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# **A COST COMPARISON OF STENOGRAPHIC REPORTING AND ELECTRONIC RECORDING IN THE COURTROOM**

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**FINAL REPORT**

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# A COST COMPARISON OF STENOGRAPHIC REPORTING AND ELECTRONIC RECORDING IN THE COURTROOM

## 1. Introduction

The National Court Reporters Association's (NCRA) Cost Comparison Task Force was assigned to compare the costs of two methods of providing a timely and accurate court record. The comparison examines what a court system would pay using a stenographic reporter, who makes a record of court proceedings using a stenotype shorthand machine, versus what a court system would pay using a courtroom monitor and an electronic recording system to record court proceedings.

To evaluate a court's monetary cost for each method, the comparison examined each method's costs from a first-year start-up through a fifth-year update. These costs were based on equipment needs in a single courtroom and one judge's chambers. Personnel costs for five years were added to equipment costs. Current equipment, software, and personnel rates were used to compare monetary costs for each method.

The comparison also examined the non-monetary lost opportunity costs arising from use of an electronic recording system rather than a stenographic reporter. These lost opportunity costs were evaluated based upon needs arising in a trial setting and are outlined in further detail throughout this comparison.

With the assistance of the NCRA's National Committee of State Associations, surveys and questionnaires were used to gather data from stenographic reporting leaders across the country. The information received included a list of the duties performed by stenographic reporters, along with salaries of stenographic reporters and courtroom monitors in jurisdictions across the United States. Because salaries varied considerably among jurisdictions, an average of the annual salary figures received from the surveys was used for both methods.

This comparison was based upon the premise that just as a stenographic reporter must always be present for any proceeding, a courtroom monitor would always be present whenever a proceeding would be electronically recorded. The need for this presence is well-supported.

According to the American Association of Electronic Reporters and Transcribers (AAERT)<sup>1</sup> and a September 2013 report<sup>2</sup> by the National Center for State Courts (NCSC),

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<sup>1</sup> AAERT, *Overview Electronic/Digital*, <http://www.AAERT.org/?page=OverviewDigital>

<sup>2</sup> [\*Making the Record: Utilizing Digital Electronic Recording\*](#), pp. 14-20 (2013). [Future reference "[NCSC 2013](#)"]

electronic recording equipment should be overseen at all times by an experienced and trained staff member who also takes simultaneous notes throughout the proceedings.

The AAERT website instructs courtroom monitors to:

Monitor recording through headphones, using **Confidence Monitoring** to ensure proceedings are being adequately and intelligibly recorded.... This means listening to the actual result being recorded – critical to ensuring its quality. [Analog reporters refer to this as "monitoring from tape."] By definition, you will hear a very slightly "delayed echo" of what is being said in the real-life sound environment. If what you hear through your earphones is exactly IN SYNC with the real-life sound environment, you are merely 'Monitoring from Source,' listening only to microphone activity – and in that mode you CANNOT know for sure what is being actually preserved on the recording medium. It is wise to occasionally switch between Confidence Monitoring and Monitoring from Source (microphone-checking). In either mode, occasionally listen to **each channel** in turn, rather than relying on a muddled 'all-source' or 'room-wide' mix, which is not very helpful when a single microphone or cable is having problems.<sup>3</sup>

The 2013 NCSC report states:

**Monitor Through Headphones.** Using headphones, monitor what is being recorded onto the audio channels, not what is being said into the microphones, ensuring that the proceedings are being adequately and intelligibly recorded (known as "confidence monitoring").<sup>4</sup>

This means the proper operation of any electronic recording system is wholly dependent upon having a trained and competent staff person in the courtroom at all times. In *The Court Manager*, Volume 25, Issue 2, p. 71 (2010), author Radhika Anand, Product and Marketing Manager at ForTheRecord, wrote:

The effectiveness of a DCR (digital court recording) system is directly dependent on the staff that will manage and operate it. They must be familiar with courtroom and record making rules and procedures. It is advantageous to be able to leverage existing court staff that already holds this knowledge.<sup>5</sup>

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<sup>3</sup> *Best Practices in E-Reporting*, <http://legacy.aaert.org/best.htm>

<sup>4</sup> [NCSC 2013](#), p. 15

<sup>5</sup> <http://ncsc.contentdm.oclc.org/cdm/ref/collection/ctadmin/id/1826>, pp. 70-71

Utilizing existing court staff as courtroom monitors prohibits and/or limits productivity by the existing staff in the functions of their overall duties, therefore creating negative cost ramifications for the court system. Alternatively, If the courtroom is not staffed by a courtroom monitor, critical courtroom functions will be either left undone or performed randomly and inadequately by a courtroom monitor covering multiple locations. These functions include: making detailed annotations of the proceedings as to witnesses, exhibits, and speaker identifications; maintaining the orderly conduct of litigants; overseeing recordings of the proceedings; and properly archiving the recordings.

Beyond this, a courtroom monitor presence is necessary to do more than merely preserve and provide the record of a proceeding. The importance of having a courtroom monitor present for the entire proceeding is made clear in Sections II and III of the 2013 NCSC report. The standards that should be followed by the court and the courtroom monitor involve: developing a comprehensive job description; fulfilling daily responsibilities; taking advantage of ongoing training; having effective oversight; maintaining proper conduct and professional ethics; ensuring optimum performance; and implementing procedures and best practices for the correct use of digital recording in a judicial setting.<sup>6</sup>

In order to ensure the judicial system works, stenographic reporters assist judges, attorneys, participants, and court administration staff every day in innumerable ways. Attachment 1 sets out some of the duties performed by stenographic reporters in many courts. Although a courtroom monitor with the proper education and experience could perform the majority of these functions, the attachment shows that only a stenographic reporter can perform some of the most critical duties, for example, providing realtime reporting.

The use of one person to monitor multiple sites is known as a centralized system. A centralized system involving an electronic recording system without a dedicated courtroom monitor cannot fully meet the needs of the justice system<sup>7</sup>; therefore, that method was not considered in this study.

To ensure there is a proper court record, a stenographic reporter always must be present in one courtroom at a time. The same would be true if electronic recording and a courtroom monitor were involved. The necessary presence of a staff member for both the stenographic reporting and the electronic recording methods allows a cost comparison based upon comparable best-practice models.

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<sup>6</sup> [NCSC 2013](#), pp. 9-20

<sup>7</sup> See the 2007 National Association of Court Management (NACM) study, "Making the Verbatim Court Record." Section 3.6 says: "The use of ER monitors (monitoring multiple-simultaneous courtrooms), however, does not completely dispense with the need for someone in the courtroom to better guarantee the environment best suited for a high-quality and accurate record."

## 2. Equipment Costs

This comparison used monetary costs necessary to obtain and maintain equipment in one courtroom and one judge's chambers in the first through fifth years of operation. This allowed for an examination of costs incurred over a period of time rather than merely on a start-up basis. Based upon those costs, a court's equipment expenditure weighs in favor of using a stenographic reporter.

### A. First-Year Costs

A court's start-up costs for a courtroom electronic recording system cover a broad spectrum; the lowest cost is \$11,028, and the highest is \$24,778 (Attachment 2). The average of the two is \$17,903. Start-up costs for a judge's chamber's electronic recording system (using portable equipment) also vary greatly; the lowest cost is \$1,395, and the highest is \$13,702 (Attachment 2). The average of the two is \$7,549. The average cost for equipping one courtroom and one judge's chambers amounts to \$25,452.

Start-up costs for the stenographic reporter method for one courtroom and one judge's chambers have been computed using high-end costs – the most expensive stenographic machine, software, and related equipment. The start-up cost is \$12,045. (Attachment 3). There is no additional cost for a judge's chambers because the stenographic reporter can easily move her or his equipment between the courtroom and chambers.

A comparison of these costs tips the scale in favor of using a stenographic reporter. The court system would be required to pay the entire \$25,452 cost for an average-priced electronic recording system for one courtroom and chambers. In contrast, the entire \$12,045 first-year cost for the stenographic reporter method will, in most jurisdictions, be paid by the stenographic reporter.

As a result, for one courtroom and one chamber, a court system will have an effective first-year budget gain of \$25,452 by using a stenographic reporter rather than an average electronic recording system.<sup>8</sup>

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<sup>8</sup> *Some jurisdictions use more courtrooms than they have judges. This would require extra courtrooms to be equipped with digital recording equipment even if they were not used on a full-time basis. Each courtroom would require installation of its own electronic recording equipment that would often sit idle.*

## B. Third-Year Costs

There is a similar result for third-year costs. Good business practices dictate computers should be replaced every three to four years.<sup>9</sup> Therefore, for the third-year cost comparison, a replacement computer was included for each method. The costs for both the stenographic reporter and electronic recording methods consist of a yearly maintenance fee added to the cost of a replacement computer.

The maintenance cost for an electronic recording system is 10% of its installed cost. With the addition of a replacement computer, the cost for maintenance on a low-end electronic recording system in one courtroom and one judge's chambers is \$2,143. The total third-year cost for a high-end electronic recording system is \$5,623 (Attachment 2). Averaging these costs, a court system must pay \$3,883 for an electronic recording system in the third year. There also would be average second-year maintenance costs of over \$2,383 (Attachment 2). For years two and three, the cost of an average electronic recording system is a total of \$6,266.

In comparison, the third-year cost for a high-end stenographic reporter method is \$3,080 -- \$2,280 for maintenance and \$800 for a replacement computer (Attachment 3). As in the first year, a stenographic reporter in most jurisdictions will pay all of the third-year costs, as well as the second-year maintenance costs of \$2,280. Again, the court system has an effective budget gain through the third year by using a stenographic reporter rather than an electronic recording system. The court system has an additional effective budget gain of \$6,266 by using the stenographic reporting method.

## C. Fifth-Year Costs

At a minimum, in the fifth year, a low-end electronic recording system must have its recording equipment replaced and a high-end system must have its software updated. Using these minimum requirements, the cost computation is conservative. This is because of the rapid obsolescence of computer hardware and software and the fact the system would be in its fifth year of use.

The electronic recording method's fifth-year cost for a low-end system is \$5,003 for the courtroom and \$140 for chambers, which total \$5,143. For a high-end system, the cost is \$7,253 for the courtroom and \$1,370 for chambers, which total \$8,623 (Attachment 2). The average equipment costs a court system would have to pay in year five are \$6,883. There also would be additional average maintenance costs in year four of \$2,383 (Attachment 2). The total costs for an average electronic recording system in years four and five is \$9,266.

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<sup>9</sup> See, e.g., <https://itservices.stanford.edu/service/helpdesk/recommended>

For the stenographic reporter method, purchase of a printer and the most expensive stenographic machine was included. Not all stenographic reporters would purchase a new stenographic machine every five years because they purchase annual maintenance agreements from their vendors. Because some stenographic reporters do purchase a new stenographic machine every five years, a replacement machine was included in the fifth-year costs.

The stenographic reporter's fifth-year equipment cost is \$5,760 (Attachment 3). As in prior years, a stenographic reporter in most jurisdictions pays all the fifth-year costs, as well as the fourth-year maintenance costs of \$2,280 (Attachment 3).

The court system, again, has an effective budget gain in the fifth year by using a stenographic reporter rather than an average electronic recording system. This is an additional \$9,266.

#### D. Total Equipment Costs

The equipment costs paid by a court system over five years for an average electronic recording system in one courtroom and one chambers are approximately \$40,984.<sup>10</sup> The five-year equipment cost for the stenographic reporter method is approximately \$20,885, but this would be paid by the stenographic reporter in most jurisdictions. In effect, the court system has a budget gain of \$40,984 by using a stenographic reporter rather than an average electronic recording system.<sup>11</sup>

### 3. Personnel Costs

The most significant monetary costs for each method are the costs of employee salaries and benefits. There is a difference in the personnel cost for each method because there is a significant difference in the required education, certification, and duties of a stenographic reporter compared to a courtroom monitor (see page 3 herein).

Generally, stenographic reporters complete at least two years of formal post-high school court reporter education. In some jurisdictions, they must pass rigorous state- or NCRA-supervised testing in order to be certified and employed as stenographic reporters and must complete 30 hours of continuing education every three years.

Over five years, the average personnel costs for a courtroom monitor would be \$222,500 – \$311,500 in salary and \$89,000 in benefits (Attachment 2). For the same number of years, the average personnel costs for a stenographic reporter would be

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<sup>10</sup> This does not take into account the additional costs of courtroom retrofitting and acoustics testing or the costs to train and maintain training for a courtroom monitor. NCSC 2013, pp. 11-12, 31, 38-39

<sup>11</sup> Even if the cost of a low-end recording system were used, the effective budget gain is \$22,190.60.

\$260,000 – \$364,000 in salary and \$104,000 in benefits (Attachment 3). Therefore, over five years, the court system would pay approximately \$52,500 more in personnel costs using a stenographic reporter rather than a courtroom monitor and electronic recording system.

The additional \$52,500 in personnel costs for a stenographic reporter is ameliorated by a court system's savings in equipment costs. When the \$40,984 the court system must pay over five years for an average electronic recording system is added to the courtroom monitor personnel costs, the total five-year monetary costs to the court system for a courtroom monitor and an electronic recording system are \$352,484. Over five years, the stenographic reporter method would cost the court system \$364,000. This means the monetary cost to the court system is \$11,516 more for the stenographic method. Therefore, the costs of a high-end stenographic method versus the costs of a courtroom monitor and an average electronic recording system, spread over five years, is only \$2,303 a year more. This is more than made up for by avoiding lost opportunity costs associated with an electronic recording system.

Beyond this, the 2013 NCSC report seems to call for a high-end digital recording system.<sup>12</sup> The total cost over five years when a courtroom monitor and a high-end digital recording system are used comes to more than \$371,000. When just the minimum \$371,000 cost of a courtroom monitor and a high-end recording system is compared to the \$364,000 cost of a high-end stenographic reporter system, the stenographic reporter system is approximately \$7,000 less expensive. The stenographic reporter system also does not have the additional lost opportunity costs inherent in an electronic recording system.

#### **4. Lost Opportunity Costs**

The final aspect of the cost comparison is crucial. It involves non-monetary lost opportunity costs arising when an electronic recording method is used. "Opportunity costs are not restricted to monetary or financial costs: the real cost of output forgone, lost time, pleasure, or any other benefit that provides utility should also be considered opportunity costs."<sup>13</sup>

Advantages of choosing a stenographic reporter method instead of an electronic recording method in a trial setting include realtime reporting, instant (rather than delayed) rough drafts, and daily copy. Advantages of using electronic recording are that, upon playback, the listener hears participants' voices and there is the ability to obtain an audio copy of court proceedings within a short time. The many advantages of the stenographic

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<sup>12</sup> [NCSC 2013](#), pp. 27-35

<sup>13</sup> See K. P. Gupta, *Cost Management: Measuring, Monitoring & Motivating Performance*, Global India Publications (2009), page 207

reporter method outweigh any advantage an electronic reporting system may present. Losing the stenographic reporting advantages would incur substantial lost opportunity costs.

A. Loss of Realtime Reporting Advantages

Realtime reporting, the immediate conversion of the spoken word into the written word, is what most differentiates the stenographic reporter method from the electronic recording method. An official stenographic realtime reporter is able to provide instantaneous transcription at no additional cost to a court system. An electronic recording system cannot provide instant access to a verbatim transcript of the spoken word.

i. *Courtroom and Off-site Benefits*

A realtime transcription can be sent simultaneously to several users in a courtroom. This is done unobtrusively with wireless technology, and it provides multiple benefits to multiple users.

A realtime reporter uses machine shorthand to preserve the record, and a rough draft transcript appears immediately on the judge's bench-top computer. This instant voice-to-text conversion assists judges in ruling on objections. Before ruling, a judge can read the actual testimony rather than rely on notes or memory. Realtime also aids judges in preparing rulings and jury instructions by allowing them to mark case issues and testimony and pull the marked portions into a document.

Realtime transcription frees judges from taking extensive contemporaneous notes during testimony. This allows judges to observe witnesses as they testify and to make more informed credibility determinations.

Attorneys in the courtroom also benefit from realtime reporting. They do not have to rely solely on notes in questioning a witness. They can use the realtime transcript to precisely frame cross-examination questions. They can review testimony during breaks or overnight to make any needed adjustments in their courtroom presentation. And they can use the realtime transcript as an aid in formulating effective closing arguments.

Realtime transcription ensures immediate and accurate readback of portions of a proceeding. This can be used to assist jurors or other courtroom participants if a cough, nervous tapping, transient noise, or a drop in a speaker's volume make a statement inaudible. Realtime readback can also assist counsel and witnesses in continuing a line of testimony. Readback is much more difficult and onerous to access when using an electronic recorder.

Realtime can be provided to a judge's law clerk during hearings or trial. This gives the law clerk the information needed to conduct legal research or begin writing proposed rulings. The judge can copy and paste a section of the realtime transcript as it is generated.

Then the judge can send it to the law clerk by e-mail or save it to the Cloud or other transcript repository locations. This can be done for anyone at any location with remote access.

In addition, realtime reporting can assist administrative functions. A remote realtime feed from the stenographic reporter to the clerk of court improves efficiency by aiding court staff in making calendar entries and docketing proceedings.

Realtime reporting also has off-site benefits. Realtime output can be instantaneously transmitted to multiple locations. It can be sent to locations outside the courtroom or even the courthouse, and more than one user can make simultaneous use of the realtime output.

A realtime text feed produced by a stenographic reporter can be “streamed” over the Internet. This allows a running transcript of the proceedings to be sent to any other location that has Internet access. Remote access makes the proceedings immediately available to the media, a litigant, a litigant’s expert, or even additional counsel. There is a cost associated with streaming the transcription to off-site consumers, but these additional costs are routinely paid for by the off-site consumers and not the court system.

Using this technology, an expert can read the testimony as it is occurring and electronically send questions or pertinent information back to counsel in the courtroom. Trial counsel also may send messages to experts or co-counsel within seconds of testimony in the courtroom.

If audio of a proceeding were streamed to the media, that might be seen as a violation of some courts’ rules against recording in the courtroom. A streaming realtime text feed would not raise this concern and would satisfy any expanded media need for immediate information. Some courts allow news reporters to blog from the courtroom during proceedings, and streaming realtime text would be an extension of that instantaneous public access to the judicial system. This could be especially important in a high-profile case because it would allow maximum media access with no courtroom disruption.

Although audio from an electronic recording system can be streamed, it is best done while using VoIP (Voice-over-Internet-Protocol) because of the large amount of bandwidth necessary to perform this function. Even if the audio were sent off-site, it is more difficult to review an audio recording than to review a transcript. If there is a particular portion of a proceeding that needs to be reviewed, it is much easier to review a static transcript than it is to continually stop and back up an electronic recording. Therefore, reviewing a static transcript saves time and expense for the litigants and also has a positive impact on the court system’s budget by allowing operational efficiency.

There are countless benefits to instantly providing a realtime rough-draft transcription of proceedings to a judge, court staff, attorneys, the media, and others. The use of an

electronic recording system eliminates the availability of realtime transcription and creates immense and unnecessary lost opportunity costs.

ii. *Expedited Transcripts*

In addition to providing a running transcription during the day's court activity, realtime reporting allows a stenographic reporter to produce a full rough draft transcript of that activity within minutes of the end of the proceedings. This can be used by the court and counsel in innumerable ways.

Additionally, daily copy – a certified transcript provided by the stenographic reporter on the same workday – can readily be produced through realtime reporting. Realtime is essential to providing daily copy, because time is of the essence for the stenographic reporter, court, and counsel when certified transcripts are needed each day.

Further, in order to facilitate quick final transcript turnaround, a stenographic reporter may stream the transcript of a proceeding to a scopist in realtime. This allows the scopist to edit the rough draft transcript into a final transcript as the proceedings are unfolding simultaneously in the courtroom. This creates certifiable transcript as the proceedings are transpiring and as the stenographic reporter is producing a verbatim record. Streaming is a very effective and efficient tool that helps a stenographic reporter to provide daily rough drafts and certified daily copy transcripts to all consumers.

Without realtime capability, a useable transcription is not immediately available. Such a transcript cannot be produced with an electronic recording system.

iii. *Communication Access*

A stenographic realtime reporter can provide effective judicial-system access for jurors, litigants, attorneys, and observers who are deaf or hard of hearing.<sup>14</sup> If a CART captioner is not available, the official reporter using realtime is able to provide communication access without cost to the court system.<sup>15</sup>

Realtime reporting is a recognized as a method of communication access for courtroom participants with hearing impairments. The Americans with Disabilities Act (ADA)

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<sup>14</sup> From 9 to 22 out of every 1,000 people in the United States have a severe hearing impairment or are deaf, and from 37 to 140 out of every 1,000 people in the United States have some kind of hearing loss. <http://research.gallaudet.edu/Demographics/deaf-US.php>

<sup>15</sup> While it is preferable that a CART (Communication Access Realtime Translation) captioner be used in addition to the stenographic official reporter, the NCRA Code of Professional Ethics - General Guidelines, Section III, paragraph 3, notes it is an acceptable practice to use solely the official reporter's realtime technology to assist people who are deaf or hard of hearing. <http://www.ncra.org/About/content.cfm?ItemNumber=8645>

Title II regulations, Part 35, Nondiscrimination on the Basis of Disability in State and Local Government Services (as amended by the final rule published on September 15, 2010), state:

Many commenters urged the Department to stress the obligation of State and local courts to provide effective communication. The Department has received many complaints that State and local courts often do not provide needed qualified sign language interpreters to witnesses, litigants, jurors, potential jurors, and companions and associates of persons participating in the legal process. The Department cautions public entities that, without appropriate auxiliary aids and services, such individuals are denied an opportunity to participate fully in the judicial process and denied benefits of the judicial system that are available to others.

Definitions in those ADA regulations, 28 C.F.R § 35.104, state:

*Auxiliary aids and services* includes—

(1) Qualified interpreters on-site or through video remote interpreting (VRI) services; notetakers; real-time computer-aided transcription services; written materials; exchange of written notes; telephone handset amplifiers; assistive listening devices; assistive listening systems; telephones compatible with hearing aids; closed caption decoders; open and closed captioning, including real-time captioning; voice, text, and video-based telecommunications products and systems, including text telephones (TTYs), videophones, and captioned telephones, or equally effective telecommunications devices; videotext displays; accessible electronic and information technology; or other effective methods of making aurally delivered information available to individuals who are deaf or hard of hearing;

(2) Qualified readers; taped texts; audio recordings; Brailled materials and displays; screen reader software; magnification software; optical readers; secondary auditory programs (SAP); large print materials; accessible electronic and information technology; or other effective methods of making visually delivered materials available to individuals who are blind or have low vision;

(3) Acquisition or modification of equipment or devices; and

(4) Other similar services and actions.<sup>16</sup>

The need for hearing assistance is not limited to members of the public. Anecdotal reports note that realtime can assist members of the bench who have developed hearing loss. Realtime reporting provided by an official stenographic reporter serves as a convenience and a necessity, allowing some judges to extend their service on the bench.

Electronic recording does not have the same capability as realtime in assisting those who are deaf or hard of hearing. This is yet again another lost opportunity cost intrinsic to an electronic recording system.

The use of electronic recording in place of realtime reporting results in judicial inefficiency, trial counsel's loss of an effective and strategic tool, the media's loss of unobtrusive access to judicial proceedings, and loss of access to justice for courtroom participants who are deaf or hard of hearing. These lost opportunity costs are more than the judicial system and the public should bear.

B. Loss of Flexibility

Electronic recording systems lack flexibility because of their dependence on microphones. An electronic recording system requires courtroom participants to restrict their normal practices and to remember to do things that may adversely affect their concentration.

The AAERT website advises judges to “discourage wandering around the courtroom – examination should occur from the podium or counsel table.” Attorneys are advised to “avoid moving microphones. Remain within arm's reach of a microphone. Avoid tapping on or striking the table or microphone. Use mute button while consulting with your client, and be sure the microphone is toggled back on before proceeding.”<sup>17</sup> These limitations can detract from an attorney's ability to effectively present his or her client's case.

Attorneys often move throughout the courtroom, say, to hand a witness an exhibit and ask questions while near the witness. When this happens, there is a risk the recording equipment will not pick up the attorney's voice or that there will be lost portions with a resulting “inaudible” or “unintelligible” in the transcript.

If a bench conference, ex parte discussion, or other proceeding is held in chambers, the court's chambers must also be equipped with recording equipment. This will result in additional expense to the court system.

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<sup>16</sup> *Realtime technology is not only included in the definition of ADA Auxiliary Aids and Services, it also has judicial recognition as a reasonable accommodation under the ADA. Duvall v. County of Kitsap, Wash., 260 F.3d 1124 (9th Cir. 2001)*

<sup>17</sup> <http://legacy.aaert.org/best.htm>

These electronic recording system limitations result in increased lost opportunity costs not present when a stenographic reporter is used.

Flexibility is a key feature of stenographic reporting. A stenographic reporter is able to move freely around the courtroom during a proceeding. If realtime is provided, that flexibility still exists because of wireless technology. The realtime transcription is continuously provided wirelessly throughout the courtroom to projectors, laptops, tablets, iPads, and even smartphones. These devices are themselves portable.

A stenographic reporter can immediately ask a speaker to repeat an inaudible statement. This ability emphasizes the need always to have present in the courtroom an officer of the court charged with the responsibility of making the record. A courtroom monitor who is always present in the courtroom is, likewise, able to ask for clarification if continuous monitoring of the recording detects the inaudible remark. With a stenographic reporter, there is no question about whether or not the inaudible statement will be clarified – the reporter is always listening.

A stenographic reporter can immediately relocate to meet changing courtroom needs whenever they arise. The stenographic reporter is able to quickly and easily relocate to chambers when necessary and change locations in the courtroom as needed. This allows the reporter to better hear the proceedings and accommodate bench conferences, individual voir dire, and participants' needs.

Electronic recording's lack of flexibility generates additional lost opportunity costs that are not present with stenographic reporting.

### C. Loss of Timely and Accurate Transcripts

There is a very real benefit to having a transcript prepared by the person who was present in the courtroom. The stenographic reporter who was in the courtroom is always responsible for preparing any transcript, and is familiar with terminology unique to each case. This is not always the case when an electronic recording system is used. Transcripts from electronic recordings can be prepared at an outsourced location by someone who has no familiarity with the proceedings. This lack of continuity with an electronic recording system can have a detrimental effect on the quality of a final transcript.

When transcription is outsourced, there is a danger that confidential information such as addresses, social security numbers, bank account numbers, and personal medical information will not be correctly redacted because the transcriptionist is unfamiliar with the case and not subject to court control. A stenographic reporter can be personally instructed as to which information is to be redacted and will keep it private.

Trial court proceedings are not directly affected because of the lost opportunity costs related to transcripts produced through an electronic recording system; however, these costs can have a significant impact on post-trial proceedings.

D. Loss of Judicial and Participant Independence

The final area of an electronic recording system's lost opportunity costs involves the impact on those in the courtroom. The NCSC report *Making the Record: Utilizing Digital Electronic Recording* (NCSC 2013, see footnote 1), outlines an electronic recording system's restrictions and demands on courts and participants. These restrictions and demands do not exist with a stenographic reporter system.

With an electronic recording system, the court will have to manage transcript production and distribution (*id.* at p. 2). The judicial system will have to establish rules for recording access and a system of transcript management (*id.* at pp. 3, 6). An electronic recording system "shifts responsibility for the record from the stenographic court reporter to the Judge and staff," including "redefining courtroom responsibilities of Judges to make sure that all participants speak clearly into courtroom microphones." (*id.* at p. 6).

Judges will have to (*id.* at p. 21):

- > verify the recording system is working;
- > make participants aware the proceedings are being recorded;
- > remind participants to speak loudly and clearly and to properly identify themselves at the beginning of each proceeding and each day of continuing proceedings;
- > remind attorneys to cover microphones or use mute buttons when consulting with clients;
- > point out to all present that coughing or sneezing near a microphone will adversely affect the recording;
- > make sure attorneys are speaking into a microphone;
- > discourage speakers from moving about the courtroom unless wireless microphones are used;
- > hold bench conferences at a bench microphone; and
- > remember to leave their bench microphone on while in session.

All of this is in addition to the myriad of responsibilities required to maintain order in the case, listen to the evidence, rule on objections, and determine the law. A judge will no longer be solely a judge, but will have to take on non-judicial ministerial acts that do not exist with a stenographic reporter system. Reporting by a stenographic reporter avoids these non-judicial demands.

Attorneys and participants will have to (id. at pp. 21, 34):

- > take additional precautions to protect disclosure of confidential communications during proceedings;
- > provide the courtroom monitor with correct spellings of unusual or technical names and words used during the proceedings;
- > avoid moving microphones;
- > always remain near a microphone;
- > address jurors by name or number during voir dire;
- > avoid shuffling papers or making other noises when people are talking and move away from a microphone before coughing or sneezing;
- > use a microphone mute button when consulting or making statements not to be recorded and then remember to turn the mute button off before proceeding;
- > avoid blocking a microphone with documents;
- > hold discussions outside the courtroom or at least away from a microphone on days when there are multiple cases set; and
- > remember to turn off lavalier microphones when leaving the courtroom to go to the restroom or to have a private discussion.

These demands can detract from an attorney's ability to maintain focus in the courtroom and to provide her or his best legal representation. These issues do not exist when a stenographic reporter is taking down the proceedings.

It is critical that lost opportunities be recognized, considered, and evaluated when comparing electronic recording and stenographic reporting. All too often, these lost opportunity costs are overlooked or ignored during such a process. That oversight results in an inaccurate assessment of a comparison of the costs involved between the two methods.

## 5. Summary

On average, a court system's monetary cost for a courtroom monitor and an electronic recording system is approximately \$352,484 over five years. Over that same time period, a stenographic reporter will cost the court system approximately \$364,000. The nominal cost difference over five years is \$11,516 – about \$2,300 a year.

If the costs of a courtroom monitor and a high-end electronic recording system are compared with a high-end stenographic reporter system, the equation reverses to make the stenographic reporter system less expensive by some \$7,000.

But possibly more telling, the enormous lost opportunity costs arising with a courtroom monitor and an electronic recording system cannot begin to be monetized. The monetary difference between the two methods is overshadowed by the advantages of using a stenographic reporter, and the lost opportunity costs are costs which the legal system can ill afford to bear.

Additionally, just one undetected mechanical failure of an electronic recording system during a trial, without immediate correction of such a failure, could result in a new trial being granted. The additional monetary and emotional costs would have a negative impact on the judicial system and the participants. These additional costs would exceed any potential monetary savings arising from use of a courtroom monitor and an electronic recording system.

Utilization of a stenographic reporter is the most cost effective, as well as the most efficient, record-making option for a court system.

**ATTACHMENT 1**  
**JUDICIAL DUTIES: COMPARISON OF STENOGRAPHIC REPORTERS**  
**AND DIGITAL AUDIO RECORDING (MONITORED AND UNMONITORED)**

<b>PROFESSIONAL DUTIES</b>	<b>COURT REPORTER</b>	<b>DAR – W/ MONITOR</b>	<b>DAR – UNMONITORED</b>
Make verbatim record	X	X	X
Provide realtime to judge	X		
Provide realtime to attorneys	X		
Provide realtime to hearing impaired	X		
Provide an immediate rough draft transcript	X		
Provide daily transcript or excerpts of proceedings	X	X	
Read back the record during court proceedings	X	X	X
Conduct word search of court record	X	X	X

<b>ADMINISTERIAL DUTIES</b>	<b>COURT REPORTER</b>	<b>DAR – W/ MONITOR</b>	<b>DAR – UNMONITORED</b>
Archive court record/upload steno notes	X	X	X
Mark and manage exhibits and exhibit list	X	X	
File document of hearing held; assessing court reporter fees	X	X	X
Swear in witnesses	X	X	
Respond to inquiries and requests from lawyers and the public	X	X	
Make copies of exhibits and distribute to parties	X	X	
Organize files and tab pertinent documents	X	X	
Keep parties and attorneys on schedule	X	X	
Escort courtroom participants into courtroom	X	X	
Draft, proofread, and/or edit orders and rulings for judge	X	X	
Type orders, rulings, calendar entries	X	X	
Prepare transcript at judge's request	X	X	
Draft and/or type jury instructions	X	X	
Conduct trial scheduling conferences	X	X	
Page litigants not present	X	X	
Schedule cases	X	X	
Assist with the jury; maintain written communications from jury	X	X	

## Cost of DAR - Installation and Ongoing Costs -- Attachment 2

		1 Courtroom		PORTABLE SYSTEM		YEAR-3		YEAR-5		
		Unit Costs	DAR-Low	DAR-High	DAR-Low	DAR-High	DAR-Low	DAR-High	DAR-Low	DAR-High
<b>Courtroom Components</b>										
	4-Channel Mixer	\$ 500								
	16-Port Mixer (Lectrosonics)	\$ 3,500		\$ 3,500						
	Amplifier	\$ 800		\$ 800						
	Husher	\$ 500		\$ 500						
	Microphones	\$ 120		\$ 1,200	\$ 320	\$ 1,360				
	Cabling	\$ 200	\$ 400	\$ 600						
	Speakers	\$ 550	\$ 4,400	\$ 4,400						
	UPS	\$ 225	\$ 225	\$ 225						
	Rolling Bag					\$ 210				
	Encoder 4-channel					\$ 1,295				
	Recording Software	\$ 7,300		\$ 7,300		\$ 7,000				\$ 4,500
	Client Software	\$ 1,000		\$ 2,000						\$ 500
	Web Client	\$ 500								
<b>Hardware</b>										
	Cassette/Digital Recorder	\$ 200			\$ 1,075					
	Recording Appliance	\$ 4,000	\$ 4,000						\$ 4,000	
	PC	\$ 1,000	\$ 1,000	\$ 2,000		\$ 2,050	\$ 1,000	\$ 2,000		
	Server	\$ 10,000								
	Archive	\$ 1,000								
	Primera Printer	\$ 1,000								
<b>UPS</b>		\$ 25,000								
<b>Installation</b>		\$ 3,000	\$ 1,003	\$ 2,253						
<b>Portable DAR Cost</b>			\$ 1,395	\$ 13,702	\$ 1,395	\$ 13,702				
<b>YEARLY MAINTENANCE PORTABLE DAR</b>							\$ 140	\$ 1,370	\$ 140	\$ 1,370
<b>DAR YEARLY MAIN. 10% INSTALL COSTS</b>		\$ 6,040			\$ 140	\$ 1,370	\$ 1,003	\$ 2,253	\$ 1,003	\$ 2,253
<b>Total DAR Costs</b>			<b>\$ 12,423</b>	<b>\$ 38,480</b>	<b>\$ 1,395</b>	<b>\$ 13,702</b>	<b>\$ 2,143</b>	<b>\$ 5,623</b>	<b>\$ 5,143</b>	<b>\$ 8,623</b>
<b>Average DAR Equipment Costs</b>			<b>\$25,452</b>				<b>\$3,883</b>		<b>\$6,883</b>	
<b>ER Monitor</b>										
	Salary		\$ 42,500	\$ 42,500			\$ 45,000	\$ 45,000	\$ 47,500	\$ 47,500
	Benefits <sup>1</sup>		\$ 17,000	\$ 17,000			\$ 18,000	\$ 18,000	\$ 19,000	\$ 19,000
<b>Total ER Monitor Cost</b>			<b>\$ 71,923</b>	<b>\$ 97,980</b>			<b>\$ 65,143</b>	<b>\$ 68,623</b>	\$ 71,643	\$ 75,123
<b>Average DAR Cost-2</b>			<b>\$ 84,952</b>				<b>\$ 66,883</b>		<b>\$ 73,383</b>	

**Notes:**

1-Benefits include: health insurance, retirement contribution.

2-Average DAR cost for each respective time period, entirely consumed by the Court Administration's budget utilizing DAR-Low and DAR-High cost averages.

## STENOGRAPHIC START-UP COSTS -- ATTACHMENT 3

		1 Courtroom		3rd Year Costs		5th Year Costs	
		Unit Costs					
Stenographic Machine - 3		\$ 5,100				\$ 3,200	
Stenographic Machine Support				\$ 345			
CAT Software		\$ 4,000		\$ 575		\$ 575	
Wheeled bag		\$ 200				\$ 200	
Notebook computer		\$ 800		\$ 800			
Notebook Carrying Bag		\$ 50		\$ 50		\$ 50	
External hard drive		\$ 75		\$ 75		\$ 75	
Power strip		\$ 25				\$ 25	
USB Microphone		\$ 50		\$ 50		\$ 50	
Realtime Cables & USB-Serial Adaptors		\$ 60				\$ 50	
FLASH DRIVES & SD CARDS		\$ 75		\$ 75		\$ 75	
Stationary&Ref.Materials		\$ 75		\$ 75		\$ 75	
Printer		\$ 350				\$ 350	
Toner/Ink		\$ 360		\$ 360		\$ 360	
Printer Paper		\$ 300		\$ 300		\$ 300	
Transcript Covers		\$ 100		\$ 100		\$ 100	
Word Index Separators		\$ 25		\$ 25		\$ 25	
CD Sleeves		\$ 20		\$ 20		\$ 20	
CD's		\$ 25		\$ 25		\$ 25	
Billing Software		\$ 100		\$ 50		\$ 50	
PDF Software		\$ 150		\$ 50		\$ 50	
Exhibit Stickers		\$ 40		\$ 40		\$ 40	
Notary Fee		\$ 30		\$ 30		\$ 30	
Anti-virus Software		\$ 35		\$ 35		\$ 35	
<b>Total Stenographic Cost-2</b>		<b>\$ 12,045</b>		<b>\$ 3,080</b>		<b>\$ 5,760</b>	
<b>STENOGRAPHER REPORTER</b>							
Salary-4		\$ 50,000		\$ 52,500		\$ 55,000	
Benefits <sup>1</sup>		\$ 20,000		\$ 21,000		\$ 22,000	
<b>Total</b>	<b>Salary &amp; Benefit for Stenographic Reporter</b>	<b>\$ 70,000</b>		<b>\$ 73,500</b>		<b>\$ 77,000</b>	

1-Benefits include: health insurance contribution, retirement contribution.

2-Stenographic start-up costs are borne by the Stenographic Court Reporter in the majority of jurisdictions throughout the United States. If court administration in your State bears some or all of these costs, this cost analysis will be of benefit to you in comparing what you pay for regarding Stenographic vs. DAR start-up costs.

3-This includes an \$1,800 trade-in value of the original stenographic machine towards the purchase of a new stenographic machine included in fifth-year costs.

4-Salary was based upon a national average, data provided by the National Committee of State Associations