



Accessible and Verifiable Voting Technology: All Charts

The latest version of this chart appears at <http://www.verifiedvotingfoundation.org/accesscharts>

Some people are concerned that requirements for voter-verified paper records may delay implementation of the Help America Vote Act's (HAVA) provisions for accessible voting systems. Nothing could be farther from the truth. Equipment exists today offering both accessible and auditable voting for all voters; it is not necessary to choose between the two.

Not all accessible equipment is created equal, however. Some systems offer a wider range of options. Some offer accessible features on all units, while others provide those features only when required. Demonstrations of auditable and accessible voting equipment have taken place from New Jersey to Oregon in recent months. Some vendors have worked with accessibility advocates to develop cross-disability access and broaden the range of available features and options.

The first chart below summarizes which accessibility and verifiability categories each voting technology model makes available. The accessibility categories on the first chart link to separate charts showing more specific accessibility features for each accessibility category.

Vendor	Model	Vision [chart]	Dexterity [chart]	Mobility [chart]	Hearing [chart]	Cognitive [chart]	All Units Accessible	VVPR on All?
AccuPoll	AVS 1000 ¹	partial	partial	minimal	complete	complete	yes	always
AutoMARK (ES&S)	ballot marking device ²	complete	complete	minimal	partial	partial	yes	always
Avante	Vote Trakker ³	partial	partial	partial	none	minimal	yes	always
Avante	Vote Trakker Full Face ⁴	partial	partial	minimal	none	minimal	yes	always
Diebold	AccuVote TS ⁵	minimal	minimal	complete	complete	minimal	no	optional
Diebold	AccuVote TSX ⁶	partial	minimal	partial	none	minimal	no	optional
ES&S	iVotronic ⁷	partial	minimal	partial	none	minimal	no	optional
ES&S	iVotronic LS ⁸	partial	minimal	none	partial	partial	no	optional
Hart Intercivic	eSlate ⁹	partial	partial	partial	complete	complete	no	optional
Populex	Digital Paper Ballot ¹⁰	partial	partial	none	partial	minimal	no	optional
Sequoia	AVC Edge ¹¹	partial	minimal	partial	minimal	partial	no	optional

Key to Overview Chart:

- A. "Vision" = The voting process shall be accessible to voters with visual disabilities, including partial vision, poor vision, color blindness, and blindness.¹²
- B. "Dexterity" = The voting process shall be accessible to voters who lack fine motor control or the use of their hands. All keys and controls should be operable with one hand and not require strong grasping, pinching, or twisting of the wrist.¹³
- C. "Mobility" = The voting process shall be accessible to voters who use mobility aids, including wheelchairs. All controls should be within reach of the voter.¹⁴
- D. "Hearing" = The voting process shall be accessible to voters with hearing disabilities, providing both audio and visual cues to the voter. Also no voting station will require speech for its operation.¹⁵
- E. "Cognitive" = The voting process shall be accessible to voters with cognitive disabilities. All voters should be able to negotiate the process effectively, efficiently, and comfortably.¹⁶
- F. "All Units Accessible" reflects whether the accessibility features are on each unit, or whether they are optional add-ons.
- G. "VVPR on All?" indicates whether the voter-verified paper record audit feature is available as part of every device, or whether it is an optional add-on.

Footnotes for Overview Chart:

1. <http://www.accupoll.com/TheAccuPollAdvantage/Brochures/accessibility.pdf>
2. <http://www.essvote.com/HTML/docs/AutoMark.pdf> (Note: Although some maintain that ballot-marking devices are not accessible to mobility-impaired and dexterity-impaired individuals due to the need to move the paper ballot from the device to the secure ballot box, in most areas election workers insert the ballots into the ballot box for all voters, and since it is possible to use privacy sleeves to maintain ballot secrecy for all voters, the ballot-marking devices provide as much accessibility to mobility-impaired and dexterity-impaired voters as to all other voters.)
3. <http://www.vote-trakker.com/White%20Papers/ACCESSIBLE%20VOTING%20with%20voter%20verifiable%20paper%20records%20in%20DRE%20Voting%20System.pdf> and http://www.vote-trakker.com/accessible_optical_voting.html
4. <http://www.vote-trakker.com/White%20Papers/fullfaceballottouchscreensystem.pdf> and http://www.vote-trakker.com/accessible_optical_voting.html

5. http://www6.diebold.com/dieboldes/accuvote_ts.htm
6. http://www6.diebold.com/dieboldes/accuvote_tsx.htm
7. <http://www.essvote.com/HTML/docs/iVotronic.pdf>
8. http://www.essvote.com/HTML/docs/ESS_iVotronic_LS.pdf
9. http://www.hartintercivic.com/files/accessible_DLA_12_rev.pdf
10. <http://www.populex.com/dfb.htm>
11. <http://www.sequoiavote.com/docs/AVCEdge.pdf>
12. <http://www.verifiedvotingfoundation.org/downloads/v1s2.pdf> pp.16-18
13. <http://www.verifiedvotingfoundation.org/downloads/v1s2.pdf> p.25
14. <http://www.verifiedvotingfoundation.org/downloads/v1s2.pdf> p.26
15. <http://www.verifiedvotingfoundation.org/downloads/v1s2.pdf> p.30
16. <http://www.verifiedvotingfoundation.org/downloads/v1s2.pdf> pp.30,34

Vision Chart:

<u>Vendor</u>	Model	<u>Display Font Size</u>	<u>Display Contrast</u>	<u>Display Color Shift</u>	<u>Audio Device</u>	<u>Audio Speed</u>	<u>Audio Volume</u>	<u>Voice Type</u>	<u>VVPR Readback</u>	<u>Tactile Keypad</u>	<u>Additional Features</u>	<u>All Units Accessible</u>	<u>VVPR on All?</u>
AccuPoll	AVS 1000 ¹	yes ²	yes ¹	yes ¹	yes ¹	no ³	yes ⁴	human ⁴	yes ¹	yes ¹	braille keypad, ¹ navigable audio ballot ¹	yes	always
AutoMARK (ES&S)	ballot marking device ⁵	yes ⁵	yes ⁶	yes ⁸	yes ⁵	yes ⁵	yes ⁷	synth ⁸	yes ⁹	yes ⁷	instructions in braille, repeat key ⁶	yes	always
Avante	Vote Trakker ¹⁰	yes ¹¹	no ¹²	yes ¹¹	yes ¹³	yes ¹³	no ¹²	synth ¹²	yes ¹⁴	yes ¹¹	navigable audio ballot ¹⁵	yes	always
Avante	Vote Trakker Full Face ¹⁶	yes ¹⁷	yes ¹⁶	yes ¹⁶	yes ¹⁶	-	-	-	yes ¹⁶	yes ¹⁶	-	yes	always
Diebold	AccuVote TS ¹⁸	yes ¹⁸	no ¹⁹	no ¹⁹	optional ¹⁸	no ¹²	yes ²⁰	human ¹²	-	no ²¹	-	no	optional
Diebold	AccuVote TSX ²²	yes ²²	yes ²³	yes ²³	optional ²²	yes ²⁴	-	-	-	no ²¹	-	no	optional
ES&S	iVotronic ²⁵	yes ²	no ¹²	-	yes ²⁵	no ²⁶	no ²⁶	human ¹²	-	yes ²⁷	braille keypad ²⁷	no	optional
ES&S	iVotronic LS ²⁸	yes ²⁸	yes ²⁸	-	yes ²⁸	-	-	-	-	-	-	no	optional
<u>Vendor</u>	Model	<u>Display Font Size</u>	<u>Display Contrast</u>	<u>Display Color Shift</u>	<u>Audio Device</u>	<u>Audio Speed</u>	<u>Audio Volume</u>	<u>Voice Type</u>	<u>VVPR Readback</u>	<u>Tactile Keypad</u>	<u>Additional Features</u>	<u>All Units Accessible</u>	<u>VVPR on All?</u>

Hart Intercivic	eSlate ²⁹	yes ²	yes ³⁰	-	optional ³¹	no ¹²	yes ³²	human ¹²	-	yes ³⁰	-	no	optional
Populex	Digital Paper Ballot ³³	yes ³⁴	yes ³⁵	yes ³⁵	yes ³	no ³	yes ³⁵	synth ³	yes ³⁵	-	-	yes	optional
Sequoia	AVC Edge ³⁶	yes ²	no ¹²	-	optional ³⁷	no ³⁸	yes ³⁸	human ¹²	-	optional ³⁷	braille keypad ³⁹	no	optional

Key to Vision Chart:

- A. "Display Font Size" = capability to enlarge font so that voters with limited vision can more easily read the text.
- B. "Display Contrast" = increase or change contrast so text stands out, for voters with color-blindness and/or limited vision.
- C. "Display Color Shift" varies the colors shown on the screen, for voters with color-blindness and/or limited vision.
- D. "Audio Device" refers to a feature which allows voters to hear the instructions and ballot choices read to them through headphones. Some systems use synthesized voice, while others use human voice. Only the AutoMARK offers synchronized audio/video (enables the audio interface to be synchronized to the text being displayed on the screen, an important benefit for voters with a variety of cognitive impairments). New draft NIST Voluntary Voting Systems Guidelines indicate "it is anticipated that this will become a requirement in future versions [of the VVSG]."
- E. "Audio Speed" refers to a feature which allows voters to adjust the speed at which text is read to them through headphones.
- F. "Audio Volume" refers to a feature which allows voters to adjust the volume at which text is read to them through headphones.
- G. "Voice Type" refers to recorded human speech or synthesized computer speech.
- H. "VVPR Readback" is an audio readback of the voter-verified paper record (VVPR) enabling the visually impaired voters to verify that their votes are recorded as intended and to make changes as necessary. In order to provide this feature, audio readback must be from the paper record itself and not from the voting machine's internal memory.
- I. "Tactile Keypad" refers to manual controls which may include Braille, specially raised or shaped buttons, etc., to facilitate the selection of choices as the voter goes through the ballot.

Footnotes for Vision Chart:

1. <http://www.accupoll.com/TheAccuPollAdvantage/Brochures/accessibility.pdf>
2. http://www.capc.umd.edu/rpts/md_evote_ContempVotingMach.pdf p.7
3. Missouri Assistive Technology Council (<http://www.at.mo.gov/>) accessibility comparison table created by Diane Cordry Golden, Spring 2005.
4. <http://www.accupoll.com/TheAccuPollAdvantage/WhitePapers/Accessible.pdf>
5. <http://www.essvote.com/HTML/docs/AutoMark.pdf> (Note: Although some maintain that ballot-marking devices are not accessible to mobility-impaired and dexterity-impaired individuals due to the need to move the paper ballot from the device to the secure ballot box, in most areas election workers insert the ballots into the ballot box for all voters, and since it is possible to use privacy sleeves to maintain ballot secrecy for all voters, the ballot-marking devices provide as much accessibility to mobility-impaired and dexterity-impaired voters as to all other voters.)
6. http://www.solidworks.com/pages/popups/viewrelease.html?prfile=11_01_2004.html
7. <http://www.automarkts.com/> under tutorial under navigation
8. <http://www.johnson-county.com/auditor/min/050502vote.htm>
9. <http://vote.nist.gov/NISTEACResaultest.pdf> under “ensuring access to voting”
10. <http://www.vote-trakker.com/White%20Papers/ACCESSIBLE%20VOTING%20with%20voter%20verifiable%20paper%20records%20in%20DRE%20Voting%20System.pdf> and http://www.vote-trakker.com/accessible_optical_voting.html
11. http://www.uhavavote.org/vendorfair/survey_results/avante_4.5.doc
12. <http://www.cvfieldsmbp.org/Voting%20Technology%20for%20People%20With%20Disabilities.pdf> p.42
13. <http://www.afb.org/afbpres/pub.asp?DocID=aw050404&select=1#1> under Voting Machines: Vote-Trakker
14. <http://www.votersunite.org/info/ElectronicVotingInBrief.pdf> p. 3
15. http://www.verifiedvoting.org/downloads/Avante_AccessibleVVPB.pdf p.4
16. <http://www.vote-trakker.com/White%20Papers/fullfaceballottouchscreensystem.pdf> and http://www.vote-trakker.com/accessible_optical_voting.html

17. <http://www.vote-trakker.com/evc308sprff.html>
18. http://www6.diebold.com/dieboldes/accuvote_ts.htm
19. Email letter from Carrie Frank at Diebold Corporation, July 5, 2005 (with attached chart).
20. <http://www.cs.umd.edu/~bederson/voting/umd-dre-report.pdf>
21. Diebold claims that their machines have a tactile keyboard, but in their letters they describe it as a telephone keypad with a dotted five key, which is a regular telephone keypad.
22. http://www6.diebold.com/dieboldes/accuvote_tsx.htm
23. Email letter from Buck Jones at Diebold Corporation, July 3, 2005.
24. http://www.tbpc.state.tx.us/cat_page/578-N1DieboldAccuVoteTSX.pdf p. 3
25. <http://www.essvote.com/HTML/docs/iVotronic.pdf>
26. <http://www.cvfieldsmbp.org/Voting%20Technology%20for%20People%20With%20Disabilities.pdf> p.22
27. <http://www.essvote.com/HTML/products/ivotronic.html> right column
28. http://www.essvote.com/HTML/docs/ESS_iVotronic_LS.pdf
29. http://www.hartintercivic.com/files/accessible_DLA_12_rev.pdf
30. http://www.uhavavote.org/vendorfair/survey_results/hart_4.5.doc p.1
31. <http://www.hartintercivic.com/innerpage.php?pageid=26> DAU section
32. <http://www.cvfieldsmbp.org/Voting%20Technology%20for%20People%20With%20Disabilities.pdf> p.27
33. <http://www.populex.com/dfb.htm>
34. <http://www.advocacyla.org/whatsnew.html>
35. http://www.populex.com/DPB_Features.htm in "Allows blind and visually impaired voting" section

36. <http://www.sequoiavote.com/docs/AVCEdge.pdf>
37. http://www.dcboee.org/pdf_files/AVC_Edge_Web_Instructions.pdf p.5
38. <http://www.cvfieldsmbp.org/Voting%20Technology%20for%20People%20With%20Disabilities.pdf> p.33
39. http://www.capc.umd.edu/rpts/md_evote_ContempVotingMach.pdf

Dexterity Chart:

<u>Vendor</u>	Model	<u>Touchscreen</u>	<u>Sip/ Puff</u>	<u>Joystick</u>	<u>Foot Pedal</u>	<u>Jelly Switch</u>	<u>Additional Features</u>	<u>All Units Accessible</u>	<u>VVPR on All?</u>
<u>AccuPoll</u>	<u>AVS 1000</u> ¹	yes ²	yes ¹	-	-	yes ³	-	yes	always
<u>AutoMARK (ES&S)</u>	<u>ballot marking device</u> ⁴	yes ⁴	yes ⁴	yes ⁵	yes ⁵	-	write-in capability ⁶ input for any stereo switch ⁷	yes	always
<u>Avante</u>	<u>Vote Trakker</u> ⁸	yes ⁹	optional ¹⁰	-	-	-	-	yes	always
<u>Avante</u>	<u>Vote Trakker Full Face</u> ¹¹	yes ¹²	optional ¹⁰	-	-	-	-	yes	always
<u>Diebold</u>	<u>AccuVote TS</u> ¹³	yes ¹³	no ⁵	no ⁵	no ⁵	no ⁵	-	no	optional
<u>Diebold</u>	<u>AccuVote TSX</u> ¹⁴	yes ¹⁴	planned ¹⁵	no ⁵	no ⁵	no ⁵	tethered telephone keypad ¹⁶	no	optional
<u>ES&S</u>	<u>iVotronic</u> ¹⁷	yes ²	no ¹⁸	-	-	-	-	no	optional
<u>ES&S</u>	<u>iVotronic LS</u> ¹⁹	yes ¹⁹	-	-	-	-	-	no	optional
<u>Hart Intercivic</u>	<u>eSlate</u> ²⁰	no ²	optional ²¹	-	-	optional ²¹	optional blink device ²²	no	optional
<u>Populex</u>	<u>Digital Paper Ballot</u> ²³	yes ²⁴	optional ²⁴	-	-	-	-	no	optional
<u>Sequoia</u>	<u>AVC Edge</u> ²⁵	yes ²	no ²⁶	-	-	-	-	no	optional

Key to Dexterity Chart:

A. "Touchscreen" refers to a computer monitor screen which allows a voter to make selections by touching the screen. Example:
<http://www.emi-marine.com/products/dps/images/touchscreen%20to%20night%20mode.jpg>



Photo credit: Touchscreen from Engine Motor, Inc. (www.emi-marine.com)

B. "Sip/Puff" refers to a straw-like accessory which enables a voter to make selections by either sucking from or blowing into the device. Example: http://www.orin.com/access/images/sip_pufED.jpg



Photo credit: Sip and puff device from Origin Instruments Corp. (<http://orin.com/index.htm>)

C. "Joystick" refers to a hand-controlled lever which enables a voter to make selections by pressing on it in different directions. Example:

<http://www.aerotech.com/products/accessories/pics/joystick.jpg>



D. "Foot Pedal" refers to device that permits a voter to make selections using his/her foot. Example:

<http://www.atpm.com/9.01/images/kinesis-foot-pedal.jpg>



E. "Jelly Switch" refers to a single input switch which has a large surface area and is very sensitive to the touch. Example:
<http://www.tecsol.com.au/images/JBx2-Holder.jpg>

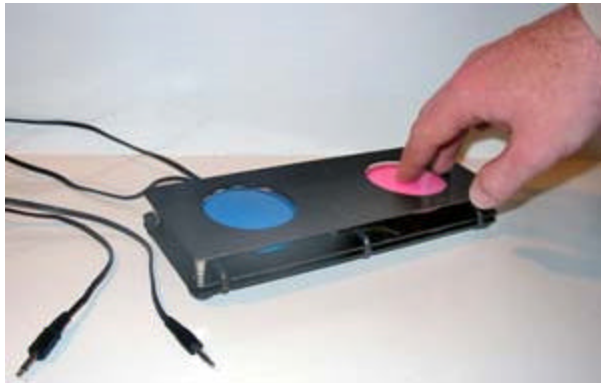


Photo credit: Disability Access Switch from Technical Solutions Australia (www.tecsol.com.au)

Footnotes for Dexterity Chart:

1. <http://www.accupoll.com/TheAccuPollAdvantage/Brochures/accessibility.pdf>
2. http://www.capc.umd.edu/rpts/md_evote_ContempVotingMach.pdf p.7
3. Confirmed by email from Frank Wiebe, AccuPoll Media Relations
4. <http://www.essvote.com/HTML/docs/AutoMark.pdf> (Note: Although some maintain that ballot-marking devices are not accessible to mobility-impaired and dexterity-impaired individuals due to the need to move the paper ballot from the device to the secure ballot box, in most areas election workers insert the ballots into the ballot box for all voters, and since it is possible to use privacy sleeves to maintain ballot secrecy for all voters, the ballot-marking devices provide as much accessibility to mobility-impaired and dexterity-impaired voters as to all other voters.)
5. http://electionarchive.net/doc_other/dopp/AdviceReDiebolds.pdf pp.8,9
6. <http://www.automarkts.com/> under tutorial under write-in screen
7. <http://www.automarkts.com/FAQ.htm> under "What options does Automark offer limited mobility users?"
8. <http://www.vote-trakker.com/White%20Papers/ACCESSIBLE%20VOTING%20with%20voter%20verifiable%20paper%20records%20in%20DRE%20Voting%20System.pdf> and http://www.vote-trakker.com/accessible_optical_voting.html

9. <http://www.afb.org/afbp/press/pub.asp?DocID=aw050404&select=1#1>
10. Email letter from Rick Gleim of Avante, August 1, 2005, and telephone call Cynthia Chu of Avante, August 3, 2005.
11. <http://www.vote-trakker.com/White%20Papers/fullfaceballottouchscreensystem.pdf> and http://www.vote-trakker.com/accessible_optical_voting.html
12. <http://www.vote-trakker.com/evc308sprff.html>
13. http://www6.diebold.com/dieboldes/accuvote_ts.htm
14. http://www6.diebold.com/dieboldes/accuvote_tsx.htm
15. Email letter from Carrie Frank at Diebold Corporation, July 5, 2005 (attached chart).
16. Email letter from Buck Jones at Diebold Corporation, July 3, 2005.
17. <http://www.essvote.com/HTML/docs/iVotronic.pdf>
18. <http://www.sdsos.gov/3-20-03min.htm>
19. http://www.essvote.com/HTML/docs/ESS_iVotronic_LS.pdf
20. http://www.hartintercivic.com/files/accessible_DLA_12_rev.pdf
21. <http://www.hartintercivic.com/innerpage.php?pageid=26> DAU section
22. <http://www.cvfieldsmbp.org/Voting%20Technology%20for%20People%20With%20Disabilities.pdf> p.38
23. <http://www.populex.com/dfb.htm>
24. <http://www.advocacyla.org/whatsnew.html>
25. <http://www.sequoiaivote.com/docs/AVCEdge.pdf>
26. <http://www.sdsos.gov/5-15-03min.htm>

Mobility Chart:

<u>Vendor</u>	Model	<u>Height Adjustment</u>	<u>Tilt Adjustment</u>	<u>Booth Size</u>	<u>Lap Voting</u>	<u>Additional Features</u>	<u>All Units Accessible</u>	<u>VVPR on All?</u>
AccuPoll	AVS 1000 ¹	-	-	-	minimal ²	-	yes	always
AutoMARK (ES&S)	ballot marking device ³	-	-	-	-	-	yes	always
Avante	Vote Trakker ⁴	yes ⁵	no ⁵	-	minimal ⁵	-	yes	always
Avante	Vote Trakker Full Face ⁶	yes ⁵	no ⁷	-	minimal ⁸	-	yes	always
Diebold	AccuVote TS ⁹	yes ⁵	yes ⁵	-	yes ⁵	-	no	optional
Diebold	AccuVote TSX ¹⁰	-	yes ¹¹	-	yes ¹⁰	-	no	optional
ES&S	iVotronic ¹²	yes ⁵	no ⁵	-	yes ⁵	-	no	optional
ES&S	iVotronic LS ¹³	-	-	-	-	-	no	optional
Hart Intercivic	eSlate ¹⁴	yes ⁵	no ⁵	-	yes ¹⁵	-	no	optional
Populex	Digital Paper Ballot ¹⁶	-	-	-	-	-	no	optional
Sequoia	AVC Edge ¹⁷	yes ⁵	yes ⁵	28x28x60 ¹⁷	no ⁵	-	no	optional

Key to Mobility Chart:

- A. "Height Adjustment" = A mobility disabled voter can adjust the height of the booth.
- B. "Tilt Adjustment" = A mobility disabled voter can adjust the tilt of the screen.
- C. "Booth Size" = These measurements are the dimensions of the voting booth in inches.
- D. "Lap Voting" = Voters can place the entire machine in their laps to make the voting process easier.

Footnotes for Mobility Chart:

1. <http://www.accupoll.com/TheAccuPollAdvantage/Brochures/accessibility.pdf>
2. Email letter from Frank Wiebe of AccuPoll, July 5, 2005.
3. <http://www.essvote.com/HTML/docs/AutoMark.pdf> (Note: Although some maintain that ballot-marking devices are not accessible to mobility-impaired and dexterity-impaired individuals due to the need to move the paper ballot from the device to the secure ballot box, in most areas election workers insert the ballots into the ballot box for all voters, and since it is possible to use privacy sleeves to maintain ballot secrecy for all voters, the ballot-marking devices provide as much accessibility to mobility-impaired and dexterity-impaired voters as to all other voters.)
4. <http://www.vote-trakker.com/White%20Papers/ACCESSIBLE%20VOTING%20with%20voter%20verifiable%20paper%20records%20in%20DRE%20Voting%20System.pdf> and http://www.vote-trakker.com/accessible_optical_voting.html
5. <http://www.cvfieldsmbp.org/Voting%20Technology%20for%20People%20With%20Disabilities.pdf> p.37
6. <http://www.vote-trakker.com/White%20Papers/fullfaceballottouchscreensystem.pdf> and http://www.vote-trakker.com/accessible_optical_voting.html
7. Email letter from Rick Gleim of Avante, August 1, 2005.
8. You can place the keyboard, but not the screen, in your lap. Email letter from Rick Gleim of Avante, August 1, 2005.
9. http://www6.diebold.com/dieboldes/accuvote_ts.htm
10. http://www6.diebold.com/dieboldes/accuvote_tsx.htm
11. http://www.tbpc.state.tx.us/cat_page/578-N1DieboldAccuVoteTSX.pdf under "accessibility"
12. <http://www.essvote.com/HTML/docs/iVotronic.pdf>
13. http://www.essvote.com/HTML/docs/ESS_iVotronic_LS.pdf
14. http://www.hartintercivic.com/files/accessible_DLA_12_rev.pdf under "lightweight and portable"
15. <http://www.sequoiaivote.com/docs/AVCEdge.pdf>
16. <http://www.populex.com/dfb.htm>
17. <http://sequoiaivote.com/productguide.php?product=AVC%20Edge&type=Specifications>

Hearing Chart:

<u>Vendor</u>	Model	<u>Written Help and Instructions</u>	<u>Synched Audio & Video</u>	<u>Additional Features</u>	<u>All Units Accessible</u>	<u>VVPR on All?</u>
<u>AccuPoll</u>	<u>AVS 1000</u> ¹	yes ²	yes ¹	-	yes	always
<u>AutoMARK (ES&S)</u>	<u>ballot marking device</u> ³	instructions only ⁴	yes ⁵	-	yes	always
<u>Avante</u>	<u>Vote Trakker</u> ⁶	no ²	no ⁷	-	yes	always
<u>Avante</u>	<u>Vote Trakker Full Face</u> ⁸	no ²	no ⁹	-	yes	always
<u>Diebold</u>	<u>AccuVote TS</u> ¹⁰	yes ¹¹	no ¹¹	-	no	optional
<u>Diebold</u>	<u>AccuVote TSX</u> ¹²	-	-	-	no	optional
<u>ES&S</u>	<u>iVotronic</u> ¹³	no ²	no ⁷	-	no	optional
<u>ES&S</u>	<u>iVotronic LS</u> ¹⁴	yes ¹⁴	-	-	no	optional
<u>Hart Intercivic</u>	<u>eSlate</u> ¹⁵	yes ²	yes ⁷	-	no	optional
<u>Populex</u>	<u>Digital Paper Ballot</u> ¹⁶	-	yes ¹⁷	-	no	optional
<u>Sequoia</u>	<u>AVC Edge</u> ¹⁸	instructions only ¹⁹	no ⁷	-	no	optional

Key to Hearing Chart:

- A. "Written Help and Instructions" = The computer screen displays written help and instructions to aid the voter.
- B. "Synched Audio & Video" = When the voter uses the audio option, text will appear on the screen at the same time it is played through the audio.

Footnotes for Hearing Chart:

- <http://www.accupoll.com/TheAccuPollAdvantage/Brochures/accessibility.pdf>
- http://www.capc.umd.edu/rpts/md_evote_ContempVotingMach.pdf p.9

3. <http://www.essvote.com/HTML/docs/AutoMark.pdf> (Note: Although some maintain that ballot-marking devices are not accessible to mobility-impaired and dexterity-impaired individuals due to the need to move the paper ballot from the device to the secure ballot box, in most areas election workers insert the ballots into the ballot box for all voters, and since it is possible to use privacy sleeves to maintain ballot secrecy for all voters, the ballot-marking devices provide as much accessibility to mobility-impaired and dexterity-impaired voters as to all other voters.)
4. <http://www.automarkts.com> under tutorial
5. <http://vote.nist.gov/NISTEACResaultest.pdf>
6. <http://www.vote-trakker.com/White%20Papers/ACCESSIBLE%20VOTING%20with%20voter%20verifiable%20paper%20records%20in%20DRE%20Voting%20System.pdf> and http://www.vote-trakker.com/accessible_optical_voting.html
7. <http://www.cvfieldsmbp.org/Voting%20Technology%20for%20People%20With%20Disabilities.pdf> p.42
8. <http://www.vote-trakker.com/White%20Papers/fullfaceballottouchscreensystem.pdf> and http://www.vote-trakker.com/accessible_optical_voting.html
9. Email letter from Rick Gleim of Avante, August 1, 2005.
10. http://www6.diebold.com/dieboldes/accuvote_ts.htm
11. <http://www.cs.umd.edu/~bederson/voting/umd-dre-report.pdf>
12. http://www6.diebold.com/dieboldes/accuvote_tsx.htm
13. <http://www.essvote.com/HTML/docs/iVotronic.pdf>
14. http://www.essvote.com/HTML/docs/ESS_iVotronic_LS.pdf
15. http://www.hartintercivic.com/files/accessible_DLA_12_rev.pdf
16. <http://www.populex.com/dfb.htm>
17. Missouri Assistive Technology Council (<http://www.at.mo.gov/>) accessibility comparison table created by Diane Cordry Golden, Spring 2005.
18. <http://www.sequoiaivote.com/docs/AVCEdge.pdf>
19. <http://www.sequoiaivote.com/bAVCEdge.php>

Cognitive Chart:

<u>Vendor</u>	Model	<u>Synched Audio & Video</u>	<u>Help Button</u>	<u>Language Translations</u>	<u>Additional Features</u>	<u>All Units Accessible</u>	<u>VVPR on All?</u>
AccuPoll	AVS 1000 ¹	yes ¹	yes ²	yes ³	-	yes	always
AutoMARK (ES&S)	ballot marking device ⁴	yes ⁵	-	yes ⁶	-	yes	always
Avante	Vote Trakker ⁷	no ⁸	no ²	yes ⁷	-	yes	always
Avante	Vote Trakker Full Face ⁹	no ¹⁰	no ²	yes ⁹	-	yes	always
Diebold	AccuVote TS ¹¹	no ⁸	no ¹²	yes ¹¹	-	no	optional
Diebold	AccuVote TSX ¹³	-	-	yes ¹³	-	no	optional
ES&S	iVotronic ¹⁴	no ⁸	no ²	yes ¹⁵	-	no	optional
ES&S	iVotronic LS ¹⁶	-	yes ¹⁶	yes ¹⁶	full-face ballot	no	optional
Hart Intercivic	eSlate ¹⁷	yes ⁸	yes ²	yes ¹⁸	-	no	optional
Populex	Digital Paper Ballot ¹⁹	yes ²⁰	-	-	-	no	optional
Sequoia	AVC Edge ²¹	no ⁸	yes ²	yes ²²	-	no	optional

Key to Cognitive Chart:

- A. "Synched Audio & Video" = When the voter uses the audio option, text will appear on the screen at the same time it is played through the audio.
- B. "Help Button" = A button on the voting machine, usually labeled help, that voters can press to call a poll worker for assistance.
- C. "Language Translations" = A language translation option for voters who speak languages other than english. Regardless of the language, candidate names shall be displayed or pronounced in English on all ballots. For written languages that do not use Roman characters, the ballot shall include transliteration of candidate names into the relevant language.

Footnotes for Cognitive Chart:

1. <http://www.accupoll.com/TheAccuPollAdvantage/Brochures/accessibility.pdf>
2. http://www.capc.umd.edu/rpts/md_evote_ContempVotingMach.pdf p.9
3. <http://www.accupoll.com/TheAccuPollAdvantage/Brochures/avs1000.pdf> p.2
4. <http://www.essvote.com/HTML/docs/AutoMark.pdf> (Note: Although some maintain that ballot-marking devices are not accessible to mobility-impaired and dexterity-impaired individuals due to the need to move the paper ballot from the device to the secure ballot box, in most areas election workers insert the ballots into the ballot box for all voters, and since it is possible to use privacy sleeves to maintain ballot secrecy for all voters, the ballot-marking devices provide as much accessibility to mobility-impaired and dexterity-impaired voters as to all other voters.)
5. <http://vote.nist.gov/NISTEACResaultitest.pdf>
6. <http://www.essvote.com/HTML/products/automark.html>
7. <http://www.vote-trakker.com/White%20Papers/ACCESSIBLE%20VOTING%20with%20voter%20verifiable%20paper%20records%20in%20DRE%20Voting%20System.pdf> and http://www.vote-trakker.com/accessible_optical_voting.html
8. <http://www.cvfieldsmbp.org/Voting%20Technology%20for%20People%20With%20Disabilities.pdf> p. 42
9. <http://www.vote-trakker.com/White%20Papers/fullfaceballottouchscreensystem.pdf> and http://www.vote-trakker.com/accessible_optical_voting.html
10. Email letter from Rick Gleim of Avante, August 1, 2005.
11. http://www6.diebold.com/dieboldes/accuvote_ts.htm
12. <http://www.cs.umd.edu/~bederson/voting/umd-dre-report.pdf>
13. http://www6.diebold.com/dieboldes/accuvote_tsx.htm
14. <http://www.essvote.com/HTML/docs/iVotronic.pdf>
15. http://www.srqelections.com/ivotronic/ivotronic_details.htm

16. http://www.essvote.com/HTML/docs/ESS_iVotronic_LS.pdf
17. http://www.hartintercivic.com/files/accessible_DLA_12_rev.pdf
18. http://www.uhavavote.org/vendorfair/survey_results/hart_4.5.doc p.1
19. <http://www.populex.com/dfb.htm>
20. Missouri Assistive Technology Council (<http://www.at.mo.gov/>) accessibility comparison table created by Diane Cordry Golden, Spring 2005.
21. <http://www.sequoiaivote.com/docs/AVCEdge.pdf>
22. <http://www.acb.org/resources/votingbook1.html#ar14> Sequoia AVC Edge factsheet

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