



REPORT TO THE ADMINISTRATIVE CONFERENCE OF THE
UNITED STATES

**BEST PRACTICES FOR USING VIDEO
TELECONFERENCING FOR
HEARINGS AND RELATED
PROCEEDINGS**

Acknowledgements

The Center for Legal and Court Technologies / Courtroom 21 would like to thank the following people for their invaluable assistance with this project. Without the support of these, this report would not have been possible.

Staff of the Administrative Conference of the United States

Paul R. Verkuil	Administrative Conference Chairman
Matt Wiener	Executive Director
Emily Bremer	Senior Attorney and Research Coordinator
Amber Williams	Attorney Advisor
Funmi Olorunnipa	Attorney Advisor
Nate Flanders	Intern

Members of the Committee on Adjudication

John Vittone	Committee Chair, Chief Administrative Law Judge, Department of Labor (ret.)
Eric Benderson	Associate General Counsel for Litigation and Claims, Small Business Administration
Charles Center	Chief Administrative Law Judge, Federal Labor Relations Authority
Mariano-Florentino Cuéllar	Director and Senior Fellow of the Freeman Spogli Institute for International Studies and the Stanley Morrison Professor of Law & (by courtesy) Political Science at Stanford University
Chai Feldblum	Commissioner, Equal Employment Opportunity Commission
D. Randall Frye	Administrative Law Judge, Social Security Administration & President, Association of Administrative Law Judges
Susan Tsui Grundmann	Chairman, Merit Systems Protection Board
Janice Hoffman	Associate General Counsel for the Centers for Medicare and Medicaid Services, Department of Health & Human Services
Jean King	Deputy General Counsel for Executive Office for Immigration Review, Department of Justice
Richard Leighton	Partner, Keller and Heckman LLP
Robert Lesnick	Chief Administrative Law Judge, Federal Mine Safety and Health Review Commission
Jeffrey Lubbers	Professor of Practice in Administrative Law, American University Washington College of Law
Nadine Mancini	General Counsel, Occupational Safety and Health Review Commission

Arti Rai	Elvin R. Latty Professor of Law and co-Director, Duke Law Center for Innovation Policy, Duke University School of Law
Bob Schiff	Chief of Staff to the Chairman, National Labor Relations Board
Glenn Sklar	Deputy Commissioner for the Office of Disability Adjudication & Review, Social Security Administration
Thomas Snook	Administrative Law Judge, Social Security Administration & Representative, American Bar Association National Conference of the Administrative Law Judiciary
Daniel Solomon	Administrative Law Judge, Department of Labor & Representative, Federal Administrative Law Judges Conference
Alan Swendiman	Deputy Principal Legal Advisor & Chief of Staff for Immigration and Customs Enforcement, Department of Homeland Security
Tyler Wood	Deputy General Counsel, Federal Maritime Commission

Center for Legal and Court Technology Project Staff

Fredric Lederer	CLCT Director and Chancellor Professor of Law
Martin Gruen	CLCT Deputy Director and Chief Technology Consultant
Christine Williams	CLCT Associate Director for Research and Legal Consultant
Nancy Archibald	CLCT Administrator
Mary Beth Dalton	CLCT Administrative Assistant
Rachael Gruen	Assistant to the Consultants
Janie Brittan	Graduate Research Fellow
Elizabeth Buner	Graduate Research Fellow
Emily Furnish	Graduate Research Fellow
Emily Hefferon	Graduate Research Fellow
Matthew Hilderbrand	Graduate Research Fellow
Madelyn Krezowski	Graduate Research Fellow
C. Rose Moore	Graduate Research Fellow
Asheley Walker	Graduate Research Fellow

BEST PRACTICES FOR USING VIDEO TELECONFERENCING FOR HEARINGS AND RELATED PROCEEDINGS

Executive Summary

Consistent with its 2011 recommendation on video hearings, the Administrative Conference of the U.S. (ACUS) solicited this report from the Center for Legal and Court Technology at William and Mary Law School (CLCT). This report is intended to provide guidance and advice through concrete and practical recommendations detailing how agencies may implement and/or improve their use of video conferencing in administrative hearings and related proceedings. Recognizing that a “one size fits all” approach would be ineffective, this study attempts to not only recommend best practices for given situations, but provide the basis for these recommendations so as to allow the end user agencies to understand why these are suggested and modify the suggestions to fit their individual needs.

Before providing specific recommendations, the report includes the results of a thorough literature review. The report identifies a number of federal agencies that are already conducting video hearings, as well a number of agencies that have adopted regulations specifically authorizing the use of video conferencing for administrative hearings. Legal issues related to due process, credibility, and the effect of videoconferencing on outcomes of administrative hearings are also identified and discussed. While the literature identified concerns about technical problems associated with video conferencing and decreased personal interactions as a result, the literature also identified significant financial and convenience benefits. Most significantly, however, the literature revealed the potential for increased access to justice as a result of video conferenced hearings.

The report then discusses the current state of video telecommunications in both the private sector and in the United States court systems. This section provides practical and technical guidance for the successful adoption and implementation of video conferencing in an administrative setting. Recommendations related to technical, employee operational, and environmental factors are included in the final report. These include information about proper bandwidth, lighting, acoustics, and heating and air conditioning, among others. Finally, the report identifies various uses of videoconferencing, including several less common potential uses. Included are uses for remote judges and remote witnesses, along with several less common uses such as remote court reporting, remote foreign language interpretation, remote court reporting, and private conference rooms.

Best Practices for Using Video Conferencing for Hearings and Related Proceedings

Table of Contents

I.	Introduction.....	1
A.	Best Practices for Many Different Situations.....	2
B.	Methodology	3
i.	Review of Administrative Conference Literature and Related Materials	3
ii.	The Nature of Video Conference Technology	4
iii.	Research into the Use of Video Telecommunications at Agencies Today	4
iv.	Document Development	5
II.	Literature Review.....	6
A.	Adopters	7
B.	Authorizing Statutes and Regulations	9
C.	Legal Issues Identified	10
i.	Due Process Concerns.....	10
ii.	Credibility Determinations.....	13
iii.	Effect of Video on Adjudicative Outcomes	16
D.	Benefits & Drawbacks of Videoconferencing	17
i.	Financial Benefits	18
ii.	Convenience.....	19
iii.	Access to Justice	20
iv.	Technical Problems.....	21
v.	Decreased Personal Interactions	22
E.	Best Practices: Credibility	22
III.	The Nature of Video Telecommunications	24
A.	What is Video Conferencing?	24
B.	Methods of Transmission	26
i.	ISDN	26
ii.	IP.....	27
C.	Standard Definition vs. High Definition Video.....	28
D.	Video Conference vs. TelePresence.....	29

E. Point-to-Point vs. Multi-Point Calls	30
F. Common Issues with Video Conferencing	31
i. Operator Issues.....	31
ii. Equipment Issues	33
iii. Environmental Concerns with the Use of Video Telecommunications	36
IV. Use of Video Conferencing in Hearings and Related Proceedings	41
A. Common Uses Today.....	41
i. Remote Witness	42
ii. Remote Judge.....	42
iii. Remote Representation	43
iv. Remote Claimant / Defendant.....	44
B. Potential Uses that are Not Common Today	44
i. Remote Foreign Language Interpretation	44
ii. Remote Court Reporting	45
iii. Remote Confidential Discussion.....	45
V. Best Practices for the Use of Video Conferencing in Hearings and Related Proceedings.....	46
A. Foundational Elements - “Bricks and Mortar”	46
i. Equipment.....	47
ii. Environment.....	51
B. Training.....	55
i. Operator Training.....	55
ii. Support Training	57
C. Financial Considerations.....	57
D. Procedural Practices.....	59
i. Control of the Hearing Room.....	59
ii. Far-end Camera Control.....	61
iii. Sight-Lines & Viewing People	61
iv. Audio Issues.....	62
v. Instances Not To Use Video Telecommunications	63
VI. Glossary of Significant Terms	64

I. Introduction

In 2011, the Administrative Conference of the United States (“Administrative Conference”) issued a recommendation on video hearings.¹ The recommendation, among other things, provided a number of legal, administrative, and budgetary criteria that agencies should examine when determining whether to begin using or expand their use of video telecommunications (the term video telecommunications is the technical term for what is commonly referred to as video conferencing). The recommendation concluded by encouraging agencies to consult with the Administrative Conference for best practices, guidance, and advice. This study aims to provide guidance and advice through concrete and practical recommendations detailing how agencies may implement and/or improve their use of video teleconferencing in administrative hearings and related proceedings.

Some agencies already have robust video teleconferencing hearing programs. Along with these programs come distinct challenges. For example, these agencies may find their technology, equipment, and methods are eclipsed by advances in technology and social science research. What once was state-of-the-art may now be outdated or otherwise inadequate. Agencies may also have suboptimal hearing environments, but not know what needs to change, or how it needs to change, in order to offer the best hearing experience. This study provides agencies with parameters for updating their technological platforms and improving their hearing environments, with an eye to facilitating future change as technology advances. The study will also provide agencies with some financial considerations showing the potential cost benefits from use of video telecommunications.

While several agencies employ video teleconferencing for their hearings, others are reluctant to implement such technology. These agencies have several reasons for not using video teleconferencing, including skepticism that video hearings may be conducted as effectively as in-person hearings and uncertainty regarding hearing technology and

¹ See 76 Fed. Reg. 48, 795 (2011), available at <http://www.acus.gov/recommendation/agency-use-video-hearings-best-practices-and-possibilities-expansion>.

logistics. In the right contexts, video teleconferencing may be established in a way that will enhance—not detract—from the proceeding. This study thus aims to mitigate concerns, as well as provide a practical roadmap for implementation so that barriers to using video teleconferencing may be addressed, if not overcome.

The Administrative Conference retained the services of the Center for Legal and Court Technology (CLCT/Courtroom 21), located at the Marshall-Wythe Law School at the College of William and Mary, to assist it in creating best practices for use of video teleconferencing in administrative hearings and other related proceedings. CLCT is an entrepreneurial public service initiative of the William and Mary Law School, dedicated to advancing the efficient use of technology in the administration of justice, and is actively engaged in worldwide consulting on the design and implementation of appropriate technology in courtrooms and hearing rooms, providing cutting-edge training on the latest advancements in legal technology. By capitalizing on CLCT’s significant experience with videoconferencing and related technologies as used by courts and administrative agencies, the Administrative Conference added both technological expertise and extensive research into the “human” side of video technology. This “human” side is often one of the biggest barriers to the effective deployment of any technology, including video telecommunications, in a legal setting; people are creatures of habit and are often put-off by anything that changes the traditional way people have done things.

A. Best Practices for Many Different Situations

The task of identifying and developing best practices is not an easy one. The plans and procedures that work for one agency may not work for another. To some agencies, the hearing is just a meeting to discuss the non-disputed facts of a situation and find an acceptable conclusion based on those facts. In other agencies, the facts are disputed and the hearing can turn into a heated adversarial situation. Simple procedures, such as how one conducts one’s self for a Social Security hearing, may work there but may be ineffective in a Labor Department “black lung” hearing. Due to this variance, this study

will attempt to not only recommend best practices for given situations, but provide the basis for these recommendations so as to allow the end user agencies to understand why these are suggested and modify the suggestion to fit their individual needs. It should also be mentioned here that while we believe that video telecommunications brings great promise to administrative law, it is like any technology. Sometimes, given certain situations, the best use of any technology may be not to use it. This report can assist administrative agencies in determining what is best for them and how to effectively use technologies they determine to be helpful.

B. Methodology

CLCT recommended that the Administrative Conference build on its prior video hearings recommendation by developing best practices and environmental guidelines for the optimal use of video teleconferencing equipment for hearings and related proceedings. To that end, CLCT proposed a multi-phased study that involved document review, research, document development, and the final presentation. Each phase has and will involve various CLCT staff based on the study requirements and phase of the study. The staff working on the report includes: Martin Gruen (Deputy Director and Chief Technology Consultant), Christine Williams (Associate Director for Research), Nancy Archibald (CLCT Administrator), Rachael Gruen (Assistant to the Consultants) and other CLCT staff and students as required.

i. Review of Administrative Conference Literature and Related Materials

The first step taken was to analyze the materials the Administrative Conference and other government agencies have provided regarding the use of video telecommunications. This was not only a source of information but provided research into any conflicting recommendations that might confuse agency users of video telecommunications. CLCT also studied other literature and materials relating to the use

of video teleconferencing in the context of judicial and administrative adjudications. The review included the topics of adoption of the technology, related problems and solutions that are commonly encountered and any legal issues that arose due to the use of video teleconferencing.

ii. The Nature of Video Conference Technology

The second step was for a technical team to research the current state of video conference technology and present a short concise explanation of the technology, how it works, and the elements that allow it to function properly. Also investigated were any industry-wide concerns and challenges that might affect successful video telecommunications in the practice of administrative law.

Environmental issues relating to the use of video telecommunications is an area of concern, since previous work with courts and hearing rooms has indicated that many of the poor quality video telecommunications found in the past were the result of the room environment and not the equipment. These areas include: lighting, acoustics, room décor and the effect of heating, ventilation, and air-conditioning (HVAC) systems.

iii. Research into the Use of Video Telecommunications at Agencies Today

The third part of the research was to interview agencies that both use and do not use video telecommunications. The insights and experiences given proved invaluable in recommending best practices for their agencies to develop. Who better to explain the benefits and drawbacks they have experienced than the first-hand users? This research also gathered information on why some agencies do not use video telecommunications. The purpose was not to persuade them to use it, but to better understand why they did not.

These interviews included members of representative groups and federal and non-federal administrative law judges (ALJ). While we were not able to interview all the federal agencies and their associated representative groups, we do want to thank the following agencies and organizations who generously gave of their time to assist CLCT in the study:

- Armed Services Board of Contract Appeals
- Department of Defense, Defense Office of Hearings and Appeals
- Department of Energy Office of Hearings and Appeals
- Department of Justice Civil Rights Section, Office of Federal Coordination & Compliance Section
- Department of Justice Executive Office for Immigration Review
- Department of Labor Office of Administrative Law Judges
- Department of Veterans Affairs Board of Veterans' Appeals
- Federal Administrative Law Judges Conference
- Health and Human Services Office of Departmental Appeals Board
- Health and Human Services Office of Medicare Hearings and Appeals
- National Association of Administrative Law Judges
- National Association of Disability Representatives
- National Organization of Social Security Claimants' Representatives
- Occupational Safety & Health Review Commission Office of Administrative Law Judges
- Social Security Administration Office of Disability Adjudication and Review
- United States Postal Service Office of Administrative Law Judges

The result of these interviews, along with previous research work, provided the foundation on which the team identified the uses of video telecommunications common to the practice of law today. This also provided many examples of experiences, which assisted in developing best practice recommendations.

iv. Document Development

The final stage of the research work is this draft report. In this report, the CLCT team will provide a short synopsis of its findings and make recommendations for the

Administrative Conference's Committee on Adjudication to consider. These recommendations will include:

- The ideal environment and best practices for using video teleconferencing;
- The minimally acceptable environment for use of video teleconferencing and the best practices for operation and support;
- Elements that an agency should implement immediately if using video teleconferencing for administrative hearings;
- Operator and support personnel training;
- The costs and cost savings of video teleconferencing as used in a typical administrative hearing environment;
- Best practices to accommodate both the judge and other parties when they are in different locations from one another;
- Best practices to accommodate both the attorney and client when they are in different locations from one another; and
- Considerations and recommendations to address concerns presented as reasons not to use video telecommunications.

II. Literature Review

During the course of its literature review, CLCT examined documents provided by the Administrative Conference as well as primary and secondary legal resources available through LexisNexis and Westlaw and general information available online. This review identified federal agencies that have already adopted videoconferencing, statutes and regulations that expressly authorize various federal agencies to use videoconferencing, potential legal issues raised in journal articles, and any benefits or drawbacks of the use of videoconferencing that had been identified previously in scholarly sources. What follows is a discussion of the findings from this literature review and is not intended to advocate either for or against the adoption of videoconferencing in any specific case by any specific federal agency.

A. Adopters

Many people are familiar with the use of videoconferencing for arraignment proceedings, but the use of videoconferencing has been adopted for use in many other settings and for many other purposes as well. State and federal courts have found videoconferencing helpful in accommodating remote witnesses, individuals with hearing impairments, judges who are ill or unable to travel, security concerns,² and court financial constraints.³ Courts have used video conferencing for remote witness testimony at the trial level and for remote arguments and remote judges, as well as opinion conferences at the appellate level.

In addition to state⁴ and federal courts⁵ that have adopted video teleconferencing, a number of state⁶ and federal agencies have done so as well. During the course of this

² Shari Seidman Diamond, Lock E. Bowman, Manyee Wong, and Matthew M. Patton, *Efficiency and Cost: The Impact of Videoconferenced Hearings on Bail Decisions*, 100 J. CRIM. L. & CRIMINOLOGY 869, 877 (2010).

³ *Id.*

⁴ See e.g., JIM MCMILLAN, NAT'L CTR. FOR STATE COURTS, VIDEOCONFERENCING SURVEY 2010 RESULTS (2010), available at <http://www.ncsc.org/~media/Files/Video%20Conferencing%202010/Videoconferencing%20Survey-3.ashx>; NEVADA JUDICIAL VIDEOCONFERENCING DIRECTORY <http://www.nevadajudiciary.us/index.php/videoconferencing-directory>, Elaine Pittman, *Michigan Expands Video Conferencing in Prisons*, GOVERNMENT TECHNOLOGY, Dec. 20, 2010 available at <http://www.govtech.com/public-safety/Michigan-Expands-Video-Conferencing-in-Prisons.html>.

⁵ As of 2006 five federal courts had adopted videoconferencing for oral arguments. MEGHAN DUNN & REBECCA NORWICK, REPORT OF A SURVEY OF VIDEOCONFERENCING IN THE COURTS OF APPEALS, 2 (Fed. Jud. Ctr. 2006), available at [http://www.fjc.gov/public/pdf.nsf/lookup/vidconca.pdf/\\$file/vidconca.pdf](http://www.fjc.gov/public/pdf.nsf/lookup/vidconca.pdf/$file/vidconca.pdf). Additionally, in 2012, the Center for Legal and Court Technology assisted the Sixth Circuit Court of Appeals with an experiment in which three of the Court's judges appeared remotely and presided over an oral argument held in William and Mary's McGlothlin Courtroom. As early as 2002 eighty-five percent of federal district courthouses had videoconferencing capabilities in at least one courtroom. Kacey Marr, *The Right to "Skype": The Due Process Concerns of Videoconferencing at Parole Revocation Hearings*, 81 U. CIN. L. REV. 1515, 1516 (2013), available at <http://scholarship.law.uc.edu/uclr/vol81/iss4/6>.

⁶ See e.g., Cliff J. Vanell, *Videoconferencing in the Registrar of Contractors Hearings*, 36 THE OAH, 1 (Aug. 2005), available at <http://www.azoah.com/Vol36.pdf>; <file:///C:/Users/crwilliams/Downloads/01.01.10%20Videoconferences.pdf>; <http://www.moga.mo.gov/oversight/over01/fispdf/1675-04T.ORG.PDF>; Elaine Pittman, *supra* note 4.

literature review, CLCT identified the following federal agencies that use video teleconferencing in hearings:⁷

- Department of Agriculture Office of Administrative Law Judges
- Department of Commerce National Appeals Office
- Department of Defense, Defense Office of Hearings and Appeals
- Department of Energy Office of Hearings and Appeals
- Department of Health and Human Services Departmental Appeals Board
- Department of Health and Human Services Office of Medicare Hearings and Appeals
- Department of Justice Executive Office for Immigration Review
- Department of Justice Parole Commission
- Department of Labor Office of Administrative Law Judges
- Department of State Foreign Service Grievance Board
- Department of Veterans Affairs Board of Veterans' Appeals
- Environmental Protection Agency Office of Administrative Law Judges
- Equal Employment Opportunity Commission Office of Federal Operations
- Merit Systems Protection Board, Office of Administrative Law Judges
- Merit Systems Protection Board, Office of Regional Operations
- Railroad Retirement Board Bureau of Hearings and Appeals
- Social Security Administration, Office of the Chief Administrative Law Judge
- United States Postal Service, Office of Administrative Law Judges

While there are likely more federal agencies that have used videoconferencing at some point, the literature indicates that these agencies have made substantial use of the technology.

⁷ The Administrative Conference of the United States is conducting a project to map the contours of federal administrative adjudication—including processes, procedures, adjudicators, types of cases, and case statistics. In the course of its research, the Conference has identified 18 offices in 15 agencies that conduct video hearings. This list does not include agencies or offices that only use remote witness testimony. As well, the research is ongoing. Therefore, this list should not be viewed as a complete list. Rather, it is illustrative of the many agencies and offices that conduct hearings via video teleconferencing (VTC). For more information about the Federal Administrative Adjudication Project, visit <http://www.acus.gov/research-projects/federal-administrative-adjudication>.

B. Authorizing Statutes and Regulations

While it does not appear that it is necessary for agencies to implement regulations or guidance authorizing their use of videoconferencing, even when Congress has not enacted enabling legislation, several agencies appear to have done just that. These include the Social Security Administration,⁸ the Department of Justice Parole Commission,⁹ the Equal Employment Opportunity Commission,¹⁰ and the Department of Labor Workers' Compensation Programs.¹¹ Each of these agencies was previously identified as conducting hearings using videoconferencing. However, a review of the Code of Federal Regulations, case law, and secondary legal resources also identified the Department of Homeland Security as having rules regarding the use of videoconferencing even though no information was available as to its implementation.¹²

While it may not be necessary to have statutes or regulations specific to the use of videoconferencing, there may be some benefits to this approach. First, such rules clarify that videoconferencing is an accepted part of the agency's operations and provide the technology with an air of legitimacy. More importantly, however, detailed regulations on the use of videoconferencing force the agency to set clear guidelines for the technology's use, to anticipate likely challenges and issues that may arise so that they can be dealt with more efficiently and effectively when the technology is used, and to get feedback and buy-in from participants. For these reasons, regardless of whether it is legally necessary to add videoconferencing to an agency's regulations, best practices suggest that an agency should consider doing so. Regardless of whether or not an agency adopts regulations specific to videoconferencing, best practices also suggest that the agency

⁸ 20 C.F.R. § 404.929 (2014)

⁹ 28 C.F.R. § 2.25 (2007).

¹⁰ *Allen v. Potter*, EEOC Decision No 01A51259, 2006 WL 2526765 (Aug. 21, 2006) (quoting EEOC Management Directive 110, Section 7-1 (revised November 9, 1999)).

¹¹ 20 C.F.R. § 10.615 (2011).

¹² 6 C.F.R. § 27.335 (2007).

must be flexible enough to avoid or solve problems with videoconferencing as they arise because it is not possible for agencies to foresee all complications that may arise.

C. Legal Issues Identified

The CLCT literature review identified several potential legal issues associated with the use of videoconferencing in legal proceedings. Two of the issues discussed at length in the literature on videoconferencing in legal settings, the right to effective assistance of counsel¹³ and the right to confront one's accuser,¹⁴ are applicable in criminal cases exclusively.¹⁵ As such, although identification of these issues is important, they are unlikely to arise in federal administrative hearings.¹⁶

i. Due Process Concerns

One additional constitutional issue is raised by the use of videoconferencing in legal settings: that of due process. Several scholars have argued that the use of

¹³ Marr, *supra* note 5, at 81 1518; *but see* Connor, *supra* note 2, at 225-26 (arguing that the use of videoconferencing in immigration removal hearings interfere with the effective assistance of counsel).

¹⁴ *Id.*

¹⁵ *See* Strickland v. Washington, 466 U.S. 668, 685–87 (1984); U.S. CONST. amend. VI. (“In all criminal prosecutions, the accused shall enjoy the right . . . to be confronted with witnesses against him.”)

¹⁶ “We acknowledge that there are cases in which courts have expressed concerns over the technology of videoconference hearings. For example, in interpreting the Confrontation Clause of the Sixth Amendment of the U.S. Constitution, which applies to defendants in criminal cases, courts have been reluctant to approve arrangements whereby defendants or witnesses were not permitted to be present in person at hearings. [Citation removed] Concerns that might be present in these types of cases, however, where an individual's life or liberty is at stake, are simply not present in Board cases and, therefore, do not compel the same result.” Koehler v. Dept. of the Air Force, 99 M.S.P.R. 82, ¶12 (2005).). It is not the intent of CLCT to argue that participants in adjudicative hearings could not benefit from being represented by counsel or being able to confront accusers or opposing witnesses but simply to express that there is no right to those as there is in the criminal justice context.

videoconferencing “threatens the due process rights” of defendants and claimants.¹⁷ Scholars who have raised this issue have largely focused on criminal law cases;¹⁸ however, three cases have addressed the due process implications of using fully functioning videoconferencing in the administrative hearing setting.¹⁹

In the first case, *Crickard v. Dept. of Veterans’ Affairs*,²⁰ the appellant argued that the use of videoconferencing denied him the right to an in-person hearing.²¹ The Board looked for guidance from the Federal Rule of Civil Procedure 43(a), which states “the court may permit testimony in open court by contemporaneous transmission from a different location” but limits the authority to do so to those “compelling circumstances” in which good cause is shown and “appropriate safeguards” are taken.²² While the Board was not bound by the Federal Rules of Civil Procedure, it ultimately determined that “when an appellant in an appeal requiring the administrative judge to make credibility determinations requests an in-person hearing, that request may not be denied in the absence of a showing of good cause.”²³

However, a later case, *Koehler v. Department of the Air Force*,²⁴ the Board revisited its decision in *Crickard*.²⁵ While acknowledging expressed concerns about

¹⁷ Diamond, Bowman, Wong, and Patton, *supra* note 2, at 869; Connor, *supra* note 15, at 225-26.

¹⁸ *See e.g.*, Diamond, Bowman, Wong, and Patton, *supra* note 2, at 869; Connor, *supra* note 15, at 225-26.

¹⁹ It should be noted that prior cases had addressed the due process implications of videoconferencing in administrative hearings but because technology issues impacted the judge’s ability to ascertain witness credibility, which went to a central disputed fact of the case the Board remanded for an in-person hearing. *See e.g.*, Perez v. Dept. of the Navy, 86 M.S.P.R. 168 (2000); Vincente v. Dept. of the Army, 87 M.S.P.R. 80 ¶¶6-9 (2000).

²⁰ *Crickard v. Dept. of Veterans’ Affairs*, 92 M.S.P.R. 625 (2002). It should be noted that both the *Crickard* and *Koehler* cases are cases before the U.S. Merit Systems Protection Board and are reviewed here because they are two of only three available cases to address, even tangentially, issues of due process associated with the use of videoconferencing in administrative hearings. As such these cases are not binding on other agencies.

²¹ *Id.*

²² Fed. R. Civ. Proc. 43(a) (2014).

²³ *Crickard*, 92 M.S.P.R. at 625.

²⁴ 99 M.S.P.R. 82 (2005). It should be noted that both the *Crickard* and *Koehler* cases are cases before the U.S. Merit Systems Protection Board and are reviewed here because they are the only available cases to

videoconferencing technology and its legal implications,²⁶ the Board found that such concerns were not at issue in cases before the Board and expressly overruled *Crickard*.²⁷ The Board thus held that its administrative law judges may hold videoconference hearings in any case, regardless of whether the appellant objects.²⁸

Finally, *EF International Language Schools, Inc. v. Andrea Jesse* involved a direct due process challenge to the use of videoconferencing.²⁹ In that case Respondent objected to the use of videoconferencing to take a foreign witness's deposition.³⁰ The Board's decision explicitly acknowledged the detailed safeguards that were put in place prior to the deposition, and it found that in light of these safeguards the Respondent was not denied due process of law.³¹

address, even tangentially, issues of due process associated with the use of videoconferencing in administrative hearings. As such these cases are not binding on other agencies.

²⁵ *Id.* at ¶9.

²⁶ *Id.* at ¶12.

²⁷ *Id.* at ¶13.

²⁸ *Id.*

²⁹ *EF Int'l Language Sch., Inc.*, 20-CA-120999, N.L.R.B., at 2 (2014), available at <http://www.nlr.gov/case/20-CA-120999>.

³⁰ *Id.*

³¹ *Id.*

ii. Credibility Determinations

The most significant legal issue and most often cited concern among judges is the ability to effectively and accurately assess witness credibility via videoconferencing. Many sources express concern that “videoconferencing may make it difficult for the fact finder to make credibility determinations and gauge demeanor,”³² and that “[e]ven in an age of advancing technology, watching on a screen remains less than the complete equivalent of actually attending it.”³³ While these concerns should not be discounted, when appropriate technology is implemented according to the best practices specified in this report, it is possible to effectively assess credibility via videoconferencing. Numerous studies (especially those that account for improvements in technology) bear out this contention.³⁴ As an administrative law judge at the National Labor Relations Board recently observed about her experience in a hearing at which witness credibility was at issue:

During the video transmission, which had been tested prior to the hearing, the audio and video quality was flawless, the witness’ demeanor, i.e., his appearance, attitude, and manner, was easily observable. Certainly, *any hesitation, discomfort, arrogance, or defiance would have been easily discerned*. The entire proceeding was as spontaneous as live testimony.

³² United States v. Baker, 45 F.3d 837, 844-46 (4th Cir. 1995); Edwards v. Logan, 38 F. Supp. 2d 463, 467 (W.D. Va. 1999) (“Video conferencing . . . is not the same as actual presence, and it is to be expected that the ability to observe demeanor, central to the fact-finding process, may be lessened in a particular case by video conferencing. This may be particularly detrimental where it is a party to the case who is participating by video conferencing, since personal impression may be a crucial factor in persuasion.”).

³³ United States v. Lawrence, 248 F.3d 300, 304 (4th Cir. 2001). It is worth noting that the comparison here may not be entirely on point as the quote appears to compare viewing and a more participatory experience. Videoconferencing allows for remote participation which differs from remote observation.

³⁴ See, e.g., Molly Treadway Johnson and Elizabeth C. Wiggins, *Videoconferencing in Criminal Proceedings: Legal and Empirical Issues and Directions for Research*, 28 LAW & POL’Y 211 (April 2006) available at <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9930.2006.00224.x/full> (“If behavior is affected in a way that gives defendants who appear by videoconferencing a disadvantage relative to those who appear in person, there is more support for the view that videoconferencing unfairly compromises a defendant’s constitutional rights. On the other hand, if there are no observable behavioral differences, the benefits of using videoconferencing might well be found to outweigh any costs.”); Sara Landstrom et al., *Witnesses Appearing Live Versus on Video: Effects on Observers’ Perception, Veracity Assessments and Memory*, 19 APPLIED COGNITIVE PSYCHOLOGY 913, 914 (2005).

There was little or no audio delay between the questions and answers. Thus, [the witness's] testimony by video may be evaluated on an equal footing with the testimony of witnesses appearing in person at the hearing.³⁵

Despite the concerns about judges' ability to make credibility determinations when using videoconferencing, there are other groups that have expressed concerns about the bench's continued reliance on credibility determinations at all, particularly when credibility is based largely on demeanor.

36

Agencies with further concerns about assessing demeanor and credibility via video conferencing may find it helpful to review the telehealth industry. Telehealth allows for a psychologist to diagnose and treat patients by conversing with and observing

³⁵ EF Int'l Language Sch., Inc., 20-CA-120999, N.L.R.B., at 2 (2014), *available at* <http://www.nlr.gov/case/20-CA-120999> (emphasis added).

³⁶This concern stems from the fact that demeanor can be unreliable. James P. Timony, *Demeanor Credibility*, 49 CATH. L. R. 903, 920 (Summer 2000), *available at* http://www.nyc.gov/html/oath/downloads/pdf/the_artof_judging.pdf; *see also*, Koehler, 99 M.S.P.R. at 84; *But see*, *Morrow v. United States Parole Comm'n*, 2012 WL 2877602, *2 (Mar. 20, 2012) ("The Court further finds that irreparable harm would likely result from a failure to allow Plaintiffs to have an in-person hearing. While videoconferencing does allow for some observation of the prisoner's demeanor, an in-person hearing no doubt allows for a more personalized comprehension of the prisoner's situation rather than the more cold and detached hearing that inevitably happens through videoconferencing."); *United States v. Williams*, 641 F.3d 758, 764–65 (6th Cir.2011) ("Being physically present in the same room with another has certain intangible and difficult to articulate effects that are wholly absent when communicating by video conference.") Whether because an accomplished liar believes his own lies or because a nervous witness appears deceitful, it is all too possible for judges to misinterpret demeanor evidence. James P. Timony, *supra*, at 920 and fn 77 (Summer 2000). Indeed, as the Conference of Canadian Administrative Tribunals pointed out, assessing credibility is difficult: there is no formula for doing it, and we have yet to invent a machine that can do it reliably. Conference of Canadian Administrative Tribunals, *ASSESSING THE CREDIBILITY OF WITNESSES: A PRACTICAL GUIDE*, 7 (2000).

Based upon this information, best practices would suggest that administrative agencies and tribunals should carefully consider whether it is necessary or appropriate to make credibility determinations, particularly those based on demeanor, to resolve the cases before them. Agencies that are able to appropriately and legally reach final decisions without reference to such factors should do so. Despite this concern, videoconferencing that is well designed from the outset and that follows the best recommendations found later in this report should in no way prevent judges from making credibility decisions over videoconferencing, and in some instances appropriately designed videoconferencing may even make assessing credibility easier as judges in in-person hearings lack the ability to zoom to see items or people more closely to read their non-verbal messages and allows the judge to watch the witness "face to face" as opposed to in profile as may be the case during in-person hearings.

the patient's nonverbal behavior using videoconferencing. The technology has received a great reception from both doctor and patient as it has many advantages previously unattainable in an on-site setting including convenience for a patient and the ability of a practitioner to unobtrusively zoom in and examine physical traits and displays that could indicate a disorder including tics and involuntary hand movements.³⁷

Extensive research has been conducted to confirm the reliability of a diagnosis and evaluate the doctor-patient relationship via videoconferencing and the results have been promising. A ten year, comprehensive review of telepsychiatric literature reached the conclusion that "Telemental health is effective for diagnosis and assessment across many populations (adult, child, geriatric, and ethnic) and for disorders in many settings (emergency, home health) and appears to be comparable to in-person care."³⁸

It would stand to reason that if a doctor is able to reliably diagnose a mental or emotional disorder using videoconferencing, then a judge likewise could accurately assess a witness' demeanor.

As technology advances, the capability to effectively assess demeanor via videoconferencing will only continue to improve. In a recent study, researchers at the University of California, San Diego and the University of Toronto employed their Facial Action Coding System and were able to conclude that a computer has better accuracy with recognizing true pain than a person. In distinguishing fake from real pain the human subjects were only 49% accurate while the automated system had an accuracy of 88%.³⁹ By implementing this system in a VTC hearing, a judge would be able to utilize the

³⁷ Eve-Lynne Nelson and Sarah E. Velasquez, *Implementing Psychological Services over Televideo*, 42 PROF'L PSYCHOLOGY: RESEARCH & PRACTICE 535 (Dec. 2011); Grant Fjermedal, *Videoconferencing: Key to Unlocking Health Benefits, Cost-Savings, and Productivity*, FEDTECH, Feb. 12, 2014, available at <http://www.fedtechmagazine.com/article/2014/02/video-conferencing-key-unlocking-health-benefits-cost-savings-and-productivity>. The Veterans Affairs system allows the remote physician to do things such as listen to the patient's heart, examine the patient's retinas, or zoom in for a close-up. *Id.*

³⁸ Donald M. Hilty, Daphne C. Ferrer, Michelle Burke Parish, Barb Johnston, Edward J. Callahan, and Peter M. Yellowlees, *The Effectiveness of Telemental Health: A 2013 Review*, 19 TELEMEDICINE & E-HEALTH 444 (June 2013).

³⁹ Gwen C. Littlewort, Marian Stewart Bartlett, and Kang Lee, *Automatic Coding of Facial Expressions Displayed During Posed and Genuine Pain*, 27 IMAGE & VISION COMPUTING 1741 (2009).

technology to more reliably discern genuine demeanor, providing increased access to justice.

iii. Effect of Video on Adjudicative Outcomes

In 2013—at the Social Security Administration’s request—the Administrative Conference undertook a project assessing the Social Security adjudication process, which included an examination of the use of video teleconferencing in hearings.⁴⁰

Administrative law judges at the Social Security Administration conduct a staggering number of hearings every year, and in order to improve efficiency and reduce costs, the agency has made it a priority to increase its use of video teleconferencing.⁴¹ Although the agency had used video hearings extensively, it had not assessed the impact of video hearings on the hearing outcome. While not definitive, a comparison of the outcome of video hearings compared with non-video hearings demonstrates that the outcome is not substantially affected by the method by which a hearing is conducted. As noted in the study:

We looked at two sets of data to examine the impact of video hearings. First, we compared the allowance rate between video and traditional hearings. We found a 3% differential – the allowance rate in video cases is 3% less than for other determinations. Over time, this differential has remained relatively constant. We also considered the incidence of representation in video cases to see if that might account for any differential. Representation rates were not substantially different. The lowest allowance rate was 4% and the highest allowance rate was 98%. In light of that substantial variance among ALJs, the three percentage point difference overall seems modest. Second, we compared the allowance rates of ALJs who conducted both video and traditional hearings to determine if there was a significant difference in allowance rate in those two settings for each particular

⁴⁰ See Admin. Conf. of the U.S., *Social Security Disability Adjudication Project*, ADMIN. CONF. OF THE U.S., available at <http://www.acus.gov/research-projects/social-security-disability-adjudication> (last visited Oct. 23, 2014).

⁴¹ See SOC. SEC. ADMIN. ANNUAL PERFORMANCE PLAN FOR FY 2013 AND REVISED PERFORMANCE PLAN FOR FY 2012, 27 (2012).

ALJ. A majority of ALJs decided for claimants more in face-to-face than in video hearings, although the differential was modest.⁴²

Therefore, in the Social Security disability adjudication context, the method by which a hearing is conducted—video or non-video—appears to have no material impact on the outcome of the hearing.

This finding in the Social Security context may not hold true in all situations. In one case, a study of asylum adjudication found that the use of video conferencing can have a negative impact on the outcome of cases—allowance rates were much lower in cases conducted via video.⁴³ However, there also existed a lower representation rate in video hearings, so video’s apparent adverse effect may not be causal.⁴⁴ In yet another study of asylum adjudications, researchers found that “detained asylum seekers in 2010 did better overall if they had a VTC hearing (twenty-four percent [24%]) than an in person hearing (eleven percent [11%]). Detained seekers in VTC hearings who were represented got asylum forty-two percent (42%) of the time.”⁴⁵ Other agencies that use video teleconferencing technology will, of course, want to conduct their own studies to ensure that outcome is unaffected by the hearing method.⁴⁶

D. Benefits & Drawbacks of Videoconferencing

⁴² See Harold Krent & Scott Morris, *Achieving Greater Consistency in Social Security Disability Adjudication: An Empirical Study and Suggested Reforms*, ADMIN. CONF. OF THE UNITED STATES, 46-47 (2013), available at http://www.acus.gov/sites/default/files/documents/Achieving_Greater_Consistency_Final_Report_4-3-2013_clean.pdf.

⁴³ Frank M. Walsh & Edward M. Walsh, *Effective Processing or Assembly-Line Justice? The Use of Teleconferencing in Asylum Removal Hearings*, 22 GEO. IMMIGR. L.J. 259, 261 (2008).

⁴⁴ *Id.* at 271-72.

⁴⁵ LENNI B. BENSON AND RUSSELL R. WHEELER, ENHANCING TIMELINESS AND QUALITY IN IMMIGRATION REMOVAL ADJUDICATION, ADMIN. CONF. OF THE U.S. 100 (2012).

⁴⁶ For example, the Board of Veteran Appeals (BVA) indicates that it tracks and periodically compares the outcomes of hearings conducted in person and those conducted by videoconferencing. The BVA reports that it has found no statistical difference between the two groups of cases. Fjermedal, *supra* note 37.

Past surveys and studies identify a number of benefits, as well as a number of drawbacks to the use of videoconferencing in a legal setting. The benefits fall into three major categories: financial benefits, convenience, and improved access to justice.

i. Financial Benefits

Although numerous sources cited the financial benefits associated with the use of videoconferencing,⁴⁷ CLCT was only able to identify one thorough review of the costs and financial gains of videoconferencing. In 2012, the Social Security Administrations Office of the Inspector General issued a report estimating the cost savings of conducting Social Security hearings via video teleconferencing.⁴⁸ The Inspector General estimated a cost saving of \$5.2 to \$10.9 million annually.⁴⁹ Therefore, over a ten-year period, the agency would save from \$52 to \$109 million.⁵⁰

Despite the lack of comprehensive and controlled studies of the financial benefits of videoconferencing, it appears well-accepted among the legal community that videoconferencing can produce substantial cost savings, most notably from savings associated with travel expenses.⁵¹ Without videoconferencing, administrative law judges

⁴⁷ See e.g., Koehler, 99 M.S.P.R. at 82 ¶8; Fjermedal, *supra* note 37; Michelle Nicolson, *Fed. Agencies Save Money with Virtual Events, Videoconferencing*, TMCNET (Aug. 27, 2013), available at <http://conferencing.tmcnet.com/topics/conferencing/articles/350950-federal-agencies-save-money-with-virtual-events-videoconferencing.htm> (indicating that in October 2012 NASA saved over \$1 million dollars by converting a 400 attendee conference to one delivered virtually through videoconferencing); Adam Kaiser, *Saving Billions, One Federal Agency at a Time*, IVCi COLLABORATE ANYWHERE (Oct. 1, 2012), available at <http://www.ivci.com/blog/2012/10/01/saving-billions-one-federal-agency-at-a-time/> (“if just half of Federal Government works (sic) used video conferencing the government could save \$8 billion dollars annually in productivity costs”).

⁴⁸ SOC. SEC. ADMIN. OFFICE OF THE INSPECTOR GENERAL, CONGRESSIONAL RESPONSE REPORT: CURRENT AND EXPANDED USE OF VIDEO HEARINGS, A-05-12-21287 (June 2012). See also, Funmi E. Olorunnipa, *Agency Use of Video Hearings: Best Practices and Possibilities for Expansion*, ADMIN. CONF. OF THE U.S. (May 10, 2011).

⁴⁹ *Id.* at 3.

⁵⁰ *Id.*

⁵¹ Fern L. Kletter, *Constitutional and Statutory Validity of Judicial Videoconferencing*, 115 A.L.R.5th 509 (2004); DUNN & NORWICK, *supra* note 5.

either would be required to travel to remote hearing sites or would require hearing participants to travel long distances.⁵² In terms of alleviating the judge’s time, of course, fewer hours devoted to travel mean, in effect, more hours available for decision-making, the primary mission of the agency, which can reduce case backlogs.

Further, one source indicated that videoconferencing could also be a mechanism for providing sign language interpretation services.⁵³ Given that qualified interpreters might not be available locally and that the Rehabilitation Act requires the government to provide interpretation services as necessary to accommodate individuals with disabilities, using videoconferencing may be an economical way to provide such services.

Any likely savings associated with the use of videoconferencing take on greater significance in light of Executive Order 13589 on Promoting Efficient Spending.⁵⁴ This executive order requires federal agencies to minimize costs and provide “mission critical functions in a most efficient, cost effective way.”⁵⁵ Section 3 of this executive order specifically identifies videoconferencing as a technological alternative to incurring travel expenses.⁵⁶

ii. Convenience

Numerous sources also cited the convenience benefits associated with videoconferencing. These included reduced travel time,⁵⁷ less wasted downtime for judges, greater scheduling flexibility,⁵⁸ and an ability to accommodate judges or

⁵² DUNN & NORWICK, *supra* note 5, at 8.

⁵³ See Robert Echols, *The Use and Effectiveness of Videoconferencing Equipment at Pine Tree Legal Assistance*, 4 (Dec. 2003), available at <http://ntiaotiant2.ntia.doc.gov/top/docs/eval/pdf/236000002e.pdf>.

⁵⁴ Exec. Order No. 13,589, 76 Fed. Reg. 70861, available at <http://www.whitehouse.gov/the-press-office/2011/11/09/executive-order-promoting-efficient-spending>.

⁵⁵ *Id.* at § 1.

⁵⁶ *Id.* at § 3.

⁵⁷ DUNN & NORWICK, *supra* note 5, at 8.

⁵⁸ *Id.* at 9.

participants who are ill or unable to travel.⁵⁹ Although not strictly a convenience issue, some sources also credit the use of videoconferencing with improved security in some instances.⁶⁰

iii. Access to Justice

Perhaps partially as a result of cost savings and convenience, videoconferencing also appears to provide greater access to justice.⁶¹ Some reports indicate that participants who would not otherwise be able to participate in proceedings do so when videoconferencing is offered.⁶² This may be because the participants would otherwise have to make a lengthy, cost prohibitive trip or because they could not afford the cost of counsel if counsel were required to travel. Other reports appear to suggest that access to justice increases when the greater scheduling flexibility and decreased downtime for travel afforded by videoconferencing enable agencies to hold more hearings in a shorter period of time, thereby reducing the agencies' backlog of cases.⁶³

One benefit that was little mentioned in the literature, but was alluded to in at least one report and expressly mentioned by one agency interviewed by CLCT, is that videoconferencing sometimes forces civility on all the participants in a hearing. In both instances this was associated with audio delays believed to be inherent in videoconferencing. Judges indicate that the delay, accompanied by a lack of body

⁵⁹ *Id.*

⁶⁰ Kletter, *supra* note 51.

⁶¹ DUNN & NORWICK, *supra* note 5, at 9. Access to justice in this instance encompasses both increased access by participants who might not have otherwise pursued an administrative hearing as well as shorter time lapse before a hearing is held. *Id.*

⁶² "In a survey of participants in the Iowa test, . . . [t]est data showed that . . . the ratio of hearings held to hearings scheduled was significantly higher for hearings using VTC procedures than for hearings conducted in person." 68 Fed. Reg. 5210, 5211 (2003).

⁶³ "In a survey of participants in the Iowa test, . . . [t]est data showed that processing time for these hearings was substantially less than for hearings conducted in person at remote sites during the same time period. . . ." *Id.*; *see also*, Kletter, *supra* note 51.

language that can signal a person is concluding or pausing in their remarks,⁶⁴ has caused the agencies to be particularly polite and cognizant that they may be interrupting. Both sets of judges identified a “workaround” in which someone who wishes to speak holds up a hand, thereby giving the remote participants an opportunity to reach a stopping point in their remarks.

The literature review identified two primary drawbacks associated with videoconferencing: technical problems⁶⁵ and decreased personal interactions.⁶⁶

iv. Technical Problems

Reports suggested that technical problems besides the classic “technology not operating the way you expect it to”⁶⁷ include initial connection problems,⁶⁸ “occasional dropped phone lines,”⁶⁹ inaudible or difficult to hear remote site participants,⁷⁰ and sound or video delay.⁷¹ However, other reports suggested that most such technical problems could be overcome with time, which brought improvements in the technology used, and greater familiarity with the technology.⁷²

⁶⁴ DUNN & NORWICK, *supra* note 5, at 13.

⁶⁵ *Id.* at 10.

⁶⁶ *Id.*

⁶⁷ *Id.*

⁶⁸ *Id.* at 7.

⁶⁹ *Id.*

⁷⁰ *Id.* at 8.

⁷¹ *Id.* at 50, 87, 11.

⁷² *Id.* at 16-17.

v. Decreased Personal Interactions

Some judges expressed a concern that videoconferencing decreased their personal interactions with other agency personnel, counsel, or participants. As mentioned before, some judges indicated that videoconferencing led to an inability to effectively read body language to determine when to interrupt.⁷³ However, the same judges indicated that this “drawback” led to a corresponding benefit in the form of greater civility. The most commonly cited concern about videoconferencing, however, was a perceived inability to observe demeanor.⁷⁴

E. Best Practices: Credibility

In situations where credibility is key, it may be advantageous to clearly define the factors judges should evaluate when making credibility determinations. A thorough review of the factors to consider may reveal that it is possible to assess credibility without resorting to demeanor evidence,⁷⁵ thereby eliminating its inherent unreliability.

⁷³ DUNN & NORWICK, *supra* note 5, at 13.

⁷⁴ *Id.* (The judges in this particular study particularly expressed a concern about the inability to perceive the demeanor of counsel as opposed to witness or participant demeanor.)

⁷⁵ Different agencies at the state and federal level may have their own list of criteria to consider when evaluating credibility. Some rely on demeanor evidence more explicitly than others. *See e.g.*, TEXAS WORKFORCE COMMISSION, APPEAL HEARING OFFICER HANDBOOK – EVIDENCE, §415 CREDIBILITY OF WITNESSES AND WEIGHT OF EVIDENCE, available at <http://www.twc.state.tx.us/ui/appl/appeal-hearing-officer-handbook-evidence.html#s41> (Aug. 12, 2014) (demeanor evidence not specifically mentioned); CAL. EVID. CODE §780, available at http://www.law.harvard.edu/publications/evidenceiii/rules/ca_div6.htm (last visited Sept. 24, 2014) (demeanor listed first in list of criteria to consider when determining credibility); WASHINGTON STATE OFFICE OF ADMINISTRATIVE HEARINGS, 17 PRACTICE TIPS FOR PUBLIC ASSISTANCE HEARING REPRESENTATIVES, available at <http://www.oah.wa.gov/17PracticeTips.shtml> (last visited Sept. 24, 2014) (requiring all findings based on credibility or demeanor to be identified and supported); INA Section 240(c)(4) (includes demeanor, candor, or responsiveness of applicant or witness); James P. Timony, *Demeanor Credibility*, 49 CATH. L. R. 903, 907-13 (Summer 2000), available at http://www.nyc.gov/html/oath/downloads/pdf/the_artof_judging.pdf (discussing demeanor before other criteria that may be used to determine credibility).

Judges should also be encouraged to document the factors used to determine credibility, thus providing support for the decision and decreasing the likelihood that the decision is reversed on appeal or the case remanded for in-person hearing.

If demeanor evidence is believed to be a necessary component of credibility, agencies should ensure that equipment allows for judges to view non-verbal cues from the claimant, attorneys, or witnesses. This evidence could include things such as hand gestures, maintenance or lack of eye contact, and shifting in one's chair.

III. The Nature of Video Telecommunications

In order to better understand the benefits of video telecommunications, it is important to understand what it is and how the technology works. The following is a brief description of the technology, the various components that are the parts of a video telecommunications system and some of the issues found throughout the use of these systems.

A. What is Video Conferencing?

The term video conference refers to the use of video and audio transmission devices to allow people in different physical locations to communicate by seeing and hearing each other. Since people communicate through their facial expressions and body language as well as through their words, video conferencing created a vehicle through which one could interact with another as he or she would in person while availing oneself of the benefits of being able to communicate remotely.

In the past, there were issues with different manufacturers' equipment communicating with other equipment, but today all of these diverse systems can communicate with each other due to current telecommunications standards. The International Telecommunications Union is responsible for generating worldwide "recommendations" for telecommunications. The H.3xx series are recommended for video-conferencing and include the protocols for coding audio and video, multiplexing, signaling, and control.

- H.320 Narrow-band V/C over circuit-switched network. This is an umbrella type recommendation for sending multimedia (audio /video /data) over ISDN based networks.
- H.321 Narrow-band V/C over Asynchronous Transfer Mode (ATM). An ATM network is designed to carry a complete range of telecommunications

and computer data networks over a managed switch system. The network is designed to handle high data packets as well as voice and video data.

- H.323 Narrow-band V/C over non-guaranteed quality-of-service packet networks (Internet). A packet service network is a type of data network that groups all transmitted data (regardless of content, type, or structure) into blocks or data, called packets.
- H.324 Very narrow-band V/C over the general (dial-up) telephone network. This type of communications uses regular analog telephone lines.

These standards made it possible to call any other system that has the ability to communicate on the same standard, thus making video conferencing today more reliable and simpler. In many respects, a video conference call today is no harder than making a telephone call.

In order to understand how a video conference system works, it is important to recognize the parts of a video conference system and their respective functions. The parts of a video telecommunications system include:

- A codec is a device capable of encoding or decoding a digital data stream. The word codec is a combination of “compressor/de-compressor” or “coder-decoder.” This device converts the audio and video signals into a digital signal which is in turn transmitted to the far-end. At the far-end, the signal is converted back into audio and video signals for display. For example, a codec converts the audio and video signals from the judge’s hearing room into a digital signal that is transmitted to the claimant’s location (i.e., the far-end). The codec at the far-end converts that digital signal back into audio and video signals.
- A camera is a device that captures images in the room. Literally this is the eye of the system. If it cannot see the object, the transmitted image is poor or non-existent. Cameras have a movable lens (zoom) and a sensor. This sensor, a charge-coupled device (CCD), measures a light panel of tiny light-sensitive diodes called photosites. Each photosite measures the amount of light (photons)

that hits a particular point, and translates this information into electrons (electrical charges). A brighter image is represented by a higher electrical charge, and a darker image is represented by a lower electrical charge. The camera also includes a housing that is capable of moving, referred to as tilt and pan for vertical and horizontal movement.

- The video conference system includes at least one display. This is a device that shows the video image from the far-end of a video conference.
- Microphones are devices that capture the sound from either end during a conference. As the camera is the eye, the microphone is the ear; what the microphone cannot hear will not be transmitted.
- Speakers are the devices that study the sound from the other end of a conference. They can either be mounted on the displays or located in another form in the room.

It is important to remember that the video product is only as good as its weakest link. Having quality components and sufficient bandwidth is the only way to guarantee a good video conference signal.

B. Methods of Transmission

The two most common methods of communication are through Integrated Services Digital Network (ISDN) and Internet protocol (IP). ISDN was the initial method of transmission and is essentially a telephone call type of connection. IP has become the universal standard for video conference and modern telephone communications due to the ready availability of high bandwidth internet connections and the low cost.

i. ISDN

ISDN is a digital communications network providing transmission rates in multiples of 64kbits per second. Typically described as 2B + D, Basic Rate ISDN (BRI)

logically uses two 64kbits/sec data channels (B channels) and one 16kbits/sec signaling channel (D channel). ISDN is not the single global standard. Within Europe, EURO-ISDN is used almost exclusively. Some countries even have their own types of ISDN, all of which are based to a varying degree around ISDN. This is important to recognize since the differences with various forms of ISDN communication have been the cause of many video telecommunication problems.

ISDN cabling usually connects to the system using an 8-core straight-through cable which is terminated with an RJ-45 jack at each end. The cable is terminated so pins 1, 2, 7, and 8 are used by ISDN to provide a power source for ISDN devices such as ISDN telephones; pins 3, 4, 5, and 6 carry the transmit (Tx), receive (Rx) balanced pairs required for data communications.

ii. IP (Internet Protocol)

IP is the video transmission carried over normal internet infrastructure. The difference is the parts of the system that allow it to function. This standard is universal throughout the world, allowing any device to easily communicate with another device. The parts of an IP based system are:

a. Terminals

The terminal is the transmitting and receiving component of a video conference system that supports video and audio. The transmitter includes a digital imaging and processing device (coder) and the receiving unit includes a data processing unit and a display generator (decoder). This is the main part of a codec's function.

b. Gatekeepers

A gatekeeper is a component of H.323 that is responsible for managing other parts of an H.323 network. Its responsibilities include bandwidth management of incoming or outgoing calls, call admission to accept or deny calls, and zone management. The

H.323 terminal must make use of the gatekeeper's services if the gatekeeper is present on the network. Gatekeepers are typically software products that reside on a server in the network.

c. Gateways

An H.323 gateway is required to perform the translation if there is a need for an H.323 terminal to communicate with another terminal on an H.320, H.324, or analog network. These components typically have ISDN and IP network connections and support the translation between these two networks. Typically, codecs have built-in gateways with minimal features.

d. Multipoint Control Units

The multiple control unit (MCU) controls conferences between 3 or more terminals. The H.323 MCU may be a separate component or may be incorporated into a terminal.

C. Standard Definition vs. High Definition Video

Standard definition (SD) video is the term for low resolution video. This is normally a resolution of 480 lines and produces a 4:3 aspect ratio. In simple terms, this is the television video we grew up watching. In the United States, this was referred to as NTSC.

High definition (HD) video is a higher resolution than standard video and normally has a current resolution of 720 to 1080 lines of resolution and a 16:9 aspect ratio (wide screen). Again in simple terms, this is the television of today.

This difference is important to know because most current video conference systems are designed for high definition. The increased resolution provides much

improved visual content and quality, but it requires more bandwidth than a standard video conference.

D. Video Conference vs. TelePresence

Video conference equipment manufacturers have revamped their equipment lines and moved to HD video conferencing as a standard. The base models are referred to as HD video conference while the higher-end equipment is considered TelePresence. HD video conferencing uses high quality camera optics and digital audio/video to greatly enhance the quality of the picture and sound of the call. TelePresence refers to a set of technologies that are designed to make all participants feel as if they are present in the same room. TelePresence provides the users' senses with stimuli to give the feeling of being in that other location through position, movements, actions, voice, and other stimuli normally utilized by one's mind during any meeting. For example, if a judge, representative, and claimant are in one room and a witness is at another location, the camera will move in order to focus on whoever is talking—the judge, representative, or claimant—just as one would move one's head toward the speaker in person. The witness, though participating remotely, will have an experience similar to one he or she would have in person. In essence, the industry is moving toward a higher level of remote video experience.

The major difference between the two methods is the technology involved within each method. Video conference equipment is much the same as it has been for the last ten years. The cameras have greatly improved in quality and performance, allowing the user to see the objects even more closely than if they are in the room with them. The audio electronics have also improved with better acoustic echo cancellation methods, vastly improving the quality of the sound on both ends of the conference. TelePresence systems take these improvements and multiply them within the experience. Multiple cameras in the room and highly

advanced digital electronics provide the visual and audio stimuli that mimic the actual presence within the room. If a person on the left speaks, the other images “turn” toward the speaker and the sound comes from the “left,” just as if the person was across the table from you. The room designs are developed to add to the experience.

The financial cost is actually less for current generation video conference equipment than previous generations. The real cost increase is in the area of bandwidth. Basic HD videoconference equipment requires a minimum of 1.2 Mbps for a single point-to-point conference. To provide for a decentralized multipoint between four end-points (the normal capability for most systems) the bandwidth requirement would be four times that at the “host” system (5 Mbps). This is quite a capacity increase from the current 384 kilobit per second or 768 kilobit per second currently used by many government agencies, but it is critical to provide the quality of service the hearing rooms need.

E. Point-to-Point vs. Multi-Point Calls

A point-to-point video call goes from one location to another location. It involves just two video conference systems. A multi-point video call is a call involving several locations and video systems. Most current video conference codecs can call three other locations using the MCU built into the codec. In order to connect to more locations, an outside bridge must be used. A bridge is simply a larger MCU that can connect multiple locations and networks.

Multi-point calls also require more bandwidth. If a point to point call is 1.2 Mbps, then to maintain the same quality on a call with four points, a bandwidth of 5 Mbps is required.

Some federal agencies require all calls to go through their bridge. This is mainly for security purposes. While no one will dismiss the need for security, this method can cause quality issues and transmission delays. It can also create scheduling issues and delays if there is too much traffic on the bridge.

F. Common Issues with Video Conferencing

The educational, business, and medical worlds have been using video conferencing for a long time as a proven method of enhancing communication and reducing costs. There have been many studies made in an effort to improve quality and performance. Most of these studies have identified three issues that cause poor quality video conference experiences, which include: (1) operator knowledge, (2) equipment problems, and (3) the physical environment in which the video conference occurs. These same issues are the cause of many of the video conference concerns voiced during our agency interviews.

i. Operator Issues

An operator is any person who uses the video telecommunications equipment. Many problems with video conferences have been traced to the operator's lack of knowledge on how the system works or basic audio principles, such as speaking into the microphone. This is a common problem that is found in corporate and medical video use, as well as in the legal world.

a. Operator Knowledge

It was surprising how little the majority of video conference users know about the systems they are using. One does not expect a person to need an

engineering degree to operate a video system, but some basic understanding of how it operates is essential to good performance.

There are a number of examples of this, but consider an example found on a previous research study by CLCT. A judge complained about a person monitoring their video hearing. Upon visiting the hearing room, CLCT found that the screen was showing a picture-in-picture split screen (PIP –when the screen is divided into a small image showing what the local camera is seeing and a larger image of the far-end room). The near-end camera zoom was pulled back so far that the image to the far-end could see only a small head in the back of the room. This explained the “person on the screen who was monitoring” was actually the judge’s image on the screen but also indicated that the people at the other (far) end could not clearly see to whom they were talking. When we mentioned this to the judge, his response was that he had no idea what that screen (PIP screen) was or how it got that way. He also did not know how to work the camera. When we explained what it was and how to adjust the camera, he was delighted, and the people at the other end could then see the judge clearly. This is presented not to imply a failing on the part of the judge but to show an obvious need for basic understanding and training that must be considered if video conference equipment is to be used successfully.

b. Agency Support Personnel

Support for video conference equipment is crucial to successful long term use. Support can include simple operator training, normal maintenance, problem trouble shooting, network management and even equipment repair. This does not necessarily mean that a user agency must hire professional electronic engineers, but the agency does need to balance the number of video systems used by the amount of normal support required. Most corporations, depending on size, use a combination of inside support personnel and vendor support.

Administrative agencies seldom have trained dedicated support personnel for the video conference equipment. The technology support personnel are normally required to support IT, telephones, copiers and other office equipment, as well as the video equipment. It should be noted that there is nothing wrong with that, either. Depending on the size of the agency and the number of video systems deployed, there are a number of options. Some larger agencies, such as the Social Security Administration, have support personnel, but that is because of the number of systems the agencies use.

c. Conclusion

All video conference users require training and technical support, and the absence of these is the root of most video equipment problems. Being familiar with the operation of video conference equipment and how to basically maintain and support it eliminates most of the operator-related issues. More suggestions on this can be found in the “Best Practices” section of this document.

ii. Equipment Issues

As with any mechanical or electrical piece of equipment, things can break or simply not work correctly. That video conference equipment must be maintained and cared for is a basic fact. Camera lenses and video displays must be clean, or the image will be affected. While this is a reality, most of the equipment problems we have seen are not just a case of poor maintenance, but sometimes the systems were doomed to poor results from the start. The greatest equipment problem area was one of insufficient bandwidth causing the system to provide poor quality video, audio, and transmission delays. Audio issues were also an industry problem that was common to hearing rooms as well as in conference rooms. Another problem area was often the way the equipment was installed in the room.

a. Bandwidth Issues

Bandwidth has already been mentioned, but the issue bears repeating. A simple way of understanding what bandwidth means to video conferencing is to compare it to a water hose. If a garden hose is connected to one sprinkler, one will get a certain amount of water out of the sprinkler. If I add three more sprinklers, I will need a bigger hose to provide the same level of water out of the sprinklers. If I do not increase the size of the hose, I will cut the water level out of each sprinkler to a third of the water compared with using just one. On one project with an administrative law agency, the contractor who supplied the network service to that agency objected to adding additional bandwidth on the grounds that it would cost too much. They indicated that the past usage did not warrant the additional cost. That sounded logical, especially in these financial times, but it was pointed out to the contractor, and the agency, that while they had not used it in the past, with the advances in video and case management contemplated by the agency, if they did not increase the bandwidth the system would crash in a very short time. If there is one predictable factor, it is that network requirements and the need for increased bandwidth will be necessary for all agencies as we move forward over the next few years.

Dedicating large amounts of bandwidth may require increasing the size of the network, and there is no question that there are significant costs to doing that. But, the cost of not providing enough bandwidth is poor quality performance from the video conference equipment, which leads to poor quality video and the source of many complaints. One judge told us that he could not clearly see a scar on a person's arm over video but could in person. When looking at the video system, the picture was fuzzy and weak due to insufficient bandwidth.

b. Audio Issues

Sound quality in hearing rooms and courtrooms is a great concern. During the interviews, the CLCT team was told of audio quality issues ranging from poor sound quality during the video calls to poor audio recording. Some of the issues were easy to identify, while others were either inherent to the current audio design or due to operator error.

The following are examples of the “easy to diagnose” problems:

There were cases when people on the far side could not hear participants in the hearing room. In the vast majority of these cases, the participants were not speaking into the microphones (i.e., the only source that picks up sound). Microphones are often moved out of the way to allow for laptop computers or papers. While this is understandable, the result, a loss of good audio, is completely unacceptable. The microphones should be placed in front of all participants and participants should speak into the microphones. One permanent solution would be to install the microphones into the desks and tables so they could not be moved. Perhaps the better solution is to require each speaker to speak into a microphone and provide a dedicated microphone for each participant.

A second issue was the ability to hear clearly in the room. During a video conference, the speakers on the television are often used for sound re-enforcement. This will work, but there are latency issues that can cause audio problems affecting the intelligibility of the sound in the room. There have also been instances of the television sound being turned down accidentally. It is best that hearing room speakers be directly connected to the audio processing system which reduces the latency and improves sound quality. This set-up also eliminates non-technical user volume error.

c. Installation Issues

Installation quality is not only a performance issue, but a safety one. In previous work with several federal agencies, CLCT has seen poor quality installation problems with a perfectly good video conference system. We have seen where some installers did not secure wiring or, in some cases, equipment. Cables are placed under chairs, which cause trip hazards and lead to cable damage. CLCT has seen wires laid on the floor with no regard for safety or appearance. In one reported case, a person had fallen and been injured as a result of tripping on these wires. Obviously, loose wires that may be broken or pulled invite technical failure. The effort installers made to secure the wires was clearly minimal.

iii. Environmental Concerns with the Use of Video Telecommunications

The room environment in which the video telecommunications system is installed is equally as important as the equipment itself. A wide variety of issues can be solved with proper lighting, acoustics, room colors, and air handling systems. The video conference industry has conducted many studies on how to use this environment to enhance the video experience and performance. The high end telepresence rooms are examples of this research. The following are short explanations of industry recommendations:

a. Lighting

The vast majority of hearing rooms and courtrooms do not have proper lighting for video camera use. This lighting situation causes poor visual quality at the other end of the video conference. Perhaps the main issue is that these rooms were designed for an

office and not for a video conference environment. In his article “Lighting for Teleconferencing Spaces,” James Robert Benya states,

Video teleconference rooms are among the most difficult spaces for which to design lighting. They combine the bright illumination requirements found in TV studios with the need for a darkened environment to allow viewing a video display screen. Making both possible at the same time is why special lighting systems and techniques must be used.⁷⁶

When we add the requirement to provide lighting for the normal functions of a hearing room, the design becomes critical. Fortunately, much of the design requirements can be adapted from normal video conference rooms as used in the corporate world.

Fluorescent overhead lighting is normally found in the hearing rooms, and while these were designed to illuminate documents and materials on work surfaces, they can cause shadows to appear on a person’s face. Lighting placement is also important so as to not create glare on computer monitors. Lighting should be placed to achieve a well dispersed, horizontal, ambient light throughout the room. The lighting fixtures should be reflective and provide indirect lighting.

The lighting configuration in the room should provide even coverage throughout the room. 100% indirect lighting should be used to ensure that there is even disbursement with no “hot-spots,” such as those that may be caused by mixing direct and indirect lighting.

Light cast on a face should be at a 45 to 60 degree angle and originate from multiple locations to minimize shadowing around the eyes and chin. There should be 400 to 500 lux (lux is a measurement of light. One lux is equal to one lumen per square meter) on the faces of the participants on a vertical plane. The usual color temperature of the lighting should be between 3,000 to 3,800 degrees Kelvin. (Indoor light setting for broadcast cameras is 3,200 Kelvin; outside setting

⁷⁶ James Robert Benya, *Lighting for Teleconferencing Spaces*, Lutron Electronics, Inc. 1998, available online at <http://asia.lutron.com/grafikeye/casestdy/366657Teleconferencing3.pdf>.

is 5,600 Kelvin). For video conferencing purposes indoor artificial lighting, “daylight” type lamps produce the best results. Incandescent quartz halogen light sources are the most popular for video production lighting. Do not use low energy florescent lights that operate between 30 and 50 kHz.

High frequency electronic ballasts are required for video room lighting. If used, there will be no flicker to interact with a video camera.

To improve screen contrast and image sharpness, room surfaces around the screen should be dark and shaped to shield the screen from ambient light. The dark finish on adjacent surfaces prevents the screen’s own light from being diffusely reflected onto itself. In other words, proper architectural design is essential in achieving good screen image quality.

b. Acoustics

Another issue in many hearing rooms and courtrooms is the transference of sound from one room to another. This is not only an issue that creates more background noise in the video conference, but also leads to privacy concerns. The design of a room for optimal acoustics is a science unto itself and requires significant engineering using the specifics of any given space. A short version of most video conference room acoustical design plans would include:

- Walls extend from floor slab to ceiling slab and should be sealed with caulking on both the top and bottom of the walls.
- Wall construction should provide a gypsum board thickness of at minimum 5/8 inch, with a preferred thickness of 1 inch. A single layer of ½ inch bonded to another layer of ½ inch creates an ideal surface to subdue mechanical coupling (vibration) between the layers of the wall.
- Studs on the wall should be “offset” to further eliminate mechanical coupling between hearing rooms.

- Fiberglass dense batting or mineral rock wool of 4 to 6 inches (the equivalent of R-11 to R-13) should be placed in the wall and should not be compacted to improve efficiency. This should increase the minimum sound transmission class (STC) rating of 55 to 65, which is better for the control of re-reinforced sound.
- Doors should be made of solid wood with rubber door sweeps and gaskets surrounding the door closure area. This should provide a minimum STC rating of 45 to 55.
- Acoustical ceiling tiles aid in absorbing and diffusing sound energy within the room. The ceiling is a critical plane for sound control. Ideally, a 1 inch thick compressed densecore fiberglass tile should be used. Above this should be a blanket of at least 6 inches unfaced dense fiberglass batting or mineral rock wool (the equivalent of R-15 to R-19).
- Floors should be carpeted to absorb sound and, in ideal conditions, 50% of the wall surface should be covered with acoustical treatment.

This treatment may be more extensive than in normal building construction, but is necessary to maintain the sound within the rooms and provide the confidentiality required.

c. Room Décor

The décor of the room also affects the video quality. The electronics and optics of a video conference system “build” the image from a blue / gray reference image; certain colors, textures, and decorations can have a negative effect on the video product even though they look esthetically pleasing. Wall finishes, artwork, furniture, and other fixtures in the field of view of the camera should be neutral in color. When there is a minimum difference between the room background and the reference image color, the codec has an easier time converting the images into a digital format and results in better video quality at the far-end. In general, light shades of gray or blue work best with cameras. White paint should be avoided, since it creates too much contrast and can literally erase the faces of participants with darker skin tones from the camera’s view. This mixed with poor lighting has already caused problems in some hearing rooms. Wall

finish should be semi-flat or eggshell for performance and low reflection. The floor usually isn't seen by the camera, but it is best to keep the floor covering relatively dark anyway, to reduce glare.

Table surfaces should not be glossy, since that kind of finish will reflect light. Matte or eggshell finishes on any surfaces will reduce reflectivity and help control the balance of light within the room. Table veneers such as Wilsonart colors of Fusion Cherry, Medium Cherry and Natural Maple are video conference camera friendly millwork colors.

d. Heating / Ventilation / Air Conditioning

Controlling the temperature of the room is necessary for the comfort of the participants in the room, but it also plays an important role in the videoconferencing. Electronic equipment produces heat and, like a person, prefers to operate within a certain temperature range. Industry standards recommend that the room have its own separate thermostatic control inside the room. The room should be maintained at a temperature range between 68 and 78 degrees Fahrenheit. Relative humidity should be between 10 and 90 percent.

It is recommended that vents should have low-velocity diffusers, duct lining, baffles, registers, or covers in order to soften the air flow and the background noise it produces. Vents should not be located directly above microphones or speaker locations in the ceiling. Also a vent should not be placed directly over the judge, as it can interfere with the judge's microphone or hearing by creating noise from air movement. All duct penetrations into the room shall be baffled to prevent compromising the STC requirement of the wall.

IV. Use of Video Teleconferencing in Hearings and Related Proceedings

A. Common Uses Today

The use of remote communications systems in courts is growing at an exponential rate. This group of technologies allows parties to participate from anywhere in the world, reducing cost and improving efficiency. Technically, remote communication technologies include both telephone communications and video conferencing. While there is no question that telephone remote communications are heavily used in the practice of administrative law, for this study we are concentrating on the video conferencing side of these technologies.

The use of video telecommunications was first used as a method of reducing cost and improving security, by not transporting detainees, for arraignment proceedings. These first appearance proceedings were a simple task of connecting the parties without the detainee having to travel to the courthouse. The transmission of these events was initially over fiber optic cable. As distances between the detention center and the courthouse increased and the need emerged to communicate to multiple detention centers and courthouses, the transmission method was changed to ISDN connections. Today, this is still a major use of video in both criminal and civil proceedings, but most communication is now over IP to vastly reduce the cost of transmission and improve quality and reliability. Video telecommunications have been used in courts large and small, and the savings can be very dramatic. In a June 7, 2011 press release by the Pennsylvania Supreme Court, the court reported:

The survey, conducted by the Administrative Office of Pennsylvania Courts' (AOPC) Office of Judicial Security, found that on average more than 15,700 proceedings are held via video conferencing each month, saving the state's magisterial district and Common Pleas courts an estimated \$1.7 million monthly or a cumulative cost savings of more than \$21 million annually.

Philadelphia and Delaware counties reported the highest monthly savings of \$550,000 and \$271,000, respectively.⁷⁷

These numbers do not include the savings and other benefits coming from improved security and judicial peace of mind.

Video teleconferencing can be used in many ways in addition to first appearances. The following is a short list of uses found commonly in administrative agencies:

i. Remote Witness

Many agencies use video telecommunications (and telephone communications) as a vehicle for remote witness participation. These witnesses can be medical experts, vocational experts, family members, doctors and even just observers to a given situation. Throughout all areas of the practice of law, remote testimony has been credited with vast financial savings and lessens the need to reschedule or delay hearings.

ii. Remote Judge

The use of video telecommunications allows the judge to enter the proceedings without traveling to the site and is a major use of this technology. While the Social Security Administration uses video teleconferencing in its disability adjudications on a larger scale than any other agency, other agencies also heavily use video for judicial appearance. While some agencies initially did not accept remote judge participation, those that use this method found the greatest benefit was the financial savings it afforded. One judge shared that his office was based in Houston, Texas, but either he or one of his colleagues had to attend hearings in Austin, Texas every week. The cost of each trip was

⁷⁷ Press Release, Administrative Office of Pennsylvania Courts, PA Courts Expand Use of Video Conferencing, Saving \$21 Million Annually in Defendant Transportation Costs (June 7, 2011), available online at www.pacourts.us/assets/files/newsrelease-1/file-1396.pdf?cb=29e05d.

\$1,000 and that cost does not account for intangibles such as travel weariness or scheduling issues (e.g., delayed or cancelled flights). The agency purchased a desktop video conference unit for \$7,000 to allow the judges to connect without traveling. In less than two months, the equipment paid for itself, and efficiency improved greatly since there was no need to reschedule hearings due to travel issues.

iii. Remote Representation

Several administrative agencies, have even promoted remote representation to the extent of making it possible for representatives who frequently practice before it to have video conference equipment in their offices. This arrangement allows representatives to attend hearings without traveling, and again saves time and alleviates scheduling difficulties.

Video teleconferencing may also play a critical role in improving representation of indigent populations and may have the potential to improve efficiency in agency adjudications by increasing or enhancing representation for indigent people seeking relief through an adjudicatory process. Accordingly, further use and study of video teleconferencing for representation is needed. In the context of indigent detained immigration court respondents, the Administrative Conference is currently planning to undergo a study and pilot project aimed at testing the efficacy of using video teleconferencing technology to represent legal clients remotely. The goals of the study and pilot project are to (1) reduce backlogs and create greater efficiencies in immigration removal procedures, and (2) increase fairness to detainees by providing a mechanism for access to counsel—since more than 70% of detained individuals currently have no representation—and a prompt hearing. The proposed project will be coordinated by leading academic experts on courtroom technology and will use remote representation for families detained by U.S. Immigration and Customs Enforcement. The project is currently in the planning phase and anticipates using lawyers, from the private bar, who are willing to take on immigration deportation cases and represent detained individuals or families pro bono in removal proceedings before the Department of Justice’s Executive Office for Immigration Review. Following planning and execution of the proposed project plan, Administrative Conference plans to issue study findings which will shed light on ways video teleconferencing may increase and improve representation in federal adjudications. Moreover, study findings may inform subsequent work in

the area of using technology to increase access to representation for indigent populations appearing before courts and adjudicatory proceedings in other settings.⁷⁸

iv. Remote Claimant / Defendant

The use of a remote claimant is common in many types of agency hearings. Essentially, the claimant, usually with their representative, is at one site and the judge is at another. For example, according to the Social Security Administration, 28% (158,758 as of September 16, 2014) of the hearings so far in Fiscal Year 2014 have involved video.⁷⁹

B. Potential Uses that are Not Common Today

It is interesting to note that several other uses for video telecommunications were not identified as being used by administrative agencies but are common to many courts throughout the United States. Some examples are:

i. Remote Foreign Language Interpretation

The need for foreign language interpretation is critical for all administrative agencies. Executive Order 13,166 requires all administrative agencies, as well as any other entity that receives federal funding, to provide for persons with a deficiency in English. Many agencies provide foreign language interpretation by telephone, and while this works, it has weaknesses in that the visual communication between the party and the

⁷⁸ E-mail from Amber G. Williams, Attorney Advisor, Admin. Conf. of the U.S. to Martin E. Gruen, Deputy Director, Center for Legal and Court Technology at William and Mary Law School (October 6, 2014, 10:37 EDST) (on file with recipient), quoting Funmi Olorunnipa, Attorney Advisor, Admin. Conf. of the U.S.

⁷⁹ E-mail from Nancy O. Webb, Associate Commissioner, Office of Disability Adjudication and Review, Social Security Administration to Martin E. Gruen, Deputy Director, Center for Legal and Court Technology at William and Mary Law School (September 17, 2014 17:50 EDST) (on file with recipient).

interpreter is lost. It also does not provide for those who require American Sign Language. Courts are turning to video conference equipment to provide more complete and better quality interpretation.

ii. Remote Court Reporting

Many administrative agencies utilize court reporters, either stenographic or voice writing, to capture the record. This often creates a problem when the reporter is ill and the hearing has to be rescheduled. For judges that ride circuit, it is often difficult to find a court reporter with competency in administrative law. Here again, many courts have used video technology to provide for a court reporter who is not physically present in the hearing room. The reporter can see and hear the proceedings and supply the judge with a real-time transcript on her laptop over the Internet. This arrangement eliminates the rescheduling issues and allows the judge to maintain the use of a court reporter with whom he or she is comfortable.

iii. Remote Confidential Discussion

Many courts provide the ability for representatives, who are in a different location than their clients, to connect remotely and securely to the client. This arrangement provides a faster, simpler method of pre-hearing communication for all parties.

V. Best Practices for the Use of Video Teleconferencing in Hearings and Related Proceedings

There is no denying that there have been issues with video conferencing in the past and many of those problems may still persist today. CLCT cautions anyone from making a judgment based on a bad experience in the past as to what is possible today. If one is going to use a technology, one should use it correctly.

As CLCT reviewed the documents and interviewed agency officials—judges and IT staff—and representative organizations, it became clear that “Best Practices” could be addressed with four separate areas:

- “Bricks and Mortar” – This section addresses the equipment and physical environment in which the equipment is used, as well as the transmission requirements to make the system work successfully.
- Training – This addresses the materials and support structure that is needed to allow users and support personnel to ensure video telecommunications systems operate properly.
- Financial Considerations – This section provides facts to consider regarding the financial costs of implementing video hearings and identifies potential returns, as experienced by federal agencies that have video hearing experience.
- Procedural Issues – This addresses the concerns and issues that agency and a representative group presented and recommends potential solutions to those issues.

A. Foundational Elements - “Bricks and Mortar”

The term “bricks and mortar” is a common expression for the physical part of a video telecommunications system design. This includes the equipment and the physical space in which it is to function.

i. Equipment

The following section will deal with some recommendations for best practices regarding the physical hardware, the way it is installed and the communications network it needs.

a. Choosing the Correct Equipment

There is a wide variety of video telecommunications equipment available today. Systems range from tablets to complex multi-camera installed telepresence systems with multiple screens. When selecting the appropriate equipment, one must first think about the proceeding the technology is meant to serve, as well as the desired result.

The first and perhaps most fundamental factor is the video screen. The screen must be large enough to clearly see the video image. If a single judge needs to view a single video image, a small desktop display should be sufficient. One judge had an issue with his display, complaining that the images were hard to see and he could not clearly see the claimant. Upon further discussion, CLCT learned that the image was a multi-view of four sites, which meant the judge only had the claimant on a quarter of a 17" screen. While a multi-view image was inadequate, if the image had been full-screen, the judge would have seen it clearly. If a multi-view image is needed, then a larger screen is required. A basic rule of thumb is that the image should be close to life size. This would mean that in a normal hearing room, a 50"-60" display would be required, creating the same size image as if the judge were physically present in the room. Therefore, the agency should consider the video image and the room size before purchasing the displays or video systems.

The second factor to consider is the location of people in the room. This determination is necessary to establish the camera sight-line and number of cameras required. When placing a camera in a room, the camera needs to face the person who is speaking. This set-up is imperative to promote good communication. When one person

speaks to another in person, they make eye contact. This is not only how we communicate but is also very important in assessing truthfulness of the statement. With video, the camera must be placed where it will achieve the same result, which is why most manufacturers of video telecommunication systems place the camera on the monitor. This set-up becomes potentially tricky in a hearing room or courtroom since many of the positions are at opposing angles. During the interviews, CLCT learned of one hearing room that had a recently installed a video system. The system was placed on a side wall so all people in the well could easily see the displays. The unit had a single camera which was aimed down the center of the room. When the judge or an attorney spoke, it appeared as if he were not looking directly at the person on the far end. To fix this situation, the agency may add a second camera to provide for the multiple angles or connect the camera control to the audio system to allow the camera to respond to whoever is speaking and pan (move sideways) between angles accordingly. The best practice here is to analyze the room and the video camera shots before purchasing a system.

A good audio system is also imperative. Issues involving audio were presented with greater frequency than any other concern. While all video telecommunications systems come with some form of microphone and speaker system, most are designed for a limited area. If working from one's desk, the built-in system should be sufficient. If one is placed in a hearing room or courtroom, where multiple people sit in different locations and at multiple distances from the unit, then the built-in system is not sufficient. With the exception of a small room or office, most administrative agency hearing rooms or courtrooms will require an audio system connected to the video telecommunications equipment. The best practice regarding the audio would be to again analyze the room and provide microphones for each participant's speaking location in the hearing room. Each microphone should be connected to an audio processing device that provides echo-cancellation to reduce echo and improve sound quality. The room should also provide sufficient speaker coverage so that all participants can clearly hear the person on the far-end of the video call. Normally, the speakers on the display are insufficient to cover all but a small room.

When purchasing a video telecommunications system, it is also important to consider how the record is captured. Not all systems allow for audio output to a recording system. If the agency uses an electronic form of record capture, the equipment must be designed to work with the room's audio system or, at minimum, connect to the recording system. If the agency uses a court reporter (either stenographic or voice-writing) the video system must be configured so the reporter can clearly hear and see the video conference.

The "heart" of the video conference system is the codec. Most current codecs are designed for high definition video transmission. That means that connected to a high definition camera and display they are capable of providing a high quality video image. Given the current video telecommunications industry standards, virtually any recently produced video conference codec can provide a more than sufficient video image. Many individuals interviewed during this research spoke of poor quality video and fuzzy pictures. It is important to know that this is most likely not the fault of the codec but of another factor in the video transmission chain. When selecting a system, most of the time the codec is matched to the other components. The key factor regarding which codec to purchase is determining how many other locations will be connected at one time (bridging), or whether the connection will involve ISDN as well as IP-based communications.

b. Implementation

Having the best equipment in the world does not always guarantee success. How the equipment is installed and the bandwidth on which it will run are mission critical parts of making a useful and smooth running video telecommunications system. Installation of video telecommunications equipment involves placing it into the room and connecting it to the other audio and video systems (if any). Installation quality is not only a performance issue but a safety one. During this study, and over the years with other studies, CLCT has been amazed at the poor quality of many of the installations we reviewed. The installers did not secure wiring or, in some cases, even equipment, to walls

and other room structures. Wires were put in plastic cable covers and placed under claimants' chairs. In one reported case, a person had fallen and was injured as a result of tripping on these wires. Obviously, loose wires that may be easily broken or disconnected are an open invitation for technical failure. The lack of effort to secure the wires demonstrates poor quality installation practices. It appeared as if too many vendors used a "drop-and-run" installation method. Equipment was brought in and placed as quickly as possible with no standardization, such as: wall-mounted equipment that was not secured to the wall, wires placed on the floor in haphazard ways, and displays placed or mounted in locations that do not allow proper personnel movement and passage space.

A best practice for installation of video telecommunications equipment is, as mentioned above, to first define where each piece should be located. Then, each piece should be properly mounted per the manufacturer's instructions and local codes. All wires and cables must be secured to millwork, tables, walls, or other non-movable support materials. Under tables, wires must be secured to the bottom of the table in a "cabled" manner that will not allow wires to hang down. If wiring has to cross a floor area, it must be routed to a low traffic area and covered with appropriate floor cable molding that is secured to the floor.

c. Bandwidth

Bandwidth was an issue discussed in almost every interview. Complaints about long delays, poor quality images, weak audio, and many other concerns can all be traced to low bandwidth. The codecs of today are capable of high definition video, but that capability requires sufficient bandwidth to transmit high definition video. Doctors can literally conduct medical examinations of people using high definition. They can zoom in a camera and see a wound as clearly as—sometimes better than—if they were physically present. For administrative agencies, this is very valuable. One judge told me that he prefers video because, for example, he can examine a scar on a claimant by zooming in the camera. If he was there in person, he would have felt uncomfortable being that close to the person. All

videoconference manufacturers are moving toward HD, and while the systems will allow connections at lesser bandwidth, most new equipment is designed for HD. The current bandwidth requirement for HD is 1.2 – 1.5 Mbps (megabit per second). Even Skype has an HD version requiring 1 Mbps. In a video-conference study for a Texas court system to allow judges and doctors to evaluate incarcerated defendants, they used 5 Mbps drops at each location to provide the quality and performance required to clearly see and connect the detention center, hospital, and courthouse on the same video call.

CLCT fully understands the cost to enhance the network on a national scale to provide the required bandwidth; however, if this is the business model the agency has chosen to improve services and reduce cost, the cost of not increasing the bandwidth is potentially greater than doing so. Many judges must assess demeanor and make credibility determinations. Unless they can see claimants as clearly (or more clearly) than they can in person, video telecommunications will be an inadequate way to conduct a hearing. The best practice regarding bandwidth is to simply provide as much bandwidth, segmented (dedicated) to video, as the agency can afford. This amount will vary, within reason, depending on whether the calls are to be point-to-point or multi-point. A basic multi-point call plan is needed for each additional location, and the bandwidth will need to double to maintain the same video quality at each point.

ii. Environment

“Bricks and mortar” also includes the physical room where the video telecommunications equipment is used. This physical environment is equally important to the successful video use as is the video equipment itself.

a. Lighting

The lighting design in the hearing room is critical for several reasons. Participants in the room must be able to see written documents, video monitors and each other clearly without glare. The lighting must also provide proper illumination for the video camera used in video conferencing, which is the most critical factor for color and temperature. The best practice for lighting is to have the lighting placed in a way to create a well dispersed, horizontal, ambient light throughout the room. The lighting fixtures should be reflective, indirect lighting. The lighting configuration in the room should provide even coverage throughout the room. Indirect lighting should be used exclusively to ensure that there is even disbursement without “hot-spots” which can be caused by direct lighting mixing with indirect lighting.

Where light is cast on a face, it should be at a 45 to 60 degree angle and come from multiple locations to minimize shadowing around the eyes and chin. There should be 400 to 500 lux on the faces of the participants (vertical plane). The usual color temperature of the lighting should be between 3,000 to 3800 degrees Kelvin. For video conferencing purposes, indoor artificial lighting “daylight” type lamps produce the best results. Low energy florescent lights that operate between 30 and 50 kHz should not be used because they create a flickering effect that interferes with a video camera image capture. High frequency electronic ballasts are best used for video room lighting because they do not produce a flicker.

b. Noise Transference

The courtroom or hearing room is a space designed for judicial proceedings. The spaces vary by design and agency needs, but all have certain similar requirements. The best practices for room construction that will assist with lessening outside noise transference are:

The rooms should be located in the inner area of the office space and not along exterior walls or windows, if possible. This set-up will reduce noise since windows permit reverberation of outside noises. The room should not be located adjacent to any

noise or vibration producing elements, such as elevators (shafts or machine rooms), mechanical rooms, restroom plumbing walls, or doors or corridors that contain high traffic.

The doors should be solid core without louvered openings in order to provide a minimum sound transmission class (STC) rating of about 40 to 55. The door should include a door sweep to help maintain the STC requirement.

As previously mentioned, in an ideal construction, the room enclosure shall be of slab-to-slab construction, with no gaps from the concrete of one floor to the concrete of the next. Walls shall have a minimum STC of 45. Wall construction for hearing rooms should use staggered studs with wall cover material connected to only one set of studs. Wall space may be filled with an absorption layer, such as fiberglass dense batting or mineral rock wool. Duct, pipe or other penetrations shall be properly sealed. Duct silencers shall be used as required to ensure the required STC of a minimum of 40. Recognizing that we do not live in a perfect world, attention should be given to achieving as close to this as possible within the constraints of the available facilities. These standards should be incorporated in any new construction.

The finishing of the room should include floor covering of carpet tile for ease of maintenance. The ceiling should be suspended, acoustical panels of either a 2 foot x 2 foot or 2 foot x 4 foot styles.

Ideally, about 50% of the surface area on the walls should be covered by sound absorption panels. It is recommended that two opposing parallel walls should have absorption panels on at least one of them. Furthermore, dispersing the absorption panels throughout the face of the wall is generally more effective than simply clustering them together. This practice will reduce ambient room noise and echo which could detract from the audio record and video conferencing.

c. Décor

The décor of a hearing room can greatly affect the video conference and judicial experience. It is better to avoid colors that are very dark, pale, or bright. The camera must work harder to pick up these colors and distinguish them from the participant, causing it to pick up other images, like the participant's face, in less detail. Neutral colors are generally more conducive to clearer images and also produce less strain on the viewer's eyes.

Video cameras typically build the images from a gray-blue reference, and can more easily handle colors in the middle of the color spectrum. Thus, smooth tones such as light gray, light blue, beige, tan, or light gray with a touch of blue are typically best. The finish of the walls is also an important consideration. The wall finish should be semi-flat or eggshell for low reflection of light.

The furniture should not include dark colors, patterns, or bold woods, as these cause negative effects similar to those caused by dark wall colors. Dark walnut and dark cherry colors should be avoided, while medium tones both present a "judicial" appearance and do not adversely affect image capture. The table and furniture should be of a color different from that of the walls in order to provide contrast, better enabling the camera to distinguish between them. The table should include a non-glossy finish, since glossy table surfaces can produce a glare.

d. Heating / Ventilation / Air Conditioning (HVAC)

The General Services Administration has control over HVAC considerations for most federal administrative agencies. While the video conference industry standards discussed above are important, the main issue facing many hearing rooms is the placement of vents. The vents should be treated with low-velocity diffusers, duct lining, baffles, registers, or covers in order to soften the air flow and the background noise it

produces. Vents should not be located directly above the microphone or speaker location in the ceiling. A vent should also not be placed directly over the judge, so as not to interfere with the judge's microphone or hearing by creating noise from air movement.

B. Training

As with any equipment, training is important for anyone operating or supporting video telecommunications equipment.

i. Operator Training

Operator knowledge was a concern voiced by many judges and representatives. Several judges we spoke with felt uncomfortable operating the equipment. One judge did not understand how to operate the camera, and so the image transmitter showed a very small image of him. In another interview, a representative spoke of how long a recent hearing took since the judge could not operate the system and had to stop and call for support several times during the hearing. All of these issues can be corrected with proper user training methods.

It is our recommendation that each agency develop training models as a supplement or to replace current materials. Materials should include a basic level of information for normal users and an advanced level of information for support personnel.

The basic training model should include an introduction to video conferencing and how it works. For example, the topics to be covered could include:

- What is a Video Conference?
- Video Conference Etiquette

- Use the picture-in-picture “near side” view function to see how you will appear to those on the far-end.
- Ensure you are looking at the monitor when you talk.
- Speak into the microphone so you can be clearly heard.
- Use visual signals to improve communications
- Video conference equipment parts and functions
- Operations required for:
 - Placing a video call
 - Receiving a call
 - Adjusting the camera (both near and far-end)
 - Adjusting the audio
 - Ending a call
- Basic user-level trouble-shooting techniques and the support resources available to the user

Much of the training will be equipment specific, so several versions will have to be provided based on the various models of video conference equipment used in the field.

Another resource to eliminate operator issues would be to create reference charts. These short, two to four page “cheat-sheets” could be kept with each video conference system and provide basic system operation directions. Areas covered could include:

- Placing a video call
- Receiving a call
- Adjusting the camera (both near and far-end)
- Adjusting the audio
- Ending a call
- Other such normal operational issues
- Trouble shooting techniques in the event the equipment is not working

ii. Support Training

The support personnel training should include more advanced material including:

- Normal equipment maintenance
- Advanced troubleshooting
- How to record issues and address recurring problems

For support personnel, it is advised that the following training be developed by each agency:

- Send support personnel to manufacturer's training for the specific equipment installed
- Have technical manuals available for each location's specific equipment
- If the agency has a support contract, plan a procedure for placing a trouble call
- If no contract, have a method in place for getting outside technical support

C. Financial Considerations

When considering the use of video telecommunications for administrative hearings, one of the factors to be evaluated is the return on investment. The cost of the equipment as opposed to the cost of travel or cost of scheduling delays must be carefully weighed before accepting or rejecting the use of video. Cost should not be the only factor, but it is an important consideration.

Identifying the cost of a video telecommunications system is difficult because there are so many options and different formats. A video system can range from a \$3,000 small format system to a \$7,000 desk-top system and so on up to telepresence systems

costing over \$200,000. The first step would be to decide which format works the best for your particular situation. For example, if a judge is holding hearings by video from the office and sitting at his desk, then the desk-top system would be workable. If the same judge is holding the hearing from a small hearing room with other parties in the hearing room, then the desk-top system is insufficient and a larger system would be required, costing from \$17,000 to \$30,000. If the judge is holding the hearing in a full-sized federal type courtroom, then the video system needs to be integrated into the courtroom audio and display system and have multiple cameras, which can be more like \$45,000 plus in cost. The best formula for selecting the particular system is to identify the people (images) that need to be visible to the far-end. That will dictate the number of cameras and the size of the system.

Once the system is selected, the cost can be estimated and the return on investment calculated. To repeat an example used earlier by a former Social Security judge: One judge shared that his office was based in Houston, Texas, but either he or one of his colleagues had to attend hearings in Austin, Texas every week. The cost of each trip was \$1,000 and that cost does not account for intangibles such as travel weariness or scheduling issues (e.g., delayed or cancelled flights). The agency purchased a desktop video conference unit for \$7,000 to allow the judges to connect without traveling. In less than two months, the equipment paid for itself and efficiency improved greatly since there was no need to reschedule hearings due to travel issues.

While no one can promise that much in savings to all agencies, there is no question that video can reduce or eliminate travel costs. The use of video has many other benefits such as eliminating the wear and tear on judges who no longer have to deal with flight delays, cancelled flights, and the other situations faced while traveling. Video can also provide judges and their staff more work time, since the judge can be in his or her office between hearings instead of waiting in a hotel.

D. Procedural Practices

The interview process provided the research team with many concerns voiced by judges, technical staff and representatives. When asked about her thoughts on best practices for video telecommunications, one judge responded that to her “the best practice was not to use it.” Upon further inquiry, CLCT learned that her reasoning was based on a poorly performing system where the people on the far-end were so fuzzy and the delays so long, that the process was almost unusable. In that context, we can understand her feelings. While this report cannot fix a poor system, the following are some recommendations regarding how to handle some common issues and improve the performance of the video session.

i. Control of the Hearing Room

Control of the hearing room was an issue with some judges. Their concern was whether they could control the room without being physically present. While we agree there are some circumstances when the physical presence of the judge is desirable, such as in a very emotional or adversarial situation, the majority of situations can benefit from the following considerations:

a. Must be Judge-driven

As best described by one of the judges interviewed, the control of the hearing room must be judge driven. He said that he had stopped wearing a robe during in-person hearings, but when on video, he always wears the robe as a symbol of authority.

b. Judge in Hearing Room When Parties Enter

Another judge stated that he is always on the video screen when people enter the far-end hearing room. That way the participants know who is in charge from the moment the hearing begins.

c. Use Hand Signs

During a video conference, it is sometimes hard to distinguish who is speaking. Several judges told us that they use visual signals when a person wants to speak. When the judge holds up a hand, all in the room stop speaking. Attorneys raise their hands when they want to speak or object. These visual signals may seem like participants are back in grade school, but they do assist judges in asserting control over the hearing room and may even promote politeness.

d. Remind Representatives that “They are Officers of the Court”

One judge’s approach to controlling the far-end is to begin each hearing, where there is a representative assisting a claimant, reminding them that the representative is an officer of the court and as such, should assist with the control of the hearing. When asked why this was effective, the judge said that the client internalizes this role often better than the attorney. The judge had experienced no problems with representatives using this method.

e. Exhibits Provided Five Days before the Hearing

One agency has a policy that in order for an exhibit to be admitted, all material must be on file five days before the hearing. Not all agencies can follow this, but it does reduce issues that arise with documents submitted at the last minute. Several representatives that work with Social Security praised the electronic folder as a method for managing documents submitted at the last minute. As soon as they file the document, it is available to the judge and all other parties.

ii. Far-end Camera Control

The need to see all parties clearly is mission critical to a video hearing. One method is for the judge to be able to move the camera on the far-end. This allows the judge to clearly see whoever is speaking. This method also allows the judge to zoom in on any particular feature that is important to note. That the judge can move the camera also reduces the chance that someone is off-screen. Several judges were concerned with a claimant receiving coaching from a party whom the judge could not see. Having the ability and knowledge to move the far-end camera is extremely helpful.

Not every video hearing will have this capability. If the far-end camera cannot be moved by the judge, it is recommended that the camera view be set to cover as much of the room as possible. In this case it is also advisable to have an “officer of the court” present at the far-end.

iii. Sight-Lines & Viewing People

As already mentioned, the ability to clearly see parties in a video hearing is mission critical. One important method of improving a video hearing is to ensure all sight-lines are without obstacles. Monitors and other materials can block a person’s view of another, just as in an in-person hearing. The room should be clear of any objects between the camera and the parties.

The camera positioning should also be adjusted so that the camera image covers the same image as though the party was physically in a hearing room. That means if you can see the person from the waist up in a witness stand, the far-end camera should be adjusted to provide the same view. One representative told the story of a recent hearing where the claimant was discouraged because he did not feel he had his “day in court.” The image of the judge on the screen was just a “big talking head.” He could not see the robe or more of the judge. Even if a judge uses a desk-top video system, the unit can be placed so the image appears the same as the in-person hearing room view.

Several people, both judges and representatives, mentioned that they could not see the image of the other person well. There are a number of possible reasons for this. Some are:

- The lens of the camera was dirty. Normal maintenance of a system includes cleaning the lens of the camera. If not regularly cleaned, the image quality will suffer, just as if your glasses were not clean.
- The lighting in the room is not sufficient. The Social Security Administration had an issue where the ability to distinguish the facial features of darker shades of skin needed to be corrected. By adding proper lighting, and in some cases additional special purpose lighting, this problem was eliminated.
- If all of the video images are fuzzy or pixelated, these are signs of insufficient bandwidth. This can only be corrected by increasing bandwidth.

iv. Audio Issues

Good audio is essential to good communication. The video can fail during a video hearing and communication can still go on to some degree, but if the audio fails, the session has to stop. The first best practice with audio is to have each person speak directly into a microphone. If we think of the microphones as the “ears” of the system, what they cannot hear cannot be transmitted. Too many hearings have not been successful because a party moved the microphone too far away and the participant’s voice could not be picked up by it.

A good practice is to always test the call before the hearing. Even if the site has been called many times, quality can vary from call to call. Sometimes establishing a quality connection requires disconnecting and recalling the site. This is true for video as well as audio.

CLCT learned through the interviews that when one or more parties at the hearing have a hearing impediment the audio cannot be understood. Electronically produced

sound is difficult for some people to understand. They hear the sound but the sound waves are unintelligible to their hearing aids. While it is true that the video conference equipment cannot correct this problem, a hearing assistance system can. Many courtrooms have American with Disability Act compliant systems already installed and connecting the video system to it is just a matter of connecting into the room audio system. For rooms without the hearing assistance equipment, such equipment can easily be added to an audio output on the video conference system.

v. Instances Not To Use Video Telecommunications

As with any technology, sometimes the best practice is not to use it. Each agency must decide its own policy, but we caution them to carefully decide use based on current facts, not past experiences that may have been caused by substandard situations. Some obvious, but reasonable reasons for not using video were presented during the interviews and include:

- There is no video capability at other location.
- There is video capability, but the quality is poor, or there is low bandwidth, or both.
- The claimant has special needs and video causes a problem (e.g., people with certain mental issues are fearful of video).
- Video cannot accommodate the “smell test” where a person’s ailment is not visual but a particular odor.

VI. Glossary of Terms

The following terms are provided to assist the readers with potentially unfamiliar language used in this report.

8-cone straight-through cable – this is the technical description of network cable including four pair of cables that is terminated to allow the signal to travel through without changing the pin configuration.

Acoustic Echo Cancellation – is a technology algorithm that listens to both the outgoing audio and the incoming audio and eliminates echo from the far-end signal.

Baffled – a term for anything that incorporates baffles.

Baffles – are devices in an air duct that reduces sound by affecting the movement of air.

Ballast – an electrical or electronic device used in florescent light fixtures to limit the amount of electrical current.

Bandwidth – Bandwidth is a measure of the rate of data transfer measured in bits per second.

Bridge – a common term used in video conferencing for a device or software in a device that connects multiple video conference systems. The technical name for this is a gateway.

Bridging – a term for using a bridge.

CCD (Charge-Coupled Device) – is an electrical device for the movement of an electrical charge. This is the capture device used in digital imaging, such as video cameras.

Codec – is the term for a device that encodes and decodes an audio/video signal allowing it to be transmitted and received over a communications cable.

Executive Order 13,166 – Executive Order 13,166 addresses improved access to services for persons with limited English Proficiency and “requires Federal agencies to examine the services they provide, identify any need for services to those with limited English proficiency (LEP), and develop and implement a system to provide those services so LEP persons can have meaningful access to them.” (Executive Order No. 13,166, 65 Federal Regulation)

Far-end – the video conference term for the other location.

Fiberglass dense batting – is a form of insulation made of fiberglass that has been densely woven together.

Fiberglass tile – is a tile made of fiberglass material.

Gatekeeper – This is a component of H.323 that is responsible for managing other components of an H.323 network. It is responsible for bandwidth management of incoming or outgoing calls, call admission to accept or deny calls, and zone management.

Gateway – An H.323 gateway is required to perform the translation if there is a need for a H.323 terminal to communicate with another terminal on a H.320, H.324, or analogue network. These typically have both ISDN and IP network connections and support the translation between these two networks.

Gypsum board – Gypsum board is the generic name for a family of panel products that consist of a noncombustible core, composed primarily of gypsum, and a paper surfacing on the face, back, and long edges. Gypsum board is one of several building materials covered by the umbrella term “gypsum panel products.” Gypsum board is also called drywall, wallboard, or plasterboard.

HD (High Definition Video) – is a term for video resolution of high quality with 720 lines of resolution or more. Most video newer conference equipment is designed for 1080 lines of resolution.

Hot-spots – are bright parts of a video image created by overly bright light hitting a limited part of the image subject.

ISDN (Integrated Services for Digital Network) – A set of communication standards for simultaneous digital transmission of voice, data, and other network services over the traditional circuits of the public switched telephone network.

Louvered door – is a door with slats allowing for air to flow through the door.

Low Velocity Diffusers – is a part of a heating, air conditioning and ventilation system that controls the amount of air entering a room. This type allows air to move but in a way as to not create air handling noise.

Lumen (Lux) – a measure of the total "amount" of light emitted by a source.

Mbps (megabits per second) – is a unit of data transfer rate equal to 1,000,000 bits per second.

MCU (Multipoint Control Units) - controls conferences between 3 or more terminals.

The H.323 MCU may be a separate component or may be incorporated into a terminal.

Millwork – is a building term for installed wooden structures used as fixed furniture. This can also be used for wood paneling and other room fixtures.

Pan – a camera term for moving the camera from side to side.

Pins – is a metal piece, in one connection device, used to make contact with a metal contact in another connection device.

Rx – is the abbreviation for receive.

SD (Standard Definition Video) – is video with less than 720 lines of resolution. This is normally 480 lines of resolution in the US and 576 lines in Europe.

Segmented to video – a term for taking a section of the network bandwidth and dedicating it to video only traffic.

Slab - a construction term for the concrete floor of a building.

STC (Sound Transmission Class) – is a whole number that can be written as a method of rating how well a building partition attenuates airborne sound. In the USA, it is used to measure interior partitions, ceilings/floors, doors, windows and exterior wall configurations.

Studs – are wood or metal framing materials that form the frame, or support structure, of a wall.

Telepresence – a video conference term for a very high quality video conference system designed to create the sensation that all parties are together in a same space.

Tilt – a camera term for moving the camera up and down.

Tx - is the abbreviation for transmit.

VTC – is the abbreviation for video tele-conference.

Walls off-set – this is a term referring to a wall structure where the studs are installed so that one set of studs touches one side wall covering and the other set touches the other side wall covering. This method is used to eliminate sound transference through the wall. In conventional construction, where there are one set of studs with both wall coverings connected to them, the sound can vibrate through the wall.

Wilsonart Colors – Wilsonart is a global manufacturer and distributor of High Pressure Laminates and other engineered composite materials, used in furniture, office and retail

space, countertops, worktops and other applications. These are often considered the standard colors for furniture.

Zoom – a camera term for moving the lens in and out to bring the image closer or farther away.