

CATS-HV Saturated Load and Transmission Study

A Transmission Option to
Serve Saturated Loads
in Pinal County, Arizona

APPENDIX F Completion of Interim Report Tasks





April 5, 2006

San Carlos Irrigation Project
c/o Alex Romero
13805 N. Arizona Blvd.
P. O. Box 250
Coolidge, AZ 85228

Dear Mr. Romero,

K. R. Saline & Associates, PLC is an electric utility consulting firm located in Mesa, Arizona. In 2005 we conducted a saturated load and transmission study for the Southwest Area Transmission ("SWAT") Oversight Committee and the Central Arizona Transmission – High Voltage sub-committee ("CATS-HV"). The purpose of the saturated load and transmission study was to develop a high voltage transmission infrastructure that could handle the calculated ultimate (or saturated) loads in the Pinal County area between Phoenix-Tucson and Globe-Mobile based on publicly available general plans.

We invite you to participate in completing the final report which could include land use data for the San Carlos Irrigation Project. If the data is readily available, please send me a General Plan map, zoning map, tabular data, or electric load in megawatts by substation delivery point to the address or e-mail noted below by April 30th, 2006. Your involvement will allow us to put together more accurate models and will apprise the nation of growth adjacent to tribal lands. If no information is received by April 30th, 2006, the assumptions in the interim CATS-HV saturated load and transmission study will be used in the final report. A copy of the interim study is enclosed; it is also available at www.azpower.org/SWAT. Along with the data requested, please also provide us with the name, address, phone number, and e-mail of the contact person to whom future CATS-HV meeting notices, agendas, and minutes should be sent, if you'd prefer someone else to be the recipient of these notices.

We also invite you to attend the next CATS-HV meeting (held jointly with the CATS-Extra High Voltage committee) on April 18, 2006 at Salt River Project's 64th Street and Thomas facility. The agenda is included.

Your assistance in forwarding this letter and request to the appropriate person within your organization would be greatly appreciated.

Regards,

LeeAnn Torkelson
CATS-HV Subcommittee Chair
K. R. Saline & Associates, PLC
160 N. Pasadena Suite 101
Mesa, AZ 85201-6764
lt@krsaline.com

Enclosures

K. R. Saline & Associates, PLC

160 N. Pasadena, Suite 101 ♦ Mesa, AZ 85201-6764 ♦ Phone 480.610.8741 ♦ Fax 480.610.8796



April 5, 2006

K. R. Saline & Associates, PLC

Arizona Tribal Energy Association
4645 S. Lakeshore Drive Suite 16
Tempe, Arizona 85282

Dear Arizona Tribal Energy Association,

K. R. Saline & Associates, PLC is an electric utility consulting firm located in Mesa, Arizona. In 2005 we conducted a saturated load and transmission study for the Southwest Area Transmission ("SWAT") Oversight Committee and the Central Arizona Transmission – High Voltage sub-committee ("CATS-HV"). The purpose of the saturated load and transmission study was to develop a high voltage transmission infrastructure that could handle the calculated ultimate (or saturated) loads in the Pinal County area between Phoenix-Tucson and Globe-Mobile based on publicly available general plans.

We invite you to participate in completing the final report which could include land use data for the Gila River Indian Community, Tohono-O'odham, and the Ak-Chin Indian Reservation. If the data is readily available, please send me a General Plan map, zoning map, tabular data, or electric load in megawatts by substation delivery point to the address or e-mail noted below by April 30th, 2006. Your involvement will allow us to put together more accurate models and will apprise the nation of growth adjacent to tribal lands. If no information is received by April 30th, 2006, the assumptions in the interim CATS-HV saturated load and transmission study will be used in the final report. A copy of the interim study is enclosed; it is also available at www.azpower.org/SWAT. Along with the data requested, please also provide us with the name, address, phone number, and e-mail of the contact person to whom future CATS-HV meeting notices, agendas, and minutes should be sent.

We also invite you to attend the next CATS-HV meeting (held jointly with the CATS-Extra High Voltage committee) on April 18, 2006 at Salt River Project's 64th Street and Thomas facility. The agenda is included.

Your assistance in forwarding this letter and request to the appropriate person within your organization and to the appropriate Gila River, Tohono-O'odham, and Ak-Chin personnel would be greatly appreciated.

Regards,

LeeAnn Torkelson
CATS-HV Subcommittee Chair
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Enclosures

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From: LeeAnn V. Torkelson
Sent: Tuesday, July 11, 2006 12:51 PM
To: 'Alex Romero - SCIP'
Subject: FW: CATS-HV Saturated Load Interim Report comments?

Attachments: CATSHV INTERIM REPORT_01-27-06.pdf

Hello Mr. Romero;

I hope you've received the messages regarding the CATS HV Interim Report. I was wondering if you had any comments to include with the final report and if you could send those comments to me as soon as possible, preferably before the next CATS HV meeting on July 20, 2006. For documentation purposes, if you have no comments, please e-mail me/ call me to indicate that SCIP has no comments.

Your help is greatly appreciated. Hope to see you at future CATS meetings!
LeeAnn Torkelson

From: LeeAnn V. Torkelson
Sent: Thursday, May 18, 2006 9:15 AM
To: 'Charles Wiese'; 'Alex Romero - SCIP'; 'manager@gilanet.net'; 'Charles Wiese'; Leonard S. Gold (lgold@lsgrrc.com)
Subject: CATS-HV Saturated Load Interim Report comments?

Hello Gentlemen,

In April I hope you received the letter and copy of the CATS HV Saturated Load Interim report with the request for comments. At the suggestion of Mr. Pezalla, the letter and report were sent to the Arizona Tribal Energy Authority to contact the Ak-Chin, Gila River, and Tohono communities.

With a meeting next week to begin the finalization of the CATS HV report, I'd like to find out if you have any comments/suggestions for the final report.

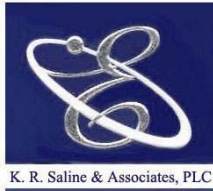
Attached, for your reference is the CATS HV Interim report.

I look forward to hearing from you!

LeeAnn

LeeAnn Torkelson

K.R. Saline & Associates, PLC.
480-610-8741



May 19, 2006

Linda Beals
Arizona State Land Department
1616 West Adams Street
Phoenix, Arizona 85007

Dear Linda,

On behalf of the Central Arizona Transmission System-High Voltage (CATS-HV) Committee, thank you for meeting with Rob Kondziolka and me on May 18, 2006 regarding the CATS-HV Saturated Load and Transmission Interim Study. We look forward to receiving a letter indicating the review of the report and any comments and suggestions regarding the assumptions made for State Land development to incorporate into the final report and future studies.

The next meeting of the CATS-HV will be held jointly with the CATS-EHV committee on May 26, 2006 at the SRP 64th Street and Thomas facility. An agenda will be distributed prior to the meeting.

Per your request, enclosed are three bound copies of the Interim CATS-HV Saturated Load and Transmission Study dated January 27, 2006.

We look forward to working with you and your staff.

Sincerely,

LeeAnn Torkelson
K.R. Saline & Associates, PLC
Chairman, CATS-HV committee

CC: Robert Kondziolka, Salt River Project (via e-mail)
Attachments: Three (3) CATS-HV Saturated Load and Transmission Study Interim Reports



A status report to the
Pinal Governmental Alliance

Presented by LeeAnn Torkelson

March 17, 2006



- CATS HV = **C**entral **A**rizona
Transmission **S**ystem – **H**igh **V**oltage
- A subcommittee of SWAT (**S**outh**w**est
Area **T**ransmission)
- CATS Participants: City, County,
Federal, Arizona government, Utilities,
any interested party.

**CATS HV Saturated Load Study
Background**



- The 2005 CATS HV Saturated Load Study was a unique and pioneering effort between municipalities and electric utilities to study the long term future electrical demand and transmission system due to phenomenal growth in Pinal County.
 - Size of study area (5200 sq miles!!)
 - Open, objective, transparent process
 - Use of municipality and county general plans and zoning
- The joint effort was called the “Saturated Load Study”

**CATS HV Saturated Load Study
Saturated Load Study – What is it?**



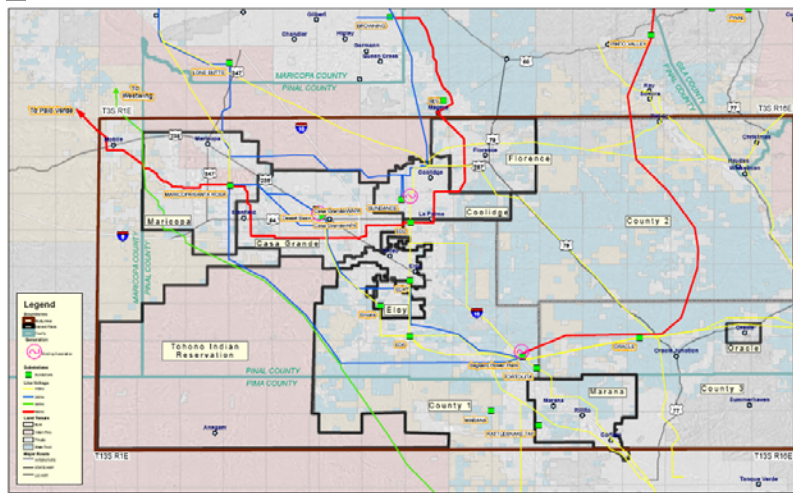
- A calculation of the potential ultimate electric load based on publicly available land use data.
 - General plans
 - Zoning maps
- A transmission solution to serve the potential ultimate electric load.

CATS HV Saturated Load Study
The Saturated Load Study Process



- Define the study area
- Gather general plans or zoning maps
- Determine electric load demand by land use type
 - Residential (low density homes vs. apartments)
 - Commercial, Industrial, Open Space
- Define electric load in undefined areas
- Model a transmission system to serve the ultimate potential load

CATS HV Saturated Load Study
Process – Define Study area & General Plans

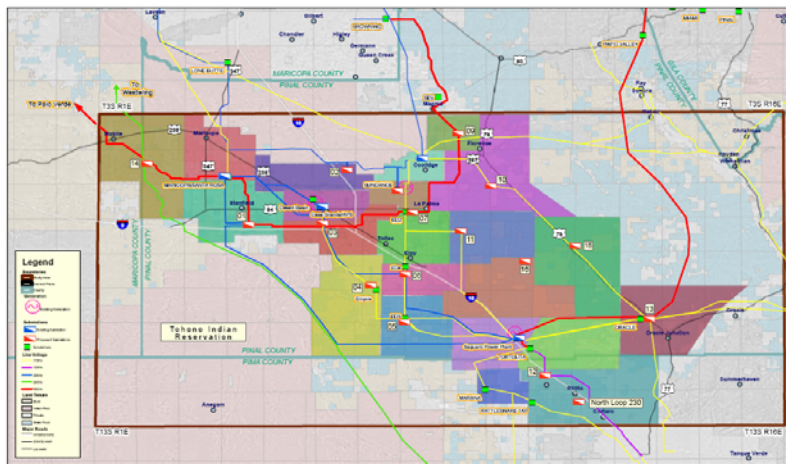


**CATS HV Saturated Load Study
Process – Define Electric Load by land use**

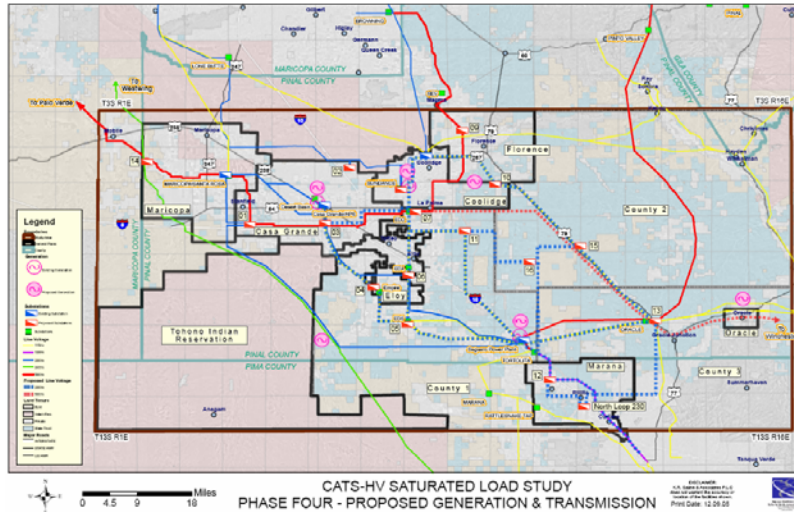


- Utilities provided estimates of demand by type (residential, commercial, industrial)
 - Residential 4kW per dwelling unit
 - Multiplied demand based on # of dwelling units per acre
 - Heavy Commercial – 45kW/acre
 - Medium Commercial – 30kW/acre
 - Light Commercial – 14kW/acre
 - Parks/Open space – 500kW/ sq mile
- Calculated Saturated Load = 10,400MW
 - Approximately the greater Phoenix area load today
 - Study area load about 500MW today

**CATS HV Saturated Load Study
Process – Model-Receiving Station areas**



CATS HV Saturated Load Study Process – Generation & Transmission



CATS HV Saturated Load Study Results and Conclusions



To serve 10,400MW of load the study added:

- **Transmission**
 - 169 miles of 115kV upgraded to 230kV
 - 184 miles of 230kV
 - 267 miles of 500kV
 - 150 miles of new “corridor” (100 miles of 500kV and 50 miles of 230kV)
- **Substations**
 - Approximately 500MW per 230kV substation
 - 16 substations 230 and 500kV
- **Generation**
 - The study assumed mostly imports

CATS HV Saturated Load Study
Next Steps



- The report submitted as part of the 10 year planning process was an *interim* report
- To finalize the report the following items will be performed:
 - Upgrade EHV system outside the study area
 - Gather and incorporate electric load data & growth projections from Native American Tribes in the study region
 - Gather more information regarding the sale & potential use of State Trust Land
 - Publish and present results to jurisdictional entities

CATS HV Saturated Load Study
Next Steps



- Finalize the 2005 Saturated Load Study
- 2006 Study Plans: investigate loads, resources and transmission for the 2016-2017 timeframe
- Next meeting – Early April 2006, Phoenix

To participate in future CATS HV meetings and studies please contact LeeAnn.

For more information visit:

www.azpower.org/swat

Distribution List Name: CATS-HV Committee

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