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50TP

June 27, 2006

Mr. Ernest Johnson
Director, Utilities Division
Arizona Corporation Commission
1200 West Washington
Phoenix, AZ 85007

RE: Docket No. E-00000D-05-0040

Dear Mr. Johnson:

Enclosed is an amended Southwest Transmission Cooperative, Inc. (SWTC) 2006-2015 Ten Year Plan, replacing the SWTC 2006-2015 Ten Year Plan that was originally filed with the Commission in January of this year.

This Amendment is in response to increased load growth in the Western and Southern Areas of SWTC's service area and also rights-of-way and permitting issues.

I have enclosed an original of the amended Ten Year Plan, plus thirteen (13) copies pursuant to A.R.S. Section 40-360-02.

Sincerely,

James Rein
Manager of Transmission Planning

enclosures

c/ L. Huff w/o enclosures

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TEN YEAR PLAN

2006 – 2015

AMENDED FILING

JUNE 27, 2006

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

TEN YEAR PLAN

2006 – 2015

An Amended Filing

Prepared for the

ARIZONA CORPORATION COMMISSION

TRANSMISSION PLANNING

JUNE 27, 2006

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SOUTHWEST TRANSMISSION COOPERATIVE, INC.

TEN YEAR PLAN

GENERAL INFORMATION

This amended Ten Year Plan is submitted to the Arizona Corporation Commission (“Commission”) to satisfy the requirements of section 40-360.02 of the Arizona Revised Statutes (“A.R.S.”), relating to power plant and transmission line siting requirements. It outlines the revised plans of Southwest Transmission Cooperative, Inc. (“SWTC”) to install electric facilities required to meet anticipated system growth.

This report contains projects that SWTC anticipates may be constructed over the next ten-year period. As noted in A.R.S. section 40-360.02.F, the plans contained in this report are tentative information only and are subject to change at any time at the discretion of SWTC. SWTC anticipates that any changes to this plan will likely be due to changes in load forecasts, environmental constraints, and/or regulatory and legal developments. Changes of any significance that occur prior to the next Ten Year Plan filing, will be discussed with the Commission staff.

Because of changes in the load growth in SWTC’s Western and Southern Areas, Commission staff was consulted on May 18, 2006 concerning a few significant changes contemplated by the SWTC planning staff to the 2006-2015 Ten Year Plan that was filed in January of 2006. As a result of these discussions, it was agreed that SWTC would file an amendment to the 2006-2015 Ten Year Plan it filed in January. Additional information on the changes between this amended document and that filed in January is found below.

The report is divided into three sections, as outlined in the Table of Contents on page 2. Section I describes planned transmission lines SWTC may construct over the ten-year plan period, whose nominal rating is equal to or greater than one hundred fifteen thousand volts (115 kV). Section II contains SWTC’s internal planning criteria and facility ratings, pursuant to Commission Decision #63876, dated July 25, 2001. Section III is a Technical Study Report of

the planned transmission projects contained in Section I, to satisfy the requirements of paragraph C.7 of A.R.S. Section 40-360.02.

The planned transmission lines that are listed in Section I are needed to serve load in the load areas of the SWTC Member Distribution Cooperatives. Because of the proximity of the new lines to the Member load being served, initial studies show little impact to the overall interconnected system.

A comparison of this amended document to the document filed in January follows. Five changes were made to specific projects in the January filing, mostly delayed in-service dates. However, one of the changes created two new projects. This amended filing also adds three new projects that were not contemplated in the January filing.

115 kV Line Changes

- **2007 Red Rock to Saguaro 115 kV line.** This project has been delayed to 2008, due to various rights-of-way and permitting issues. In addition, the Red Rock substation will now be known as the “Naviska” substation.
- **2008 Valencia to CAP Black Mountain 115 kV Line.** This project has been delayed to 2011.
- **2010 Sandario to Bopp Road 115 kV Line.** This project has been delayed to 2012. In addition, the Bopp Road substation will now be known as the “San Joaquin” substation.
- **2013 Picture Rocks to Twin Peaks 115 kV Line.** The in-service date for this project has been changed to 2012.
- **2013 Red Rock to Picture Rocks 115 kV Line.** This project has been changed due to a wider project scope and results in the creation of two new projects:
1) The Naviska to Thornydale 115 kV Line in 2009 and 2) The Thornydale to Twin Peaks 115 kV Line in 2011. Studies are ongoing in this area with regards to future distribution substations that will be served off of these two 115 kV lines. The addition of these two new lines will allow SWTC to provide transmission

service to increased load growth in the Trico Electric Cooperative, Inc. certificated service area.

New Projects

- **2007 Hackberry 230/69 kV Substation.** This new substation will be a direct tap of the existing Dos Condados to Morenci 230 kV line. The Hackberry substation will be a joint project with Phelps Dodge Corporation (PD) and is being constructed i) for SWTC to provide 69 kV transmission service to its customers in the Graham County area; and, ii) for Phelps Dodge to provide service to its Safford mining operations. In addition to the construction of the substation, SWTC will also construct a new SWTC 69 kV line that will tie into the existing Thatcher Substation, providing additional reinforcement to the Graham County 69 kV system.
- **2008 Gordon Sloan 230/69 kV Substation.** This new substation will be a direct tap of the existing Butterfield to Pantano 230 kV line and is being constructed to provide for increased load growth in the Benson/Mescal area of the Sulphur Springs Valley Electric Cooperative, Inc. certificated service area.
- **2009 Naviska to Thornydale 115 kV Line.** As noted above, this new line will provide transmission service to increased load growth in the Trico Electric Cooperative, Inc. certificated service area.
- **2011 Thornydale to Twin Peaks 115 kV Line.** Also as noted above, this new line will provide transmission service to increased load growth in the Trico Electric Cooperative, Inc. certificated service area.
- **2012 Sandario to CAP Brawley 115 kV Line.** This new line will connect the existing Sandario Substation to the CAP Brawley Substation and reinforce the existing 115 kV system in the area.
- **2013 Adonis 115/24.9 kV Substation.** This new substation will tap the Naviska to Thornydale 115 kV line and provide transmission service to Trico Electric Cooperative, Inc. loads in the area.

- **2014 New Tucson 230/24.9 kV Substation.** This new substation will be a direct tap of the Pantano to Sahuarita 230 kV line and provide transmission service to Trico Electric Cooperative, Inc. loads in the area.
- **2015 Camino de Manana 115/24.9 Substation.** This new substation will tap the Thornydale to Twin Peaks 115 kV line and provide transmission service to Trico Electric Cooperative, inc. loads in the area.

The January filing noted that additional studies were being performed to determine the exact timing of the 115 kV projects that have been amended above. SWTC hired a consultant to assist in this process and these studies are still in progress. SWTC still expects the timing of the above projects to fall within the ten year planning horizon. However, due to the dynamic nature of the load growth that is being experienced in the area, SWTC reserves the right to make further modifications to this Ten year Plan should the need arise.

SWTC continues to participate in the various subcommittees of the Southwest Area Transmission (“SWAT”) Planning Group, along with electric utilities and other interested parties in the Desert Southwest. These subcommittees include the SWAT Central Arizona Transmission EHV (“CATS-EHV”), SWAT Central Arizona Transmission HV (“CATS-HV”), SWAT Colorado River Transmission Subcommittee (“CRT”) and the SWAT Arizona-New Mexico EHV Subcommittee (“AZNM”). Each of these subcommittees has been involved in various study efforts such as investigating wind energy, coal generation, and transmission studies to enhance and utilize existing transmission. A SWAT Cats-HV Saturated Load and Transmission Interim Study report was filed with the SRP 2006-2015 Ten Year Plan submittal as Appendix 1.

SECTION I

SWTC PLANNED TRANSMISSION LINES

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Sandario Substation loop-in of Avra Valley to Three Points 115 kV line
Size	
a) Voltage	115 kV
b) Capacity	72 MVA
c) Point of Origin	Avra Valley to Three Points 115 kV line Sec. 26 T13S R10E
d) Point of Termination	Sandario Substation Sec. 5 T14S R11E
e) Length	Approximately 5 miles of double circuit 115 kV line
Routing	Due East of the Avra Valley to Three Points 115 kV line and then following the El Paso Natural Gas line to proposed sub site
Purpose	To provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc. in Northwest Tucson
Date	
a) Construction Start	September 2005
b) In-Service Date	April 25, 2006
Is Certificate Necessary?	Yes. The Commission in Case 125 issued a Certificate of Environmental Compatibility for the project (Decision No. 67432) on December 3, 2004

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Saddlebrooke Ranch 115 kV Substation
Size	
a) Voltage	115 kV
b) Capacity	50 MVA
c) Point of Origin	APS 115 kV line Sec. 33 T9S R15E
d) Point of Termination	Saddlebrooke Ranch Substation Sec. 33 T9S R15E
e) Length	0 miles
Routing	Substation to be located on the APS Oracle to San Manual 115 kV line approximately 4 miles east of Oracle Substation, and approximately 16 miles west of San Manual Substation
Purpose	To provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc. in Southern Pinal County
Date	
a) Construction Start	Proposed May 2006
b) In-Service Date	Proposed October 2006
Is Certificate Necessary?	No

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Marana 115 kV Line Upgrade
Size	
a) Voltage	115 kV
b) Capacity	To be determined
c) Point of Origin	Marana Tap Sec. 26 T11S R10E
d) Point of Termination	Marana Substation Sec. 26 T11S R10E
e) Length	Approximately 0.2 miles. Proposed loop-in to the Marana Substation
Routing	Same R.O.W. as existing Marana Tap to Marana 115 kV Line
Purpose	To mitigate various thermal overloads and/or voltage criteria violations due to N-1 outages on the 115 kV system between Bicknell and Marana and to provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc.
Date	
a) Construction Start	Proposed January 2007
b) In-Service Date	Proposed May 2007
Is Certificate Necessary?	No

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Hackberry 230/69 kV Substation
Size	
a) Voltage	230 kV
b) Capacity	125 MVA
c) Point of Origin	Tap of existing Dos Condados to Morenci 230 kV line. Sec. 29 T6S R27E
d) Point of Termination	Hackberry Substation Sec. 29 T6S R27E
e) Length	0 miles
Routing	Substation to be located on the Dos Condados to Morenci 230 kV line, approximately 7.7 miles north of Dos Condados Substation and approximately 27 miles west of Morenci Substation.
Purpose	To provide transmission service to PD's Safford mining operations in Graham County and to provide for enhanced service reliability to the existing Graham County 69 kV system.
Date	
a) Construction Start	Proposed September 2006
b) In-Service Date	Proposed January 2007
Is Certificate Necessary?	No

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Hassayampa to Pinal West
Size	
a) Voltage	500 kV
b) Capacity	1200 MVA
c) Point of Origin	Hassayampa Switchyard Sec. 15 T1S R6W
e) Point of Termination	Pinal West Substation Sec. 18 T5S R5E
f) Length	Approximately 52 miles
Routing	South and east of the Hassayampa Switchyard along the existing Palo Verde-Kyrene 500 kV line to a point where the gas pipeline splits from the transmission line, then generally along the pipeline (except in the Maricopa County Mobile Planning Area) to the new Pinal West Substation
Purpose	Identified by SWAT as necessary to accommodate load growth and access to energy sources in the central AZ area. The project provides for increased transfer capability to SWTC loads in Southeast Arizona
Date	
a) Construction Start	2006
b) In-Service Date	2008
Is Certificate Necessary?	Yes. The Commission in Case 124 issued a Certificate of Environmental Compatibility (Decision No. 67012) on May 24, 2004. SWTC is a participant; SRP is the project manager

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Pinal West to Santa Rosa
Size	
a) Voltage	500 kV
b) Capacity	1200 MVA
c) Point of Origin	Pinal West Substation Sec. 18 T5S R2E
e) Point of Termination	Santa Rosa Substation Sec. 30 T5S R4E
f) Length	Approximately 14.5 miles
Routing	South and east from the Pinal West substation to approximately Teel Road, then east to the Santa Rosa substation.
Purpose	Identified by SWAT as necessary to accommodate load growth and access to energy sources in the central AZ area. The project provides for increased transfer capability to SWTC loads in Southeast Arizona
Date	
a) Construction Start	2006
b) In-Service Date	2008
Is Certificate Necessary?	Yes. The Commission in Case 126 issued a Certificate of Environmental Compatibility (Decision No. 68093) on August 25, 2005. SWTC is a participant; SRP is the project manager

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Naviska to Saguaro 115 kV	
Size		
a) Voltage		115 kV
b) Capacity		167 MVA
c) Point of Origin		Naviska Substation Sec. 5 T11S R11E
d) Point of Termination		Saguaro Substation Sec. 14 T10S R10E
e) Length		Approximately 3.2 miles
Routing	Northwest from Naviska Substation to the APS Saguaro Substation paralleling existing transmission lines	
Purpose	To provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc. in Northern Pima and Southern Pinal Counties	
Date		
a) Construction Start		Proposed November 2007
b) In-Service Date		Proposed Mar 2008
Is Certificate Necessary?		Yes

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Apache to Hayden 115 kV line to APS San Manual Substation
Size	
a) Voltage	115 kV
b) Capacity	To be determined
c) Point of Origin	Apache-Hayden 115 kV line near San Manual Sec. 19 T9S R18E
d) Point of Termination	APS San Manual Substation Sec. 29 T9S R17E
e) Length	Approximately 4.5 miles of double circuit 115 kV line
Routing	Apache-Hayden 115 kV line, heading generally West then Southwest to San Manual Substation
Purpose	Provide for increased transfer capability and voltage support in Southern Pinal County and to provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc.
Date	
a) Construction Start	Proposed January 2008
b) In-Service Date	Proposed May 2008
Is Certificate Necessary?	Yes

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Gordon Sloan 230/69 kV Substation
Size	
a) Voltage	230 kV
b) Capacity	100 MVA
c) Point of Origin	Tap of existing Butterfield to Pantano 230 kV Line. Sec. 29 T16S R20E
d) Point of Termination	Gordon Sloan Substation Sec. 29 T16S R20E
e) Length	0 miles
Routing	Substation to be located on the Butterfield to Pantano 230 kV line, approximately 11.5 miles west of Butterfield Substation and approximately 19.5 miles east of Pantano Substation.
Purpose	To provide for anticipated load growth in the certificated service area of Sulphur Springs Valley Electric Cooperative, Inc.
Date	
a) Construction Start	Proposed January 2008
b) In-Service Date	Proposed May 2008
Is Certificate Necessary?	No

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Valencia to CAP Black Mountain 115 kV Line
Size	
a) Voltage	115 kV
b) Capacity	167 MVA
c) Point of Origin	Valencia Substation Sec. 17 T15S R12E
d) Point of Termination	CAP Black Mountain Substation Sec. 2 T15S R12E
e) Length	Approximately 4.5 miles
Routing	From Valencia Substation heading North and East to the CAP Black Mountain Substation
Purpose	To provide an additional source to the SWTC 115 kV system and for the Valencia Substation which is currently served by a radial 115 kV line from Three Points Substation
Date	
a) Construction Start	Proposed 2010
b) In-Service Date	Proposed 2011
Is Certificate Necessary?	Yes

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Valencia to San Joaquin 115 kV Line
Size	
a) Voltage	115 kV
b) Capacity	167 MVA
c) Point of Origin	Valencia Substation Sec. 17 T15S R12E
d) Point of Termination	San Joaquin Substation Sec. 29 T14S R12E
e) Length	Approximately 3.2 miles
Routing	North from Valencia Substation to San Joaquin Substation
Purpose	Provide for increased transfer capability and voltage support in Southern Pima County and to provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc.
Date	
a) Construction Start	Proposed September 2008
b) In-Service Date	Proposed February 2009
Is Certificate Necessary?	Yes

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Sandario to San Joaquin 115 kV Line
Size	
a) Voltage	115 kV
b) Capacity	167 MVA
c) Point of Origin	Sandario Substation Sec. 5 T14S R11E
d) Point of Termination	San Joaquin Substation Sec. 29 T14S R12E
e) Length	Approximately 8.0 miles
Routing	From Sandario Substation heading Southeast to Joaquin Substation
Purpose	Provide for increased transfer capability and voltage support in Southern Pima County and to provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc.
Date	
a) Construction Start	Proposed 2011
b) In-Service Date	Proposed 2012
Is Certificate Necessary?	Yes

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Naviska to Thornydale 115 kV Line	
Size		
a) Voltage		115 kV
b) Capacity		167 MVA
c) Point of Origin		Naviska Substation Sec. 5 T11S R11E
d) Point of Termination		Thornydale Substation Sec. 33 T11S R12E
e) Length		Approximately 9.1 miles
Routing	Southeast from Naviska Substation to Thornydale Substation	
Purpose	Provide for increased transfer capability and voltage support in Southern Pima County and to provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc.	
Date		
a) Construction Start		Proposed 2008
b) In-Service Date		Proposed 2009
Is Certificate Necessary?		Yes

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Thornydale to CAP Twin Peaks 115 kV Line
Size	
a) Voltage	115 kV
b) Capacity	167 MVA
c) Point of Origin	Thornydale Substation Sec. 33 T11S R12E
d) Point of Termination	CAP Twin Peaks Substation Sec. 14 T12S R11E
e) Length	Approximately 11 miles
Routing	Southwest from Thornydale Substation to Twin Peaks Substation
Purpose	Provide for increased transfer capability and voltage support in Southern Pima County and to provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc.
Date	
a) Construction Start	Proposed 2010
b) In-Service Date	Proposed 2011
Is Certificate Necessary?	Yes

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Picture Rocks to CAP Twin Peaks 115 kV Line
Size	
a) Voltage	115 kV
b) Capacity	167 MVA
c) Point of Origin	Picture Rocks Substation Sec. 14 T12S R11E
d) Point of Termination	Twin Peaks Substation Sec. 14 T12S R11E
e) Length	Approximately 2 miles
Routing	North and then east from Picture Rocks Substation to Twin Peaks Substation
Purpose	Provide for increased transfer capability and voltage support in Southern Pima County and to provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc.
Date	
a) Construction Start	Proposed 2011
b) In-Service Date	Proposed 2012
Is Certificate Necessary?	Yes

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Sandario to CAP Brawley 115 kV Line	
Size		
a) Voltage		115 kV
b) Capacity		167 MVA
c) Point of Origin		Sandario Substation Sec. 5 T14S R11E
d) Point of Termination		CAP Brawley Substation Sec. 33 T13S R11E
e) Length		Approximately 1 mile
Routing	Northeast from Sandario Substation to Brawley Substation	
Purpose	Provide for increased transfer capability and voltage support in Southern Pima County and to provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc.	
Date		
a) Construction Start		Proposed 2011
b) In-Service Date		Proposed 2012
Is Certificate Necessary?		Yes

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Adonis 115/24.9 kV Substation
Size	
a) Voltage	115 kV
b) Capacity	50 MVA
c) Point of Origin	Tap of Naviska to Thornydale 115 kV line Sec. 23 T11S R11E
d) Point of Termination	Adonis Substation Sec. 23 T11S R11E
e) Length	0 miles
Routing	Southeast from Naviska Substation to Adonis Substation
Purpose	Provide for increased transfer capability and voltage support in Southern Pima County and to provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc.
Date	
a) Construction Start	Proposed 2012
b) In-Service Date	Proposed 2013
Is Certificate Necessary?	No

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	New Tucson 230/24.9 kV Substation
Size	
a) Voltage	230 kV
b) Capacity	50 MVA
c) Point of Origin	Tap of Pantano to Sahuarita 230 kV Line Sec. 34 T16S R16E
d) Point of Termination	New Tucson Substation Sec. 34 T16S R16E
e) Length	0 miles
Routing	West of Pantano Substation and East of Sahuarita Substation
Purpose	Provide for increased transfer capability and voltage support in Southern Pima County and to provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc.
Date	
a) Construction Start	Proposed 2013
b) In-Service Date	Proposed 2014
Is Certificate Necessary?	No

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Camino de Manana 115/24.9 kV Substation
Size	
a) Voltage	115 kV
b) Capacity	50 MVA
c) Point of Origin	Tap of Thornydale to Twin Peaks 115 kV Line Sec. 23 T12S R12E
d) Point of Termination	Camino de Manana Substation Sec. 23 T12S R12E
e) Length	0 miles
Routing	Southeast from Thornydale Substation to Camino de Manana Substation
Purpose	Provide for increased transfer capability and voltage support in Southern Pima County and to provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc.
Date	
a) Construction Start	Proposed 2014
b) In-Service Date	Proposed 2015
Is Certificate Necessary?	No

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

10 YEAR PLAN

PLANNED TRANSMISSION FACILITIES

Line Designation	Upgrade of Marana to Avra Valley 115 kV Line
Size	
a) Voltage	115 kV
b) Capacity	167 MVA
c) Point of Origin	Marana Substation Sec. 26 T11S R10E
d) Point of Termination	Avra Valley Substation Sec. 11 T13S R10E
e) Length	Approximately 8.75 miles
Routing	Same R.O.W. as existing Marana to Avra Valley 115 kV line
Purpose	To mitigate various thermal overloads and/or voltage criteria violations due to N-1 outages on the 115 kV system between Bicknell and Marana and to provide for anticipated load growth in the certificated service area of Trico Electric Cooperative, Inc.
Date	
a) Construction Start	Proposed 2015
b) In-Service Date	Proposed 2015
Is Certificate Necessary?	Yes

SECTION II

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

INTERNAL PLANNING CRITERIA AND FACILITY RATINGS

The following represents the internal planning criteria of Southwest Transmission Cooperative, Inc. ("SWTC") and also identifies the assumptions and methodologies used by SWTC to determine electrical facility ratings. This criteria is published in the FERC FORM #715 Filing that is made annually by the Western Electricity Coordinating Council ("WECC") for its members.

The assumptions used below represent criteria that SWTC has used for a number of years, to meet requirements of the North American Electric Reliability Council ("NERC"), the Federal Energy Regulatory Commission ("FERC") and the WECC.

1) Nominal Operating Limit

- Transmission lines should not be loaded greater than 100% of the thermal rating of the conductors.
- Transformers, circuit breakers, current transformers, and other equipment should not be loaded above their continuous nameplate rating.
- Transmission system voltages should not fall below 0.9 per unit (p.u.) of nominal nor rise above 1.05 p.u. of nominal

2) Emergency Operating Limit

- Transmission lines should not be loaded greater than 110% of the thermal rating of the conductors.
- Transformers, circuit breakers, current transformers, and other equipment should not be loaded above their continuous nameplate rating.
- Transmission system voltages should not fall below 0.90 p.u. of nominal nor rise above 1.10 p.u. of nominal.

3) Transformer Loading Criteria

For study purposes, transformers are generally considered in nominal operating conditions at the maximum of their 55°C rise; and represented at the maximum of their 65°C rise under emergency operating conditions.

4) Conductor Loading Criteria

Ampacities for the bulk of SWTC's transmission lines have been developed, using the House and Tuttle formula for Aluminum Conductor Steel Reinforced (ACSR) overhead conductors as developed by the Western Area Power Administration (Power System Bulletin 510, dated January 14, 1992).

The Conductor type and Ampacities are listed below at 75 degrees Celsius conductor operating temperature, 2 foot per second wind velocity and 40 degrees Celsius ambient air temperature:

Type	Amps
#2 CU	240
#4 ACSR	120
1/0 ACSR	240
3/0 ACSR	310
4/0 ACSR	360
266.8 ACSR	380
336.4 ACSR	500
477 ACSR	620
795 ACSR	840
954 ACSR	920
1272 ACSR	1100
2-954 ACSR	1370

5) The following table summarizes the conditions establishing limits for SWTC.

Circuit Feature	Nominal Limit	Emergency Limit
Power Circuit Breaker	100% rating	100% rating
Bushing CT	100% connection	100% connection
Wound CT	100% thermal	100% thermal rating
Switches	100% rating	100% rating
Conductor	100% thermal rating	110% thermal rating
Regulator	100% rating	100% rating
Transformer	100% rating @ 55°C rise	100% rating @ 65°C rise
Reactor	100% rating	100% rating
Relay Setting	80% of setting	80% of setting

- 6) Table 1 below describes the electrical load limits of SWTC's facilities under nominal and emergency conditions. The methodology for determining the path was to pass through the from-bus and stop just before the to-bus. Transformers, jumpers, and other equipment were considered when determining the limiting element for the from-bus only.

Table 1: Load Limits

Station A From	Station B To	Voltage KV	Nominal Limit Amps	Emergency Limit Amps	Nominal Limit MVA	Emergency Limit MVA	Limiting Equipment
BICKNELL	VAIL	345	251	323	150	193	Transformer
VAIL	BICKNELL	345	1370	1507	819	901	Conductor
GREEN-SW	GREENLEE	345	586	698	350	417	Transformer
GREENLEE	GREEN-SW	345	1370	1507	819	901	Conductor
APACHE	BUTERFLD	230	840	924	335	368	Conductor
BUTERFLD	APACHE	230	840	924	335	368	Conductor
APACHE	RED TAIL	230	1100	1210	438	482	Conductor
RED TAIL	APACHE	230	1100	1210	438	482	Conductor
BUTERFLD	PANTANO	230	840	924	335	368	Conductor
PANTANO	BUTERFLD	230	251	281	100	110	Transformer
BUTERFLD	SAN RAF	230	920	1012	367	403	Conductor
MORENCI	GREEN-SW	230	1100	1210	438	482	Conductor
GREEN-SW	MORENCI	230	251	323	150	193	Transformer
DOSCONDO	MORENCI	230	1100	1210	438	482	Conductor
MORENCI	DOSCONDO	230	1100	1210	438	482	Conductor
MORENCI	PD-MORNC	230	920	1012	367	403	Conductor
PD-MORNC	MORENCI	230	753	843	300	336	Transformer
PANTANO	SAHUARITA	230	251	281	100	110	Transformer
SAHUARITA	PANTANO	230	840	924	335	368	Conductor
SAHUARITA	BICKNELL	230	840	924	335	368	Conductor
BICKNELL	SAHUARITA	230	251	323	150	193	Transformer
RED TAIL	DOSCONDO	230	1100	1210	438	482	Conductor
DOSCONDO	RED TAIL	230	1100	1210	438	482	Conductor
DAVIS	RIVIERA	230	1100	1210	438	482	Conductor
APACHE	WINCHSTR	230	1100	1210	438	482	Conductor
WINCHSTR	APACHE	230	702	773	420	462	Transformer
APACHE	HAYDENAZ	115	620	682	123	136	Conductor
HAYDENAZ	APACHE	115	620	682	123	136	Conductor
AVRA	MARANA	115	360	396	72	79	Conductor
MARANA	AVRA	115	360	396	72	79	Conductor
BICKNELL	THREEPNT	115	251	281	100	112	Transformer
THREEPNT	BICKNELL	115	620	682	123	136	Conductor
BICKNELL	MILLSITE	115	251	281	100	112	Transformer
MILLSITE	BICKNELL	115	620	682	123	136	Conductor
BICKNELL	OXIDEPLT	115	251	281	100	112	Transformer
OXIDEPLT	BICKNELL	115	620	682	123	136	Conductor
MARANA	MARANATP	115	500	550	100	110	Jumpers
MARANATP	MARANA	115	500	550	100	110	Jumpers
PANTANO	KARTCHNR	115	251	281	100	112	Transformer
AVRA	SANDARIO	115	360	396	72	79	Conductor
SANDARIO	AVRA	115	360	396	72	79	Conductor
THREEPNT	SANDARIO	115	360	396	72	79	Conductor
SANDARIO	THREEPNT	115	360	396	72	79	Conductor
THREEPNT	VALENCIA	115	620	682	123	136	Conductor

SECTION III

SOUTHWEST TRANSMISSION COOPERATIVE, INC.

TEN YEAR PLAN

2006 – 2015

TECHNICAL STUDY REPORT

**SUBMITTED TO THE ARIZONA CORPORATION COMMISSION
IN FULFILLMENT OF A.R.S. §40-360.02 ¶C.7**

**TRANSMISSION PLANNING
JANUARY 2006**

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SOUTHWEST TRANSMISSION COOPERATIVE, INC.
TEN YEAR PLAN
2006 – 2015
TECHNICAL STUDY REPORT

INTRODUCTION

This technical report is submitted to the Arizona Corporation Commission (“Commission”) pursuant to the Arizona Revised Statutes (“ARS”) §40-360.02 ¶C.7, and Decision No. 63876, dated July 25, 2001, regarding the Biennial Transmission Assessment prepared by Commission Utilities Division Staff. It has been amended to reflect increased projected loads on SWTC’s Western and Southern Systems that were not anticipated in the January Ten Year Plan Filing.

Power flow analyses performed for this amended report looked at N-0 conditions for each year from 2006 to 2015 and N-1 conditions for only the year 2015, of this Amended Ten Year Plan. This provided an excellent snapshot of the problems that will be encountered with the increased loadings used in this Amended Ten Year Plan Filing. The analyses showed that under a variety of N-1 conditions in 2015, the system performed with no violations of SWTC’s internal criteria, with the exception of the loss of the Apache to Butterfield and Butterfield to San Rafael 230 kV lines. Additional discussion concerning these two outages is found below.

The last stability analyses completed by SWTC were included in the SWTC 2002 Ten Year Plan Filing for the Winchester Project. These studies were performed on the system using summer of 2004 conditions, which was reported in the 2002 SWTC Ten Year Plan filing to the Commission. Stability studies for the expanded systems of 2006 and later have not been performed.

POWER FLOW ANALYSIS

Power flow studies were performed using General Electric’s Positive Sequence Load Flow (“PSLF”) program. Power flow cases were created for the years 2006-2015 of the study plan using the latest base cases from the Western Electricity Coordinating Council (“WECC”). The base cases from WECC were updated with the latest load projections of SWTC, as noted above, and other entities participating in the Southwest Area Transmission (“SWAT”) Planning Group. Representations of the sub-transmission systems of SWTC’s member-owners were added to the cases as necessary. Base case and single contingency conditions were evaluated using PSLF to determine system impacts and timing of transmission facilities needed to mitigate those system impacts.

Numerous outage simulations were performed for the final year, 2015, of the study period. The analyses looked at the impact of new projected member system load growth to the interconnected transmission system, which were higher than those used in the January filing, and determined where facilities would be placed to most economically serve this projected member

system load. As a result of these studies, SWTC will be assured of maintaining reliability and quality of service for its interconnected transmission system and for the customers of its member-owners.

With the planned projects of this Amended Ten Year Plan included, the numerous N-1 analyses for the final year, 2015, showed no violations to SWTC's internal planning criteria under normal and emergency conditions, with the exception of the loss of the Apache to Butterfield and Butterfield to San Rafael 230 kV lines. The outages of these two lines, which were not able to be solved through local remedial action, is due to the addition of an increased load forecast from one of SWTC's Member Owners, that varies significantly from its Rural Utilities Service (RUS) recently approved load forecast. This particular Member adjusted their load forecast due to increased load growth in its certificated service area and provided SWTC with this adjusted forecast for specific study purposes to help aid discussions between this Member and SWTC over the facilities that will be needed to accommodate this increased load growth. Since the facilities that will be needed to accommodate this load growth will likely be difficult to site from an environmental and aesthetic perspective, it was felt necessary to proceed with these studies as quickly as possible, to get ahead of the curve, in starting the necessary environmental and siting study work that will be needed to place the future facilities into service when needed.

As of this writing, study work to look at various options to mitigate loss of either the Apache to Butterfield 230 kV line or the Butterfield to San Rafael 230 kV line, has not been completed. Options that were studied in SWTC's Long Range Plan will be updated and additional options will be studied.

As the study work progresses and a practical, cost effective solution develops, SWTC will work closely with the affected Member in making a final determination of the transmission enhancements that will be needed to resolve the Apache to Butterfield or Butterfield to San Rafael 230 kV outages. SWTC contemplates providing the Commission with the appropriate information arising out of this study work in the 2007-2016 Ten Year Plan Filing, which will be made in January of 2007.

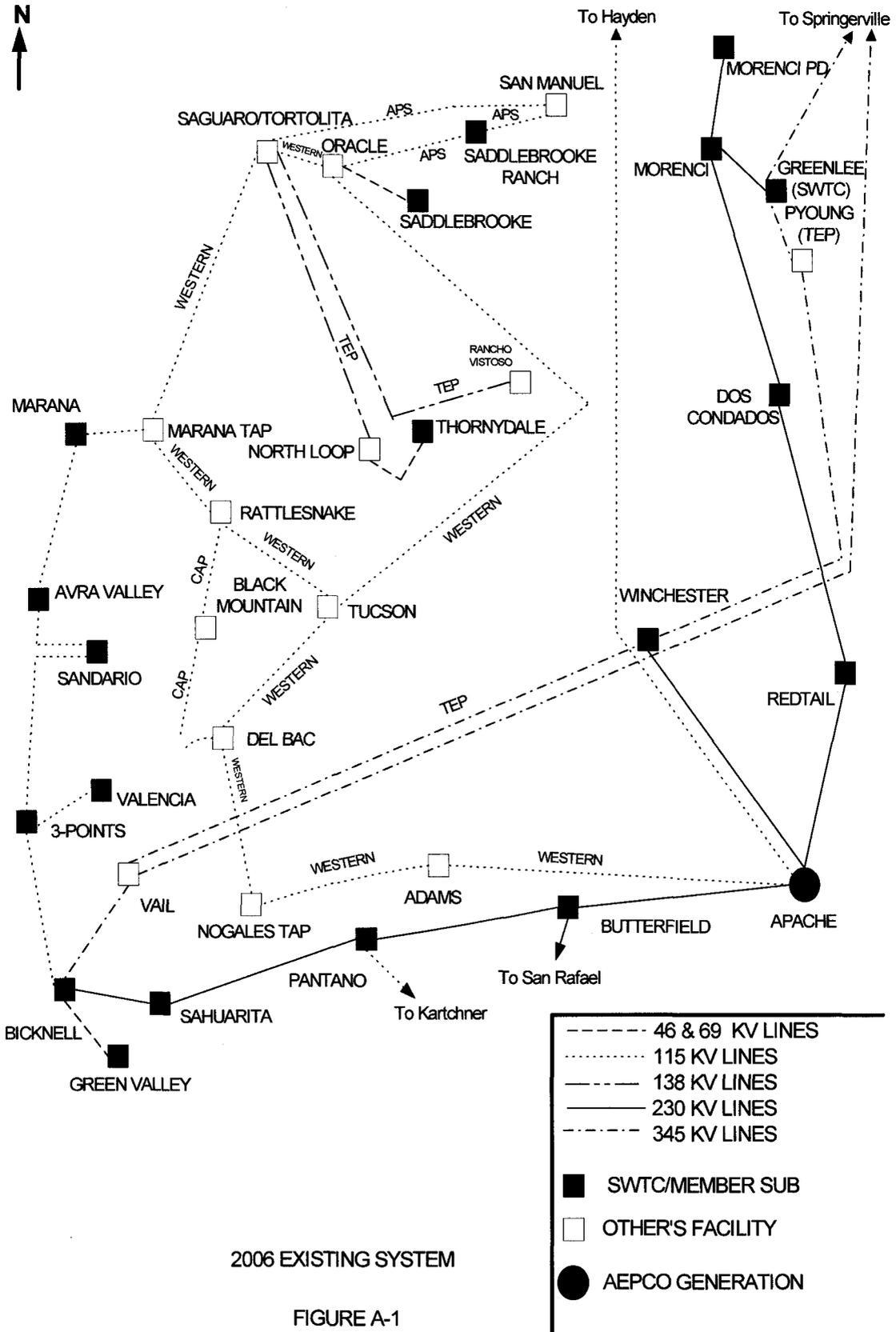
SWTC's existing and proposed transmission system maps are included in Appendix A, which starts on page 37. Power flow one-line diagrams are included in Appendix B, which starts on page 40. The power flow diagrams show the entire SWTC system for selected years of the Ten Year Plan.

STABILITY ANALYSIS

Extensive stability studies were performed for the Winchester Interconnect Project as reported in the 2002 SWTC Ten Year Plan filing to the Commission. SWTC has not performed any stability analyses for the expanded systems of 2006 and beyond.

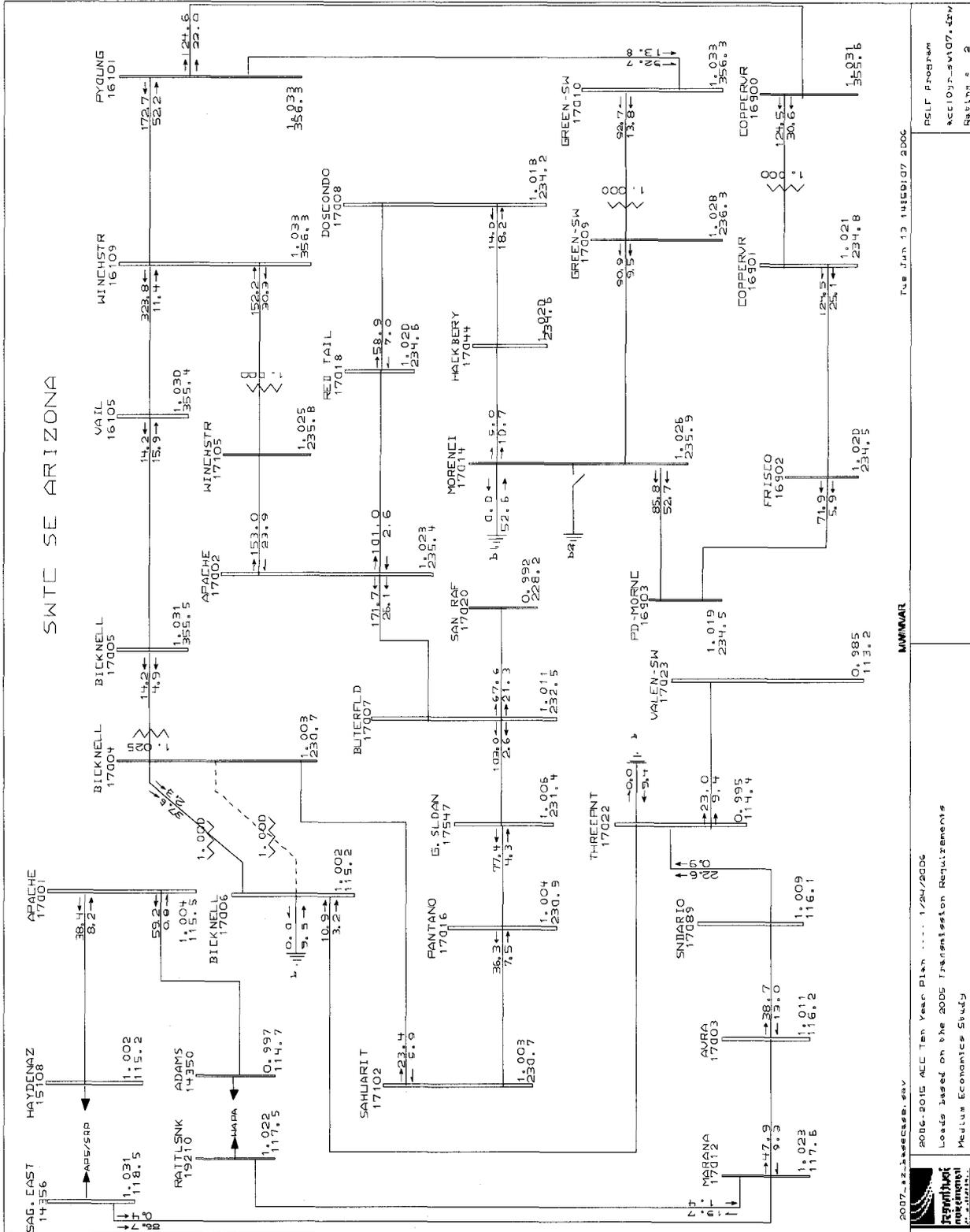
APPENDIX A

EXISTING AND PROPOSED TRANSMISSION SYSTEM MAPS



APPENDIX B
POWER FLOW ONE LINE DIAGRAMS

2007 Southwest Transmission Cooperative System with the Marana Line Upgrade



2007-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000

SWTC SE ARIZONA

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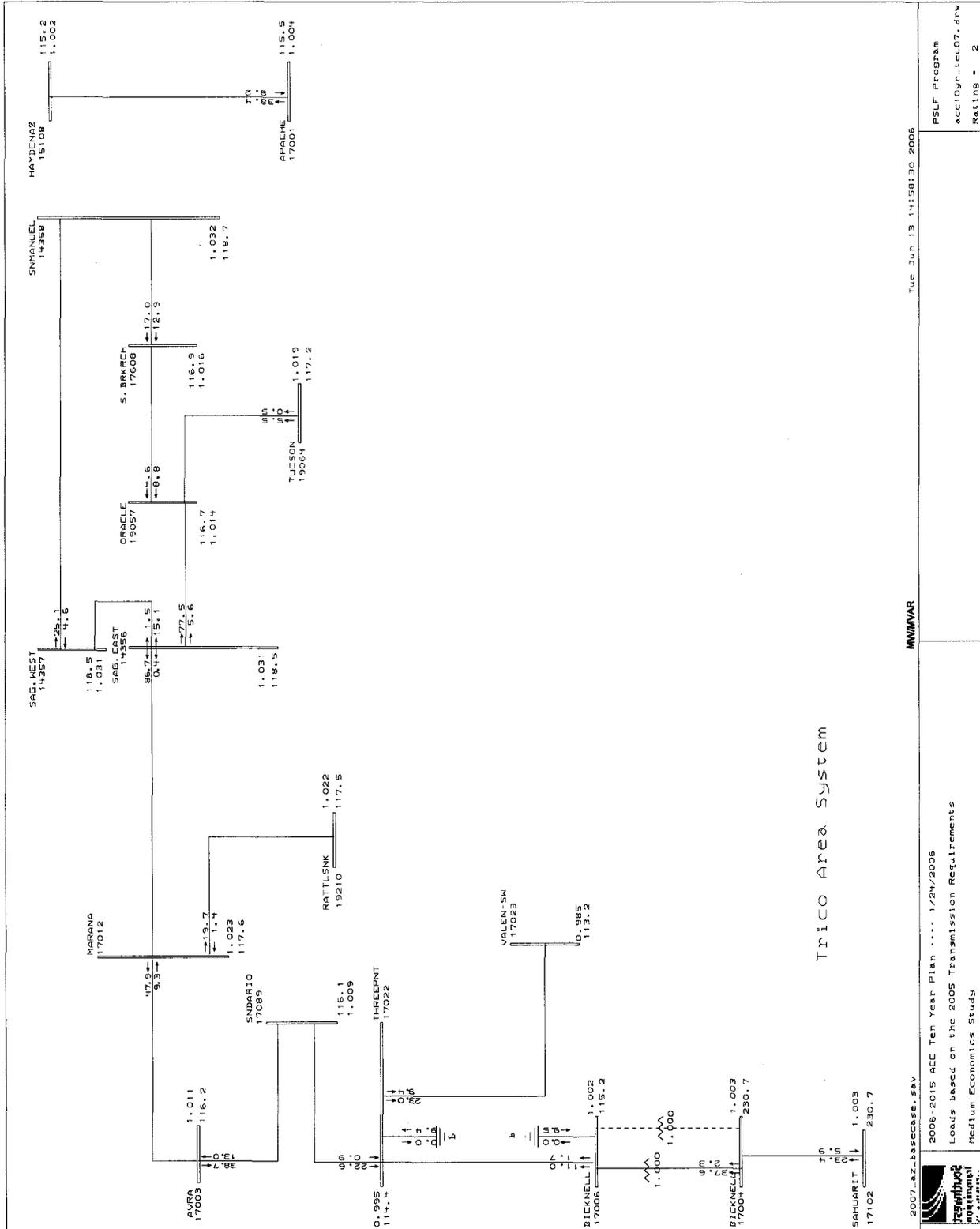
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 Medium Economics Study

MMW/MAR

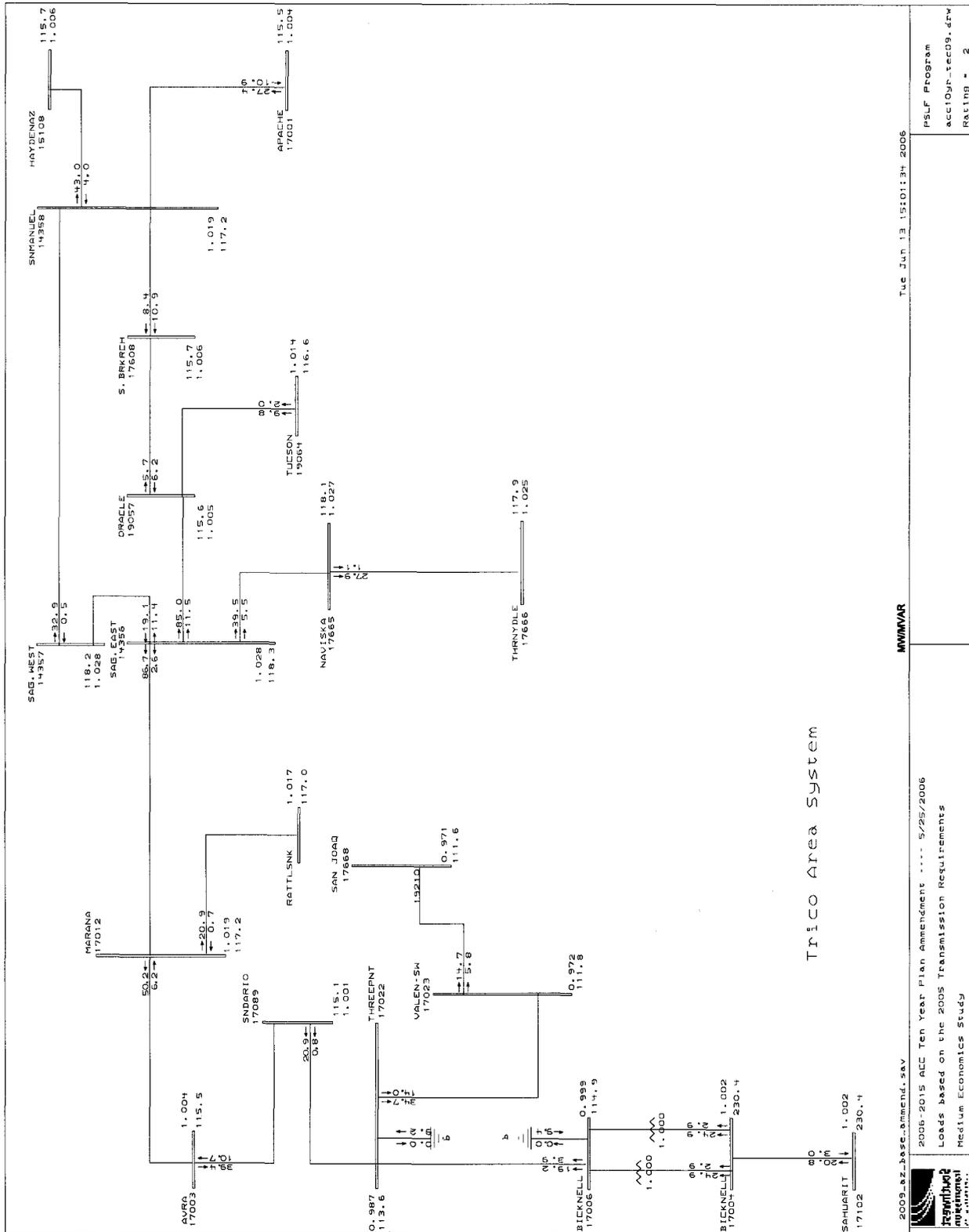
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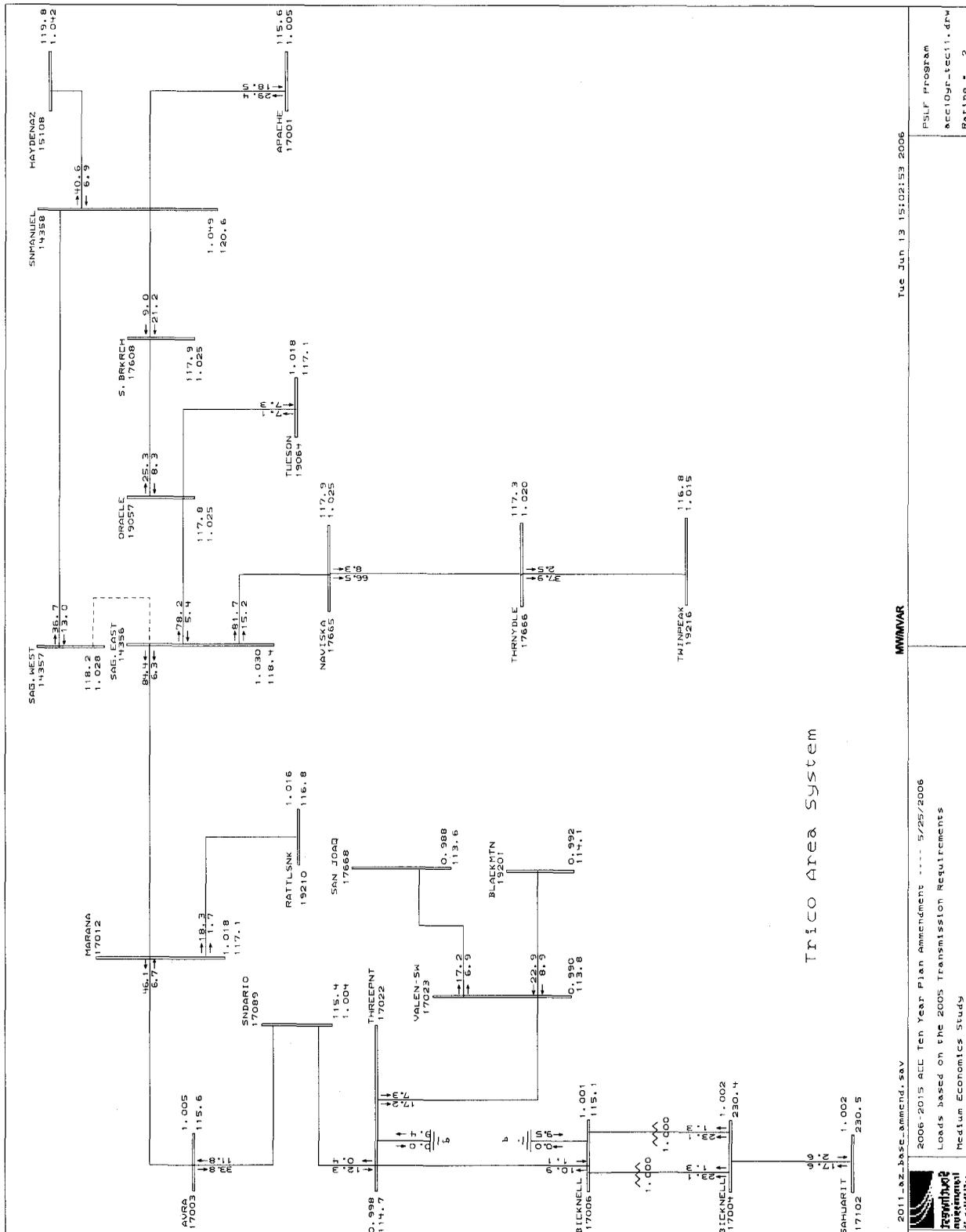
2007 Southwest Transmission Cooperative detail of Trico Electric Cooperative Area with the Marana Line Upgrade



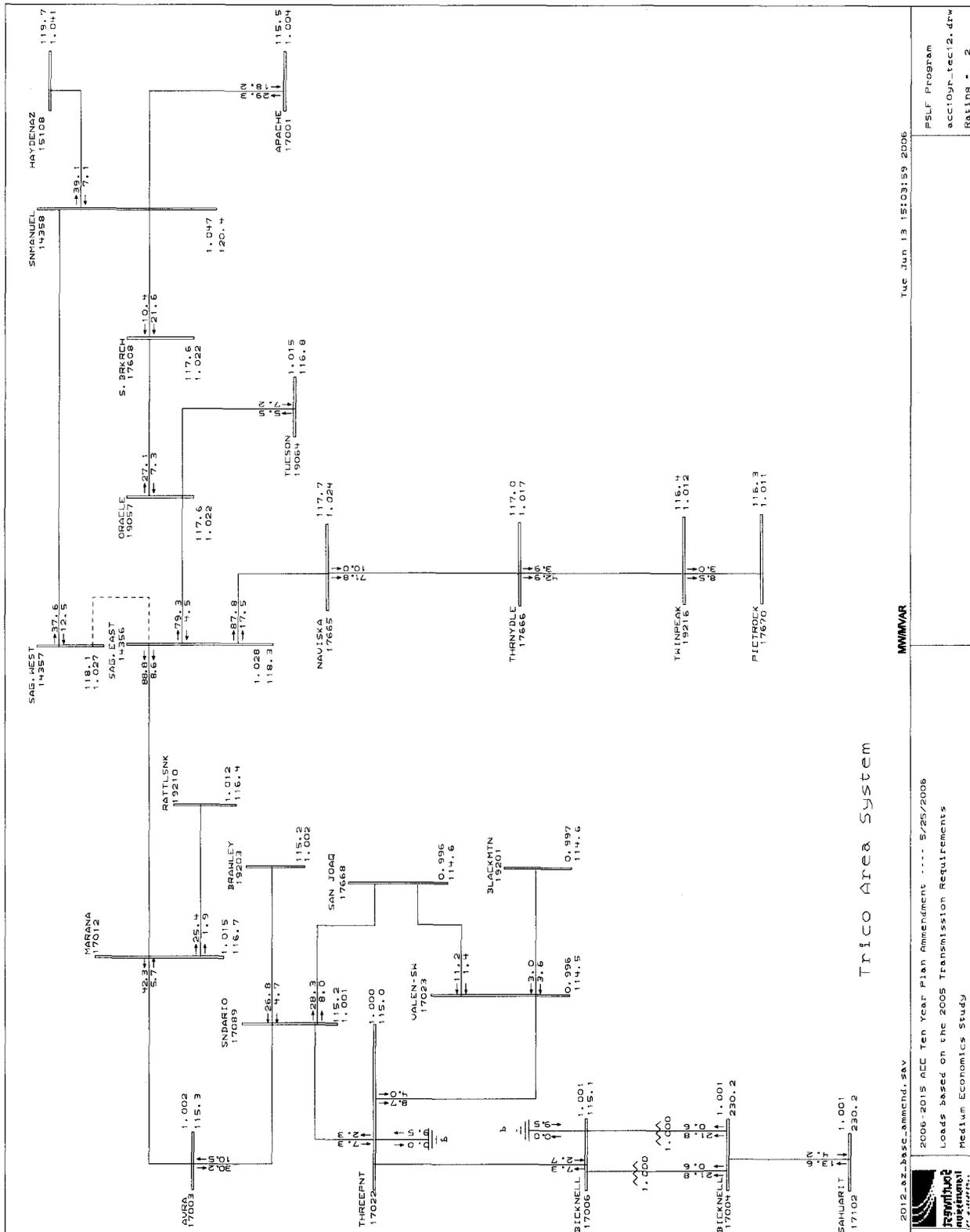
2009 Southwest Transmission Cooperative detail of Trico Area with Naviska to Thornydale and Valencia to San Joaquin 115 kV lines



2011 Southwest Transmission Cooperative detail of Trico Area with new 115 kV interconnections between Thornydale and CAP's Twin Peaks and between Valencia and a new 115 kV Substation near CAP's Black Mountain



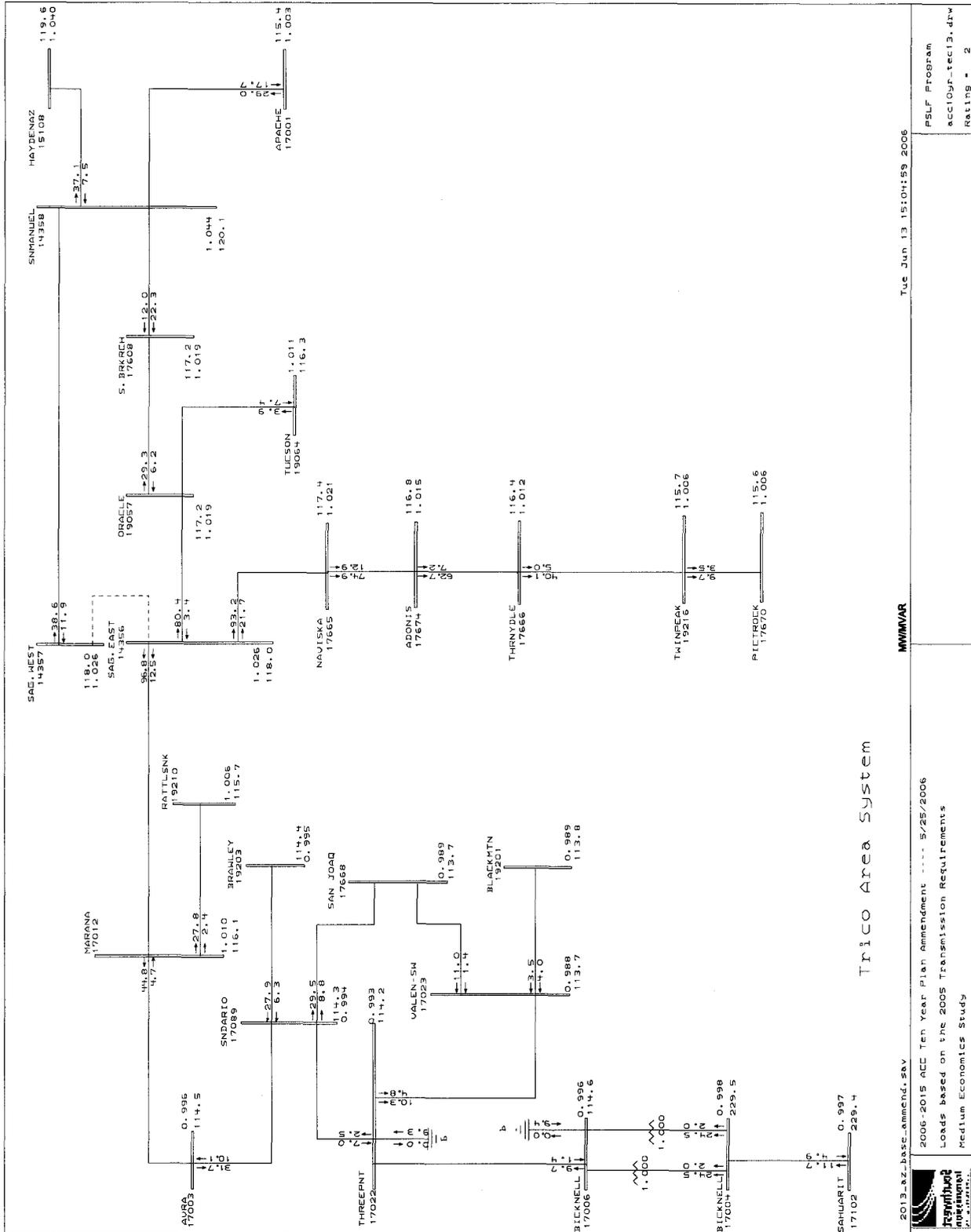
2012 Southwest Transmission Cooperative detail of Trico Area with Sandario to San Joaquin
 115 kV line and new 115 kV interconnections between Picture Rocks and CAP's Twin Peaks and
 Sandario and CAP's Brawley



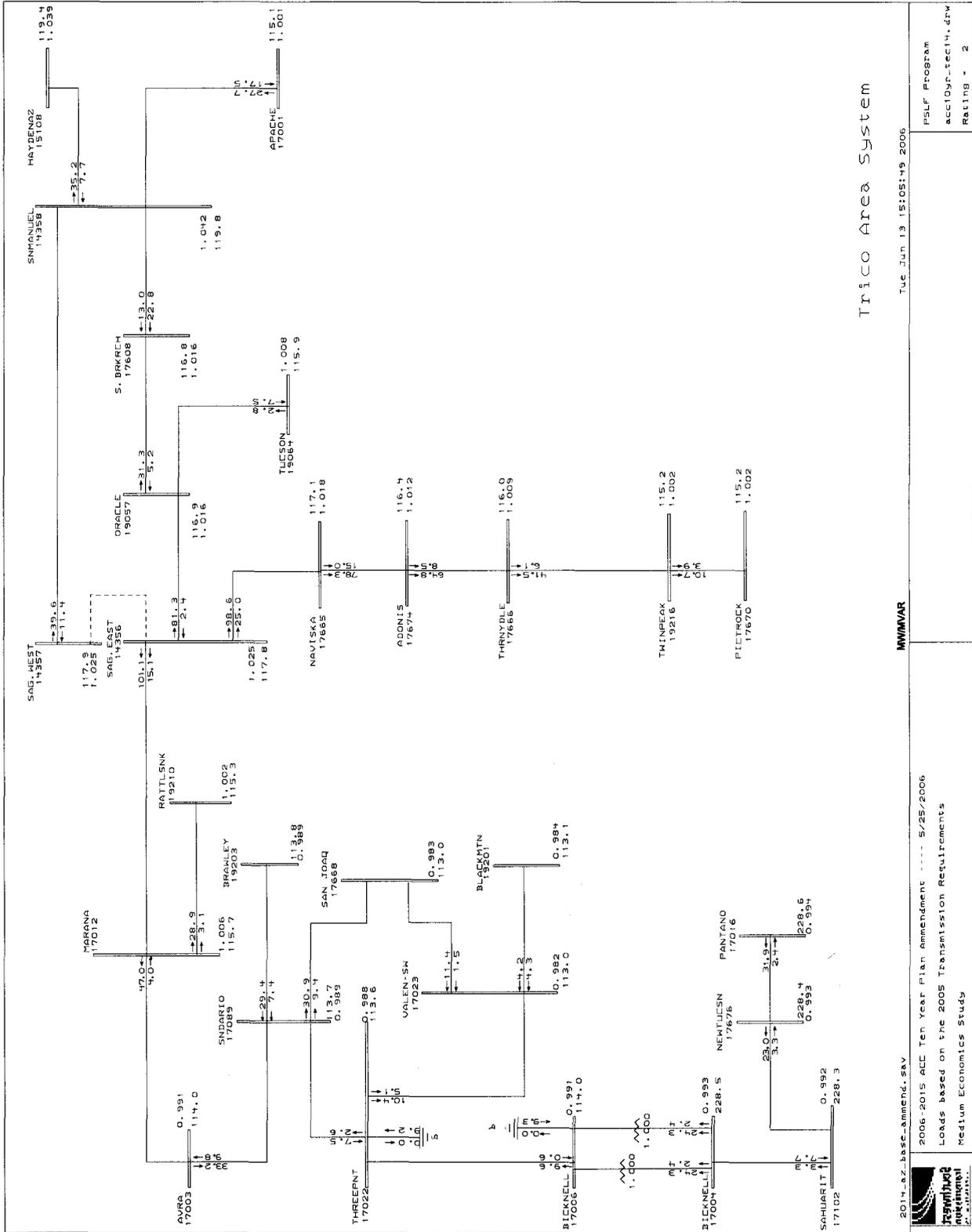
Trico Area System

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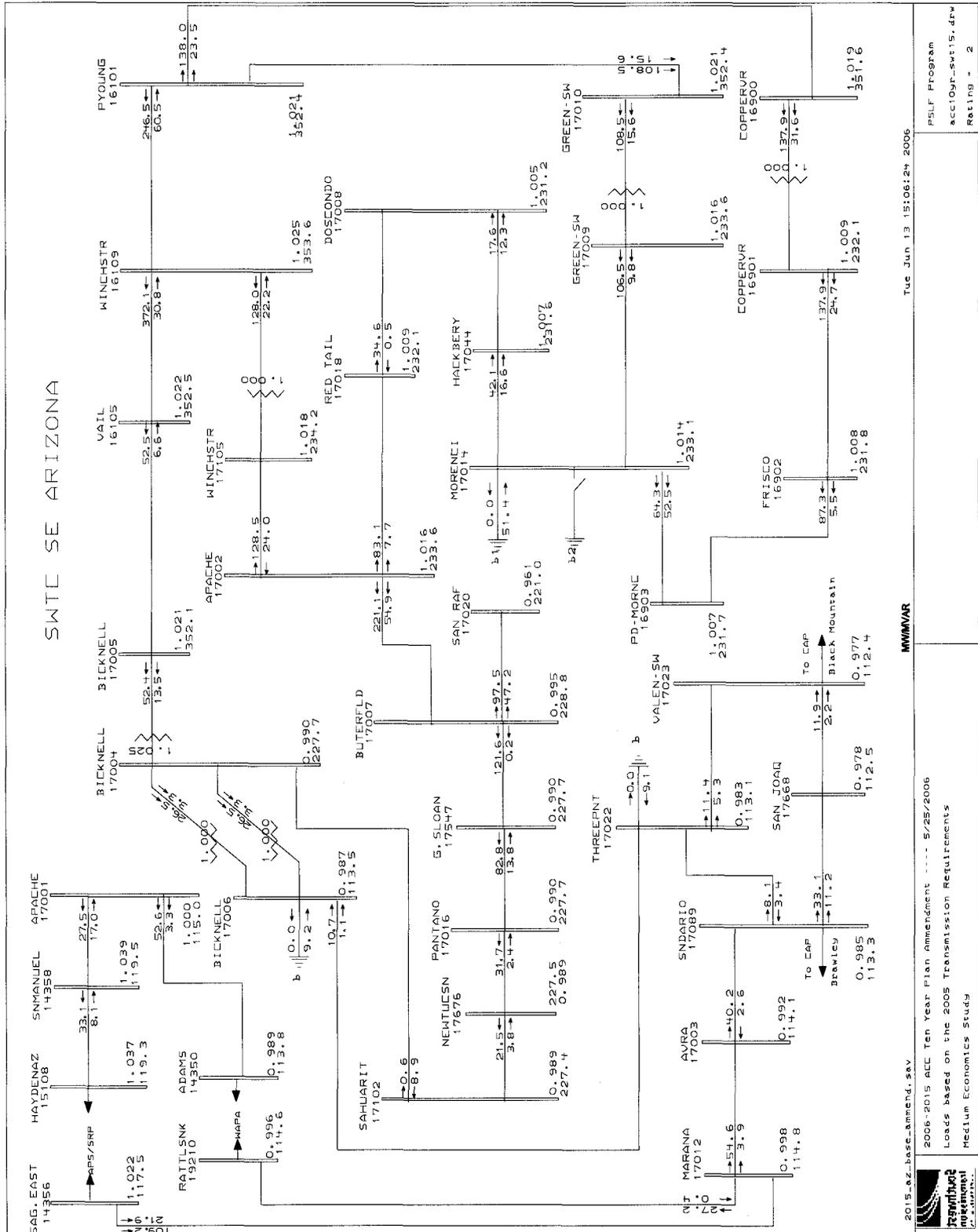
2013 Southwest Transmission Cooperative detail of Trico Area with the addition of Adonis 115 kV Substation tapping the Naviska to Thornydale 115 kV line



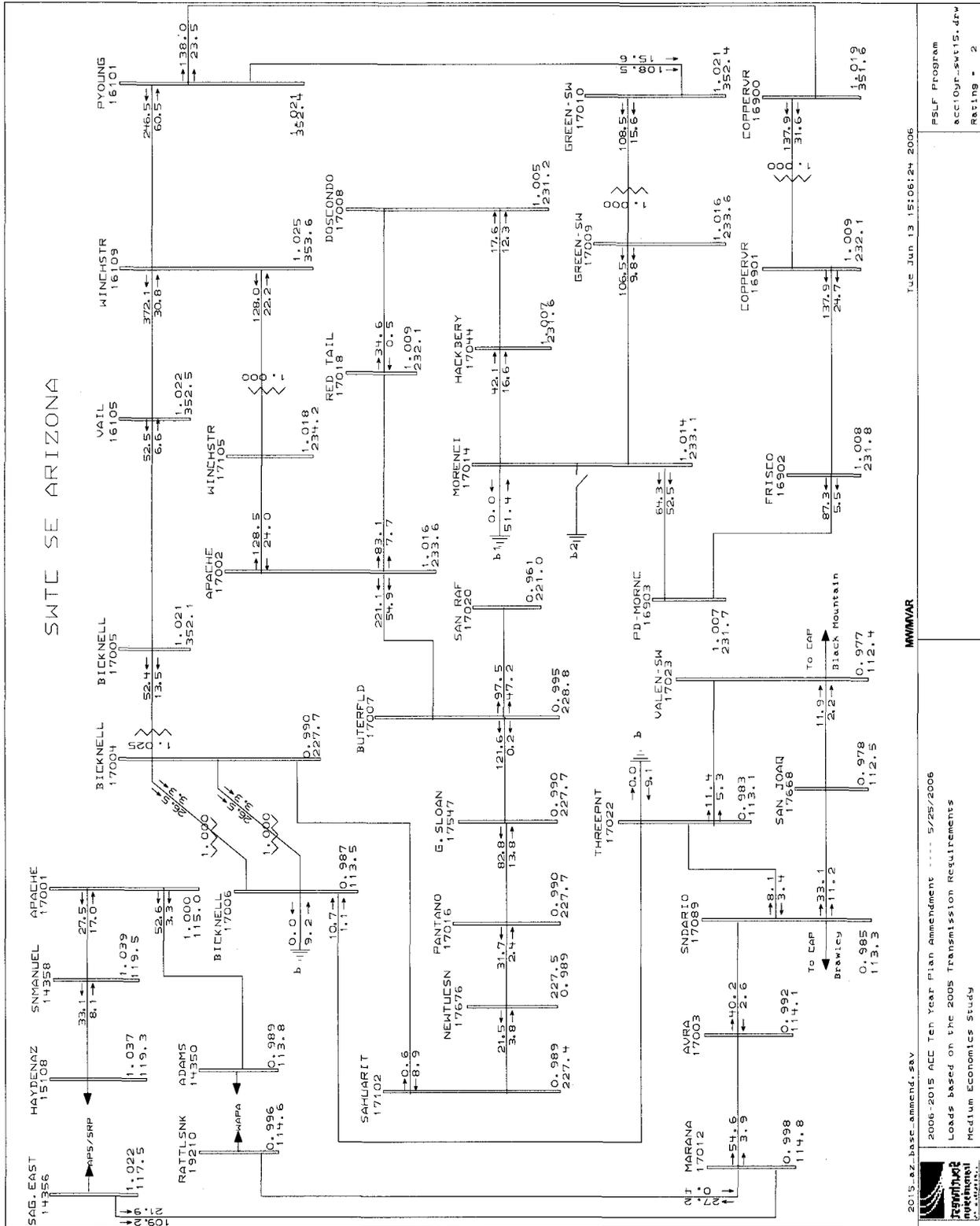
2014 Southwest Transmission Cooperative detail of Trico Area with the addition of New Tucson 230 kV Substation tapping the Pantano to Sahuarita 230 kV line



2015 Southwest Transmission Cooperative Base System with the addition of Camino de Manana 115 kV Substation tapping the Thornydale to Twin Peaks 115 kV line and upgrade of Marana to Avra Valley Line



2015 Southwest Transmission Cooperative Base System with all planned projects



SWTC SE ARIZONA

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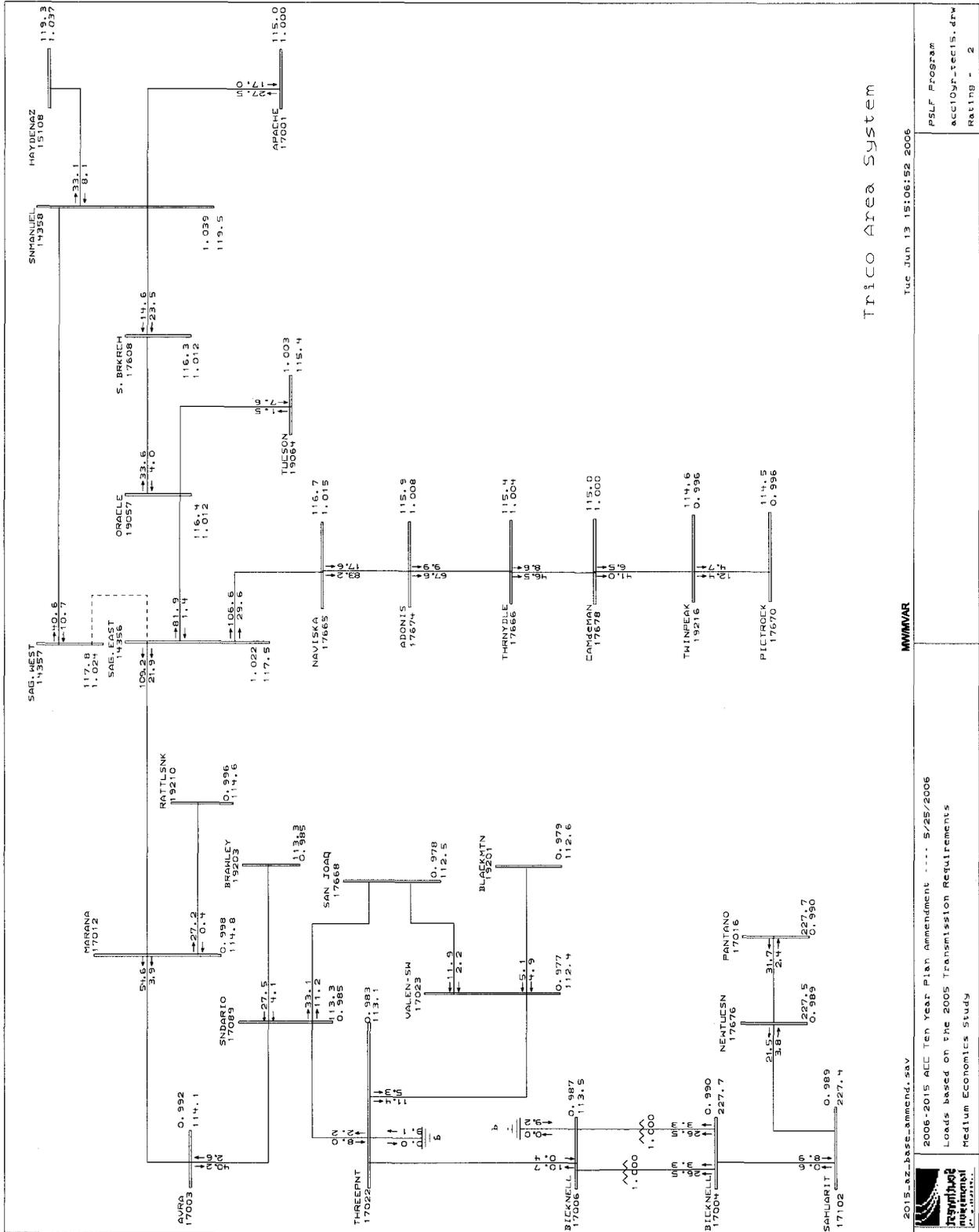
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2006-2015 AEC Ten Year Plan Amendment --- 5/25/2006
 Loads based on the 2005 Transmission Requirements
 Medium Economics Study



PSLF PROGRAM
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 Rating - 2

2015 Southwest Transmission Cooperative detail of Trico Electric Cooperative Area with all planned projects



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 2006-2015 AEC Ten Year Plan Amendment 5/25/2006
 Loads based on the 2005 Transmission Requirements
 Medium Economics Study

MMMWAR
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 ecc10pr_tec15.dfm
 Rating - 2

Trico Area System