



EFFECTIVENESS OF VIDEOCONFERENCING

Phase II: Post-Pilot Test Report

Final Report 465-(2)

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16. Abstract <p>This phase of the project entailed research into the usage of videoconferencing technology (VCT) within ADOT during the ten month test period spanning August 1999 through May 2000.</p> <p>In the 10-month testing period, 305 people within the ADOT organization attended 29 VCT meetings in three different sites. Evaluation based on the direct responses from all the participants shows that the incremental savings (savings excluding fixed costs of ownership) from VCT was nearly \$85,000 for the 10 month period. Assuming a five-year life to the videoconferencing equipment, it is estimated that even at the low levels of utilization experienced in the pilot test, videoconferencing would produce a net benefit (after all costs and savings are considered) of around \$600 per site per month.</p> <p>From the findings of this phase, it can be concluded that Videoconferencing Technology not only helps other companies and organizations to save time and money, it also helps ADOT to enhance effective and efficient use of time and money. In addition, videoconferencing technology not only offers contributions to communications between geographically remote parties, it also offers its contributions to the communications within local companies and organizations like ADOT.</p>					
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Introduction

This project explored the effectiveness of videoconferencing to determine if videoconferencing technology can reduce travel costs and enhance effective and efficient use of staff time for the Arizona Department of Transportation. The project was divided into two phases. Phase 1 began in February 1997 and ended in November 1998. This phase entailed research studies into the impacts experienced by other organizations that have deployed videoconferencing technology (VCT) for internal use. From the findings of Phase 1, we know that VCT offers three major contributions to today's business world: 1) Communications between geographically remote parties become much easier with much less time and money. 2) More people can attend the meetings and get direct information to participate in the decision making process. 3) VCT changes the whole culture of the employee training format. More people can get trained for the same amount of money. There is little doubt that the use of videoconferencing will increase as the technology improves and bandwidth limitations are overcome.

Phase 1 reviewed Videoconferencing Technology capability and performance among several companies, institutions and organizations. Participants' responses and a survey of other states DOTs attested to the benefits of this technology and to the fact that current and planned uses of this technology are consistent with other recent studies on this topic. There will be a greater use of Videoconferencing Technology that will change how, when, and where meetings are held and how, when, and where employees are trained (American Society for Training and Development, 1994). It is predicted that in the future more companies and organizations will utilize VCT and other multimedia technologies to provide more efficient meeting opportunities to workers in remote areas.

We can also conclude from the findings that there are differences in the use of this technology among businesses and organizations of various sizes, and these differences are likely to continue in future years. Generally, large organizations will find tremendous savings with VCT, and will easily find the money to install it. States which are large or widely separated geographically from locations with which they frequently do business have a stronger tendency to install VCT than those which are smaller or closer to those with which they do business.

From the survey responses, it can be concluded that VCT especially benefits the majority of common people. Those who used to have no or little chance to attend meetings or have little or no chance to have further training can now get most opportunities, which will further improve their ability and eventually benefit the organization.

It was determined by the participants that vendor support is very important in this technology, in other words, establishing a good vendor service-relationship and choosing a strong service vendor is as important as buying high quality equipment.

Market research revealed that video quality is poor at ISDN (128 bps) speed, but is much better if three ISDN lines or equivalent are installed.

For more information about Phase 1, please refer to final report ---- *Effectiveness of Videoconferencing Phase 1: Pre-pilot Test Report*, Report Number: FHWA-AZ98-465 (1), published in November 1998.

Based on the findings of phase 1, three sets of VCT equipment were bought and installed at three ADOT locations: Flagstaff, Phoenix, and Tucson. Phase 2 of the research—the post-pilot test report--started in August, 1999. The purpose of this phase was to measure the use of videoconferencing among employees in the ADOT organization. Its first objective was to identify all costs associated with installing, maintaining, and operating the system. The second was to obtain direct responses from the ADOT employee participants to calculate the “Hard Savings” such as the savings from travel expenses, vehicle expenses and personal time. The third was to obtain the direct responses from ADOT VCT participants to find out what “Soft Benefits,” such as A) increased employee involvement in decision making, B) the perceived reduced accident rate and stress due to travelling, C) the improved communication quality, and D) the better use of staff time on work.

Videoconference monetary savings can be achieved in five ways:

- 1) Savings from the time not spent on traveling to distant meeting locations
- 2) Savings from the reduced mileage wear on vehicles
- 3) Savings from per diem expenses avoided
- 4) Savings from hotel, airfare, and rental car expenses
- 5) Savings from avoiding miscellaneous costs.

Soft benefits can be achieved in five ways:

- 1) More people attend meetings
- 2) Reducing stress due to traveling
- 3) Reducing accident risk
- 4) Increasing productivity by the employee due to less time spent travelling
- 5) Increasing communication quality since everyone hears the same message from one speaker

ESA Conferencing System

Of five final vendors with over 15 different products, VTEL's TC2000 Conferencing Room System was picked with the following features:

General Description

- 1) ITU-T Standards supported: H. 320, G. 711, G. 722, H. 221, H. 230, H. 242, H. 243, H. 261, H. 281
- 2) Intel Pentium Microprocessor, CD-ROM drive, modem, 3.5" floppy drive, hard drive, 16 MB RAM
- 3) CPU Pentium: 133MHz
- 4) CPU Memory: 64MB
- 5) Line Rate: 384 kbps
- 6) Frames Per Second (claimed): 30 fps
- 7) H. 320 Support/Compression Algorithm: Yes, ITU-T H. 261 (px64)
352 x 288 (FCIF)
176 x 144 (QCIF)
- 8) Additional I/O Capabilities: Audio inputs, 3 microphones, line level in, VCR audio (play) input, Audio output, line level out, VCR audio (record) output
- 9) Simultaneous display of incoming and outgoing video
- 10) PC based, easy to upgrade
- 11) 6 local, 6 remote preset video cameras
- 12) Camera controls:
Up to 4 pan/tilt/zoom cameras
Focal length: 6 - 64mm
Iris:
Zoom:

Pan: 100

Tilt: + 25

Moveability;

- 13) Microphone: 3 microphones
- 14) Monitor: Dual 32"
- 15) Pen Pal Graphics
- 16) Remote Diagnostics
- 17) Wireless Keyboard and Mouse
- 18) Picture-in-picture
- 19) Still image capture
- 20) Full-duplex with adaptive echo cancellation
- 21) Drag-and-drop file transfer
- 22) Single-button-launch application sharing
- 23) LAN, WAN or Internet capable
- 24) Pen Pal Graphics slide presentation and annotation
- 25) Smartview software
- 26) Document camera

Optional features:

- 1) Smart Board Interactive Electronic Whiteboard
- 2) CameraMan auto-tracking camera
- 3) Multi-point Chair Control
- 4) Integrated PC Sound
- 5) Phone Add Allows Telephone-only participants (U.S./Canada)

- 6) T1 (1536 kbps) line rate
- 7) Wireless Keyboard and Mouse

Figure 1: TC2000 Large Group Conferencing System

(The following picture and its description was quoted from VTEL web site)



SPECIFICATIONS

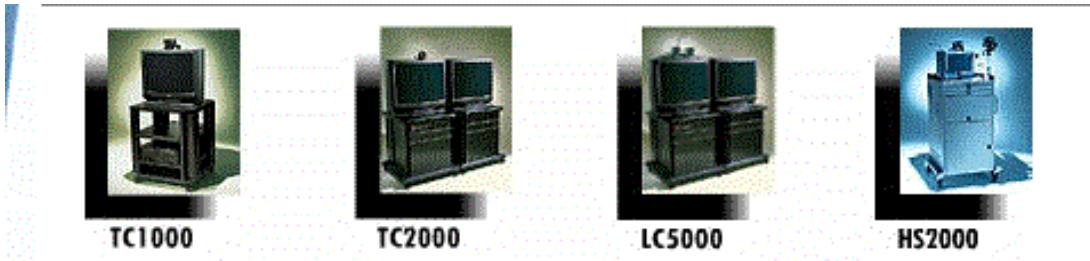
TC2000 Large Group Conferencing System

The TC2000 is a full-multimedia system, stepping up features for more dynamic video communications. Video and audio are crisper because the system comes standard with a 512Kbps data rate, upgradable to the highest T1/E1 connection. And data conferencing is made easier, with the TC2000's large dual monitors. They give your data and colleagues equal focus -- as well as accommodate larger meeting groups. Similar to the TC1000, the TC2000 is scalable and easily networked. Any-sized organization -- from corporate, to education, to healthcare -- will experience significant improvements in their communications without the barriers of distance. How long before you hear yourself saying, "I'll see you on the VTEL?"

TC2000 Conferencing Room System is one of room-system members in VTEL's Enterprise Series Architecture™ (ESA) family. This family of products provides unprecedented investment protection and flexibility:

- **Scaleable Products** - customer requirements change and technology advances quickly. The ESA platform allows users to purchase the model and features they require today with the assurance that they can increase the capability in the future with cost effective, easy to install upgrades.
- **Compatibility Across product Family** - Customers can utilize a variety of ESA models in their digital visual communications networks with total interoperability of video/audio/data conferencing features, plus VTEL's common user interface, AppsView, ensures ease of use.
- **Fully Integrated Solutions** - Customers can use familiar PC tools and existing data residing on a corporate LAN in an ESA videoconference creating a smooth and efficient work flow from individual work performed on a desktop PC to collaborative meeting environments. Fully integrated with video and audio capability, multi-media presentations, software applications, CD-ROM and access to the Internet enhance traditional meetings.

Figure 2: VTEL Videoconferencing Systems



VTEL's Enterprise Systems product family provides powerful digital visual communications group systems for virtually any type of company, organization or institution and is designed to meet a wide range of customer requirements. Built on a common hardware and software platform, the Enterprise Series Architecture™ (ESA), this family of products provides unprecedented investment protection and flexibility.

The above pictures and information was quoted from introduction to VTEL Products online. (For more information, please visit www.vtel.com).

Locations and Contact Information

Vender: Norstan
 Norstan Videoconferencing Help Desk 1 800 676-8800

Table 1: ADOT VCT Sites and Contacts

VCT Site	CustomerID	Video Number	Contact Person/Phone#
Phoenix	701240	(602) 594-0812	Peggy Harding / (602) 712-7391
Flagstaff	101510	(520) 679-2496	Ellen Jean Diamond / (520) 779-7534
Tucson	101508	(520) 628-2054	Carolyn Ellis / (520) 620-5425

Administrators:

ADOT Videoconferencing Project Manager: John Semmens (602) 712-3137
 ADOT Videoconferencing Project Coordinator: Diane Ohde (602) 712-8941

Equipment & Network Information:

VTEL TC2000 video unit – Industry Standard Compliant

US West circuits

3-ISDN BRI dial-up circuits

AT & T network carrier

Available Connection Speeds: 112, 128, 224, 260, 336 and 384 kbps

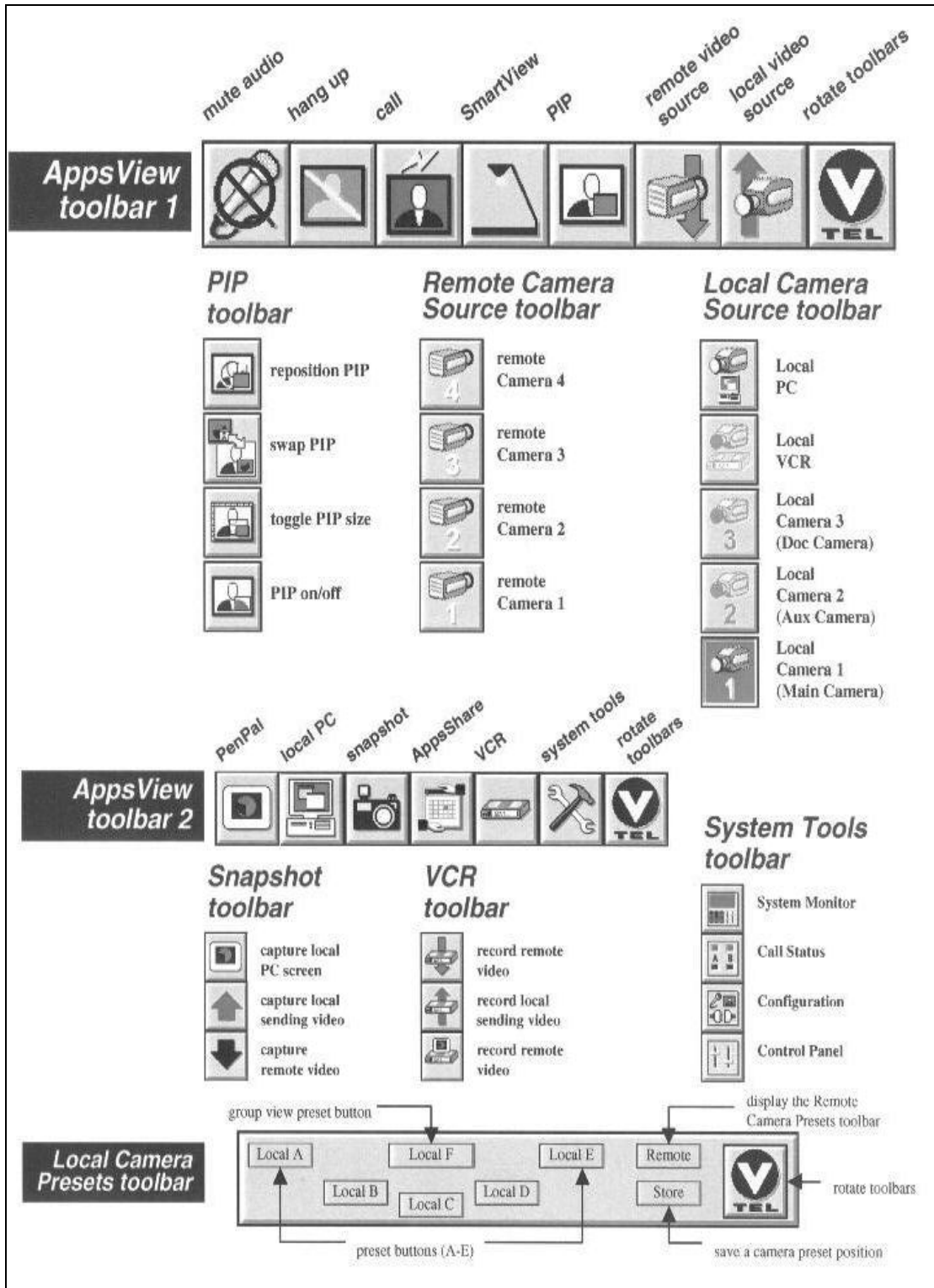
AT & T (Scheduling multipoint calls): 1 800 VIDEO-GO

AT & T (Help & Troubleshooting): 1 800 222-2838

ESA TC2000 Working Guide

- 1 Toolbars
- 2 How to Place a Call
- 3 How to Send slides
- 4 How to Share your Data
- 5 How to Shut Down the system
- 6 Video Conferencing tips and Warnings

Figure 3: VTEL Toolbar



How to Place a Videoconference Call

1 Click the Call button.

2 In the Speed-Dialer window:

If one of the site buttons is for the site you want to call, click that site button. AppsView dials the call.

If there is no button for the site you want to call, but it is included in the Address Book list in the center of the window, select the site from the list, then click the Dial button. AppsView dials the call.

If the site is not listed, select the Hand Dialer tab. Use the keypad to enter the video number you wish to call. (You may have to enter two video numbers when placing a two-channel “clear channel” call.) Select the appropriate call type. (It should match the call type of the system you will be connecting to.) Click the Dial button. AppsView dials the call.

3 Select the source of the video you want the remote site to see:

On the AppsView toolbar, click the Local Camera Source button to display the Local Camera Source toolbar, then select a camera.

4 Adjust the video and audio as necessary.

To adjust the video, use the on-screen camera tilt and zoom cursors:

To move the camera, move the cursor to the monitor or the PIP displaying local video, then move the cursor around on the screen until it changes into an arrow pointing in the direction you want to move the camera.

To zoom the camera, move the cursor on the screen until the cursor changes into a zoom in or zoom out icon, then press the left mouse button to zoom.

To adjust the audio, move the volume control slider bar (above the AppsView icon in the lower right corner of the screen).

5 To end the call, click the Disconnect Video Call button.

Using SmartView to Send Slides

- 1 Click the SmartView button on the AppsView toolbar to enable.
- 2 Place the object you want to send to the remote site on the document camera.

When you finish adjusting the object, SmartView's motion detector senses the absence of movement and switches control to the document camera, captures the image, saves it as a slide, and sends it to the remote site.

If the remote site's system includes the PenPal option, those participants can use PenPal to annotate, save, etc. the slide.

Note: You cannot use SmartView if a PIP window is open.

Disabling SmartView

- 1 Click the SmartView button on the AppsView toolbar.

Using AppsShare for Data Collaboration

Note: The system at the remote site must be either an ESA system (TC1000, TC2000, or LC5000), a MediaMax-based Leadership Conferencing (LC) system or HDLC capable.

1 Run the application you want to share. (For best performance, close all applications except AppsView and the application you want to share.)

2 Click the AppsShare button on the AppsView toolbar.

The Share Application window opens, which shows all applications you are currently running.

3 In the Share Application window, select the application you want to share, then click the Share button.

The application starts running at the remote site. Both you and the remote site can control the application.

To Stop Sharing the Application

1 Either you or the remote site closes the application you are sharing or click the AppsShare button on the AppsView toolbar.

To Send Saved Files to the Remote Site

1 Open Windows Explorer and locate the file you wish to send to the remote site.

2 Select the file and while holding the left mouse button down, drag the file to the Toolbar Rotation button, then release it. A copy of your file will be sent to the “C:/Vtel/Received Files” fold at the remote site.

How to Shut Down the System

Standard Method

- 1 Click the right mouse button on the Vtel AppsView toolbar button.

A menu will pop up with the option to shut down AppsView, select this option. AppsView will exit immediately.
- 2 Click on the Windows 95 Start button, select Shut Down, a menu will pop up with the option to shut down or restart the system, select Shut Down the Computer. The windows 95 operating system will shut down immediately.
- 3 Turn the system off. The main power switch is inside the main cabinet in the upper right hand corner (Orange Power Switch).

Quick Shutdown

- 1 Click on the Shutdown button. When the pop up menu appears, select option number one to Close AppsView and Shutdown the system. The system will now automatically close any applications, which are open including AppsView and then shutdown, the windows 95 operating system.
- 2 Turn the system off. The main power switch is inside the main cabinet in the upper right hand corner (Orange Power Switch).

Video conferencing Tips and Warnings:

1. Dress

Your organization already has a dress code, whether it is official or just “understood.” In addition to those guidelines, here are a few suggestions for video meetings where you want to look your best.

- **Colors** -You do not need to wear bland clothes. However, you should avoid very intense or “hot” colors because they can be overwhelming onscreen. And for shirts or blouses, light pastels look better than bright white.
- **Patterns** - Avoid narrow stripes, prominent herringbone weaves, small checks, and other intricate designs. Such patterns on a shirt, tie, dress, or jacket can cause distracting visual effects onscreen.
- **Light and Dark** - Avoid all-light or all-dark clothes, because they trick the camera’s automatic brightness control.

2. Faux Pas

Here are a few simple videoconferencing don’ts. Some of them are distressingly similar to things you probably remember from kindergarten.

- **Making Noises** - Small noises can be big distractions. The microphone can pick up sounds of pens clicking, fingers tapping, papers shuffling, and anything being chewed. You might find it helpful to imagine that you’re in a library, or at the symphony, or whatever works for you. And if you must do something noisy, first press MUTE.
- **Talking on the side** - side conversations can be a sore temptation during a videoconference -- maybe because it’s hard to break the habit of talking during TV programs. But a side conversation on the screen is even more distracting than one across the table. It’s more visible, and the microphone can make it much more audible. If you must do it, press MUTE first.
- **Moving too Much** - the heart of videoconferencing is the communication that happens through live video -- through a moving picture. But there’s such a thing as moving too much. Moving too much includes things like rocking or swiveling in your chair, wiggling your foot, stroking your hair or beard, and twirling your pen. Feel free to use natural gestures and body language, but avoid movement that only distracts and draws attention to itself on the screen.

3. Savoir-Faire

Here are a few more suggestions for successful videoconferencing. Some of them are things you already know (and probably do) that come across especially well in a video call.

- Maintain eye contact with the people on the screen just as you do with people at the table. It's polite, it's persuasive, and it's effective communication.
- Watch facial expressions and response to them. Let your own face be expressive, reinforcing what you say. Be yourself.
- Let your tone of voice be expressive, too. Don't overdo it; just talk the way you always do when you're interested and involved.
- Expressive gestures are good. Exaggerated or overused gestures aren't. If you tend to "talk with your hands" in person, practice using fewer and gentler gestures when you are in a video meeting. You'll look more professional onscreen.
- Take advantage of the momentary delay that's a normal part of videoconferencing. After you finish making a point, stop. Maintain eye contact, and wait for a response. At first the pause might feel awkward -- but it's an important part of videoconferencing etiquette. And besides being the polite thing to do, it gives you a moment to collect your thoughts.

4. Meeting Set-up tips

- Remember to use videoconferencing to save time and resources and, reduce travel.
- When planning a meeting, remember to schedule ALL participating videoconferencing locations.
- Ensure that there is someone familiar with or trained to use the equipment at all videoconferencing locations.
- Schedule all Necessary video locations as early as possible.
- Ensure that the equipment is running and functional in advance of the meeting start time.

Videoconferencing Usage

In the 10-month testing period, 305 people within the ADOT organization attended 29 VCT meetings in the three different ADOT sites (Flagstaff, Phoenix, and Tucson). The equipment was used for a total of 53 hours.

Figure 4: Number of Videoconferences



Figure 5: Number of Persons Using ADOT Videoconferencing Facilities

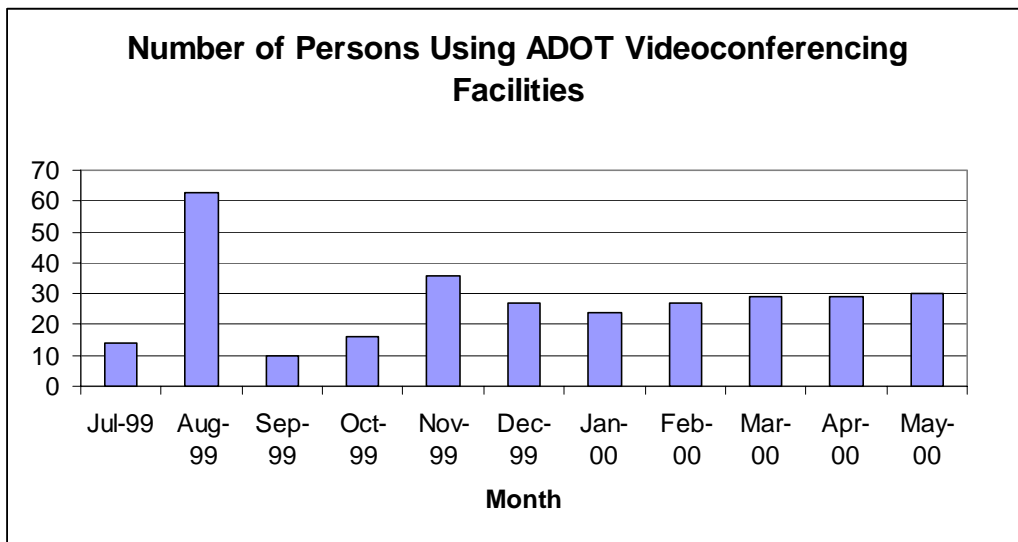
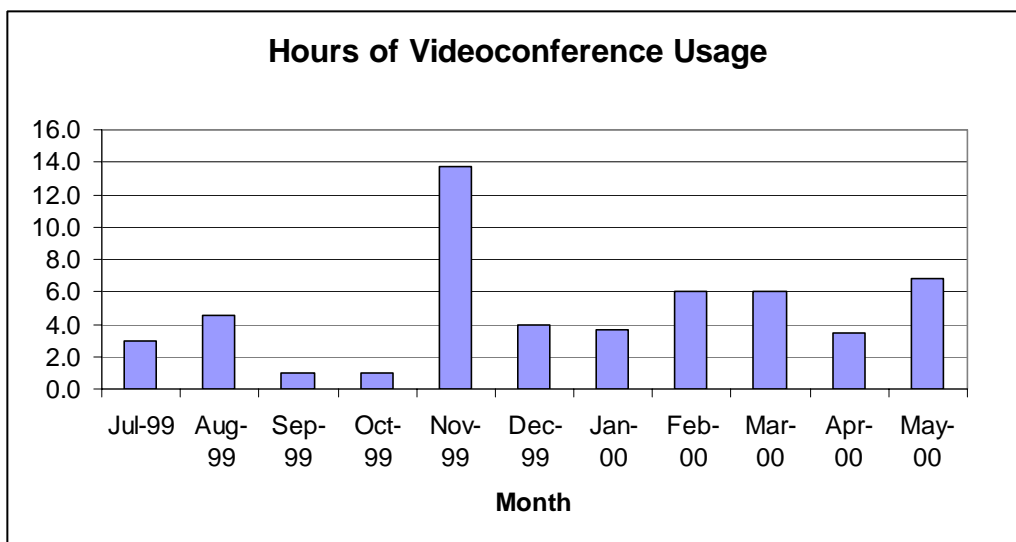


Figure 6: Hours of Videoconference Usage



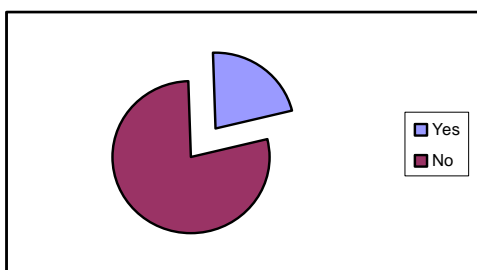
By any reasonable standard, usage of ADOT’s videoconferencing capabilities was extremely light. The peak month for usage was November when a total of five videoconference meetings amounting to nearly 14 hours of equipment use were held. On average, the videoconferencing equipment was used less than once a week for the span of the pilot test (August 1999 through May 2000).

In order to provide some insight into the usage rate of ADOT’s videoconferencing facilities, we conducted an e-mail survey of ADOT employees on the “Performance and Value of Videoconferencing”. A total of 244 persons returned the survey. Here is the survey result from 244 returns:

1. Have you used any of ADOT’s videoconferencing facilities?

Yes --- 53 ; No --- 191, (Only 21.7% used ADOT’s VCT)

Figure 7: Percent of Survey Respondents Using ADOT’s Videoconferencing

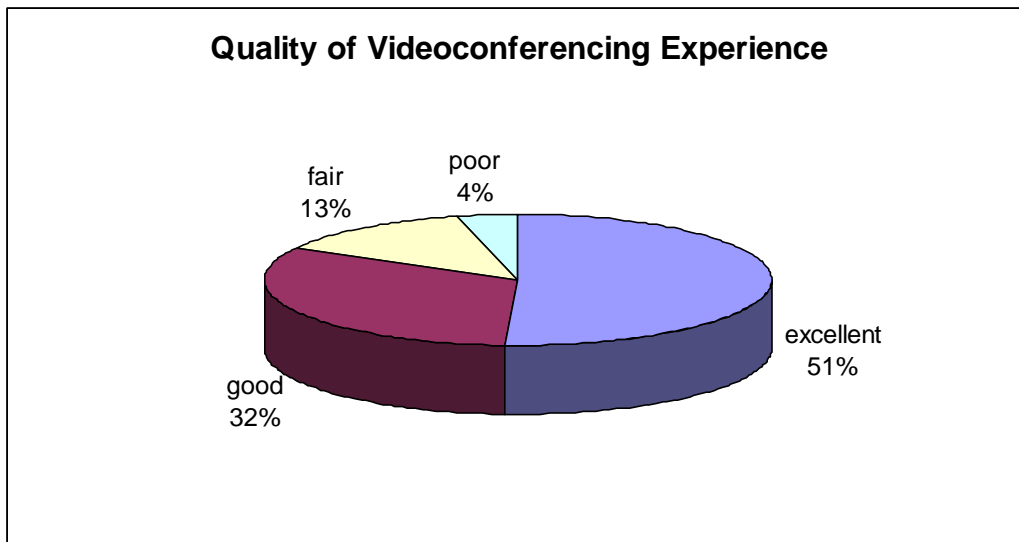


2) If you have used ADOT’s videoconferencing facilities, how would you rate the ability to see, hear, understand and communicate with persons on the other end of the video connection?

Of 53 who used ADOT’s VCT facilities:

27	51%	Excellent
17	32%	Good
7	13%	Fair
2	4%	Poor

Figure 8: Quality of Videoconferencing Experience



3) If you have used ADOT’s videoconferencing facilities, how would you rate the comparability with meeting in-person?

Of the 53 who used ADOT’s VCT facilities:

14	26%	Better than meeting in-person
22	42%	About the same as the meeting in-person
16	30%	Worse than meeting in-person.
1	2%	Much worse than meeting in-person

Figure 9: Quality of Videoconferencing Compared to Meeting In-Person

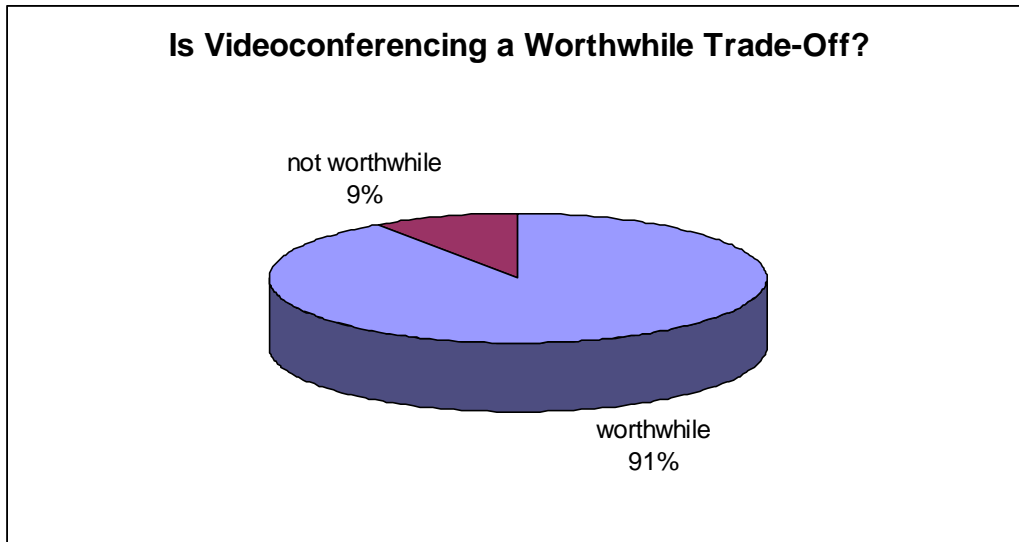


2. If you have used ADOT’s videoconferencing facilities, how would you rate the trade-off of reduced travel time and cost vs. the videoconference experience?

Of the 53 who used ADOT’s VCT facilities:

48	91%	A worthwhile trade-off
5	9%	Not a worthwhile trade-off

Figure 10: Is Videoconferencing a Worthwhile Trade-Off?

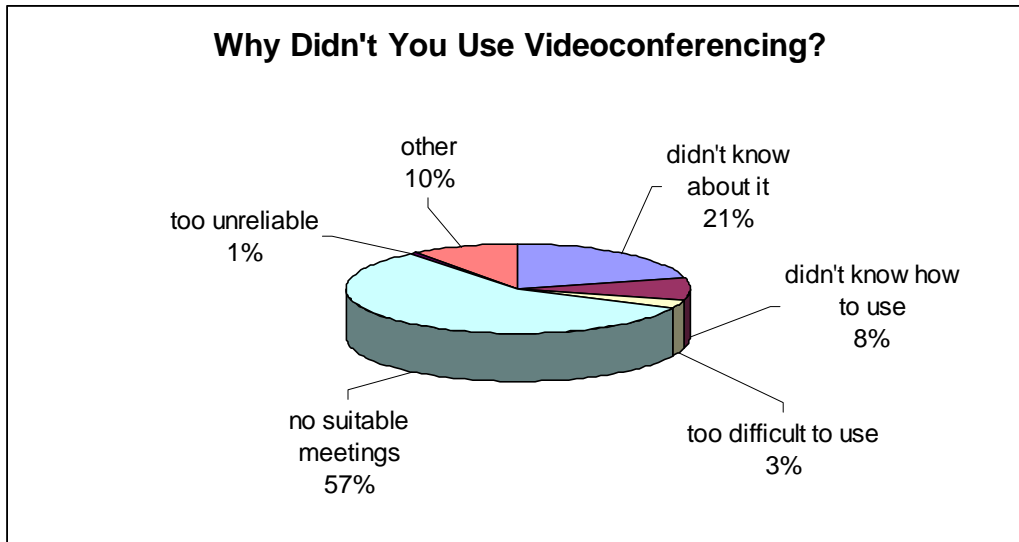


3. If you have not used ADOT’s videoconferencing facilities, please indicate why not...

Of 191 who have not used ADOT’s VCT facilities:

40	21%	didn’t know ADOT had videoconferencing facilities.
16	8%	knew about it, but didn’t know how to use it.
6	3%	tried to use it, but it was too difficult to reserve it.
109	57%	no meetings appropriate for videoconferencing.
1	0.5%	videoconferencing is still too unreliable to trust.
20	10.5%	other reasons (please see comments).

Figure 11: Why Didn't You Use Videoconferencing?



The 32% that haven't used videoconferencing because they didn't know about it, didn't know how to use it, or found it too difficult to use are prime candidates for future use of the equipment. A little education may go a long way toward getting more usage by this category of ADOT employees. Given the light usage to-date, there is plenty of capacity with which to handle an increased usage by this category of ADOT employees.

The 57% who responded that they had no meetings for which videoconferencing might be appropriate is a different story. Previous studies have shown that most communications can be done through VCT. However, there would be some obvious exceptions. On the one hand, there may be employees who never need to meet with persons outside their own building. These employees would have little potential use for videoconferencing. On the other hand, there may be meetings that need to be conducted in the field to inspect highway facilities or construction projects. Until we have portable videoconferencing capability, these types of meetings cannot rely on videoconferencing. Since it is not known to what extent the "no suitable meetings" responses represent valid exceptions to the versatile technology of videoconferencing we cannot say whether there is much potential for increased use by this category of ADOT employees.

In addition to the quantitative data, there were also some additional comments on Videoconferencing. These are shown below.

The unit I work with doesn't put importance on videoconferencing. Training isn't important for administrative secretaries. Assistants. Just getting the job done

Planning where videoconferencing equipment is to be installed needs to be considered carefully. A location that doesn't use District Conference. Room will be best rooms

I didn't know the system was available to all groups, I thought it was for invitation to use only.

It will save travel time and money. There are classes were employees have to travel. Will videoconferencing be feasible for HRDC?

But we should still have personal contact meetings.

I would take videoconferencing anytime. Saves time money and its better for our Arizona Taxpayers to help them.

I've only worked at ADOT for a month but I've used videoconferencing before and look forward to using the system.

Never facilitate meetings

Never thought about it.

Have not had a reason to use the equipment yet.

The time delay takes getting use to, but overall, spending time with that challenge far outweighs the travel time avoided.

In my team there are people from north of Arizona and south. We would like to use videoconferencing to save time travel and budget constraints. "Whose Org pays?"

It's very expensive to link up the videoconferencing from Tucson to Flagstaff, more with a 3rd link. Many links have to be set up to make the money for payment.

Actually, my past administrator tried last Fall and was unsuccessful in setting it up.

Use of equipment for cost should be compared to travel cost to get a better comparison.

Hard to view graphics when used as presentation/discussion tool. Sometimes hard to hear participants.

Too far away

N/A to me.

We planned on using it, but frequently meetings from Phoenix & Tucson (1 or 2 each month) are called at the last minute.

Phoenix Engineering office people are not willing to walk across the street for the meeting.

Experienced technical difficulties, which resulted in a waste of time.

No meeting yet for which it is appropriate, but would like to work with it.

No budget

I like the videoconferencing, but it loses too much of the brainstorming process. Maybe it's the way it's set up.

Just as close to Phoenix as going to Flagstaff to videoconferencing from Prescott! We need our own system !!!!!

Not available locally at any of my offices.

Even though we had some difficulties, it saved an important meeting: there was a snowstorm and we used our videoconferencing. It's great!

Need to have one in each district.

I have found that with videoconferencing they stick to the agenda and don't get side tracked.

It was fun using videoconferencing.

I have used it in 3 occasions; it saved a significant amount of travel for the Rural District it was easy to use. FULL SPEED AHEAD!!!!

I love it. It gets the meeting straight to the point, not side tracking, it's a valuable tool for us.

I have not yet used it but I think the idea was excellent. Perhaps you should use a demo to help promote it.

Was more focused, time was valuable.

Only 3 locations W/ people in Safford or Globe Districts. Also conference participants have to go to Transportation Board Conference Room.

It's worth the time spending in Phx. Use more, it will get better. How about doing it for the bid openings every Friday we have large projects for Tucson

The quality was really not bad. The travel saved time and money is well worth putting up a little jerkiness and audio delay.

Have meeting for videoconferencing, but do not know where.

I have not had a reason to use it.

Videoconferencing Savings Potential

Lightly used as ADOT's videoconferencing facilities were during the pilot test, data from the 305 persons who did use the equipment indicates that there is a substantial potential for saving money by an effective videoconferencing program.

Every person participating in any of the 29 ADOT videoconferencing meetings held during the pilot test was asked to provide information that could be used to estimate the potential benefits of videoconferencing. The detailed, meeting-by-meeting data can be found in Appendix A and the survey instruments used can be found in Appendix C of this report. A summary of this data is shown below.

Table 2: Videoconference Meeting Summary

Date	Sites ¹	Hours	Partici- pants	Saved Hours	Saved Miles	Total Savings	Cost	Net
7/29/99	F	3.0	14	52.0	3,280	\$2,764.95	\$68.85	\$2,696.10
8/9/99	F P T	1.5	47	110.8	6,916	\$6,320.27	\$400.95	\$5,919.32
8/18/99	P T	1.0	10	15.0	930	\$905.50	\$22.95	\$882.55
8/23/99	P T	2.0	6	15.5	695	\$1,877.25	\$68.85	\$1,808.40
9/29/99	P T	1.0	10	48.5	2,540	\$2,694.00	\$22.95	\$2,671.05
10/13/99	F, P	1.0	16	83.0	5,020	\$3,719.00	\$22.95	\$3,696.05
11/3/99	F P T	8.0	18	25.8	1,274	\$1,284.84	\$2,138.40	(\$853.56)
11/15/99	P	1.3	2	10.0	480	\$399.50	\$29.84	\$369.66
11/16/99	P	2.0	1	2.0	100	\$75.00	\$45.90	\$29.10
11/22/99	P T	1.0	10	41.0	2,180	\$2,130.50	\$22.95	\$2,107.55
11/23/99	F, T	1.4	5	14.0	830	\$528.88	\$32.13	\$496.75
12/3/99	F, P	1.5	12	60.0	3,760	\$3,200.50	\$34.43	\$3,166.07
12/14/99	F P T	2.5	15	38.0	2,310	\$1,731.00	\$668.25	\$1,062.75
1/5/00	F, P	1.5	7	33.0	2,140	\$1,824.35	\$34.43	\$1,789.92
1/14/00	P B	0.6	5	80.0	11,220	\$8,422.00	\$47.25	\$8,374.75
1/24/00	P B	0.6	6	152.0	22,440	\$10,196.00	\$47.25	\$10,148.75
1/28/00	P B	1.0	6	220.0	42,700	\$15,088.00	\$94.50	\$14,993.50
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4/26/00	P T	1.0	12	32.0	1,450	\$1,412.85	\$22.95	\$1,389.90
4/28/00	P B	0.5	5	80.0	11,322	\$8,448.00	\$47.25	\$8,400.75
5/2/00	P T	2.8	13	29.0	1,840	\$1,756.00	\$64.26	\$1,691.74
5/18/00	F P	3.0	9	36.0	2,210	\$1,668.50	\$68.85	\$1,599.65
5/22/00	P T	1.0	8	33.0	1,760	\$1,534.50	\$22.95	\$1,511.55
Totals:		53.2	305	1,459.6	141,729	\$89,162.69	\$4,430.72	\$84,731.97

¹F = Flagstaff, P = Phoenix, T = Tucson, B = Boston

On an incremental cost vs. benefit basis, there would appear to be little reason to hold back on using the videoconferencing equipment ADOT now has. As the summary table shows, the benefit from saved travel time, travel distance, and travel *per diem* exceeded the incremental cost of videoconferencing for 28 out of 29 of the meetings during the pilot test period. The one exception was an eight-hour long videoconference meeting involving all three ADOT sites. Participation by more than two sites in any videoconference meeting incurs “bridge costs.” In this case, the bridge cost was over \$2,000. Inasmuch as there was only one participant from Tucson in on this meeting, it would have been less costly for ADOT to have borne the cost of having this person travel to Phoenix to participate in the videoconference from there. As ADOT becomes more accustomed to using videoconferencing we will be more cognizant of the costs involved and better positioned to make more efficient use of the videoconferencing capabilities.

Of course, while this incremental cost analysis argues persuasively for maximum use of the videoconferencing equipment we already have it cannot, by itself, answer the question of whether we should even have videoconferencing facilities at all. There are other, fixed costs, of owning and operating videoconferencing equipment that must be taken into consideration if we are to make a fully informed decision on the merits of videoconferencing for ADOT.

These fixed costs include the acquisition of the videoconferencing equipment, the installation charge, the monthly phone line charge, and the ongoing maintenance of the system. As ADOT’s videoconferencing capacity is presently configured, these costs are as follows:

- 1) **Acquisition of three units with double monitors and accompanying peripherals:** \$132,722.99. This is an average cost of \$44,241 per unit. Since this equipment lasts several years, it is appropriate to amortize this cost over its expected future life. For purposes of this report, we assumed a future life of five years. This would put the annual amortized cost at \$8,848.20, or \$737.35 per month, for each unit.
- 2) **Network (ISDN) line installation fee (one time charge):** \$803.21 for all three sites. Since this charge should occur only once during the life of the equipment, it also should be amortized over a future period. For purposes of this report, we assumed a future life of five years. This would put the annual amortized cost at \$53.55, or \$4.46 per month, for each unit.
- 3) **Maintenance and Service fee:** The first year’s maintenance and service was covered in the acquisition cost for purchasing the equipment. Subsequent years, though, would have to be purchased. The equipment vendor offers three levels of maintenance service agreements: standard, comprehensive, and remote. The standard coverage entails a service representative coming to a site during normal business hours. Comprehensive coverage entails a service representative coming to the site 24 hours a day, seven days a week. Remote coverage is basically a do-it-yourself service with telephone assistance 24 hours a day, seven days a week. More details on what each level of service covers are shown in Appendix B. The costs of each per site are estimated as follows: \$3,650 per year (\$304.17 per month) for standard, \$4,355 per year (\$362.92 per month) for comprehensive, and \$1,820 per year (\$151.67 per month) for remote.

4) **Monthly phone line service charge:** \$226.50 every month per site.

If we assemble these fixed costs into a monthly projected cost per site we find that they amount to around \$1,300. Assuming a future level of use comparable to that experienced during the 10 month pilot test, the net savings per site per month would amount to around \$2,800. This would imply a net benefit of around \$1,500 per month per site for an investment in videoconferencing capabilities.

Fixed Cost Item	Monthly Cost
Equipment	\$737.35
Line Installation	\$4.46
Maintenance	\$304.17
Phone Lines	\$226.50
Total costs	\$1,272.48
Savings per Site per Month	\$2,824.40
Projected Net Benefit	\$1,551.92

Now, it could be argued that the savings implied by the avoided travel for the purpose of meeting are exaggerated. After all, there may be the possibility of carrying on these meetings by teleconferencing. Not all of the videoconference meeting participants would necessarily have traveled to a face-to-face meeting if videoconferencing had not been available. Of the 305 persons participating in ADOT's videoconferencing during the pilot test, one-third stated that they would not have attended the meeting if it weren't for videoconferencing. This means that two-thirds of the participants would have attended the meetings even if this meant they had to travel in order to do so. Applying adjustment this to our cost and benefit data would lower the savings to around \$1,900 per site per month. This still would exceed the projected monthly cost. So, the case for an actual cash saving from videoconferencing even at low levels of usage is bolstered.

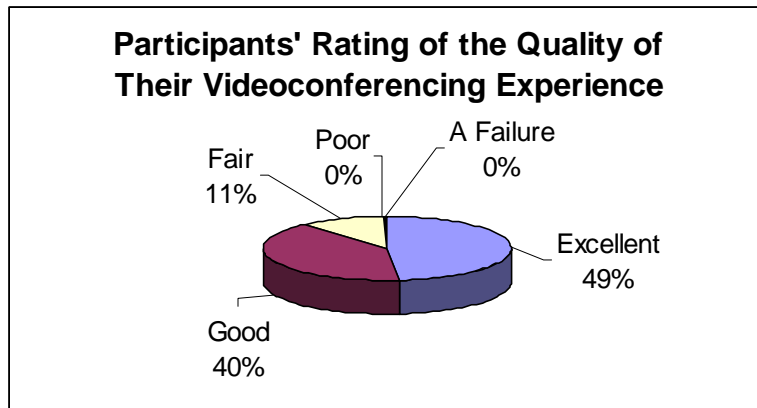
Videoconferencing Qualitative Evaluation

The 305 persons who attended an ADOT videoconferencing meeting were asked to evaluate the quality of the experience and give us their comments. Less than one percent felt the experience was unsatisfactory. Nearly 90% found the experience good or excellent.

Table 3: Videoconferencing Quality Assessment

Quality	Flagstaff	Phoenix	Tucson	Total
Excellent	26	90	31	147
Good	43	59	21	123
Fair	11	18	4	33
Poor	0	1	0	1
A Failure	0	1	0	1
Totals	80	169	56	305

Figure 12: Participants' Rating of the Quality of Their Videoconferencing Experience

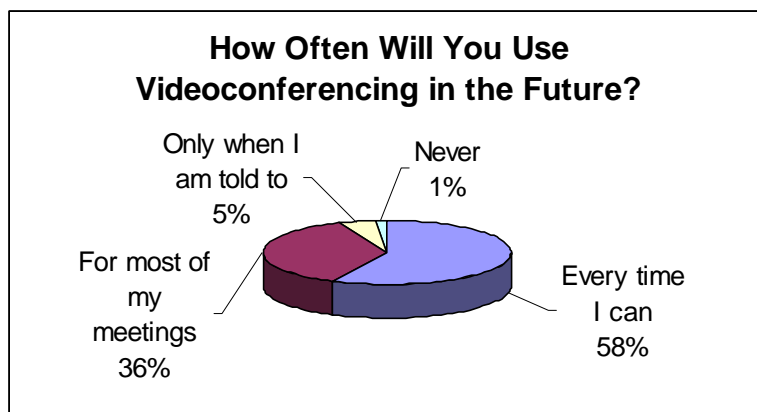


Videoconference participants were quite enthusiastic about using the technology in the future. Over 90% looked forward to using videoconferencing frequently—either whenever possible or for most meetings.

Table 4: Planned Frequency of Future Use of Videoconferencing

Planned Frequency of Use	Flagstaff	Phoenix	Tucson	Total
Every time I can	42	98	30	170
For most of my meetings	32	56	20	108
Only when I am told to	4	5	6	15
Never	0	4	0	4
Totals	78	163	56	297

Figure 13: How Often Will You Use Videoconferencing in the Future?



Participants’ Comments on VCT

In order to provide a clear picture of how people view this technology, the original comments are presented here:

Comments from Flagstaff Site

For a first time - not too bad.

I commute out of Flagstaff daily and it still saved me a trip of going back.

Thank you for the open enrollment information sheet. Was very helpful.

Open enrollment packet was sufficient for this type of information - most questions

Everyone needs to be directed to the carrier.

This is great! Especially for us in the rural districts.

Hand-outs need to be made available prior to the VCT site.

There was a lot of talking over the speaker.

The time delay needs to be allowed by Phoenix site.

Audio was spotty in some instances, need to set up beforehand.

Make sure questions are repeated by the speaker

Try not to swing camera (blurred screen).

Speaker needs to ensure everyone hears him or her.

The video portion was a little “jerky” when people on the other end moved around.
Occasionally, the audio had a little echo or far-away sound. However, over all the meeting was effective.

Comments from Phoenix Site

Only when available in Prescott I will use VCT.

Really enjoyed the videoconferencing.

Would be helpful if all remote sites could be viewed at once instead of seeing the local room reflected back to us.

Linda did a super job, very informative.

Not very organized

Why the question about salary?

It is nice to see body language.

Good demo.

The speaker was able to communicate effectively; we were usually getting frustrated during our meeting. This was great.

Thanks, this is terrific. Very useful tool to connect us statewide.

Great tool

Was very easy to use

How much did it cost?

Makes meeting too rigid. What happens to free flow of conversation and ideas?

Not available in my office, will come to Phoenix.

It was very impersonal and we did not seem to have as much participation.

Have a person to work the video equipment. Distracting for management. Participants to do both effectively. Too impersonal.

The system could be utilized better if more people are in Flagstaff and Tucson and travel less. Today only one in Tucson and three in Flagstaff.

Can't network with all ASOs, no cost savings for most (except for the people in Tucson and Flagstaff)

No cost savings, only 3 did travel.

The room set-up distracts from the smooth flow of the meeting. Need to work the bugs out of the system to avoid technology problems.

This videoconference went very well. All equipment worked well.

Saved a lot of time.

Worthwhile for this kind of meeting.

Good technology-glad to see it being used.

Recommend including for training requirements -for mandatory training.

Need to make sure off-site participants have whatever handouts are distributed in the general meeting.

It was great, once it got started.

This is an outstanding tool. Should be a great tool.

A much better way to do business.

Excellent opportunity to communicate without additional travels.

Went without any problem.

Good job.

Good job helping us.

Excellent use of the technology

Will use only if I need to.

Vendor is also extremely pleased with the process.

Contractor says they are going to buy the videoconferencing system as they see it's a major benefit.

This technology was used to link Tucson to a 4-hour class presentation. This is a great tool for allowing more people to attend due to lack of funding.

Think classes are more effective in person.

Will use video conferencing every chance I get.

Great, not having to travel, saved time and money.

It was wonderful.

It was great.

It is wonderful to take this advantage when you do not have time and have bad weather.

Very good tool will save many hours and miles.

This is a great application.

This is an excellent option to hold meetings when the group is at various locations around the state or nation.

Great idea-videoconferencing. It is a time saver.

Good quality video and audio.

Good deal!

Helpful to make it possible for people out of Phoenix to participate in committee meetings.

Great technology.

Worked fine.

It is wonderful.

Comments from Tucson Site

Great!

Less travel relieves fatigue, reduces exposure time to accidents. No site boss.

Should be used whenever possible for monthly meeting to avoid travel to Phoenix.

Worked well, but some streaming video difficulties. Slow to keep up with video.

For the first time, I thought it was great.

Love it, got the information I needed and did not have to travel.

This is a nice substitute for a telephone meeting.

If it were not expensive, I 'd like to use it every time I can.

Great!

Excellent alternative to travel. Meeting was actually more productive than normal face-to-face.

The only thing I do not like is not being able to talk and network with the others.

Good way to avoid 2 and half hours traveling to Phoenix.

Great system, very effective.

Please provide 'tips' on visual aids.

Very useful and a time saver.

Excellent system, but had software problems.

Very good experience.

Very interesting.

Audio poor and not consistent!

The topic determines video effectiveness.

Let's use it more often!

When it works, it works very well. Glitches are distracting.

Great way of saving time and money.

Simple and easy

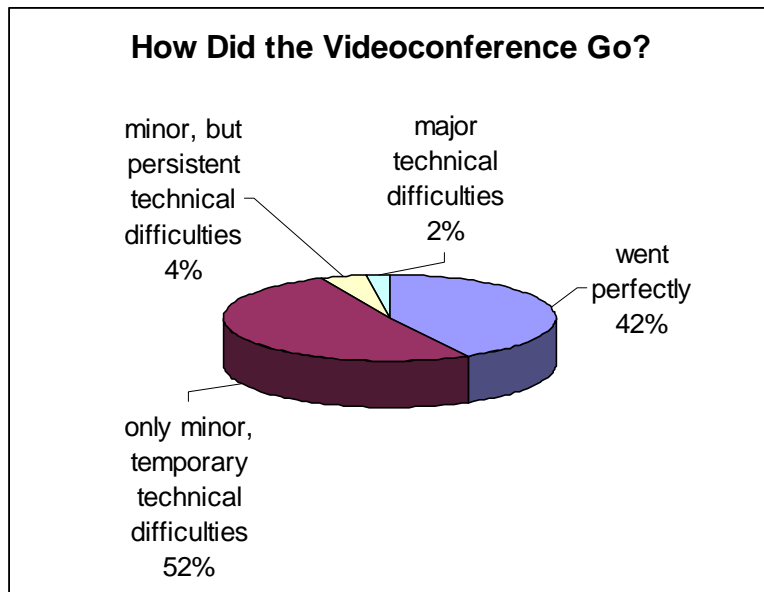
Technology worked flawlessly.

In addition to comments from videoconference meeting participants, we also asked the site hosts to answer a couple of questions about each meeting. For the most part, the meetings went very well. Over 90% of the time there were no significant problems.

How did the meeting go?

went perfectly, no technical difficulties	19
went pretty well, only minor, temporary technical difficulties	23
was marred by minor, but irritating, persistent or repeated technical difficulties	2
was a failure due to major technical difficulties	1

Figure 14: How Did the Videoconference Go?



Host Comments on VCT

Some delay caused by Jack having to contact AT&T to get our certification number.

This was the first video conferencing we have done. I feel it went pretty well.

The delays caused a loss of some words in sentences & therefore some information or questions were repeated. The meeting was shorter than usual.

Everyone seemed to be happy with the video conferencing, and getting materiel first hand. Once they got used to the camera, people were more talkative.

The meeting went perfectly. Everyone enjoyed getting familiar with new technology.

This worked very well!

Too much activity causes problems with the audio.

Phoenix Could not get a clear picture of us, when they dialed in.

Camera was moved too fast around room in Phoenix People in Phoenix need to realize there is a delay when talking.

We couldn't call into the bridge & had to have AT&T call for us. We did a Quad screen. It was distracting, but a good learning experience

Used the "ELMO" only at the CTOC public meeting.

Went well, no problems occurred during the videoconference.

Used for Interview.

The video was a call to check out problems with hook-ups attending Jack Peterson & Joe Madson

Phoenix had problems dialing Flagstaff. We had no problems calling them. *I think if videoconferencing equipment moved from the boardroom in Phoenix it would be used more.

Meeting went well I had Trouble calling Flagstaff-couldn't get through. Finally, had Flagstaff call Phoenix and it went though fine.

Meeting went great. Recorded meeting.

This was the 3rd videoconference meeting w/ this company. They enjoyed & realized the savings. They stated they are going to purchase videoconferencing equipment

Beginning took 1/2 hour to get to work.

No problems, went great

Trouble connecting

No problems. Worked very good

Turn up volume, or have difference source of volume to where it is clear.

There was a slight interruption. Tucson picture froze & had to place call again. This took place in the middle of the meeting.

No interruptions, went fine

Future Videoconferencing

Currently, the Arizona Department of Transportation has 10 district offices, 60 maintenance offices, 40 construction offices, 100 MVD field offices, and 16 equipment services shops. All told, the agency has over 200 separate facilities throughout the state. Travel among these offices for purposes of meeting, conferring, and training consumes a considerable amount of personnel time and money on the road. According to the records, within the Intermodal Transportation Division alone, ADOT spent \$1,883,000.00 on in-state travel in fiscal year 1996.

High expenses for travel have induced companies and organizations to look for alternative ways to conduct their business. As a result, videoconferencing has become very prevalent. Companies like Mobile Oil, and Hughes have invested in videoconferencing facilities in order to reduce travel expenses and improve communications amongst employees. Hotel companies such as Hyatt and Westin are installing videoconferencing facilities to accommodate business travelers and corporations. Commercial entities like Kinko's Copy have installed facilities to allow videoconferencing between cities.

This same technology is also being utilized by public entities. In 1984 the Transportation Research Board held an experimental videoconferencing session in which 180 respondents at 4 active sites and 186 respondents at 6 passive sites were surveyed to assess the effectiveness of videoconferencing. As a result of this study, the TRB determined that videoconferencing has a place in technology transfer activities and should be incorporated in appropriate areas to improve communication. The TRB is now broadcasting their annual meeting to cities throughout the country via videoconferencing. The Federal Highway Administration is also beginning to take advantage of videoconferencing technologies. Facilities have been installed in each of the regional offices and in some of the divisional offices.

As we know, Phase 1 of this project proved that videoconferencing has been helping many companies, agents and organizations save money and time in the past 10 years. Now, this phase of the videoconferencing project demonstrated that videoconferencing also can help ADOT save money and time, even at low rates of utilization of the equipment.

From the findings of this phase, it can be concluded that Videoconferencing Technology not only helps other companies and organizations to save time and money, it also helps ADOT to enhance effective and efficient use of the time and money. In addition, Videoconferencing Technology not only offers the contributions to communications between geographically remote parties, also offers its contributions to the communications within local companies and organizations like ADOT.

The videoconference participants' responses within ADOT attest to the benefits of this technology and to the fact that results within ADOT are consistent with other recent studies on this topic. It appears inevitable that in the future there will be a greater use of videoconferencing technology that will change how, when, and where meetings are held and employees are trained. It is predicted that in the future more companies and organizations will utilize Videoconferencing Technology and other multimedia technologies and individual performance

support systems to provide flexible meeting and training opportunities to remote area employees when desktop systems are improved.

Options for Decision

When we started this project we promised to evaluate three options for the future of videoconferencing at ADOT. These three options and their pros and cons are discussed below.

Abandon videoconferencing: With any pilot test there is always the possibility of discovering that it is not worth continuing to pursue the technology. The benefit of abandoning videoconferencing is that the equipment could be resold and the resulting funds put to other research uses. The estimated resale value of ADOT's videoconferencing equipment is around \$90,000. The downside of abandoning videoconferencing is the loss of potential future benefits from its use. While it is true that levels of usage during the pilot test were disappointingly low, it is also true that even at such low levels of usage the benefits outweigh the costs. For this reason, abandonment of videoconferencing is not recommended.

Continue with limited videoconferencing: Even at the low levels of usage experienced during the pilot test there was still an estimated net benefit of around \$600 per month per site in saved time, travel and *per diem* expenses. By itself, this is a fairly persuasive argument for continuing with videoconferencing. Given the intangible benefits and the possibility for more frequent usage as knowledge of videoconferencing's availability and benefits spreads throughout ADOT, it seems clear that ADOT has good reason to continue to pursue videoconferencing.

Expand videoconferencing to more ADOT sites: The existence of net benefits averaging \$600 per month per site during the low levels of usage of the pilot test implies that there are further net benefits to be obtained from expanding to other ADOT sites. What is not known is whether the potential magnitude of any additional net benefits from expansion will outweigh the costs. On the one hand, there are bound to be some diminishing returns for additional sites. Videoconference participants who avoided longer trips by being able to drive to say, Flagstaff, rather than all the way to Phoenix for a meeting would add only the shorter distance of driving to Flagstaff as the incremental benefit of having a videoconferencing site established at their office. On the other hand, there may be untapped latent demand inherent in turning a videoconference meeting from a drive down the highway to a walk down the hall. Further, if videoconference usage rates could be increased from the less than once-a-week frequency experienced during the pilot test the potential net benefits would most likely outweigh the cost of adding more sites.

Recommendation

The demonstration of net benefits from videoconferencing even under conditions of light usage makes a strong case for continuing to pursue this technology. At a minimum, ADOT should retain its existing three sites and strive to encourage greater use of this time and money-saving technology. We believe it is also warranted for ADOT to explore a phased expansion of videoconferencing sites while continuing to collect usage data in order to verify the incremental

gains from each new site. For example, the deputy state engineer has requested that an additional eight videoconferencing sites be added. This would be a useful increment of expansion to be tested. Usage data similar to that collected for the pilot test should be collected and analyzed for the new total of eleven sites in order to determine if eleven sites are optimal or whether still further expansion is warranted.

Potential Future Enhancements

To get better utilization of existing videoconferencing equipment and to broaden the scope of its use within ADOT, management may want to consider adopting all or some of the following actions:

- Fully installing VCT equipment within ADOT, not only room systems for a group of more than five employees, but desktop systems linked to the network for those remote areas for meetings locations with less than five people.
- Print a handbook or some VCT literature that can be sent to every employee to educate those who facilitate meetings. This handbook should clearly explain how to reserve and use the videoconferencing facilities. It should also point out how VCT saves time and money and reduces stress.
- Provide a series of training on how to use VCT to those who facilitate meetings, including some basic knowledge of how to use multimedia presentation software, such as PowerPoint, to empower them with the ability to make VCT meetings more interesting and productive and less boring.
- Establish a reward system to encourage those who use VCT. Explicit recognition for achieving reductions in travel expenditures and saving employee time would help spread awareness and use of videoconferencing.
- Hire a professional “Educational Technology Person” to 1) design courseware for any employee training and other training within ADOT; 2) help executives to design important meetings using multimedia presentation software to make meetings more interesting and more productive, less boring.

Appendix A: Videoconference Meetings: Detailed Statistics

Meeting List Summary Table

Date	Sites ¹	Hours	Partici- pants	Saved Hours	Saved Miles	Total Savings	Cost	Net
7/29/99	F	3.0	14	52.0	3,280	\$2,764.95	\$68.85	\$2,696.10
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12/14/99	F P T	2.5	15	38.0	2,310	\$1,731.00	\$668.25	\$1,062.75
1/5/00	F, P	1.5	7	33.0	2,140	\$1,824.35	\$34.43	\$1,789.92
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4/26/00	P T	1.0	12	32.0	1,450	\$1,412.85	\$22.95	\$1,389.90
4/28/00	P B	0.5	5	80.0	11,322	\$8,448.00	\$47.25	\$8,400.75
5/2/00	P T	2.8	13	29.0	1,840	\$1,756.00	\$64.26	\$1,691.74
5/18/00	F P	3.0	9	36.0	2,210	\$1,668.50	\$68.85	\$1,599.65
5/22/00	P T	1.0	8	33.0	1,760	\$1,534.50	\$22.95	\$1,511.55
Totals:		53.2	305	1,459.6	141,729	\$89,162.69	\$4,430.72	\$84,731.97

¹F = Flagstaff, P = Phoenix, T = Tucson, B = Boston

Detailed Meeting Data

Date of Meeting: July 29th, 1999

Participating Sites: Flagstaff

Persons Participating: 14

Duration of Meeting: 3 hours

Marginal Cost: \$68.85 (standard rates of \$22.95/hour apply)

Savings: \$2,764.95

Net: \$2,696.10

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
F1	5.0	240	\$10.61	Munds park	\$53.05	\$84.00		\$137.05
F2	5.0	260	\$19.00	Flagstaff	\$95.00	\$91.00	\$100.00	\$286.00
F3	5.0	300	\$11.00	Page	\$55.00	\$105.00	\$28.00	\$188.00
F4	2.0	120	\$13.41	Kingman	\$26.82	\$42.00	\$130.00	\$198.82
F5	2.5	300	\$15.50	local	\$38.75	\$105.00	\$100.00	\$243.75
F6	1.0	100	\$12.42	Gray Mtn.	\$12.42	\$35.00		\$47.42
F7	5.5	250	\$22.50	Flagstaff	\$123.75	\$87.50	\$30.00	\$241.25
F8	5.0	280	\$22.00	Flagstaff	\$110.00	\$98.00	\$90.00	\$298.00
F9	2.0	400	\$12.30	Lakeside	\$24.60	\$140.00	\$90.00	\$254.60
F10	2.0	300	\$22.00	in Area	\$44.00	\$105.00	\$100.00	\$249.00
F11	2.0	200	\$10.03	William	\$20.06	\$70.00		\$90.06
F12	5.0	200	\$22.00	Holbrook	\$110.00	\$70.00	\$12.50	\$192.50
F13	5.0	170	\$19.00	Holbrook	\$95.00	\$59.50	\$21.50	\$176.00
F14	5.0	160	\$19.00	Holbrook	\$95.00	\$56.00	\$11.50	\$162.50
total	52.0	3,280			\$903.45	\$1,148.00	\$713.50	\$2,764.95

Date of Meeting: August 9th, 1999

Participating Sites: Flagstaff, Phoenix, Tucson

Persons Participating: 47

Duration of Meeting: 1.5 hours

Marginal Cost: \$400.95 (bridge costs of \$89.10/hour/site apply)

Savings: \$6,320.27

Net: \$5,919.32

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
F19	2.5	300	\$15.50	Munds Park	\$38.75	\$105.00	\$100.00	\$243.75
F20	1.0	100	\$12.42	Flagstaff	\$12.42	\$35.00		\$47.42
F21	5.5	250	\$22.00	Page	\$121.00	\$87.50	\$30.00	\$238.50
F22	5.0	280	\$22.00	Kingman	\$110.00	\$98.00	\$90.00	\$298.00
F23	2.0	450	\$12.30	local	\$24.60	\$157.50	\$90.00	\$272.10
F24	2.0	300	\$13.00	Gray Mtn	\$26.00	\$105.00	\$100.00	\$231.00
F25	2.0	200	\$11.00	Flagstaff	\$22.00	\$70.00	\$100.00	\$192.00
F26	5.0	200	\$16.00	Flagstaff	\$80.00	\$70.00	\$12.50	\$162.50
F27	5.0	170	\$18.00	Lakeside	\$90.00	\$59.50	\$21.50	\$171.00
F28	5.0	160	\$14.00	local	\$70.00	\$56.00	\$11.50	\$137.50
F29	4.5	250	\$18.00	william	\$81.00	\$87.50	\$100.00	\$268.50
F30	5.0	240	\$10.61	Holbrook	\$53.05	\$84.00		\$137.05
F31	5.0	260	\$19.00	holbrook	\$95.00	\$91.00	\$100.00	\$286.00
F32	5.0	300	\$11.00	Holbrook	\$55.00	\$105.00	\$28.00	\$188.00
F33	2.0	120	\$13.41	local	\$26.82	\$42.00	\$130.00	\$198.82
P1			\$12.27	Phx.				
P2			\$13.30	Sloke				
P3			\$11.76	Phx.				
P4			\$15.10	Phx.				
P5			\$12.00	Phx.				
P6			\$25.50	Phx.				
P7	1.3	90	\$21.00	Prescott	\$27.30	\$31.50	\$65.00	\$123.80
P8	3.0	200	\$15.87	Prescott	\$47.61	\$70.00	\$60.00	\$177.61
P9			\$15.00	Phx.			\$200.00	\$200.00
P10			\$10.03	Phx.				
P11			\$12.00	Phx.				
P12			\$15.25	local				
P13			\$8.00	Phx.				
P14	2.0	20	\$11.89	Phx.	\$23.78	\$7.00		\$30.78
P15			\$13.00	Phx.				
P16	0.5		\$0.00	Phx.				
P17			\$4.00	Phx.				
P18			\$11.00					
P19			\$0.00	local				
P20			\$13.99	Phx.				
T1	5.0	240	\$16.70	Tucson	\$83.50	\$84.00	\$100.00	\$267.50
T2	4.5	270	\$11.13	Tucson	\$50.09	\$94.50	\$90.00	\$234.59
T3	4.0	250	\$10.80	Tucson	\$43.20	\$87.50	\$120.00	\$250.70

T4	4.5	270	\$17.50	Tucson	\$78.75	\$94.50	\$65.00	\$238.25
T5	2.5	167	\$11.00	Willcox	\$27.50	\$58.45	\$50.00	\$135.95
T6	3.5	334	\$10.32	Threeway	\$36.12	\$116.90	\$100.00	\$253.02
T7	3.0	325	\$16.00	Safford	\$48.00	\$113.75	\$80.00	\$241.75
T8	4.0	225	\$12.29	local	\$49.16	\$78.75	\$100.00	\$227.91
T9	4.0	250	\$18.00	Tucson	\$72.00	\$87.50	\$100.00	\$259.50
T10	3.5	270	\$17.00	local	\$59.50	\$94.50	\$90.00	\$244.00
T11	4.0	225	\$10.38	Tucson	\$41.52	\$78.75	\$100.00	\$220.27
T12	5.0	200	\$14.50	local	\$72.50	\$70.00		\$142.50
total	110.8	6,916.00			\$1,666.17	\$2,420.60	\$2,233.50	\$6,320.27

Date of Meeting: August 18th, 1999
Participating Sites: Phoenix, Tucson
Persons Participating: 10
Duration of Meeting: 1 hour
Marginal Cost: \$22.95 (standard rates of \$22.95/hour apply)
Savings: \$905.50
Net: \$882.55

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P21	3.0	200	\$27.00	Phx.	\$81.00	\$70.00	\$15.00	\$166.00
P22			\$13.50					
P23			\$31.50					
P24			\$15.00	local				
P25			\$40.00					
P26			\$23.00					
P27			\$25.00					
T13	4.0	240	\$11.00	Sierra Vista	\$44.00	\$84.00	\$80.00	\$208.00
T14	4.0	240	\$16.00	local	\$64.00	\$84.00	\$100.00	\$248.00
T15	4.0	250	\$19.00	local	\$76.00	\$87.50	\$120.00	\$283.50
total	15.0	930			\$265.00	\$325.50	\$315.00	\$905.50

Date of Meeting: August 23rd, 1999
Participating Sites: Phoenix, Tucson
Persons Participating: 6
Duration of Meeting: 3 hours
Marginal Cost: \$68.85 (standard rates of \$22.95/hour apply)
Savings: \$1,877.25
Net: \$1,808.40

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P28	2.0	100	\$100.00	N. Tucson	\$200.00	\$35.00		\$235.00
P29	2.0	100	\$100.00	Tucson	\$200.00	\$35.00		\$235.00
P30	1.5	70	\$36.00	Phx.	\$54.00	\$24.50		\$78.50
P31	3.0	120	\$35.00	Osborn	\$105.00	\$42.00		\$147.00
T16	4.0	125	\$125.00		\$500.00	\$43.75	\$100.00	\$643.75
T17	3.0	180	\$125.00		\$375.00	\$63.00	\$100.00	\$538.00
Subtotal:	15.5	695			\$1,434.00	\$243.25	\$200.00	\$1,877.25

Date of Meeting: September 9th, 1999
Participating Sites: Phoenix, Tucson
Persons Participating: 10
Duration of Meeting: 1 hour
Marginal Cost: \$22.95 (standard rates of \$22.95/hour apply)
Savings: \$2,694.00
Net: \$2,671.05

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P142	5.0	250	\$28.00	local	\$140.00	\$87.50	\$6.00	\$233.50
P143	5.0	240	\$18.00		\$90.00	\$84.00	\$12.00	\$186.00
P144	5.0	240	\$32.00		\$160.00	\$84.00		\$244.00
P145	5.0	240	\$25.00		\$125.00	\$84.00	\$30.00	\$239.00
P146	5.0	240	\$32.00		\$160.00	\$84.00	\$12.00	\$256.00
P147	5.0	240	\$25.00	Yuma	\$125.00	\$84.00	\$15.00	\$224.00
P148	5.0	250	\$40.00	local	\$200.00	\$87.50		\$287.50
P149	5.0	250	\$32.00	local	\$160.00	\$87.50		\$247.50
P150	5.0	240	\$24.00		\$120.00	\$84.00	\$30.00	\$234.00
T18	3.5	350	\$100.00	Tucson	\$350.00	\$122.50	\$70.00	\$542.50
Subtotal:	48.5	2,540			\$1,630.00	\$889.00	\$175.00	\$2,694.00

Date of Meeting: October 13th, 1999
Participating Sites: Phoenix, Tucson
Persons Participating: 16
Duration of Meeting: 1 hour
Marginal Cost: \$22.95 (standard rates of \$22.95/hour apply)
Savings: \$3,719.00
Net: \$3,696.05

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
F34	5.0	320	\$22.00	Holbrook	\$110.00	\$112.00	\$6.50	\$228.50
F35	5.0	320	\$27.00	Flagstaff	\$135.00	\$112.00		\$247.00
F36	5.0	300	\$18.00	Kingman	\$90.00	\$105.00	\$21.00	\$216.00
F37	6.0	320	\$20.50	local	\$123.00	\$112.00	\$26.00	\$261.00
F38	6.0	320	\$19.00	local	\$114.00	\$112.00	\$6.50	\$232.50
F39	6.0	320	\$18.00	Flagstaff	\$108.00	\$112.00		\$220.00
P151	5.0	300	\$19.00		\$95.00	\$105.00	\$35.00	\$235.00
P152	5.0	300	\$23.00		\$115.00	\$105.00	\$12.00	\$232.00
P153	5.0	320	\$18.50		\$92.50	\$112.00		\$204.50
P154	5.0	300	\$16.00		\$80.00	\$105.00	\$6.50	\$191.50
P155	5.0	320	\$19.00		\$95.00	\$112.00	\$12.00	\$219.00
P156	5.0	320	\$23.00	local	\$115.00	\$112.00	\$6.50	\$233.50
P157	5.0	300	\$32.00	Flagstaff	\$160.00	\$105.00		\$265.00
P158	5.0	320	\$26.00	Phx.	\$130.00	\$112.00	\$10.00	\$252.00
P159	5.0	320	\$30.00	Phx.	\$150.00	\$112.00		\$262.00
P160	5.0	320	\$19.00	local	\$95.00	\$112.00	\$12.50	\$219.50
Subtotal:	83.0	5,020			\$1,807.50	\$1,757.00	\$154.50	\$3,719.00

Date of Meeting: November 3rd, 1999
Participating Sites: Flagstaff, Phoenix, Tucson
Persons Participating: 18
Duration of Meeting: 8 hours
Marginal Cost: \$2,138.40 (bridge costs of \$89.10/hour/site apply)
Savings: \$1,284.84
Net: (\$853.56)

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
F30	9.0	400	\$14.00	local	\$126.00	\$140.00	\$26.00	\$292.00
F31	5.0	300	\$16.00	local	\$80.00	\$105.00	\$126.00	\$311.00
F32	1.8	60	\$13.41	local	\$24.14	\$21.00	\$150.00	\$195.14
P32			\$17.00	local				
P33			\$16.50	local			\$60.00	\$60.00
P34			\$16.00	local				
P35			\$15.50					
P36	5.0	304	\$13.46		\$67.30	\$106.40	\$25.00	\$198.70
P37	0.5	5	\$16.00		\$8.00	\$1.75		\$9.75
P38			\$17.50					
P39			\$14.50					\$6.50
P40								\$6.50
P41			\$22.00					
P42			\$14.58	local				
P43			\$18.54	local				
P44			\$25.50	local				
P45	0.5	5	\$17.00	local	\$8.50	\$1.75		\$10.25
T19	4.0	200	\$15.00	Local	\$60.00	\$70.00	\$65.00	\$195.00
Subtotal:	25.8	1,274			\$373.94	\$445.90	\$465.00	\$1,284.84

Date of Meeting: November 15th, 1999
Participating Sites: Phoenix
Persons Participating: 2
Duration of Meeting: 1.3 hours
Marginal Cost: \$29.84 (standard rates of \$22.95/hour apply)
Savings: \$399.50
Net: \$369.66

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P46	5.0	240	\$22.50	local	\$112.50	\$84.00	\$6.50	\$203.00
P47	5.0	240	\$22.50	local	\$112.50	\$84.00		\$196.50
Subtotal:	10.0	480			\$225.00	\$168.00	\$6.50	\$399.50

Date of Meeting: November 16th, 1999

Participating Sites: Phoenix

Persons Participating: 1

Duration of Meeting: 2 hours

Marginal Cost: \$45.90 (standard rates of \$22.95/hour apply)

Savings: \$75

Net: \$29.10

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P48	2.0	100	\$20.00	local	\$40.00	\$35.00		\$75.00

Date of Meeting: November 22nd, 1999

Participating Sites: Phoenix, Tucson

Persons Participating: 10

Duration of Meeting: 1 hour

Marginal Cost: \$22.95 (standard rates of \$22.95/hour apply)

Savings: \$2,130.50

Net: \$2,107.55

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P49	4.0	200	\$35.00	local	\$140.00	\$70.00	\$12.00	\$222.00
P50	4.5	240	\$25.00	local	\$112.50	\$84.00		\$196.50
P51	4.0	250	\$34.00	local	\$136.00	\$87.50	\$10.00	\$233.50
P52	4.0	250	\$31.00	local	\$124.00	\$87.50		\$211.50
T20	4.0	240	\$34.00	local	\$136.00	\$84.00	\$6.50	\$226.50
T21	4.5	240	\$21.00	local	\$94.50	\$84.00		\$178.50
T22	4.0	200	\$36.00	local	\$144.00	\$70.00		\$214.00
T23	4.0	120	\$45.00	local	\$180.00	\$42.00		\$222.00
T24	4.0	200	\$33.00	local	\$132.00	\$70.00		\$202.00
T25	4.0	240	\$35.00	local	\$140.00	\$84.00		\$224.00
Subtotal:	41.0	2,180			\$1,339.00	\$763.00	\$28.50	\$2,130.50

Date of Meeting: November 23rd, 1999
Participating Sites: Flagstaff, Tucson
Persons Participating: 5
Duration of Meeting: 1.4 hours
Marginal Cost: \$32.13 (standard rates of \$22.95/hour apply)
Savings: \$528.88
Net: \$496.75

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
F33	8.0	500	\$15.61	local	\$124.88	\$175.00	\$6.50	\$306.38
T26	3.0	150	\$12.00	Oracle	\$36.00	\$52.50	\$20.00	\$108.50
T27	3.0	180	\$17.00	local	\$51.00	\$63.00		\$114.00
T28				local				
T29								
Subtotal:	14.0	830			\$211.88	\$290.50	\$26.50	\$528.88

Date of Meeting: December 3rd, 1999
Participating Sites: Flagstaff, Phoenix
Persons Participating: 12
Duration of Meeting: 1.5 hours
Marginal Cost: \$34.43 (standard rates of \$22.95/hour apply)
Savings: \$3,200.50
Net: \$3,166.07

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
F34	5.0	300	\$36.00	Local	\$180.00	\$105.00	\$100.00	\$385.00
F35	5.0	300	\$20.00	Local	\$100.00	\$105.00	\$60.00	\$265.00
P161	5.0	320	\$23.00	local	\$115.00	\$112.00	\$6.50	\$233.50
P162	5.0	320	\$31.00	local	\$155.00	\$112.00		\$267.00
P163	5.0	300	\$28.00	local	\$140.00	\$105.00	\$10.00	\$255.00
P164	5.0	320	\$27.00	local	\$135.00	\$112.00	\$6.50	\$253.50
P165	5.0	320	\$34.00	local	\$170.00	\$112.00		\$282.00
P166	5.0	320	\$23.00	local	\$115.00	\$112.00	\$12.50	\$239.50
P167	5.0	320	\$25.00	local	\$125.00	\$112.00	\$6.50	\$243.50
P168	5.0	320	\$27.00	local	\$135.00	\$112.00		\$247.00
P169	5.0	300	\$24.50	local	\$122.50	\$105.00	\$35.00	\$262.50
P170	5.0	320	\$31.00	local	\$155.00	\$112.00		\$267.00
Subtotal:	60.0	3,760			\$1,647.50	\$1,316.00	\$237.00	\$3,200.50

Date of Meeting: December 14th, 1999
Participating Sites: Flagstaff, Phoenix, Tucson
Persons Participating: 15
Duration of Meeting: 2.5 hours
Marginal Cost: \$668.25 (bridge costs of \$89.10/hour/site apply)
Savings: \$1,731.00
Net: \$1,062.75

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P53				Local				
P54			\$35.00					
P55				Local				
P56			\$26.00					
P57			\$25.00					
P58			\$21.00					
P59				Local				
F36	4.5	320	\$19.00	local	\$85.50	\$112.00		\$197.50
F37	6.0	320	\$26.00	local	\$156.00	\$112.00	\$100.00	\$368.00
F38	5.0	320	\$16.00	local	\$80.00	\$112.00		\$192.00
F39	6.0	320	\$18.00	local	\$108.00	\$112.00	\$50.00	\$270.00
F40	5.0	300	\$15.00	Local	\$75.00	\$105.00	\$12.50	\$192.50
F41	5.0	320	\$18.50	Local	\$92.50	\$112.00	\$6.50	\$211.00
F42	5.0	320	\$17.00	local	\$85.00	\$112.00	\$12.50	\$209.50
T30	1.5	90	\$35.00	Safford	\$52.50	\$31.50	\$6.50	\$90.50
Subtotal:	38.0	2,310			\$734.50	\$808.50	\$188.00	\$1,731.00

Date of Meeting: January 5th, 2000
Participating Sites: Flagstaff, Phoenix
Persons Participating: 7
Duration of Meeting: 1.5 hours
Marginal Cost: \$34.43 (standard rates of \$22.95/hour apply)
Savings: \$1,824.35
Net: \$1,789.92

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
F43	5.0	300	\$16.50	local	\$82.50	\$105.00	\$12.00	\$199.50
F44	5.0	320	\$18.00	local	\$90.00	\$112.00	\$6.50	\$208.50
F45	5.0	320	\$17.00	local	\$85.00	\$112.00		\$197.00
P60	4.5	300	\$15.00	Prescott	\$67.50	\$105.00	\$123.00	\$295.50
P61	4.5	300	\$14.30	Prescott	\$64.35	\$105.00	\$123.00	\$292.35
P62	4.5	300	\$24.00	Prescott	\$108.00	\$105.00	\$123.00	\$336.00
P63	4.5	300	\$15.00	Prescott	\$67.50	\$105.00	\$123.00	\$295.50
Subtotal:	33.0	2,140			\$564.85	\$749.00	\$510.50	\$1,824.35

Date of Meeting: January 14th, 2000
Participating Sites: Phoenix, Boston
Persons Participating: 5
Duration of Meeting: 0.5 hour
Marginal Cost: \$47.25 (out-of-state rates of \$94.50/hour apply)
Savings: \$8,422.00
Net: \$8,374.75

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P64	16.0	6000	\$22.50	local	\$360.00		\$1,500.00	\$1,860.00
P65	16.0	6000	\$29.00	Phx.	\$464.00		\$1,500.00	\$1,964.00
P66	16.0	6000	\$30.00	Phx.	\$480.00		\$1,500.00	\$1,980.00
P67	16.0	6000	\$28.00	local	\$448.00		\$1,500.00	\$1,948.00
P68	16.0	6000	\$40.00	local	\$640.00		\$30.00	\$670.00
Subtotal:	80.0				\$2,392.00		\$6,030.00	\$8,422.00

Date of Meeting: January 24th, 2000
Participating Sites: Phoenix, Boston
Persons Participating: 6
Duration of Meeting: 0.5 hour
Marginal Cost: \$47.25 (out-of-state rates of \$94.50/hour apply)
Savings: \$10,196.00
Net: \$10,148.75

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P69	36.0	5000	\$28.00	local	\$1,008.00		\$1,200.00	\$2,208.00
P70	36.0	5000	\$30.00	local	\$1,080.00		\$1,200.00	\$2,280.00
P71	16.0	5000	\$28.00	Mesa	\$448.00		\$1,900.00	\$2,348.00
P72	16.0	5000	\$32.00	local	\$512.00		\$1,500.00	\$2,012.00
P73	24.0	5000	\$25.00	local	\$600.00		\$100.00	\$700.00
P74	24.0	5000	\$27.00	Prescott	\$648.00			\$648.00
Subtotal:	152.0	30000			\$4,296.00		\$5,900.00	\$10,196.00

Date of Meeting: January 28th, 2000
Participating Sites: Phoenix, Boston
Persons Participating: 6
Duration of Meeting: 1 hour
Marginal Cost: \$94.50 (out-of-state rates of \$94.50/hour apply)
Savings: \$15,088.00
Net: \$14,993.50

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P75	36.0	5,000	\$40.00	Tucson	\$1,440.00		\$1,500.00	\$2,940.00
P76	16.0	5,000	\$25.00		\$400.00		\$1,200.00	\$1,600.00
P77	48.0	5,000	\$32.00	local	\$1,536.00		\$1,500.00	\$3,036.00
P78	48.0	6,000	\$35.00	Flagstaff	\$1,680.00		\$1,200.00	\$2,880.00
P79	36.0	5,000	\$38.00	local	\$1,368.00		\$1,200.00	\$2,568.00
P80	36.0	5,000	\$24.00		\$864.00		\$1,200.00	\$2,064.00
Subtotal:	220.0	31,000			\$7,288.00		\$7,800.00	\$15,088.00

Date of Meeting: February 10th, 2000
Participating Sites: Phoenix, Tucson
Persons Participating: 17
Duration of Meeting: 4 hours
Marginal Cost: \$91.80 (standard rates of \$22.95/hour apply)
Savings: \$1,826.50
Net: \$1,734.70

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P81	4.0	240	\$22.00		\$88.00	\$84.00	\$12.00	\$184.00
P82				local				
P83	4.0	250	\$14.50	local	\$58.00	\$87.50	\$6.50	\$152.00
P84								
P85				local				
P86	1.0		\$30.00	local	\$30.00			\$30.00
P87								
P88	4.0	150	\$11.75	Phx.	\$47.00	\$52.50	\$6.50	\$106.00
P89	4.0	200	\$11.00	local	\$44.00	\$70.00	\$6.50	\$120.50
P90	4.0	200	\$19.00	Mesa	\$76.00	\$70.00	\$12.50	\$158.50
P91	4.0	250	\$18.00	Phx.	\$72.00	\$87.50	\$6.50	\$166.00
P92			\$20.00	Tempe				
T38	4.0	240	\$24.00	Local	\$96.00	\$84.00	\$12.00	\$192.00
T39	4.0	250	\$16.00	local	\$64.00	\$87.50		\$151.50
T40	4.0	240	\$26.00	Sierra Vista	\$104.00	\$84.00	\$6.50	\$194.50
T41	4.0	240	\$19.00		\$76.00	\$84.00	\$30.00	\$190.00
T42	4.0	250	\$23.50	Sierra Vista	\$94.00	\$87.50		\$181.50
Subtotal:	45.0	2,510			\$849.00	\$878.50	\$99.00	\$1,826.50

Date of Meeting: February 16th, 2000
Participating Sites: Phoenix, Tucson
Persons Participating: 7
Duration of Meeting: 2 hours
Marginal Cost: \$45.90 (standard rates of \$22.95/hour apply)
Savings: \$890.50
Net: \$844.60

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
T31	2.5	250	\$15.00	Tucson	\$37.50	\$87.50	\$6.50	\$131.50
T32	2.0	200	\$25.00	local	\$50.00	\$70.00		\$120.00
T33	2.0	160	\$18.00	Tucson	\$36.00	\$56.00	\$50.00	\$142.00
T34				local				
T35	2.0	160	\$30.00	Tucson	\$60.00	\$56.00	\$50.00	\$166.00
P93	4.0	250	\$15.00	local	\$60.00	\$87.50	\$6.00	\$153.50
P94	4.0	250	\$21.00	Phx.	\$84.00	\$87.50	\$6.00	\$177.50
Subtotal:	16.5	1,270			\$327.50	\$444.50	\$118.50	\$890.50

Date of Meeting: February 18th, 2000
Participating Sites: Phoenix, Tucson
Persons Participating: 3
Duration of Meeting: 3.5 hours
Marginal Cost: \$80.33 (standard rates of \$22.95/hour apply)
Savings: \$648.20
Net: \$567.87

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P95	4.0	240	\$14.30	Mesa	\$57.20	\$84.00	\$89.00	\$230.20
T36	3.5	240	\$24.00	local	\$84.00	\$84.00	\$100.00	\$268.00
T37	3.5	200	\$21.00	local	\$73.50	\$70.00	\$6.50	\$150.00
Subtotal:	11.0	680			\$214.70	\$238.00	\$195.50	\$648.20

Date of Meeting: March 6th, 2000
Participating Sites: Flagstaff, Phoenix
Persons Participating: 16
Duration of Meeting: 1 hour
Marginal Cost: \$22.95 (standard rates of \$22.95/hour apply)
Savings: \$2,998.70
Net: \$2,975.75

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
F56	5.0	320	\$14.50	Local	\$72.50	\$112.00	\$21.00	\$205.50
F57	5.0	300	\$16.00	Local	\$80.00	\$105.00	\$12.50	\$197.50
F58	5.0	320	\$19.50	Local	\$97.50	\$112.00	\$6.50	\$216.00
F59	5.0	320	\$23.00	Local	\$115.00	\$112.00	\$12.50	\$239.50
F60	5.0	320	\$15.00	Local	\$75.00	\$112.00	\$12.50	\$199.50
F61	5.0	320	\$16.50	Local	\$82.50	\$112.00	\$6.50	\$201.00
P96	10.0	200	\$15.00	Local	\$150.00	\$70.00	\$160.00	\$380.00
P97	5.0	240	\$20.00	Local	\$100.00	\$84.00	\$6.50	\$190.50
P98	5.0	240	\$16.00	Local	\$80.00	\$84.00	\$6.50	\$170.50
P99	2.0	120	\$40.00	Local	\$80.00	\$42.00		\$122.00
P100	5.0	250	\$20.00	Local	\$100.00	\$87.50		\$187.50
P101	3.0	242	\$25.00		\$75.00	\$84.70	\$50.00	\$209.70
P102	2.0	100	\$26.00	Yuma	\$52.00	\$35.00		\$87.00
P103	3.0	220	\$15.00		\$45.00	\$77.00	\$100.00	\$222.00
P104			\$20.00					
P105	5.0	240	\$16.00		\$80.00	\$84.00	\$6.50	\$170.50
Subtotal:	70.0	3,752			\$1,284.50	\$1,313.20	\$401.00	\$2,998.70

Date of Meeting: March 20th, 2000
Participating Sites: Flagstaff, Phoenix
Persons Participating: 6
Duration of Meeting: 2 hours
Marginal Cost: \$45.90 (standard rates of \$22.95/hour apply)
Savings: \$1,616.00
Net: \$1,570.10

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
F62	5.0	320	\$17.00	local	\$85.00	\$112.00	\$12.50	\$209.50
F63	6.0	340	\$18.00	local	\$108.00	\$119.00		\$227.00
F64	6.0	330	\$24.00	local	\$144.00	\$115.50	\$100.00	\$359.50
F65	6.0	320	\$19.50	local	\$117.00	\$112.00	\$126.00	\$355.00
F66	5.0	320	\$17.50	local	\$87.50	\$112.00	\$6.50	\$206.00
P106	5.0	240	\$35.00	Payson	\$175.00	\$84.00		\$259.00
Subtotal:	33.0	1,870			\$716.50	\$654.50	\$245.00	\$1,616.00

Date of Meeting: March 28th, 2000
Participating Sites: Flagstaff, Phoenix
Persons Participating: 7
Duration of Meeting: 3 hours
Marginal Cost: \$68.85 (standard rates of \$22.95/hour apply)
Savings: \$1,811.90
Net: \$1,743.05

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
F67	5.0	320	\$21.50	Local	\$107.50	\$112.00	\$100.00	\$319.50
F68	5.0	320	\$18.50	Local	\$92.50	\$112.00		\$204.50
F69	5.0	330	\$19.00	Local	\$95.00	\$115.50		\$210.50
F70	5.0	330	\$21.50	Local	\$107.50	\$115.50	\$6.50	\$229.50
F71	5.5	330	\$12.00	Local	\$66.00	\$115.50	\$12.50	\$194.00
F72	6.0	340	\$18.00	Local	\$108.00	\$119.00	\$21.00	\$248.00
P107	8.0	190	\$14.30	Gilbert	\$114.40	\$66.50	\$225.00	\$405.90
Subtotal:	39.5	2,160			\$690.90	\$756.00	\$365.00	\$1,811.90

Date of Meeting: April 14th, 2000
Participating Sites: Flagstaff, Phoenix
Persons Participating: 12
Duration of Meeting: 2 hours
Marginal Cost: \$45.90 (standard rates of \$22.95/hour apply)
Savings: \$1,389.50
Net: \$1,343.60

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
F73	5.0	320	\$18.50	local	\$92.50	\$112.00	\$6.50	\$211.00
F74	5.0	300	\$19.50	local	\$97.50	\$105.00	\$6.50	\$209.00
F75	6.0	300	\$21.00	local	\$126.00	\$105.00		\$231.00
F76	5.0	320	\$17.50	local	\$87.50	\$112.00		\$199.50
F77	5.0	330	\$18.50	local	\$92.50	\$115.50	\$12.00	\$220.00
F78	5.0	300	\$19.50	local	\$97.50	\$105.00		\$202.50
P108				Sandros				
P109				Phx.				
P110	0.5	10	\$23.00	Phx.	\$11.50	\$3.50		\$15.00
P111	2.0	200	\$14.00	Phx.	\$28.00	\$70.00		\$98.00
P112			\$0.00	local				
P113	0.5	10	\$0.00	Phx.		\$3.50		\$3.50
Subtotal:	34.0	2,090			\$633.00	\$731.50	\$25.00	\$1,389.50

Date of Meeting: April 26th, 2000
Participating Sites: Phoenix, Tucson
Persons Participating: 12
Duration of Meeting: 1 hour
Marginal Cost: \$22.95 (standard rates of \$22.95/hour apply)
Savings: \$1,412.85
Net: \$1,389.90

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P114				local				
P115				local				
P116				local		\$0.35		\$0.35
P117	6.0	250	\$23.00	local	\$138.00	\$87.50	\$6.50	\$232.00
P118			\$22.50	local				
P119	2.0	40	\$40.00	local	\$80.00	\$14.00	\$12.50	\$106.50
P120	8.0	240	\$10.00	local	\$80.00	\$84.00	\$12.50	\$176.50
P121	4.0	240	\$20.00	local	\$80.00	\$84.00	\$12.50	\$176.50
P122	4.0	190	\$40.00	local	\$160.00	\$66.50	\$18.00	\$244.50
P123			\$20.00	Local				
T38	4.0	240	\$40.00	Oro Valley	\$160.00	\$84.00	\$12.50	\$256.50
T39	4.0	250	\$31.50	local	\$126.00	\$87.50	\$6.50	\$220.00
Subtotal:	32.0	1,450			\$824.00	\$507.85	\$81.00	\$1,412.85

Date of Meeting: April 28th, 2000
Participating Sites: Phoenix, Boston
Persons Participating: 5
Duration of Meeting: 0.5 hour
Marginal Cost: \$47.25 (out-of-state rates of \$94.50/hour apply)
Savings: \$8,448.00
Net: \$8,400.75

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P124	16.0	5000	\$28.50	local	\$456.00		\$1,200.00	\$1,656.00
P125	16.0	5000	\$32.00	local	\$512.00		\$1,200.00	\$1,712.00
P126	16.0	5000	\$24.00	local	\$384.00		\$1,200.00	\$1,584.00
P127	16.0	5000	\$31.00	local	\$496.00		\$1,200.00	\$1,696.00
P128	16.0	5000	\$37.50	local	\$600.00		\$1,200.00	\$1,800.00
Subtotal:	80.0	25000			\$2,448.00		\$6,000.00	\$8,448.00

Date of Meeting: May 2nd, 2000
Participating Sites: Phoenix, Tucson
Persons Participating: 13
Duration of Meeting: 2.8 hours
Marginal Cost: \$64.26 (standard rates of \$22.95/hour apply)
Savings: \$1,756.00
Net: \$1,691.74

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P129				local			\$100.00	\$100.00
P130				local				
P131			\$35.50	local			\$12.00	\$12.00
P132				local				
P133				local				
P134	2.0	200	\$40.00	local	\$80.00	\$70.00	\$80.00	\$230.00
P135	2.0	200	\$24.00	Local	\$48.00	\$70.00		\$118.00
T40	4.0	240	\$32.50	Sahuarita	\$130.00	\$84.00		\$214.00
T41	4.0	260	\$33.00	local	\$132.00	\$91.00	\$6.50	\$229.50
T42	4.0	240	\$32.50	local	\$130.00	\$84.00		\$214.00
T43	4.0	220	\$27.50	local	\$110.00	\$77.00		\$187.00
T44	4.0	240	\$38.00	local	\$152.00	\$84.00	\$6.50	\$242.50
T45	5.0	240	\$25.00	Phx.	\$125.00	\$84.00		\$209.00
Subtotal:	29.0	1,840			\$907.00	\$644.00	\$205.00	\$1,756.00

Date of Meeting: May 18th, 2000
Participating Sites: Flagstaff, Phoenix
Persons Participating: 9
Duration of Meeting: 3 hours
Marginal Cost: \$68.85 (standard rates of \$22.95/hour apply)
Savings: \$1,668.50
Net: \$1,599.65

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
F79	6.0	350	\$21.00	local	\$126.00	\$122.50	\$6.00	\$254.50
F80	5.0	330	\$19.50	local	\$97.50	\$115.50	\$6.50	\$219.50
F81	5.0	320	\$14.50	local	\$72.50	\$112.00	\$12.50	\$197.00
F82	5.0	300	\$16.50		\$82.50	\$105.00		\$187.50
F83	6.0	330	\$21.50	Local	\$129.00	\$115.50	\$12.50	\$257.00
P136			\$20.00	local	\$20.00		\$100.00	\$120.00
P137				local				\$0.00
P138	4.0	300	\$22.00	local	\$88.00	\$105.00	\$6.00	\$199.00
P139	5.0	280	\$26.00	local	\$130.00	\$98.00	\$6.00	\$234.00
Subtotal:	36.0	2,210			\$745.50	\$773.50	\$149.50	\$1,668.50

Date of Meeting: May 22nd, 2000
Participating Sites: Phoenix, Tucson
Persons Participating: 8
Duration of Meeting: 1 hour
Marginal Cost: \$22.95 (standard rates of \$22.95/hour apply)
Savings: \$1,534.50
Net: \$1,511.55

Participant	Saved Hours	Saved Miles	Hourly Pay	From Where?	Salary Saved	Mileage Cost Saved	Per Diem Saved	Total Savings
P140	4.0	240	\$15.00	Local	\$60.00	\$84.00	\$35.00	\$179.00
T46	5.0	240	\$12.00	local	\$60.00	\$84.00		\$144.00
T47	5.0	240	\$18.00	local	\$90.00	\$84.00	\$100.00	\$274.00
T48	4.0	240	\$30.00	local	\$120.00	\$84.00	\$7.50	\$211.50
T49	5.0	120	\$17.30	local	\$86.50	\$42.00	\$10.00	\$138.50
T50	2.0	210	\$15.00	local	\$30.00	\$73.50	\$50.00	\$153.50
T51	4.0	230	\$25.00	local	\$100.00	\$80.50	\$7.50	\$188.00
T52	4.0	240	\$28.00	local	\$112.00	\$84.00	\$50.00	\$246.00
Subtotal:	33.0	1,760			\$658.50	\$616.00	\$260.00	\$1,534.50

Summary:

- 1) **VCT cost for the calls: \$9,108.47**
- 2) **Monthly service charge: (each line \$226.5 per month) 3 x (10 x 226.5) = \$6,795.00**
- 3) **Equipment acquisition charge: (3 sets) \$132,411.53**
- 4) **ISDN lines installation charge: \$140 x 3 = \$420 per site x 3 = \$1,260.00**
- 5) **VCR-intellisys: \$311.46**

Total VCT cost in 10-month testing period: \$9,108.47 + \$6,795.00 + \$132,411.53 + \$1,260.00 + \$311.46 = \$149,886.46

Each month cost in five years: \$226.5 (line service) + \$2,233.05 (equipment charge amortized) = \$2,459.55 (not including maintenance fee yet)

Total VCT savings: (adding all the savings from 'SalarySaved', 'MileageSaved' and 'SavedPerDiem') \$89,162.69

Each month Saving in 10-month testing period: \$89,162.69/10 = \$8,916.27

Total savings in five years: \$8,916.27 x 60 = \$534,976.2 based on the same usage rate and these three sets of equipment.

Appendix B: Norstan Maintenance Contract Options

STANDARD PLAN

NORSTAN'S SOLUTION CENTER WILL PROVIDE REMOTE DIAGNOSTICS AND RESOLVE THE PROBLEM OR DISPATCH ON-SITE ASSISTANCE IF NEEDED. THE STANDARD PLAN INCLUDES ALL PARTS AND LABOR DURING NORMAL BUSINESS HOURS, OFFERING A FULL SUPPORT SERVICE PLAN.

SERVICE FEATURES

Support from Single Service Provider	One toll-free 800 # for all service needs Video Support Specialist Group maintains ownership of problem from start to finish Materials Labor included during coverage hours Corrective Maintenance Remotely Diagnose Problem Isolate source of problem Dispatch on-site as needed	Manufacturer Corrective Software Updates* 24 hour x 7 day Norstan solution center**
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Defined Service Response Time	Remote diagnostics performed within one hour of initial call for Major Failures and 4 hours for Minor Failures On-site response within 24 hours of initial call, on the next business day for Major Failures Minor failures receive a two business day response to on-site requests Technical Assistance and on-site labor is included 8am-5pm, Monday-Friday for Major and Minor Failures (excluding Norstan Holidays)	After hours Technical Assistance and on-site service is available for Major Failures at our Preferred Contract Labor Rates Internal escalation procedures in place which provide Norstan's technical assistance center with direct access to manufacturer technical support
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BENEFITS	Ease and convenience of a single source solution Flexibility to access features of the Comprehensive Plan without incurring the price of a premium contract	Experienced technical expertise is accessible whenever you need it to resolve problems quickly Responsive and efficient problem resolution
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* **Manufacturer Corrective Software Updates** are defined as a new release of software that include "bug" fixes in a customer application area or minor revisions that correct errors or defects in the existing operation of the software. Labor to remedy these changes is included in this plan. Software enhancements are not included in this plan and labor is billable at current contract labor rates.

** **Norstan's Solution Center** is staffed after hours with personnel responsible for entering customer service requests and dispatching on-call technical Support Engineers for problem resolution.

COMPREHENSIVE PLAN

NORSTAN'S SOLUTION CENTER WILL PROVIDE REMOTE DIAGNOSTICS AND RESOLVE THE PROBLEM OR DISPATCH ON-SITE ASSISTANCE IF NEEDED. THE COMPREHENSIVE PLAN INCLUDES ALL PARTS, LABOR, PRIORITY RESPONSE AND EXTENSIVE FEATURES, OFFERING A TRULY ALL INCLUSIVE SERVICE PLAN.

SERVICE FEATURES

Support from Single Service Provider	One toll-free 800 # for all service needs Video Support Specialist Group maintains ownership of problem from start to finish Materials Labor included during coverage hours Corrective Maintenance Remotely Diagnose Problem Isolate source of problem Dispatch on-site as needed	Work to completion/Continuous effort-Majors Manufacturer Corrective Software Updates* 24 hour x 7 day Norstan solution center **
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Defined Service Response Time	Remote diagnostics performed within 30 minutes of initial call for Major Failures and 2 hours for Minor Failures On-site response within 4 hours of initial call for Major Failures*** On-site response within 24 hours of initial call for Minor Failures, on the next business day Technical assistance and on-site labor is included 24x7 for major failures and 8am-5pm, Monday-Friday for minor failures	Norstan Holidays included for Major Failures Non-emergency service is available outside coverage hours at current labor rates Internal escalation procedures in place which provide Norstan's technical assistance center with direct access to manufacturer technical support
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BENEFITS

Ease and convenience of a single source solution Priority response and problem resolution for Major Failures, 24 hours a day at no additional charge	Experienced technical expertise is accessible whenever you need it to resolve problems quickly Increased system availability and user productivity, resulting in reduced costs
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* **Manufacturer Corrective Software Updates** are defined as a new release of software that include "bug" fixes in a customer application area or minor revisions that correct errors or defects in the existing operation of the software. Labor to remedy these changes is included in this plan. Software enhancements are not included in this plan and labor is billable at current contract labor rates.

** **Norstan's Solution Center** is staffed after hours with personnel responsible for entering customer service requests and dispatching on-call technical Support Engineers for problem resolution.

*** **4 hour on-site response** for PictureTel products is available within Norstan territories and the following metropolitan areas; Atlanta, Boston, Chicago, Dallas/Fortworth, New York, San Francisco, Los Angeles and Toronto. 4 hour on-site service is available in 160 VTEL locations, refer to listing.

REMOTE PLUS PLAN

NORSTAN'S REMOTE PLUS PLAN IS DESIGNED FOR CUSTOMERS WHO HAVE MADE AN INVESTMENT IN THEIR OWN INTERNAL RESOURCES AND PREFER TECHNICAL BACKUP SUPPORT, PARTS AND ON-SITE SERVICE, AS NEEDED. THE REMOTE PLUS PLAN INCLUDES ALL REPLACEMENT PARTS AND DEFINED RESPONSE TIMES. ON-SITE SUPPORT IS AVAILABLE AT NORSTAN'S PREFERRED CONTRACT LABOR RATES ON A SCHEDULED BASIS.

SERVICE FEATURES

Support from Single Service Provider	One toll-free 800 # for all service needs Video Support Specialist Group maintains ownership of problem from start to finish Materials Corrective Maintenance Remotely Diagnose Problem Isolate source of problem On-site service available	Manufacturer Corrective Software Updates* 24x5 Norstan Solution Center**
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Defined Service Response Time	Remote diagnostics performed within one hour of initial call for Major Failures and 4 hours for Minor Failures On-site response will be provided on a scheduled, best effort basis at our Preferred Contract Labor Rates Technical Assistance labor is included 24x5 for Major Failures and 8am-5pm, Monday-Friday for Minor Failures	Internal escalation procedures in place which provide Norstan's technical assistance center with direct access to manufacturer technical support
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BENEFITS	Ease and convenience of a single source solution Cost effective service option	Experienced technical expertise is accessible whenever you need it to resolve problems quickly Enhances customer's own internal support structure
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* **Manufacturer Corrective Software Updates** are defined as a new release of software that include "bug" fixes in a customer application area or minor revisions that correct errors or defects in the existing operation of the software. On-site labor to remedy these changes is not included in this plan but available at current contract labor rates. Software enhancements are not included in this plan and labor is billable at current contract labor rates.

** **Norstan's Solution Center** is staffed after hours with personnel responsible for entering customer service requests and dispatching on-call technical Support Engineers for problem resolution.

Appendix C: Videoconferencing Activity Surveys

VIDEOCONFERENCING HOST SURVEY

As the “host” of this videoconferencing site, you will be asked to distribute and collect participant surveys, as well as complete this brief activity record for each videoconferencing meeting that is held over the next year. [These surveys are part of the conditional approval given for implementing videoconferencing and they will be used to determine whether to acquire more equipment and expand to more videoconferencing sites.](#)

Name of host: _____

Site location: _____

Phone: _____

e-mail: _____

1. What other sites were connected to **this videoconferencing meeting**?
2. Duration of the meeting (approximate):
hours: _____ minutes: _____
3. Date of the meeting: _____
4. How would you rate **this videoconferencing activity**?
___ meeting went perfectly, no technical difficulties
___ meeting went pretty well, only minor, temporary technical difficulties
___ meeting was marred by minor, but irritating, persistent or repeated technical difficulties
___ meeting was a failure due to major technical difficulties
5. Comments (if there were any significant problems with this videoconferencing meeting please briefly describe them):

Please attach participant surveys. Once a week, please forward activity records and their attached participant surveys to John Semmens, mail drop 075R.

VIDEOCONFERENCING PARTICIPANT SURVEY

Please take a few minutes to help us assess the performance and value of videoconferencing as a communication tool by providing brief answers to the following questions. [These surveys are part of the conditional approval given for implementing videoconferencing and they will be used to determine whether to acquire more equipment and expand to more videoconferencing sites.](#)

1. Would you still have attended **this meeting** if videoconferencing were not available?
2. To where would you have had to travel for **this meeting** if videoconferencing had not been available?
3. Would you have been eligible for *per diem* for travel to **this meeting** if videoconferencing had not been available?
___yes (please give us an estimate of an approximate dollar amount.) _____
___no
4. About how much travel time (both the time coming and going) would you estimate you saved by videoconferencing for **this meeting**? hours:_____minutes:_____
5. About how many miles (round trip) would you estimate you saved by videoconferencing for **this meeting**?
6. From where did you come to attend **this videoconferencing meeting**?
7. To help us estimate the potential value of time savings from videoconferencing, please tell us your annual salary:_____ **OR** your hourly rate of pay_____
8. How would you rate **this videoconferencing experience**? (check one)
___excellent
___good
___fair
___poor
___a failure
9. How often do you think you would want to use videoconferencing in the future? (check one)
___every time I can
___for most of my meetings that would require traveling from my normal work site
___only when I am told to by my supervisor
___never
10. Comments:

Please leave this survey with the videoconferencing host. Thank you for your assistance.