is unclear as to how this project affected the Research Ranch’s 40 years of data accumulation, but the effect would likely be greater than SSVEC’s installation of an overhead power line.
  
7. ***“The Sulphur Springs Valley Electric Cooperative Board has indicated a willingness to reopen talks with the Babocomari Ranch with the goal of identifying new, far more acceptable power line routes than they have thus far proposed.”***
  - a. The SSVEC Board of Directors has not issued any such statement to its staff, or to the community. Furthermore, several members have approached SSVEC’s Board of Directors requesting an immediate stop-work order on the SRP; nonetheless Staff has been instructed to continue design functions and to continue evaluation and response to community input.

#### COMMUNITY:

There has been consternation from the community because of SSVEC’s **‘unwillingness’** to discuss the litigation, or future plans, prior to court judgment or settlement. This **‘gag order’** was recommended by SSVEC’s legal council as prudent to maintain respectful negotiations with a member of the cooperative and not contribute to speculation among the community.

Upon settlement with the Ranch on June 30<sup>th</sup>, SSVEC moved quickly forward with a direct mailing on July 7<sup>th</sup> to all Sonoita/Elgin/Canelo/Patagonia members advising of the SRP status, a full community presentation on July 22<sup>nd</sup>, a follow-up letter to the meeting for all members on August 8<sup>th</sup>, a neighborhood discussion on August 13<sup>th</sup>, and numerous telephone/email conversations regarding plans for the Sonoita Reliability Project. SSVEC’s Board of Directors have attended the community meetings, heard three presentations from members, have been presented several letters and have been supportive of staff by allowing time to gather the information required to respond to all members’ concerns. As evident from this document, SSVEC has been forthcoming with information regarding options for improved service, community concerns regarding the substation location, and visual impact of the 69kV sub-transmission line. SSVEC is by no means **‘stone-walling’** discussions regarding this project as suggested by some community members.



SSVEC realizes this letter is significant in length, however it is only a brief representation of the hundreds of hours of research and review SSVEC has performed as its due diligence to the community, and we have tried to be clear and concise on issues that involve complex and technical details. We certainly hope the information contained within clarifies many of the questions surrounding the SRP, SSVEC's intentions to provide quality, reliable service to the Sonoita/Elgin/Patagonia areas, and especially SSVEC's commitment to its members and their concerns. We appreciate your continued support with the Sonoita Reliability Project.

A handwritten signature in black ink, appearing to read 'Deborah White', written over a circular stamp or seal.

Deborah White,  
SR/WA Right of Way Services Manager

A handwritten signature in black ink, appearing to read 'Ronald C. Orozco', written in a cursive style.

Ron Orozco,  
Engineering Division Manager

cc: SSVEC Board of Directors  
Creden W. Huber, Chief Executive Officer  
Various Government Officials

RECEIVED  
SEP 24 2008  
BY

# Sonoita Reliability Project

Community Meeting

July 22, 2008



Sulphur Springs Valley Electric Cooperative, Inc.

A Touchstone Energy® Cooperative



# SSVEC Sonoita Reliability

## Team Members:

Creden Huber – Chief Executive Officer

Jack Blair – Chief Member Services Officer

Anselmo Torres - Chief Operations and Engineering Officer

Ron Orozco, PE – Engineering Manager

Deborah White, SR/WA – Right of Way Services Manager

Ricardo Garcia – Construction Manager

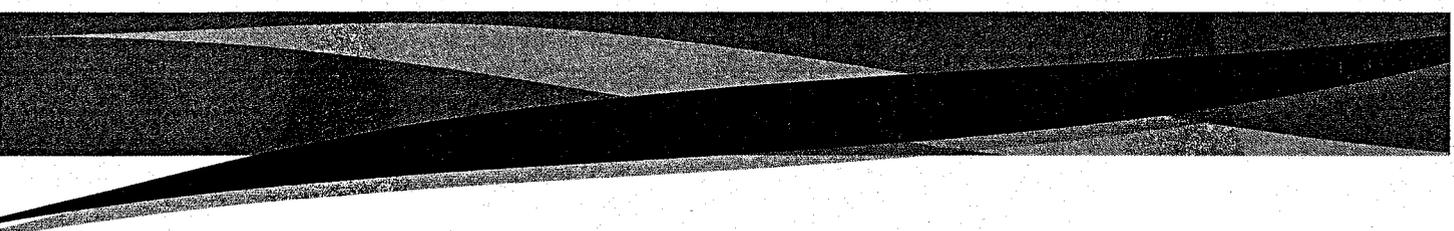
Vic Plumb, Ms. E.E. Substation Engineer

Kurt Towler - Geographic Information Systems Coordinator

Wayne Crane – Public Relations Manager

Megan Resor – Right of Way Agent





# **Purpose of Community Meeting**

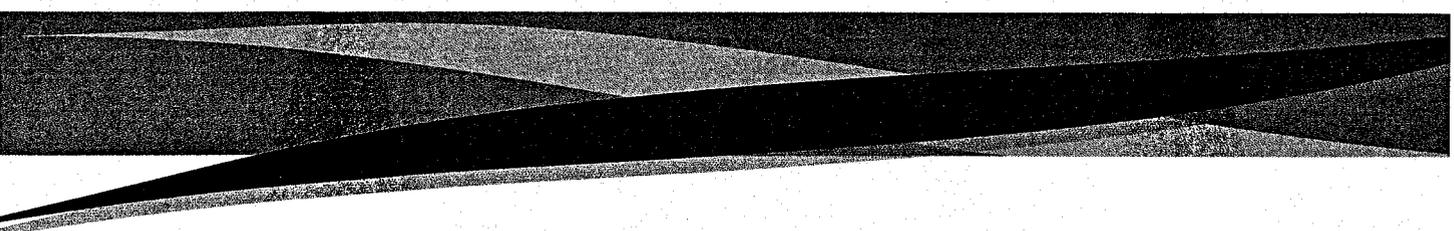
- **Introduce the Sonoita Reliability Project**
- **Provide Relevant Background and Project Purpose**
- **Review the need to improve the adequacy and reliability of electric supply to the Elgin/Sonoita/Canelo/Patagonia communities**
- **Present Solutions for meeting area reliability needs**
- **Review project criteria, plans and maps**
- **Address community concerns**
- **Questions & Answers**



- 1980: Identification of service reliability concerns
- 1982: Acquisition of substation property and 69kV sub-transmission corridor.
- 1991: SSVEC proposes evaluation of substation site and 69kV sub-transmission route for 1992-1993 construction
- 1994: Project deferred due to availability of new technological improvements
- 1996: Huachuca Substation upgrade completed; addition of improved voltage regulation equipment
- 2005: System planning study identifies priority need for upgrade of service reliability
- 2006: Sub-Transmission easement on San Ignacio del Babocomari Land Grant disputed
- 2007: Sonoita Area Capacity Study evaluates service reliability solution - Project funded at \$7.9 million for 2008-2010

JUNE 30, 2008: Sub-Transmission easement dispute settled





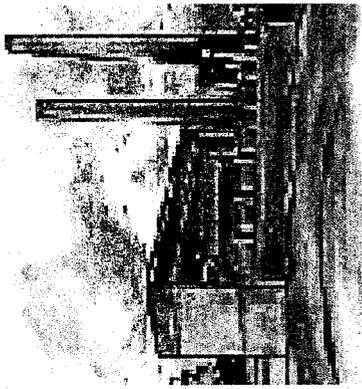
# **Why is Project Needed?**

**Ron Orozco, P.E.**

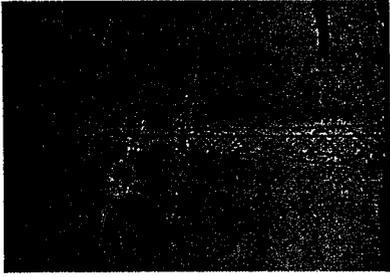
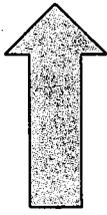
**Engineering Manager**



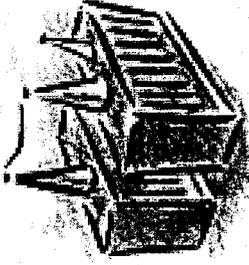
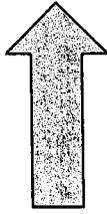
# Key Electrical Terms



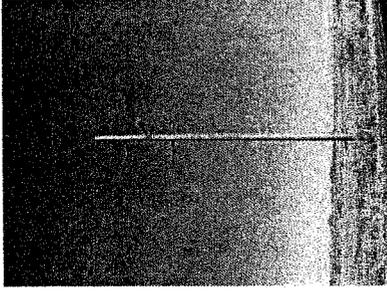
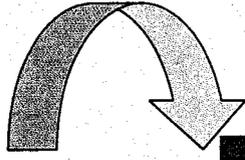
Generating Station



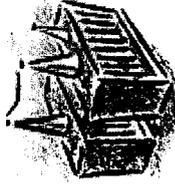
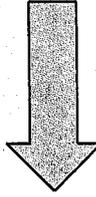
Transmission Line  
(115kV or Higher)



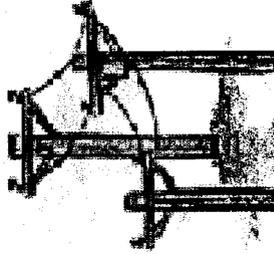
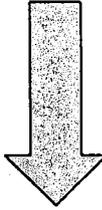
Transmission  
Substation



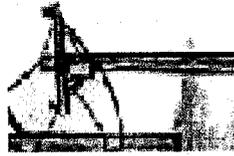
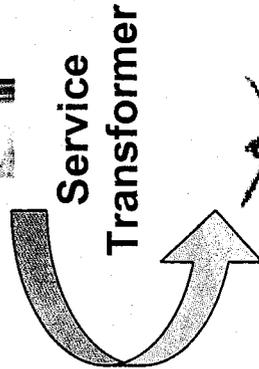
Sub-Transmission  
Line (69kV)



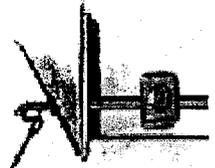
Distribution  
Substation



Distribution System  
(Feeder or Lateral)



Service  
Transformer



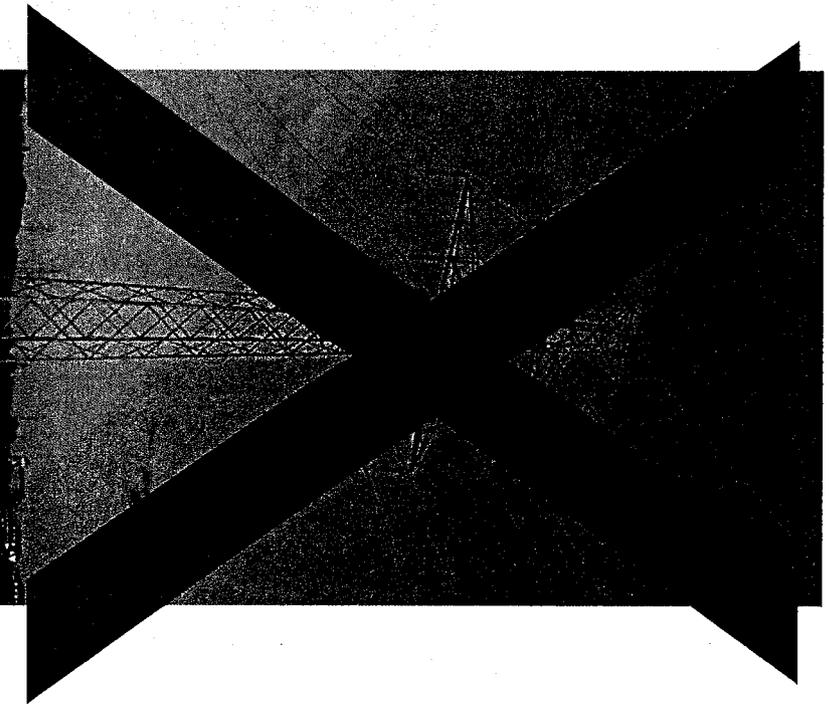
Service Entrance and Load Center



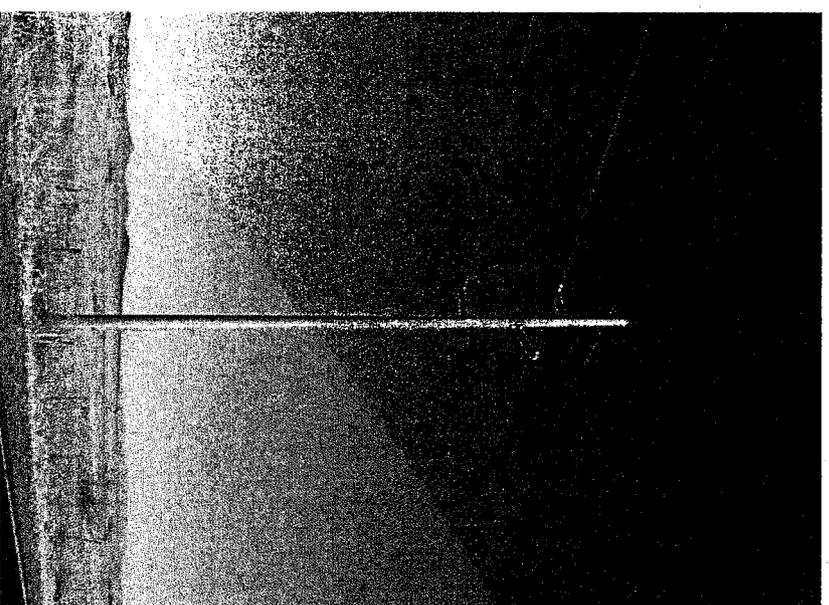
# Key Electrical Terms (Cont'd)

## Overhead Structures

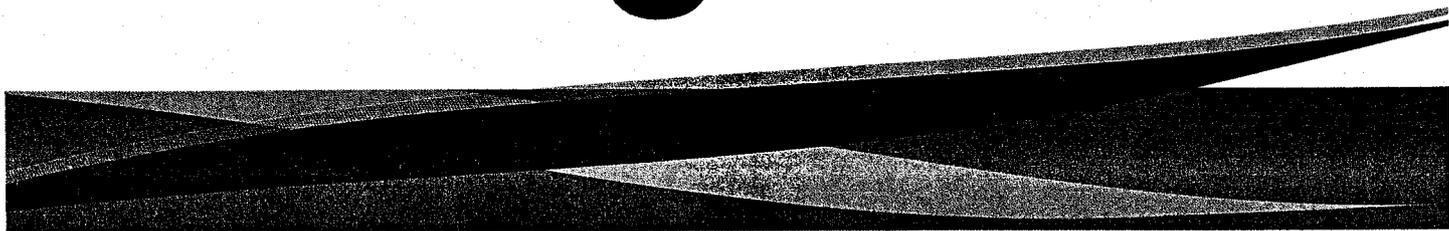
**Lattice Structure**



**Monopole Structure  
(Narrow Profile)**

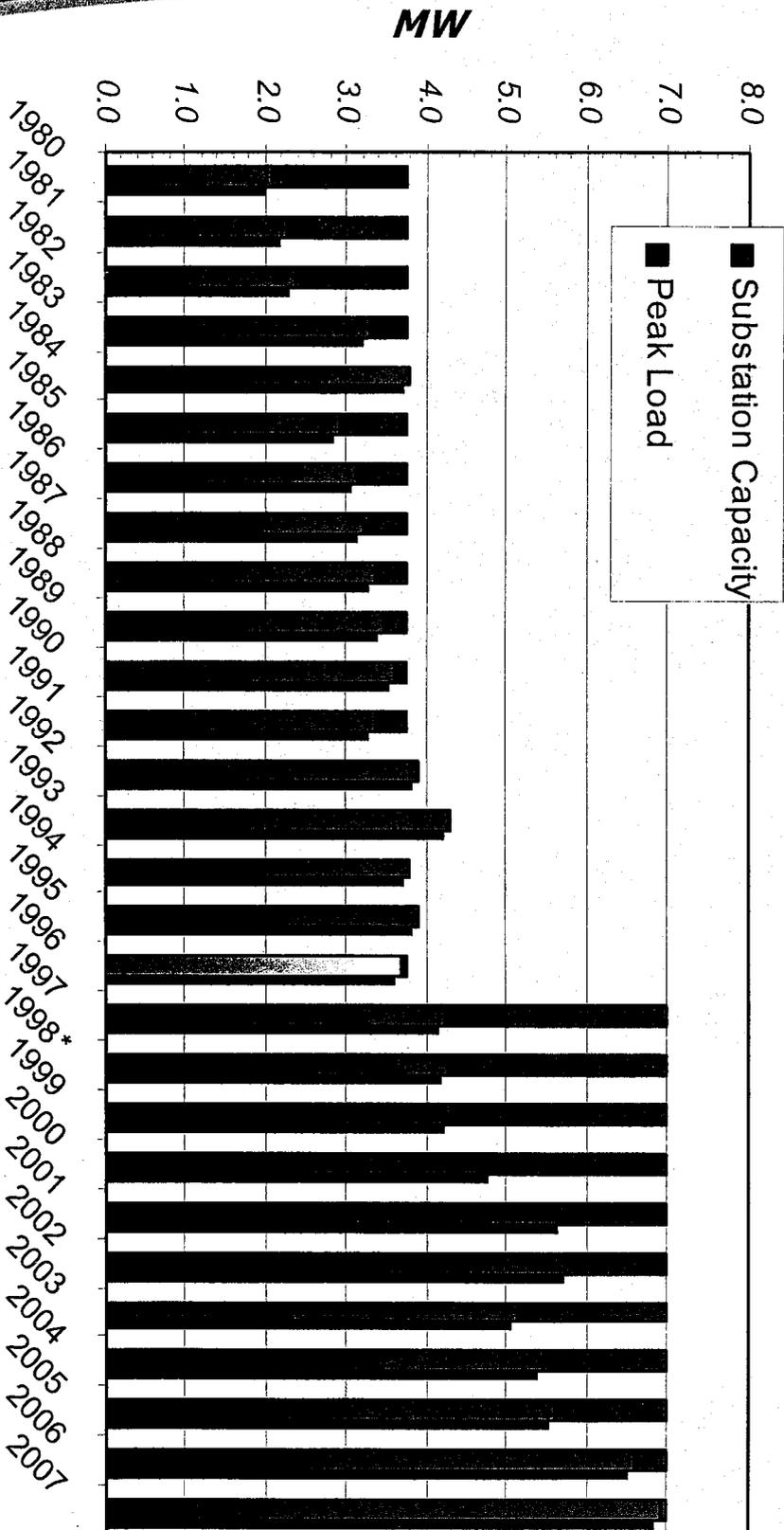


# Capacity and Reliability



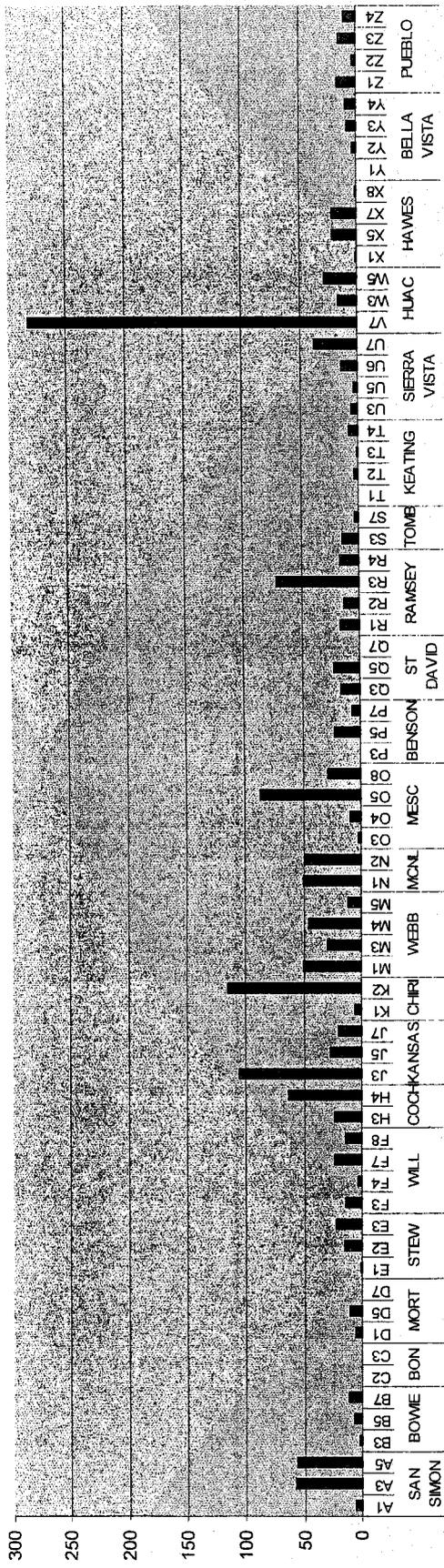
# Increasing Load vs. Capacity

## Huachuca Substation Reaching Capacity

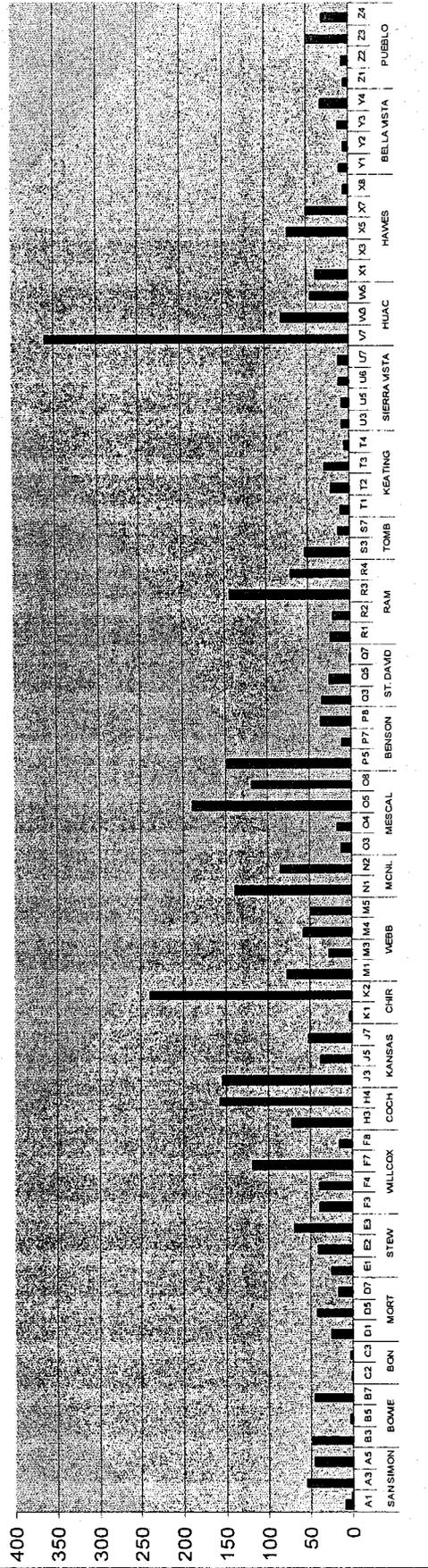


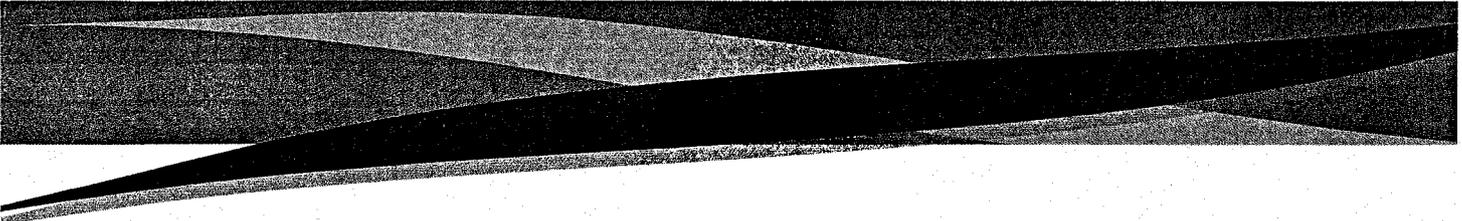
# V-7 Feeder Outages per Year and Length in Miles as compared to all SSVEC feeders

Hours Out



Total Miles





# **Substation Site Selection**

**Deborah White, SR/WA**

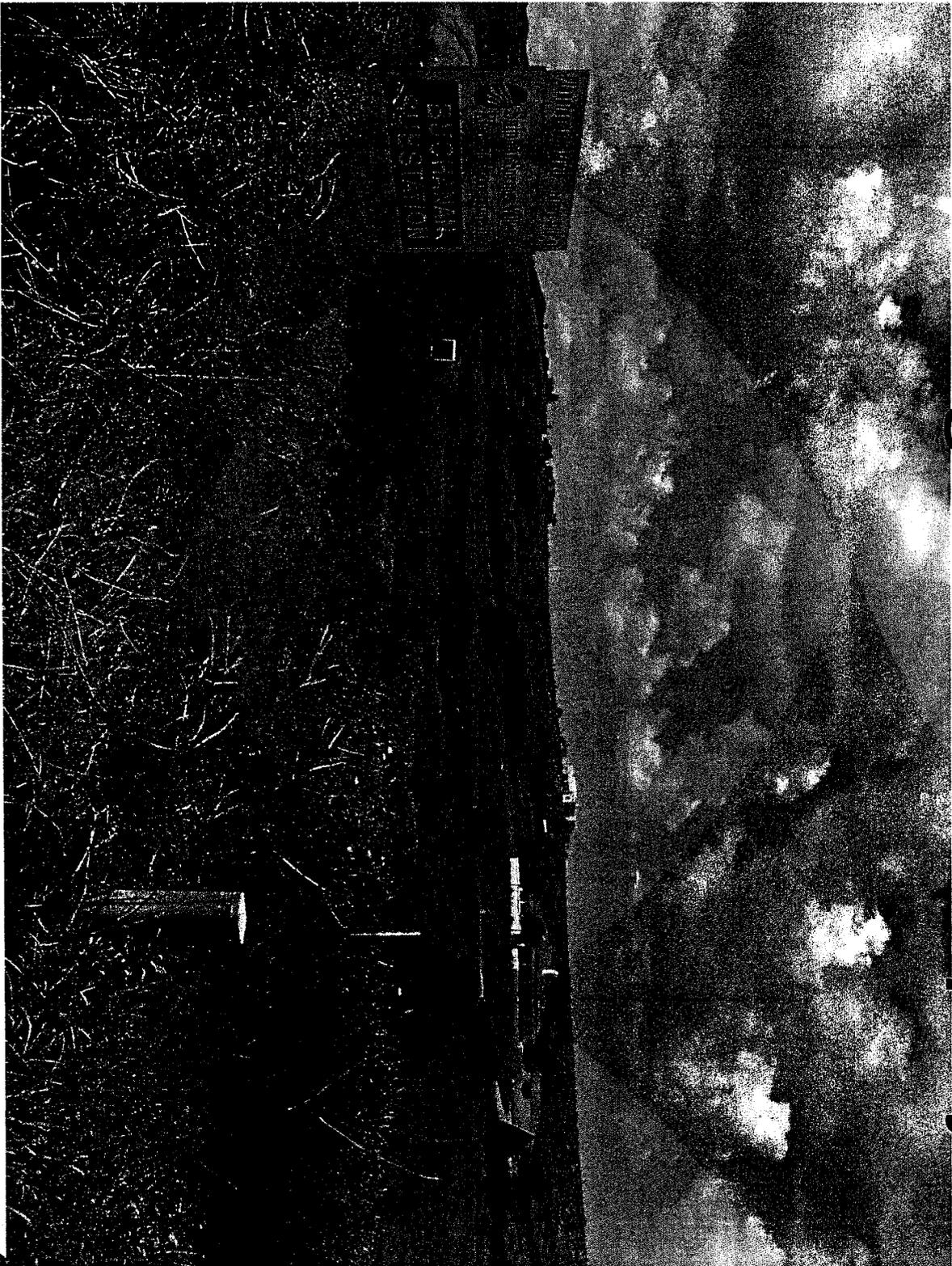


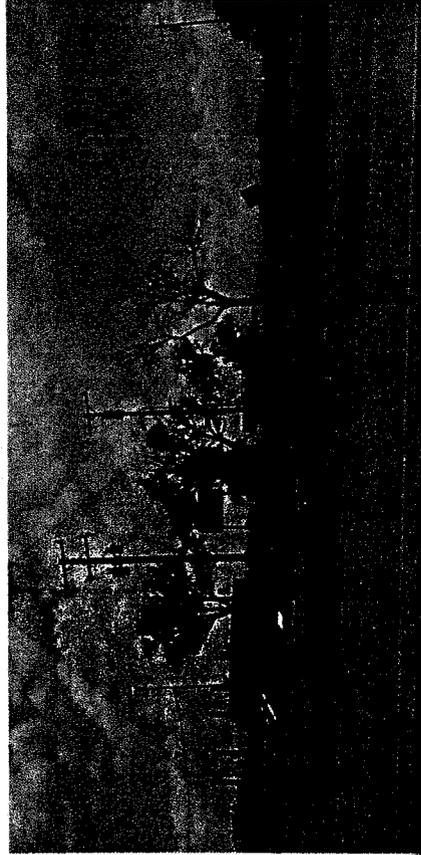
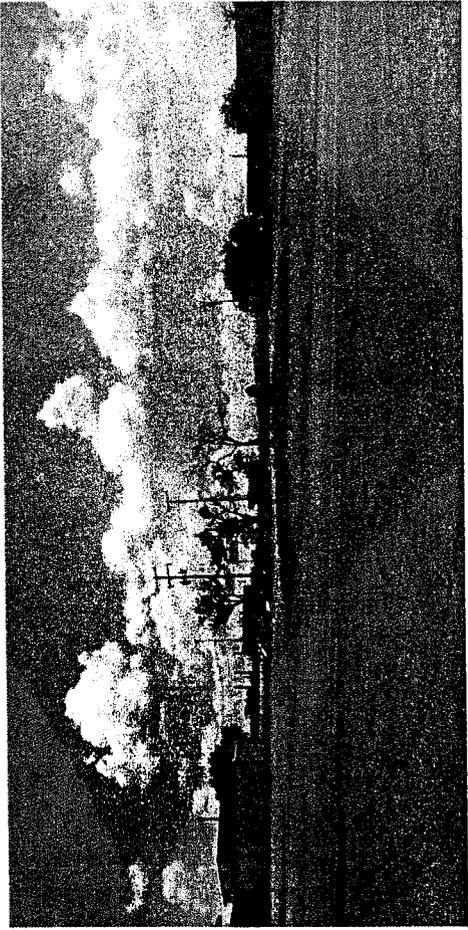
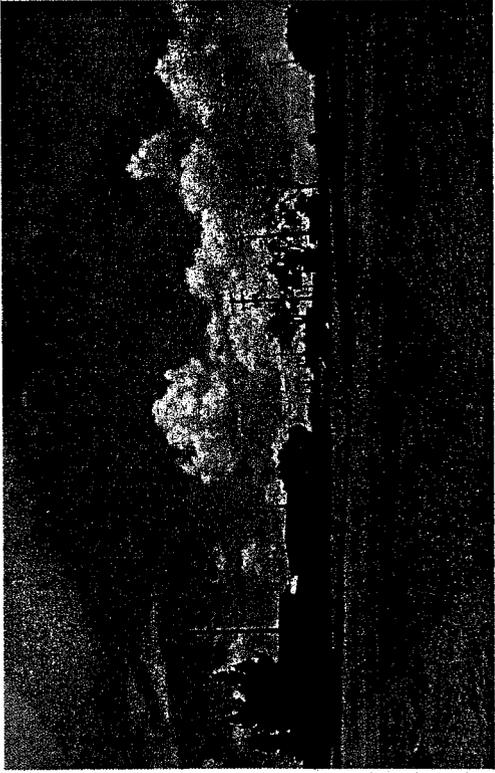
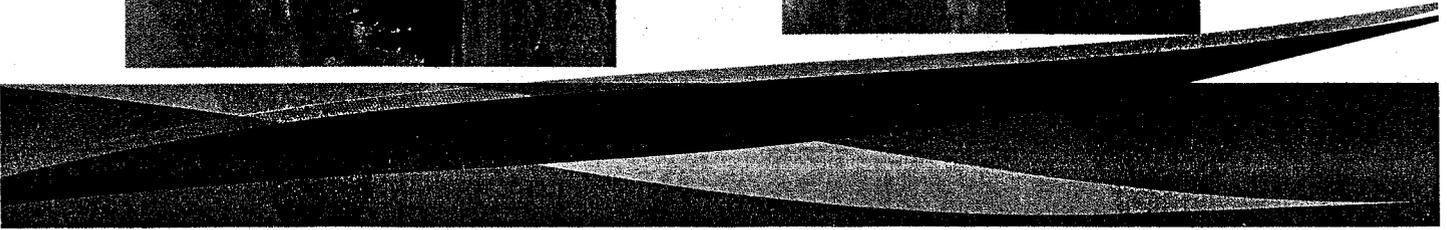
# **CRITERIA for SUBSTATION PROPERTY**

- Central to Load Area
- Proximate to Main Feeder Lines
- Current and Proposed Land Use
- Parcel Size
- Accessibility
- Topography



# Existing Substation Property

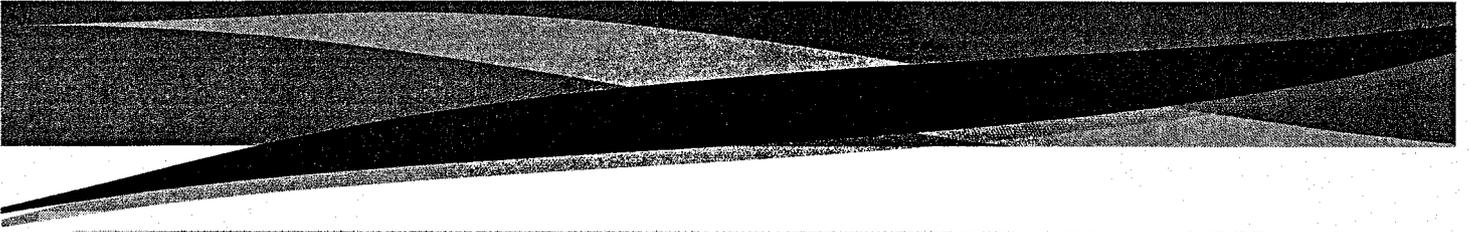
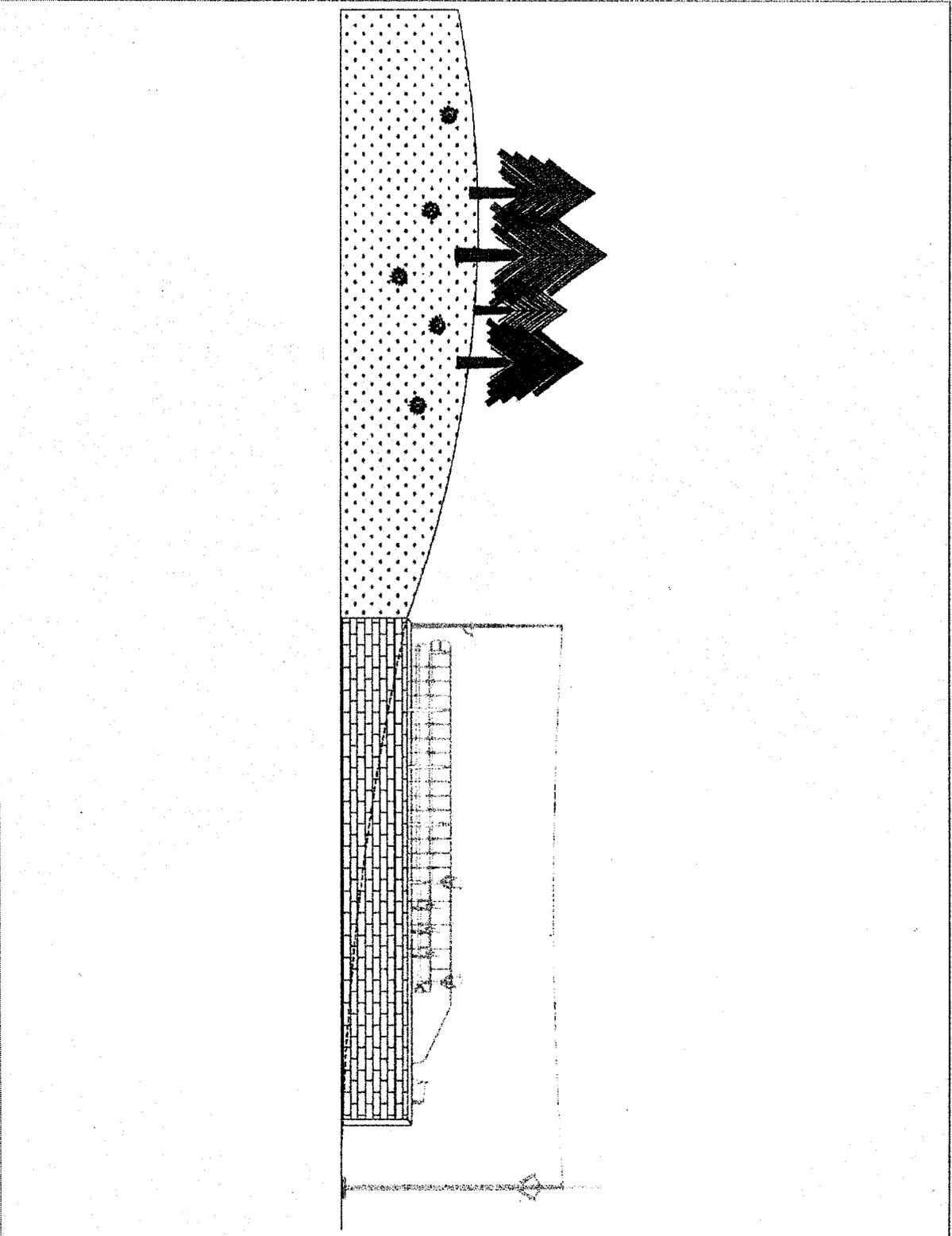




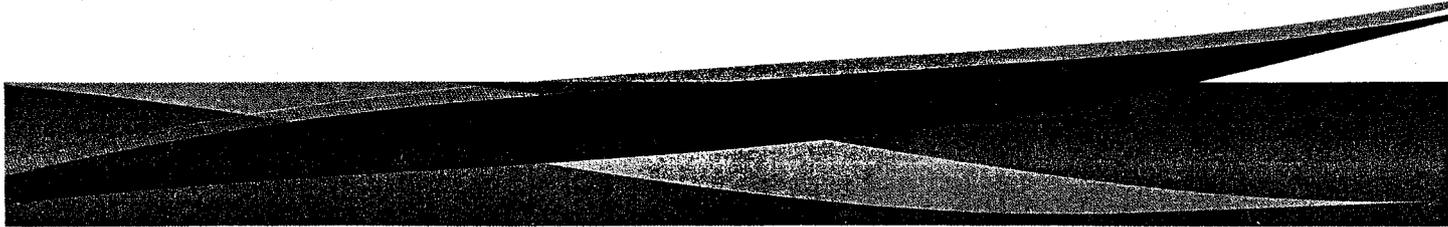
# New Substation Property

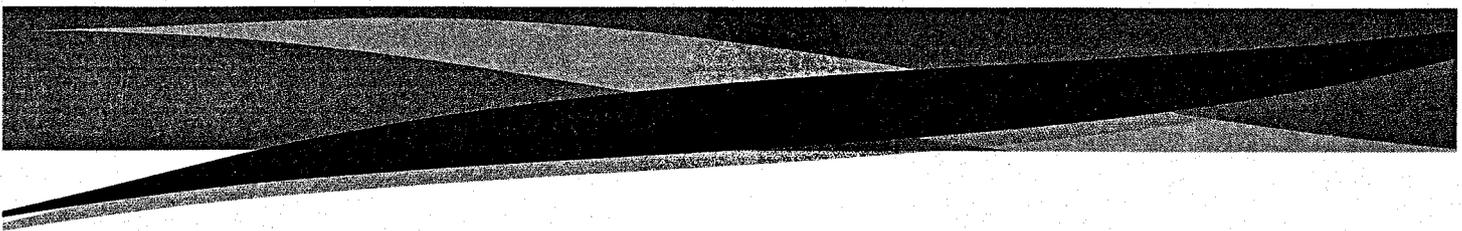


# SUBSTATION SCREENING



# Sub-Transmission Line Design



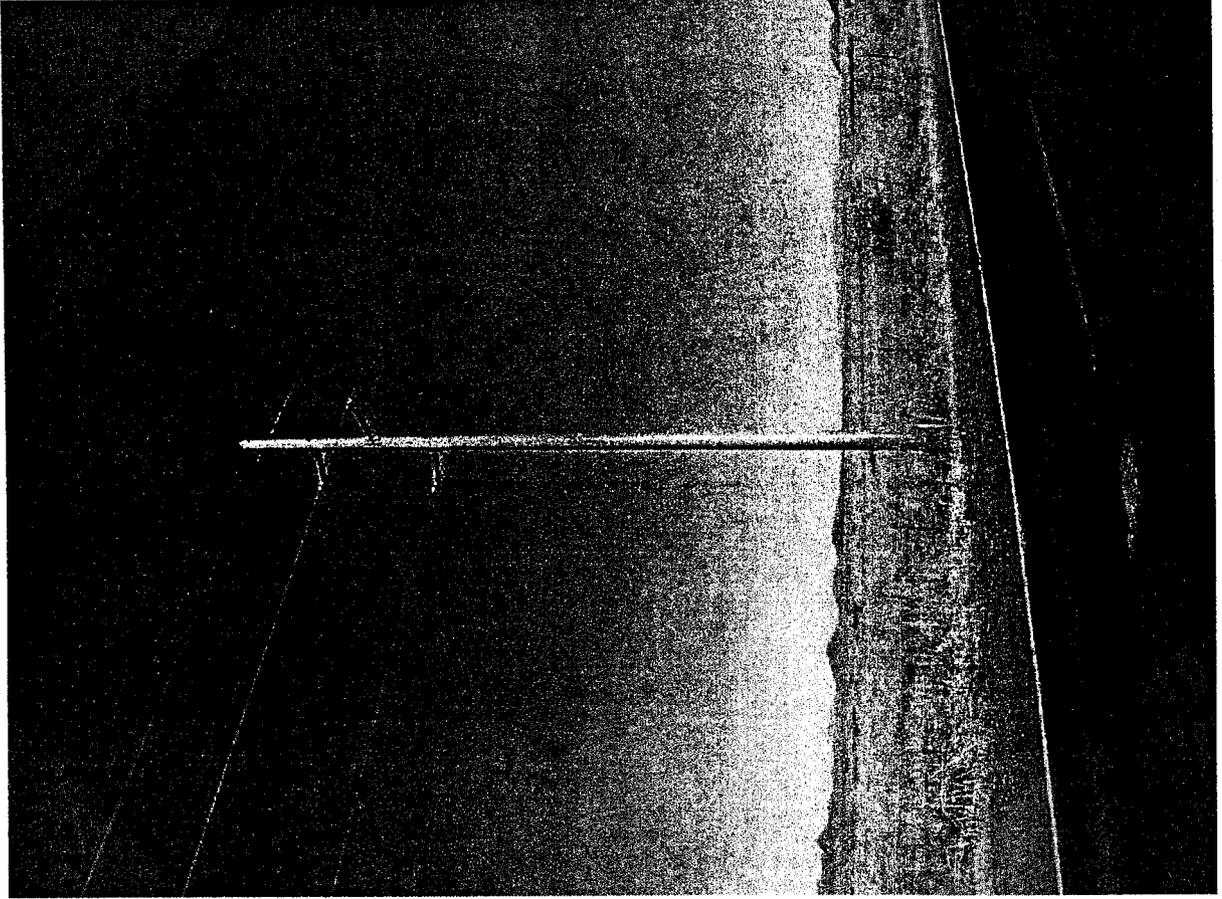


# **VISUAL IMPACT**

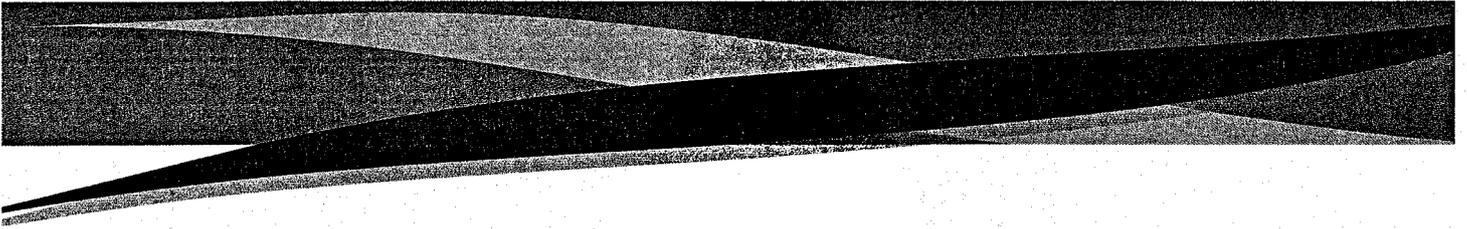
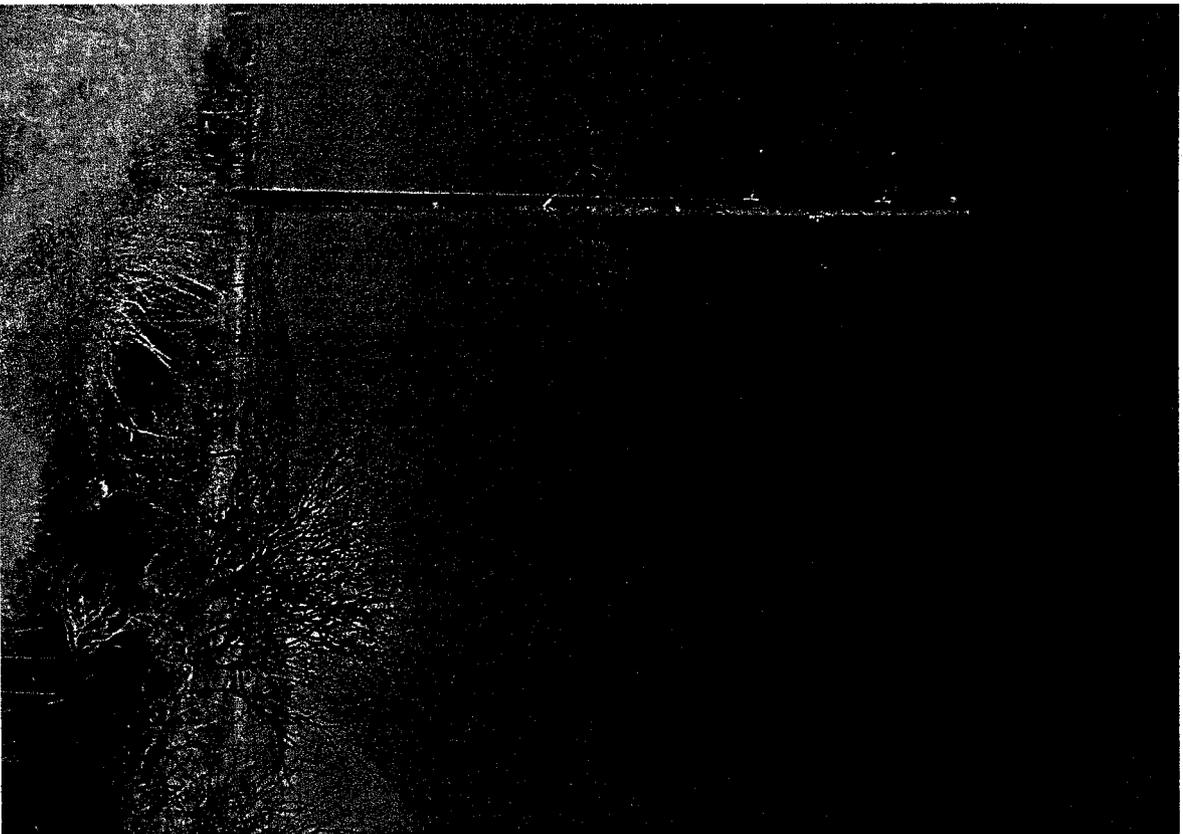
- **VISUAL IMPACT OF THIS 69KV SUB-TRANSMISSION LINE IS OF CONCERN TO THE COMMUNITY**
- **SSVEC IS SENSITIVE TO THIS ISSUE WITH DESIGN PLANNING AND WILL USE COMPONENTS WITH IMPROVED AESTHETIC APPEARANCE.**



# Narrow-Profile Sub Transmission Pole



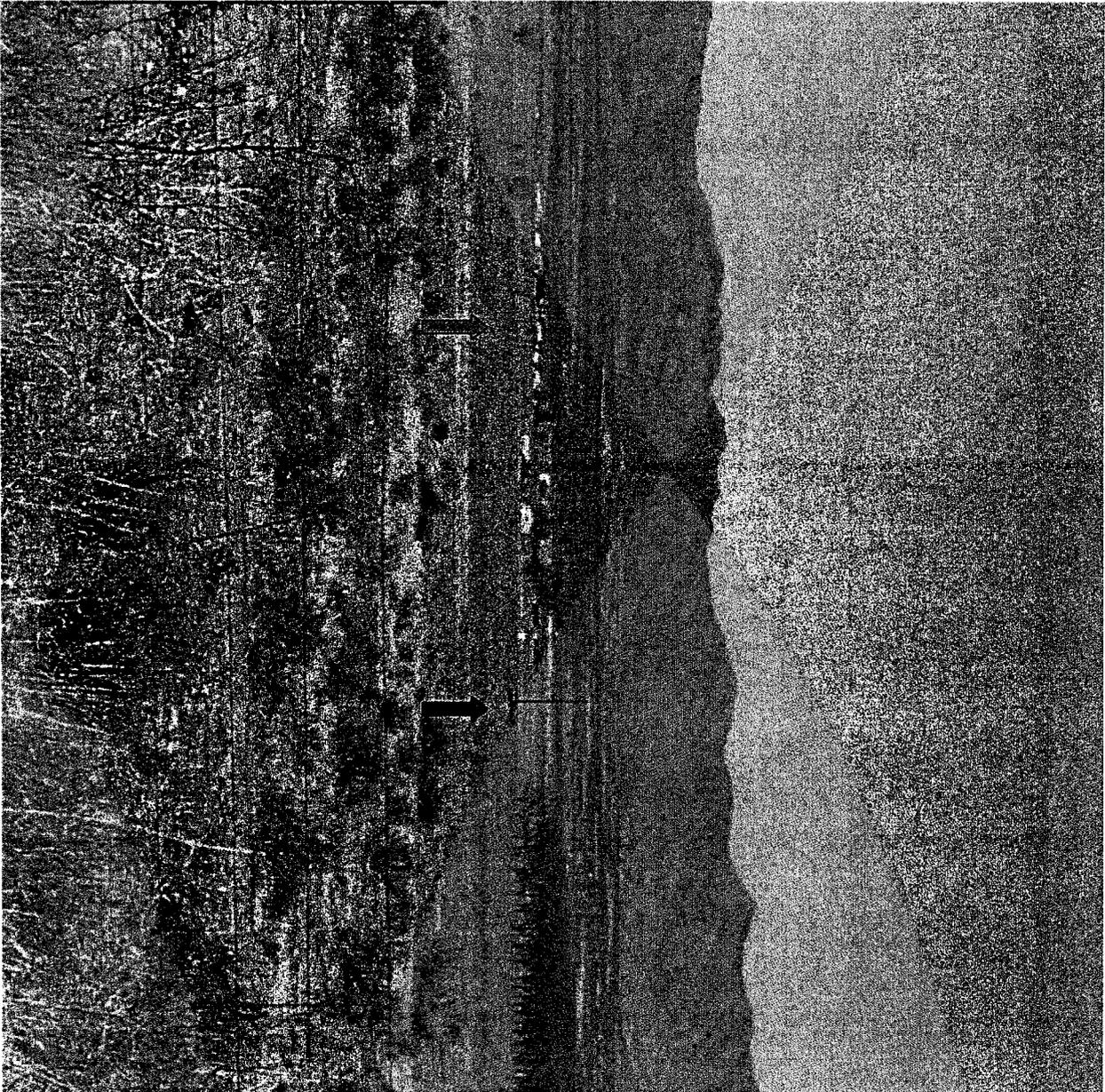
# **Narrow-Profile Sub-Transmission Pole with High Flat Distribution Crossarm**



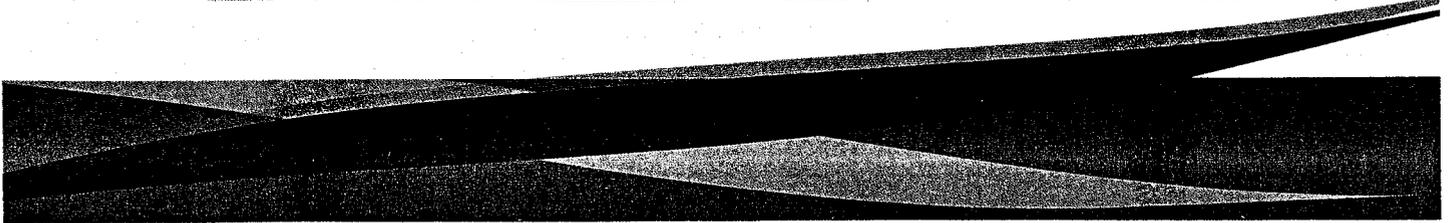
# Pole Color Test: Tan vs. Gray



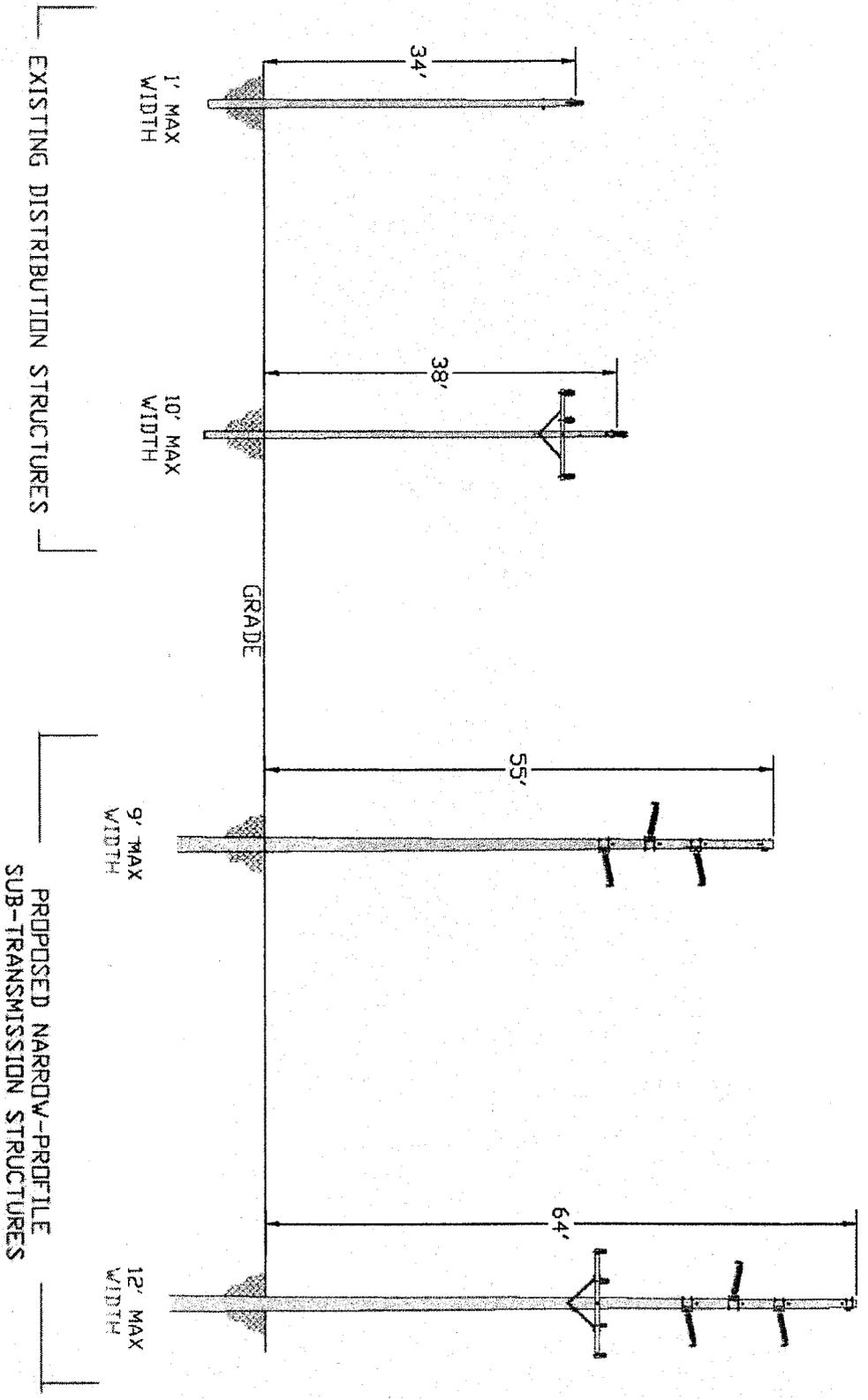
# Pole Color Test: Rust vs. Gray



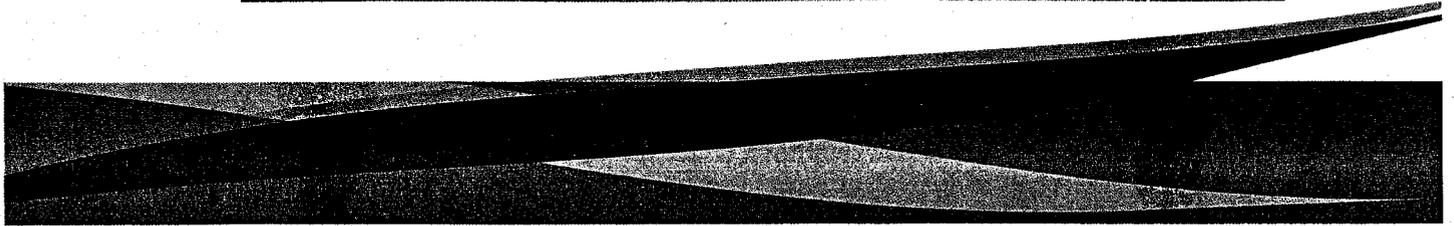
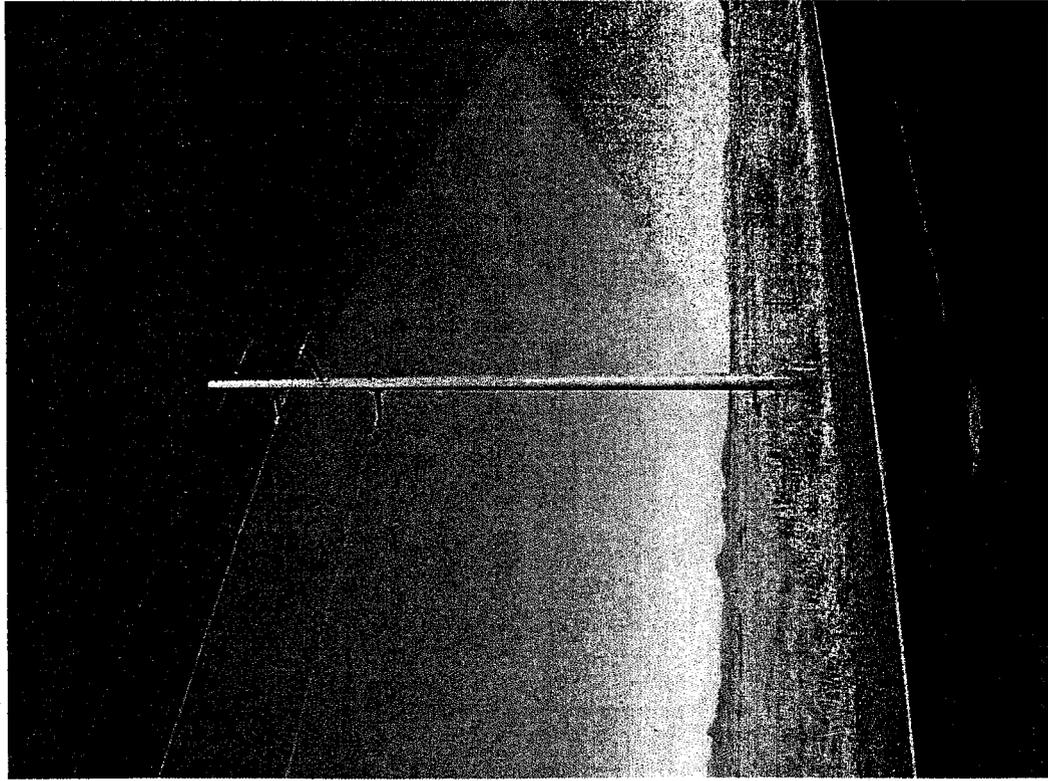
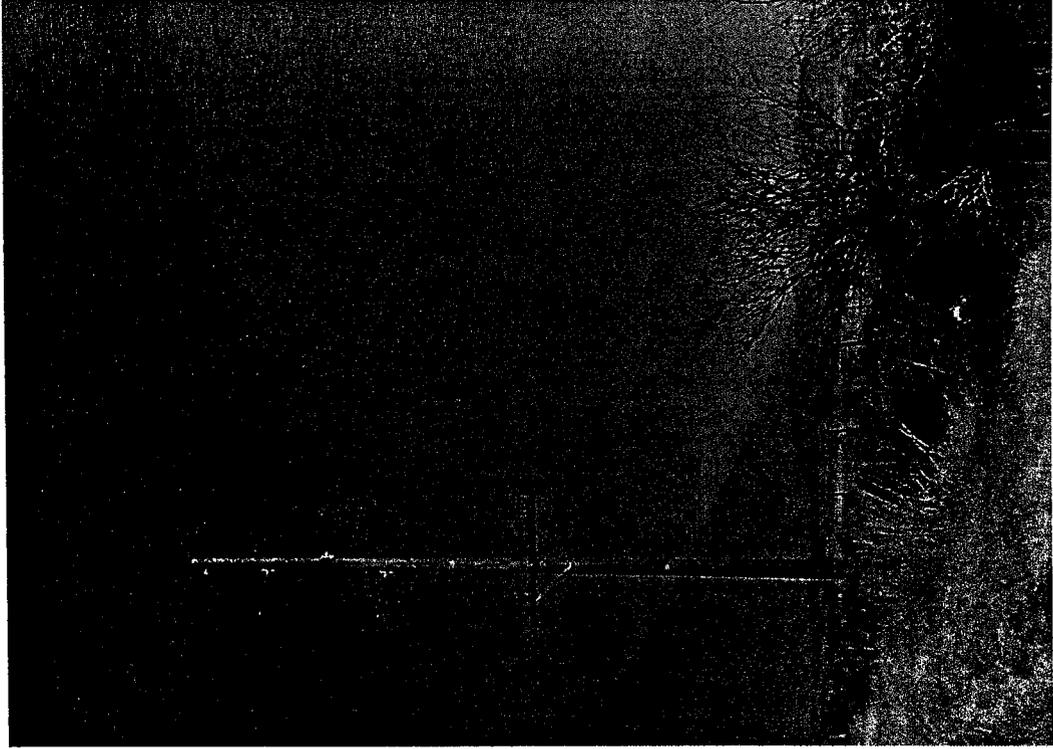
# Poles with Viewshed Background

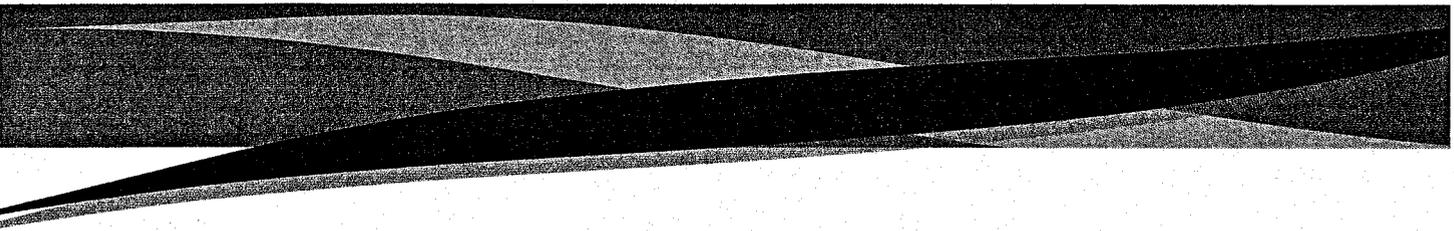


# Pole Height Comparisons



# Selected Pole Configuration

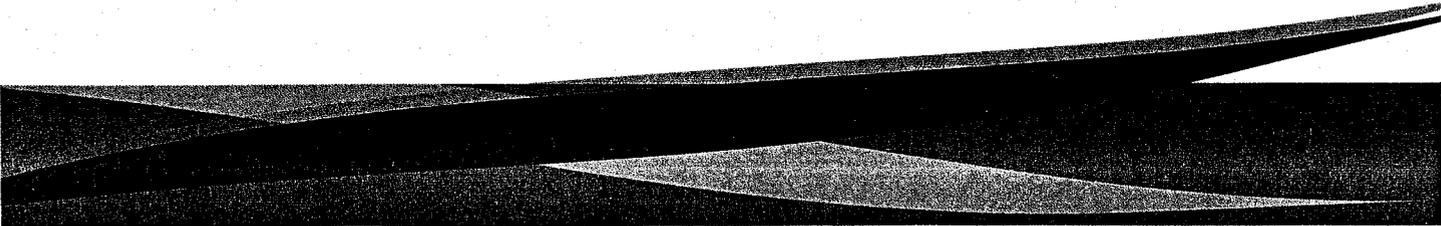




# **VISUAL IMPACT**

**Some visual impact will result from installation of electrical facilities -**

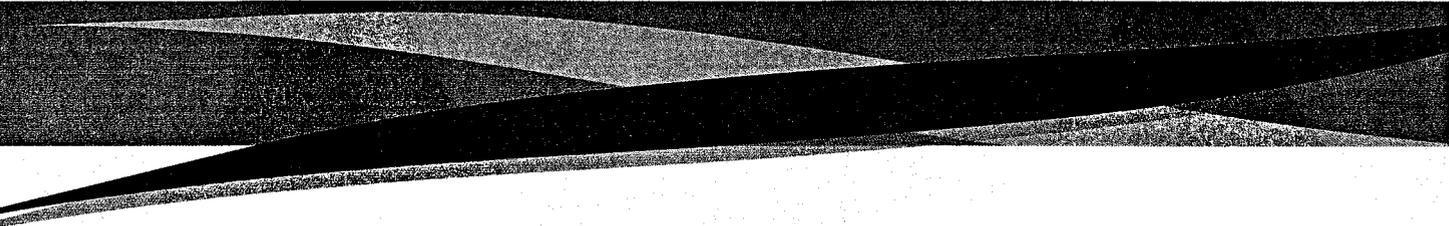
**THIS IMPACT CAN BE REDUCED BY PROPER CHOICE OF CONSTRUCTION TYPE, QUALITY OF CONSTRUCTION, LINE DESIGN AND EQUIPMENT CONFIGURATIONS AND ROUTE SELECTION.**



# Sub-Transmission

# Line Route





# **Right of Way Criteria for Sub-Transmission Line Routing**

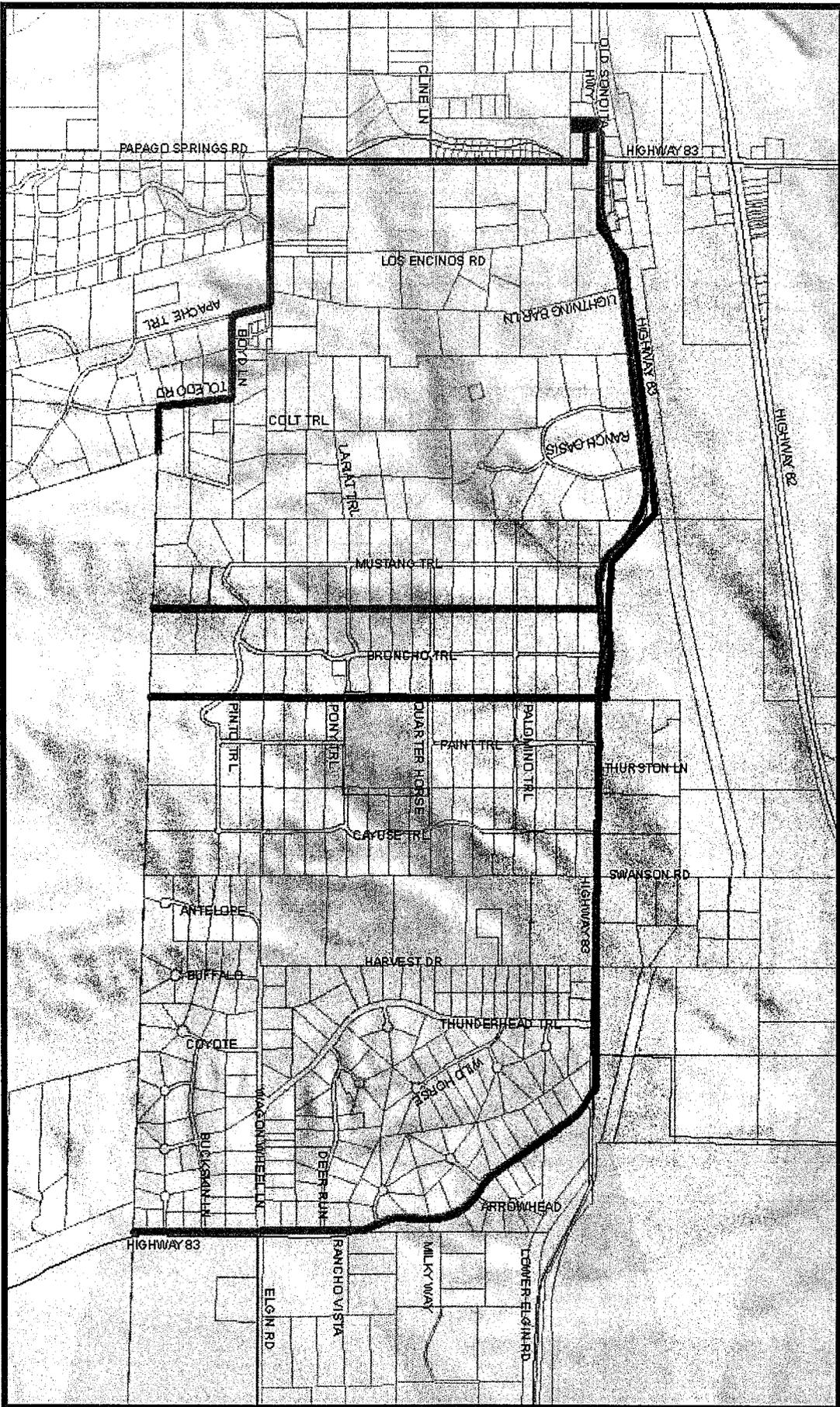
- Existing SSVEC Easements
- Designated Utility Easements
- Existing Roads / Highways
- Natural Landscape Features
- Existing Power Line Corridors
- Current and Proposed Land Use
- Property Orientation
- Minimize Angles



## **Right of Way Criteria for Sub-Transmission Line Routing**

- **Existing SSVEC Easements** – Private/Exclusive and specific rights to our power lines
- **Designated Utility Easements** – Created through land development processes for use by All Utilities
- **Existing Roads / Highways** - Impact of roadway is already established
- **Natural Landscape Features** – Used to reduce visual impact of poles and power lines
- **Existing Power Line Corridors** – Impact of line is already established
- **Current and Proposed Land Use** – All adjoining land to SIDB is residential on this project
- **Property Orientation** – Adjacent to property lines to reduce impact on property
- **Minimize Angles in Pole Line** – Higher construction cost and increased number of poles





1 inch equals 2,000 feet

- Option 1
- Option 2
- Option 3
- Option 4
- Buckman Substation
- Sonoma Substation

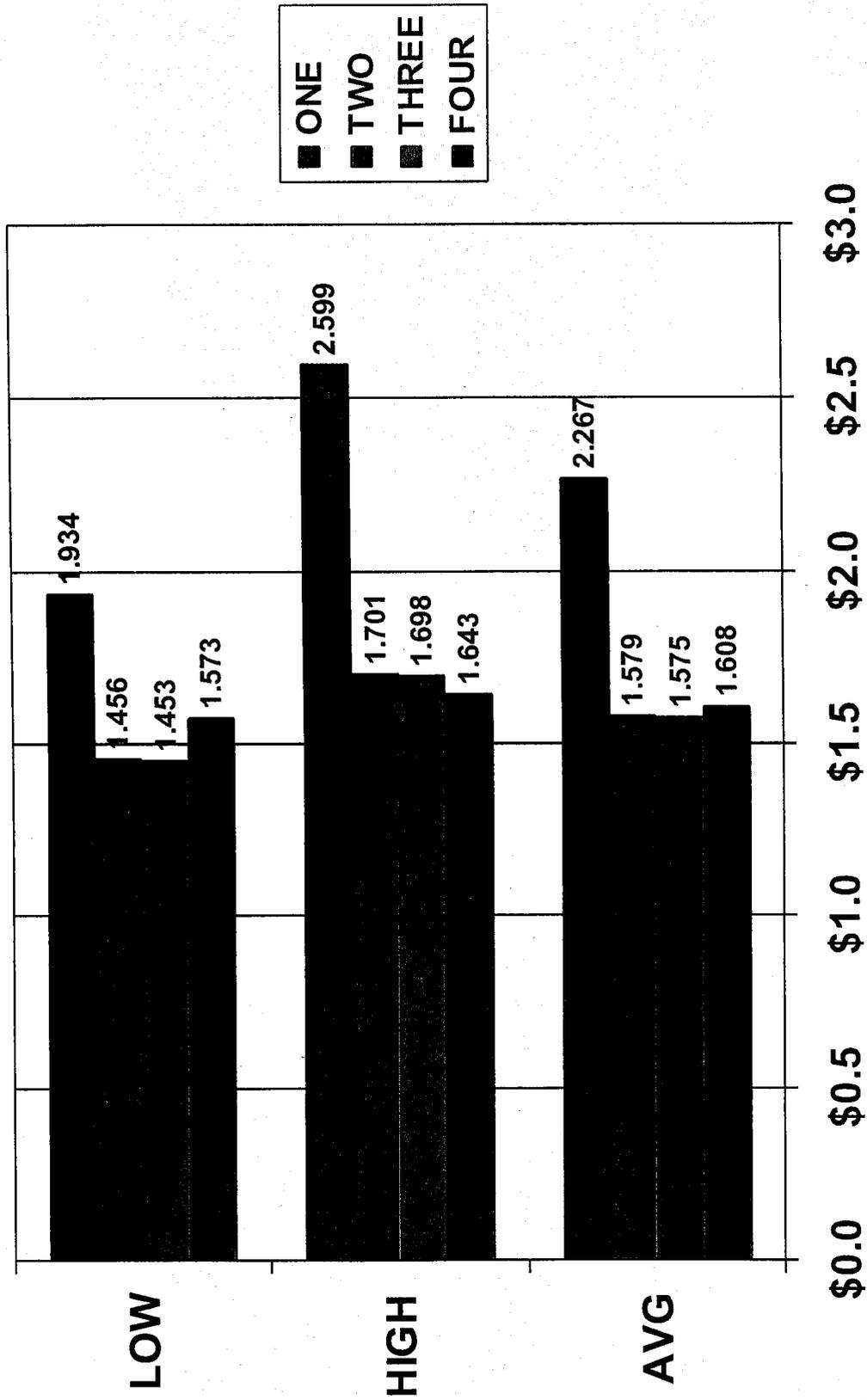
- BLM
- Forest
- Local or State Parks
- Military
- National Parks
- Other
- Private
- State Trust
- Wildlife

**69kV Sub-Transmission Route Options**  
 (from San Ignacio del Babocoman Land Grant)  
**SONOMA RELIABILITY PROJECT**

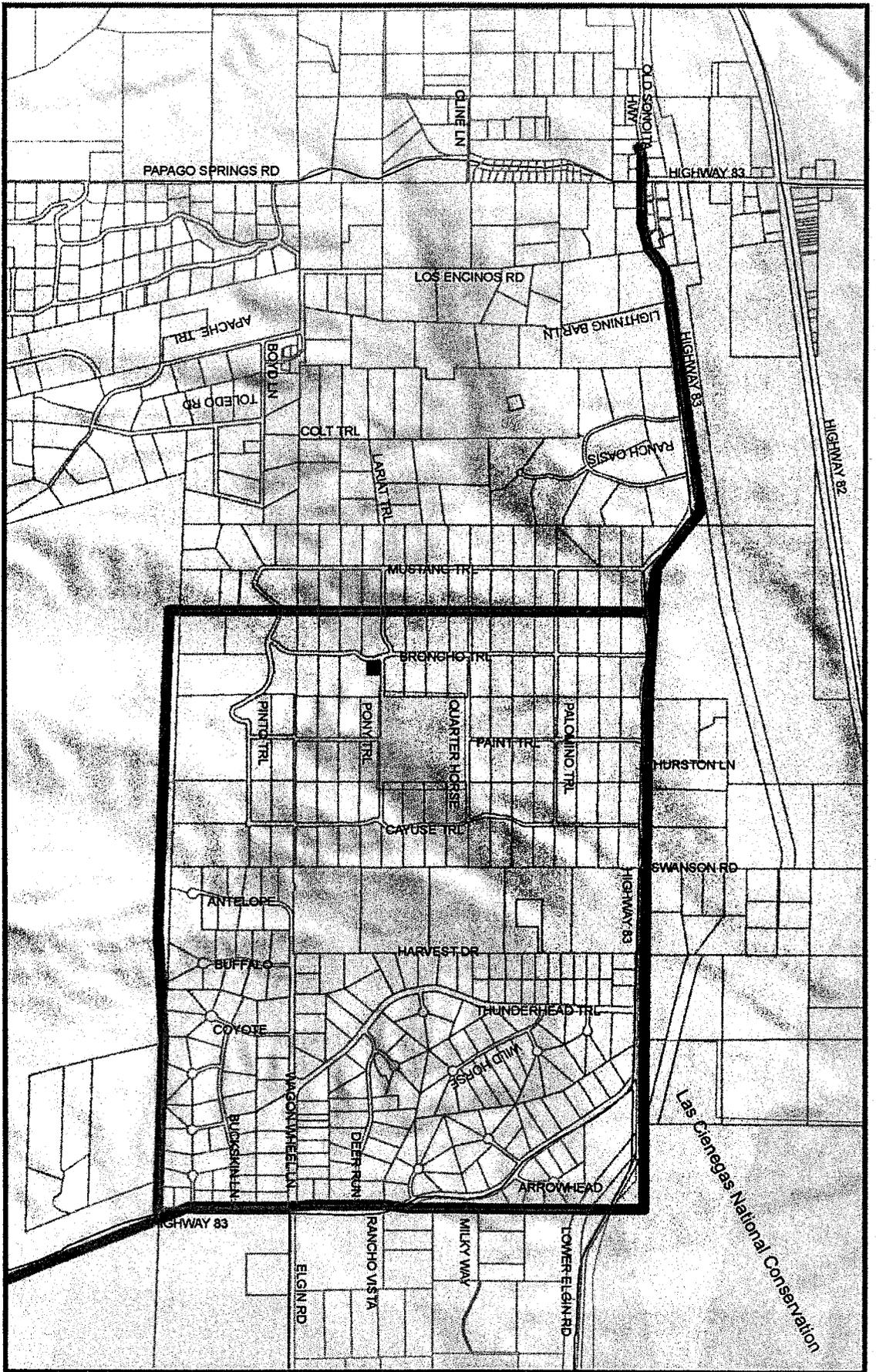


Southur Springs Valley  
 Electric Cooperative, Inc.  
 A Southern Electric Transmission Company  
 Right of Way Services Division

# DESIGN COST COMPARISONS PER OPTION



IN MILLIONS



- Option 1A
- Option 3
- SIDB Easement
- Burdman Substation
- Sonota Substation

- LANDOWNERSHIP
- BLM
- Forest
- Local or State Parks
- Waterway
- Hall Parks
- Other
- Private
- State Trust
- Wardle

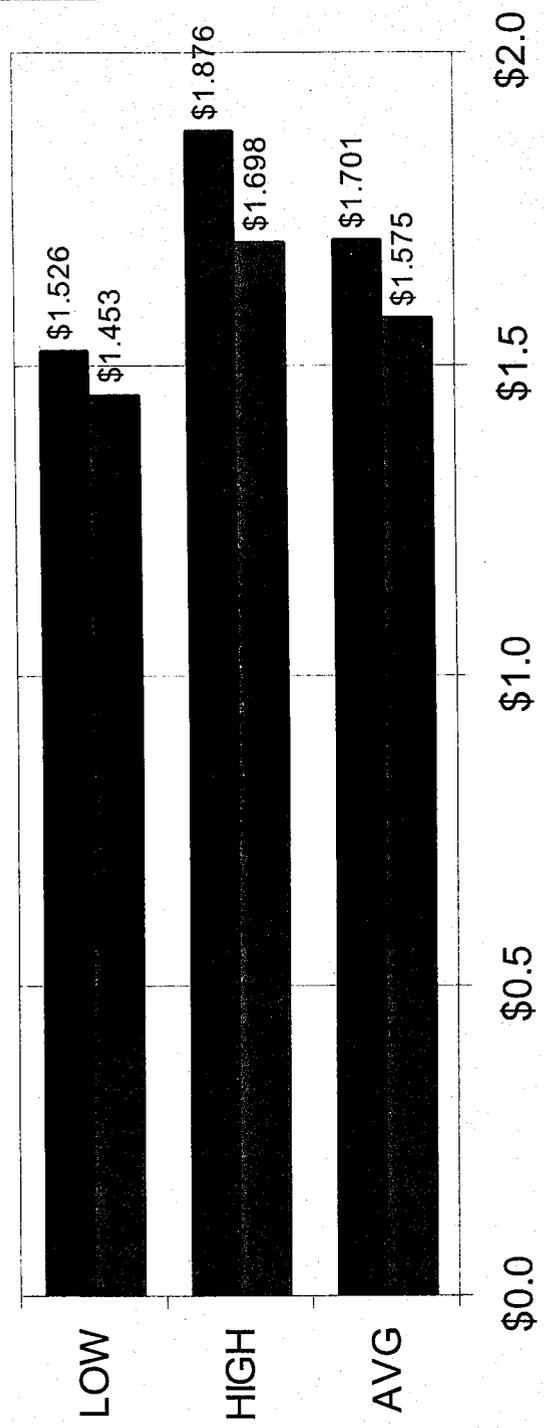
Option Considerations Route 1A and Route 3  
 69kV Sub-Transmission Route Options  
 (from San Ignacio del Babocomari Land Grant)  
**SONOTA RELIABILITY PROJECT**



Saffhar Springs Valley  
 Electric Cooperative, Inc.  
 A Member of Valley Services Division  
 Right of Way Services Division

# COST COMPARISONS PER OPTION

■ ONE-A  
■ THREE



IN MILLIONS



# What's Next?

- Complete the Substation and 69 kV Sub-Transmission Line Design
- Material Acquisition and Construction scheduling
- Proposed in-service date in early 2010
- Neighborhood input for design refinements



# EMF

- Research on EMF began in the 1970's and continues today
- According to researchers, there are no confirmed health risks associated with EMF
- No Federal or Arizona State standards have been established for EMF levels or exposure

National Institute of Environmental Health Services  
<http://www.niehs.nih.gov/emfrapid>

World Health Organization     [www.who.int](http://www.who.int)

Electric Power Research Institute     [www.epri.com](http://www.epri.com)



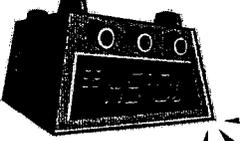
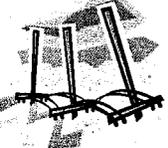
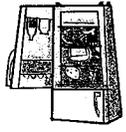
# EMF: Electromagnetic Fields

EMF's are produced by ALL devices which use, carry or

## Produce Electricity

Ex: computers, televisions, refrigerators, microwaves and alarm clocks

A Comparison of Household Appliances and 69kV Powerline

 <b>Alarm Clock</b> 8 mG	 <b>Refrigerator</b> 185 mG
 <b>69 kV Power Line</b> 3mG	 <b>Microwave</b> 2mG

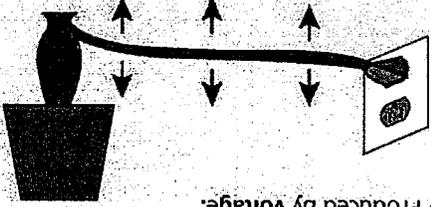
Measurements taken at six inches from appliances. Measurement on power line was taken directly underneath wires.



### A Comparison of Electric and Magnetic Fields

**Electric Fields**

• Produced by voltage.

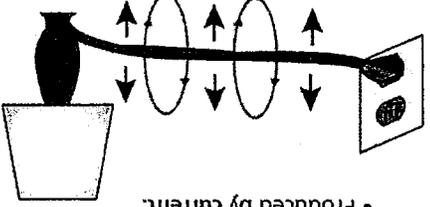


Lamp plugged in but turned off. Voltage produces an electric field.

- Measured in volts per meter (V/m) or in kilovolts per meter (kV/m).
- Easily shielded (weakened) by conducting objects such as trees and buildings.
- Strength decreases rapidly with increasing distance from the source.

**Magnetic Fields**

• Produced by current.



Lamp plugged in and turned on. Current now produces a magnetic field also.

- Measured in gauss (G) or tesla (T).
- Not easily shielded (weakened) by most material.
- Strength decreases rapidly with increasing distance from the source.

An appliance that is plugged in and therefore connected to a source of electricity has an electric field even when the appliance is turned off. To produce a magnetic field, the appliance must be plugged in and turned on so that the current is flowing.