

Lever Replacement Costs: Case Study of a Small New York County (County X)

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Findings

Help America Vote Act (HAVA) funds will not cover County X's first-year costs of replacing levers. Costs will be at least **\$293,886** more than the county's HAVA §102 funds designated for replacing levers. The shortfall will nearly deplete the county's HAVA §101 and §251 funds of \$333,733 that are intended for meeting HAVA requirements and for making election-administration improvements (such as ensuring ADA compliance).

After the first year, recurring annual costs we were able to estimate could be **\$150,000** or more above the current cost of conducting elections with levers supplemented by accessible Ballot Marking Devices (BMDs).

The table below summarizes the county's HAVA funds and the costs we could estimate for BMDs and replacing levers. We did not distinguish between costs that are eligible vs. ineligible for HAVA funds, nor between costs for which the county will use HAVA vs. county funds.

HAVA Funds by Source (Section 10)	§101, §251	§102	Total all \$s
Title I, Section 101	\$12,531		\$12,531
Title I, Section 102		\$194,247	\$194,247
Title II, Section 251	\$547,877		\$547,877
Interest earned	\$71,528	\$23,580	\$95,108
County's matching funds required by §251	\$28,836		\$28,836
Total HAVA Funds	\$660,772	\$217,827	\$878,599
Expenditures and Costs (Section 9)			
2006 to present, expenditures for 25 BMDs	(\$309,457)		(\$309,457)
BMD programming & transport (2009, 2010)	(\$17,582)		(\$17,582)
36 scanners to replace levers		(\$262,800)	(\$262,800)
Additional first-year costs for lever replacement *		(\$150,381)	(\$150,381)
Ballots & audits for primary & general elections		(\$98,532)	(\$98,532)
Funds Minus Expenditures and Costs	\$333,733	(\$293,886)	\$39,847
Costs we could not estimate: storage and security for equipment and ballots, additional personnel, inventory control, consumables, escalating audits, reprinting ballots (Section 1.b)	(???)	(???)	(???)

* County X plans to purchase as much accessory equipment as possible from sources other than their scanner vendor, to share vendor training classes with adjoining counties, and to forego vendor onsite support. **In these ways, the county expects to save over \$70,000 in first-year costs they would otherwise pay to the vendor** (see page 2).

Acknowledgements

Election commissioners in a small New York county worked with us for two months on this study of their lever replacement costs. They provided information about their county's HAVA funds, their plans, and the methods they intend to use to cut costs. They reviewed our work three times, providing suggestions and documentation so that the study could accurately reflect their county's situation. However, when the report was complete, they asked us not to identify them as agreeing with the analysis, though they declined to state which details in the report they believed were incorrect. So, we are using the terms "County X" and "Commissioner Y."

Commissioner Y was not only essential to our study and generous with time but also exhibited commendable frugality, vendor-independence, and forethought about the ways to cut costs. The table below shows the additional costs County X might incur for lever replacement if not for Commissioner Y's proactive, creative efforts – an additional **\$72,560** in the costs of these items alone.

Cost	-----Estimate Based on -----	
	County X's Plan	Vendor's Price List
Privacy booths (Sec. 2.b)	\$19,250	\$38,500
Year 1 accessories (Sec. 2.c)	\$17,390	\$26,590
Equipment for the EMS (Sec. 2.d)	\$11,000	\$22,010
Training for poll worker trainers (Sec. 4.b)	\$0	\$4,500
Training for Voting Machine Technicians (Sec. 4.h)	\$7,000	\$17,300
Vendor on-site support (minimum) (Sec. 7)	\$0	\$18,300
Total	\$54,640	\$127,200

Our thanks go to Commissioner Y, without whose assistance this study could not have been done. Our thanks go also to Columbia County Election Commissioner Virginia Martin, Howard Stanislevic of the E-Voter Education Project, Andi Novick of the Election Transparency Coalition, and Sally Castleman of the Election Defense Alliance for their review comments.

Document Revision Information

Significant updates will be assigned a new major version number, and details will be recorded on this page. Minor additions or corrections will be assigned a new minor version number and will be noted in footnotes.

[July 24, 2009. Rev. 1.1. Revised the acknowledgements to explicitly state that County X did not agree with our analysis.]

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Lever Replacement Costs: Case Study of a Small New York County (County X)

1. Executive Summary

Costs of replacing lever voting machines with electronic scanners will deplete County X's HAVA funds entirely, including:

- HAVA §102 funds for lever replacement,
- HAVA §101 and §251 funds for election administration and meeting §301 requirements
- HAVA §251 matching funds supplied by the county.

Associated costs that recur annually – such as printing paper ballots, quarterly testing, 3% audits, storage, security, and inventory management – are estimated to be at least \$150,000 and will be borne directly by county taxpayers.

1.a Findings.

County X currently uses a voting system that includes:

- ImageCast ballot marking devices (BMDs) in each poll site for voters with disabilities.
- Lever voting machines in each poll site for other voters.
- Hand counting of absentee and BMD ballots.

County X selected the ImageCast Precinct BMD, sold by Sequoia Voting Systems, to satisfy their accessibility requirements. This unit houses an accessible BMD on one side and a ballot scanner on the other.

The county owns 25 ImageCasts and has fielded 22 of them with only the BMD portion operational; the remaining three are reserved for training.

Current New York State law requires replacement of the levers. To replace them, County X will begin to use the scanner portion of its 25 ImageCasts and will purchase another 36 ImageCasts for use as scanners only.

# ImageCasts	Purpose for County X
22	Poll site use as BMDs starting in 2008 Poll site use as BMDs and scanners starting in 2010
3	BMD training, starting in 2008 BMD and scanner training, starting in 2010
36	Poll site use as scanners to replace levers, starting in 2010

Help America Vote Act (HAVA) funds will not cover County X's first-year costs of replacing levers. Costs will be at least **\$293,886** more than the county's HAVA §102 funds designated for replacing levers. The shortfall will nearly deplete the county's HAVA §101 and §251 funds of \$333,733 that are intended for meeting HAVA requirements and for making election-administration improvements (such as ensuring ADA compliance).

After the first year, recurring annual costs we were able to estimate could be as high as **\$150,000** or more above the current cost of conducting elections with levers supplemented by accessible Ballot Marking Devices (BMDs).

The table below summarizes the county's HAVA funds and the costs we could estimate for BMDs and replacing levers. We did not distinguish between costs that are eligible vs. ineligible for HAVA funds, nor between costs for which the county will use HAVA vs. county funds.

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* County X plans to purchase as much accessory equipment as possible from sources other than the Sequoia, to share Sequoia training classes with adjoining counties; and to forego Sequoia onsite support. **In these ways, the county expects to save over \$70,000 in first-year costs they would otherwise pay to Sequoia** (see page 2).

1.b Limitations.

Many significant costs associated with replacing levers are as yet unknown, including:

Environmentally-controlled storage for new electronic equipment and accessories	???
Laying out ballots in the new format	???
Security for ballots and memory cards before, during, and after election day	???
Storage for ballots after elections	???
Inventory control and tracking for equipment and accessories	???
Replacement of consumable accessories	???
Security for equipment while out of the warehouse for election use	???
Compensation for additional staff and consultants	???

Replacement may also include increased costs for:

Additional poll worker training facilities	???
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Some costs are unpredictable or dependent on unpredictable events, such as:

Additional training that proves necessary	???
Vendor support if unexpected problems occur	???
Reprinting ballots when the layout changes after the initial printing	???
Escalating manual audit of ballots if discrepancies are found	???

1.c Methodology.

No governmental agency or official has published a comprehensive study of the costs of replacing lever machines, nor the costs of using voter-marked paper-ballots and precinct-based optical scanners (PBOS) in future years. This document has been prepared in order to:

- Inform officials and the public about the financial impact to County X of replacing lever machines with ImageCast scanners.
- Highlight expenses that are unknown at present.
- Assist other New York counties currently using ImageCast BMDs to estimate their costs of converting from lever machines to a Sequoia PBOS system.

The authors attempted to obtain accurate information from official documents and County X officials. For example, the Sequoia prices we quoted are based on “Sequoia Response to New York State Office of General Services Pricing Forms.” All documents we used to prepare this report are listed in Appendix C, “Reference Documents.”

We tried to cover all areas that may involve cost to the public now and in the future. We are grateful to the County X Board of Elections (BOE) for responding to our questions. Without their help, this document could not have been prepared. However, this document is still not comprehensive due to the many types of information we were unable to obtain or predict, listed in Section 1.b.

1.d Allocation of costs to optical scanners vs. ballot-marking devices

Costs associated with ballot-marking devices (BMDs) are relevant to this study because they deplete the county’s HAVA funds and thus increase the total costs that will be borne by county taxpayers. BMD costs have been incurred and will continue to be incurred by the county regardless of whether the county replaces its lever machines.

We have attempted to separate BMD costs from lever replacement costs in every area of our analysis. However, in addition to the 36 scanners the county plans to purchase to replace levers, the 25 BMDs the county currently owns would also be used as scanners (22 in poll sites, and three for training). This made it difficult to allocate costs with precision in some areas.

For example, costs of training BOE staff and poll workers will include training for both the BMD and scanner. In order to estimate lever-replacement costs for training, we estimated the total cost of training and then allocated half to scanners and half to BMDs.

We allocated all costs of the Election Management System (EMS) hardware and software to lever replacement. Even though the EMS could be used to program ballots for both BMDs and scanners, County X did not purchase the EMS in 2008; instead the county hired Sequoia to do its ballot programming in 2008, and plans to have ballot programming done in the future either by a consultant or in collaboration with other counties. Thus the BOE would use the EMS only to aggregate scanner results, adjudicate ballot images,¹ and print election reports – activities associated only with lever replacement.

¹ Adjudication is the process of duplicating a ballot image electronically so that it will be accurately counted by the software, without altering the original image of the ballot. For example, if stray marks on a ballot are likely to cause the ballot to be counted incorrectly, the stray marks can be removed from the duplicate image so that the votes can be determined for counting.

2. Hardware Purchases

To replace its lever machines with ImageCast scanner systems, the county would need to purchase scanners, voting booths, secure ballot bins, accessories (such as seals and memory cards), and a computer system on which the Board of Elections would run its central Election Management System software. Most of these costs would be covered by HAVA funds, but after the first year, the continuing costs of servicing, repairing, and replacing broken equipment and replacing consumable accessories would likely be borne directly by county taxpayers.

Summary of Costs for Equipment	----Estimate for 36 Scanners and 220 Booths----	
	From Sequoia	From Best Source
Image Cast Scanners (Sec. 2.a)	\$262,800	\$262,800
Privacy booths (Sec. 2.b)	\$38,500	\$19,250
First year accessories (Sec. 2.c)	\$26,590	\$17,390
EMS equipment (Sec 2.d)	\$22,010	\$11,000
Total	\$349,900	\$310,440

2.a ImageCast Scanners.

County X currently owns 25 ImageCast Precinct machines, each of which includes both a scanner and an accessible BMD component – 22 units for poll site use and 3 for training. The county plans to purchase 36 additional scanners for poll site use and as spares.²

Sequoia’s quote to the state included a price of \$7,200 with a 3.5% discount per ImageCast scanner without accessibility components, yielding a cost of \$6,948³ per scanner. However, the cost to County X was not discounted and, in addition, Sequoia will charge \$100 per scanner for delivery. The total cost for 36 scanners will be \$262,800.

# of Scanners	Cost per Scanner	Total Cost
36	\$7,300	\$262,800

As required by law⁴, the scanner purchase price will include five years of hardware and software maintenance.

2.b Privacy booths.

Section 6210.19 of New York State regulations⁵ specifies the minimum number of privacy booths required per poll site for a presidential or gubernatorial election: poll sites with fewer than 6000 active registered voters must provide one privacy booth for each 250 such voters.

Each County X poll site serves approximately 2000 active registered voters, so 8 booths would be required per poll site. To avoid long lines and voter wait times, the commissioners may want to purchase additional booths for each poll site.⁶ Assuming 2 additional booths per poll site, the county would purchase 10 booths for each of 22 poll sites, or 220 booths.

² Interviews with Election Commissioner Y.

³ Sequoia prices quoted in this document are from “Sequoia Response to New York State Office of General Services Pricing Forms,” listed in Appendix C, “Reference Documents.”

⁴ “State of New York 2008 Election Law,” Section 7-204, page 235

⁵ “6210 Regulations,” page 45.

⁶ Interviews with Election Commissioner Y.

One non-accessible voting booth from Sequoia costs \$175. Less expensive voting booths are available from other sources. The following table shows a sampling of voting booths offered by ES&S, along with the one offered by Sequoia. The cost for 220 of these booths ranges from \$5,445 to \$69,300.

County X expects to reduce costs by purchasing privacy booths from a source other than Sequoia. We estimate County X's cost to be half the price of a Sequoia privacy booth.

Voting Booths	Cost Each	Cost for 220
Sequoia Voting Booth	\$175.00	\$38,500
Booths offered by ES&S:		
Cardboard Kora-Booth with no Light	\$24.75	\$5,445
Tote-A-Vote Portable Voting Booth	\$92.35	\$20,317
Pollstar Voting Booth with Lamp	\$138.60	\$30,492
Pollstar Standard Voting Booth without Lamp	\$145.00	\$31,900
Model VI Voting Booth without Lamp	\$220.50	\$48,510
Pollmaster I Voting Booth with Light & Shelf	\$250.00	\$55,000
Model VI Voting Booth with Lamp	\$257.25	\$56,595
Model VII Gemini Dual Voting Booth with Lamp	\$278.25	\$61,215
1 stall voting booth	\$315.00	\$69,300
Estimated cost, purchased from other sources	\$87.50	\$19,250

2.c Accessories for the first year.

Commissioner Y expects to purchase three secure ballot bins for each of the county's 70 election districts, for a total of 210 bins. The estimated cost for bins and security seals is \$8,190.⁷

Sequoia's price list for New York suggests that the county may need additional accessories for each scanner. The table below shows the accessories, Sequoia's prices for them, and the cost for the number of accessories needed for the first year for 36 new scanners. Estimated quantities are based on the best information available.

Accessories for the scanners on the 25 units with BMDs are not included in this estimate.

County X plans to purchase accessories and privacy sleeves at lower cost from sources other than Sequoia. We are estimating the county's cost to be half what Sequoia would charge.

Accessories for Scanners	Sequoia's Prices --Per Scanner--		--For 36 Scanners--		Cost
	Cost Each	#	Cost	#	
Memory Card (1 gigabyte)	\$125	2	\$250	72	\$9,000
Privacy Screen	\$100	1	\$100	36	\$3,600
Ballot Transfer Case	\$100	1	\$100	36	\$3,600
Accessories for Scanners			\$450		\$16,200

⁷ "County X 2010 Budget New Costs."

	Cost Each	---Per Booth---	--For 220 Booths--	
Secrecy Sleeves⁸ from Sequoia	\$5	2	\$10	440 \$2,200
<hr/>				
All Accessories	County X Cost		Full Cost	
210 Secure Ballot Bins & Seals	\$8,190		\$8,190	
For Scanners, half of \$16,200	\$8,100		\$16,200	
Secrecy Sleeves, half of \$2,200	\$1,100		\$2,200	
Year 1, Total for Accessories	\$17,390		\$26,590	

Other accessories, such as batteries, ballot box keys, iButton security keys, and precinct scanner counter keys are not listed separately in Sequoia’s price list and appear to be included in the base price of the scanner.

2.d Dedicated computers and peripherals for the Election Management System (EMS).

County X has not yet purchased the equipment needed for the central Election Management System (EMS) to be housed at the Board of Elections. The county plans to hire consultants or collaborate with other counties to perform ballot programming and would need the EMS equipment only after replacing levers in order to manage vote totals, ballot images, and reports.

The items listed below make up Sequoia’s quote for the “EMS Datacenter Express,” which Sequoia recommends as the minimum equipment for counties with fewer than 100 Election Districts. County X, with 70 Election Districts, would need this equipment.⁹

However, County X expects to enjoy significant savings by purchasing EMS system hardware and supporting software from sources other than Sequoia. We are estimating that the county would incur approximately half the cost that Sequoia would charge: \$11,000.

EMS Datacenter Express Components	Cost Each	#	Cost All
EMS Application Server Hardware	\$5,800	1	\$5,800
Cisco Catalyst Gigabit Switch Hardware (12 ports)	\$1,560	1	\$1,560
APC UPS Backup Devices (2 per EMS Datacenter) ¹⁰	\$975	2	\$1,950
Datacenter 25U Rack Hardware	\$1,040	1	\$1,040
Network and power cables	\$520	1	\$520
HP Laser Printer	\$650	1	\$650
Windows Server 2003 R2 Standard	\$1,950	1	\$1,950
SQL Server 2005 Standard	\$6,500	1	\$6,500
EMS EED Workstation Hardware with 20" LCD Screen	\$1,500	1	\$1,500
Windows XP Professional SP2	\$300	1	\$300
Compact Flash (CF) Card Programmer	\$75	2	\$150
I-Button Programmer	\$45	2	\$90
Total for Minimum Datacenter Express			\$22,010
Estimate, components purchased from other sources			\$11,000

⁸ Assumes two secrecy sleeves per privacy booth: one for the voter going into the booth, one for the voter taking the ballot to the scanner. See Section 2.b for calculations estimating the number of booths needed.

⁹ “Democracy Suite EMS Express System (< 100 ED's)”

¹⁰ Sequoia’s list states that two are needed, but the quote includes the price for only one. The table shows the price for two.

3. Software Licenses

Before each election, Sequoia’s Election Management System (EMS) software is required by a county to program its own ballots. After each election the EMS is required to upload tallies from individual scanners via memory cards, tabulate the results, “adjudicate” ballot images,¹¹ and print reports. This software would run on the county’s “EMS Datacenter Express” computers (Section 2.d).

County X plans to hire consultants or collaborate with other county BOEs for its ballot programming. However, when the county replaces its levers it will need the EMS in order to manage vote totals, ballot images, and reports.

Sequoia does not sell its EMS software; instead Sequoia licenses it for an annual fee.¹² This annual cost will continue for as long as County X uses the EMS.

3.a First year software license fee.

County X has not yet purchased a license for the EMS software. For the 2008 election the county paid Sequoia \$6,000 to program the accessible ballot marking device (BMD) portion of its 25 ImageCast units so they could be used as accessible voting stations. As long as lever machines continue to be used, the county plans to hire a consultant or collaborate with other counties to have the ballot programming done for the BMDs.¹³

Upon replacing its lever machines with optical scanners, the county will need to license Sequoia’s EMS software in order to manage the vote totals, ballot images, and reports as described above. For this reason, we regard the licensing fees as a cost of lever replacement.

The Sequoia price list for New York State¹⁴ shows a base price for the software license and an additional fee per workstation. For County X, the first-year license fees for one workstation would be:

License Type	Annual Fee
Base price	\$50,000
Additional fee per workstation	\$25,000
Total first-year fee	\$75,000

Sequoia charges on-site support fees for installing and setting up the EMS system on the server. For a county the size of County X, implementation is likely to take 3 days.¹⁵ The support costs would be:

EMS Implementation, Senior project manager	\$ per Day	Days	Support Fee
On-site support first day	\$3,300	1	\$3,300
On-site support additional days	\$2,000	2	\$4,000
Total implementation fees			\$7,300

¹¹ Adjudication is the process of duplicating a ballot image electronically so that it will be accurately counted by the software, without altering the original image of the ballot. For example, if stray marks on a ballot are likely to cause the ballot to be counted incorrectly, the stray marks can be removed.

¹² “5.0 Requirements & Requirements Response from Sequoia.” Page 175.

¹³ Interviews with Election Commissioner Y.

¹⁴ See Appendix B for a sampling of software license fees charged by Sequoia in other states.

¹⁵ Sequoia quoted these costs to Columbia County for 3 days service for implementing the EMS system. Columbia County has approximately the same number of voters as County X. See “Sequoia Sales Order: Columbia County.”

3.b Future software license fee increases.

In other jurisdictions Sequoia software license fees can increase significantly from one year to the next. For example:

- Sequoia’s contract with Alameda County, California stated a license fee of \$67,500 for 2007 through 2009, with the option to increase the fee 5% per year after 2009.
- Sequoia’s contract with Essex County, New Jersey stated a license fee of \$30,000 for 2005 through 2009, with the option to increase the fee by 10% after 2009.

We were unable to document Sequoia’s licensing fees for the second and subsequent years. Although the Sequoia price list for New York State gives the current license fee of \$75,000 per license, it is likely to increase by at least 5% per year in the future.

4. Training and Voter Education

Poll workers, BOE personnel, and voting machine technicians will require training to use the scanner functionality of the ImageCast (currently, training is required only for the ImageCast’s BMD functionality). Training for both the scanner and BMD portions of the ImageCast will require classes that are longer than comparable classes for lever machines and the BMD portion.

In addition, voters would need to be educated on how to use the new scanner system.

Sequoia support would be needed to train:

- Trainers for the poll workers
- Board of Election personnel to use the Election Management System software
- Voting machine technicians who will maintain and repair the equipment.

We arbitrarily attributed half of the cost for most training to scanner functionality. The exceptions are BOE training on the EMS and voter education, for which the full cost applies to lever replacement.

In addition to HAVA funds, the county has received a grant from the state for \$39,159 to cover the costs of voter education and poll worker training,¹⁶ leaving approximately **\$20,441** to be covered by county and/or HAVA funds.

Type of training required	Total Training	Scanner Training
Poll worker training	\$30,000	\$15,000
Training for trainers of poll workers	???	???
Training for BOE on ImageCast	\$9,000	\$4,500
Training for BOE on EMS	\$26,600	\$26,600
Training for voting machine technicians	\$7,000	\$3,500
Training for scanner functionality		\$49,600
Voter Education for using scanners		\$10,000
Estimated county costs for scanner training		\$59,600
Grant for educating voters and poll workers		(\$39,159)
Balance for county and/or HAVA to cover		\$20,441

¹⁶ Interviews with Election Commissioner Y.

4.a Poll worker training for the first year.

County X Election Commissioners have allocated \$30,000 for poll worker training for using the ImageCast scanners.¹⁷

4.b Training trainers for the poll workers.

Since the county conducts its own poll worker training, trainers would have to be prepared. Sequoia offers a 2-day or 3-day course to become a certified poll worker trainer.¹⁸ The number of participants is from 1 to 25. Sequoia charges \$2,900 for the first day of on-site training and \$1,600 for the second day.

With 280 poll workers,¹⁹ County X would need one class for fewer than 25 trainers.

Sequoia Training for Trainers	\$ per day	\$ if 2 days	\$ if 3 days
On-site class first day (1-25 students)	\$2,900	\$2,900	\$2,900
On-site class per additional day (1-25 students)	\$1,600	\$1,600	\$3,200
Sequoia's Total Fees for Training Trainers		\$4,500	\$6,100
Estimated cost for training by County X			???

County X Election Commissioners plan to train the trainers without Sequoia's assistance, so the cost, while unknown, is likely to be significantly less.

4.c Poll worker pay for training days.

Poll workers must be trained on the scanner features as well as the ballot marking features of the ImageCast. Class time for poll workers will be extended. The Board of Elections is not planning to increase the pay of poll workers for training or for working on election day.

4.d Additional poll worker training facilities.

It is unknown whether additional poll worker training facilities will be needed.

4.e Transporting equipment to training facilities.

It is likely that equipment used for BMD training can also be used for scanner training, so additional transportation costs may not be incurred.

4.f Voter education.

County X Election Commissioners have allocated \$10,000 for educating voters on the use of the ImageCast scanners.

4.g Training for the Board of Elections

State law requires contracts for voting systems to include vendor training on the system for the BOE personnel.²⁰

"Sequoia Response to New York State Office of General Services Pricing Forms" suggests the following courses for Board of Elections and gives the number of days per class and the costs. Each class will serve at least 10 participants, so County X is likely to need no more than one class of each type.

¹⁷ Interviews with Election Commissioner Y.

¹⁸ "5.0 Requirements & Requirements Response from Sequoia." Page 140 says the course is a 3-day seminar. "Sequoia Response to New York State Office of General Services Pricing Forms." Page 12 says the course is 2 days of training and gives the participant limit and the cost. We've used the cost and number of days from the price list.

¹⁹ Interviews with Election Commissioner Y.

²⁰ "State of New York Election Law." Section 7-204, page 235

The following table lists the types of training that would be required for using both BMD and scanner functionality of the ImageCast. We allocated half of the cost to scanners; these costs would apply to lever replacement.

Type of Training for BMD and Scanner	\$ per day	# days	Cost
Acceptance Test Training; 1-25 students; 2 days			
Onsite training, first day	\$2,900	1	\$2,900
Onsite training, additional days	\$1,600	1	\$1,600
Voting Equipment Training; 1-25 students; 2 days			
Onsite training, first day	\$2,900	1	\$2,900
Onsite training, additional days	\$1,600	1	\$1,600
Total Cost, Training for BMD and Scanner			\$9,000
Total Cost, Training for Scanner Only			\$4,500

County X may be able to decrease these costs further by sharing ImageCast training classes with adjoining counties. If that occurs, the costs will be less than \$4,500.

Election Commissioner Y expects that training on the Election Management System cannot be shared with adjoining counties, since the training is specific to the county.²¹ The following table lists the types of training required for the BOE and staff to learn to use the EMS. Since the county would have to purchase and use the EMS only if levers are replaced, all these costs apply to lever replacement.

Type of Training for EMS	\$ per day	# days	Cost
EMS Technical Training; 1-10 students; 5 days			
Onsite training, first day	\$2,900	1	\$2,900
Onsite training, additional days	\$1,600	4	\$6,400
EMS User Training; 1-10 students; 10 days			
Onsite training, first day	\$2,900	1	\$2,900
Onsite training, additional days	\$1,600	9	\$14,400
Total Cost for EMS Training			\$26,600

4.h Training for voting machine technicians.

Sequoia offers a class for 1-10 Voting Machine Technicians to maintain the ImageCast machines and conduct quarterly and pre-election testing. The class lasts 10 days, for a total cost of \$17,300.

By sharing training costs with adjoining counties, County X expects to cut the total expense to about \$7,000.²²

Sequoia Training for Voting Machine Technicians	\$ per day	# days	Cost
On-site training, first day	\$2,900	1	\$2,900
On-site training, additional days	\$1,600	9	\$14,400
Total Cost for Training Voting Machine Technicians			\$17,300
County X's Portion of Shared Cost			\$7,000

²¹ Interviews with Election Commissioner Y.

²² Interviews with Election Commissioner Y.

5. Per-Election Costs

Per-election costs of using scanners would be somewhat offset by not using levers, but such savings would fall far short of compensating for new and higher scanner costs, including:

- Ballot layout and programming
- Printing paper ballots
- Pre-election testing
- Mandatory 3% manual audit and possible escalating audits if discrepancies are found
- Transporting and securing equipment and ballots
- Replacing consumed accessories

5.a Ballot layout.

Ballot layout means setting up the ballots for printing. Contest names, candidate names, party names, other text, and graphic elements are entered and positioned as they will appear on the printed ballot. The county currently hires a print shop to perform layout and to print absentee ballots. However, scanner ballots and absentee ballots are different sizes and will require different layout. It is unknown who will do the layout for scanner ballots or what the cost will be.

Currently, the county lays out the ballot strips for the front of the lever machines. If these strips were no longer needed, the saving would somewhat offset the cost of ballot layout for scanners.

5.b Ballot programming.

Ballot programming means creating the election-specific ballot definition files that display the ballots on the BMDs and, when scanner functionality is used, determine which marks on a ballot are credited to which candidates in the scanner's internal electronic vote counters.

The county paid Sequoia approximately \$6000 to program BMD ballots for the 2008 elections. The BOE plans to hire consultants or collaborate with other county BOEs or the state BOE to do its future ballot programming at the same cost.²³ The same ballot programming can be used both for the BMD and the scanner; therefore, we did not consider ballot programming to be a cost of lever replacement.

Currently the county performs the mechanical programming for its lever machines. If this mechanical programming were no longer needed, the saving would somewhat offset the cost of contracting for software ballot programming for the BMDs and scanners.

5.c Printing paper ballots.

Sequoia prints ballots for \$0.57 per ballot.²⁴

²³ Interviews with Election Commissioner Y.

²⁴ "County X 2010 Budget New Costs."

Costs for primary and general elections. Given voters’ unfamiliarity with using paper ballots, voters may spoil some ballots. New York law allows each voter to receive a maximum of three ballots—one blank ballot upon signing in, and up to two blank replacement ballots for spoiled ballots.²⁵

For each election, it is necessary to print more ballots than active registered voters, as many as 110% or higher. County X has high turnout for both primary and general elections, and Election Commissioner Y plans to print ballots equal to 200% of active registered voters for each primary and general election during the first two years the scanners are used.²⁶ Fewer paper ballots may be needed in subsequent years.

The following table shows printing costs for different percentages of active registered voters. As of April 1, 2009, County X had 42,385 such voters.²⁷ The cost of printing ballots for 200% of this number of voters for the primary and general elections for one year would be **\$96,638**.

% of 42,385 Voters	# of Ballots	Cost per election at \$0.57 per ballot	Cost per year
90%	38,147	\$21,744	\$43,488
110%	46,624	\$26,575	\$53,150
150%	63,578	\$36,239	\$72,478
200%	84,770	\$48,319	\$96,638

It is not uncommon for County X to have to make a last-minute change to the ballot. When this occurs, the unpredictable, additional printing costs would be significant.

Savings related to lever strips or emergency ballots. County X currently prints lever strips for the 60 to 70 levers used per election. Lever strips cost a maximum of \$90 per machine. Installing lever strips costs about \$720 per election.²⁸

The county provides approximately 50 emergency ballots to each of the 22 polling places for use by voters in case of lever machine malfunction. These ballots cost about \$0.50 each.²⁹

If the lever machines were replaced with scanners, these lever strips and emergency ballots would no longer be needed. Eliminating them would save up to approximately **\$7,570** per election. This would partially offset the cost of printing scanner ballots.

	Cost Each	Cost per Election	Cost per Year
Strips for 70 lever machines	\$90	\$6,300	\$12,600
Installing lever strips		\$720	\$1,440
Total for Lever Strips		\$7,020	\$14,040
Printing 1100 emergency ballots	\$0.50	\$550	\$1,100
Total maximum savings		\$7,570	\$15,140

²⁵ “State of New York 2008 Election Law.” Section 8-312.1, page 261

²⁶ Interviews with Election Commissioner Y.

²⁷ “NYS Voter Enrollment by County, Party Affiliation and Status.”

²⁸ Interviews with Election Commissioner Y.

²⁹ Interviews with Election Commissioner Y.

Costs for special elections/local elections. County X rarely holds special elections; therefore we are not projecting costs for such elections.

5.d Pre-election testing.

Section 6210.8 of New York State Regulations³⁰ requires a “pre-qualification test” to be conducted on each voting system prior to its use in an election. For each ballot face to be scanned, a set of ballots called a “test deck” is marked with a predetermined set of votes. The test deck is fed into each scanner programmed to handle that ballot face, and the scanner’s results are compared to the expected results to ensure that the scanner counts all voting positions correctly. Any discrepancies require the error or errors to be corrected and the scanner to be retested.

Guidelines for creating a test deck of ballots,³¹ prepared by a certified software quality engineer, describe how to create the minimum number of ballots that provide thorough testing for a scanner. The number of ballots in the test deck varies according to the number of contests and number of candidates on the ballot. For example, the sample ballot described in the guidelines has 12 contests and 40 candidates; testing requires 155 ballots.

County X has 70 election districts, and the Election Commissioners plan to print at least 100 test ballots for each ED.³² The following table shows the cost of printing blank ballots at a cost of \$0.57 per ballot for the test decks needed per election and per year.

Election	#of Ballots in Test Deck	# of Ballots for 70 EDs	Cost for 70 EDs
Primary	100	7,000	\$3,990
General	100	7,000	\$3,990
Total per year	200	14,000	\$7,980

County X Board of Elections is composed of two commissioners and two deputies. They say that the quarterly and pre-election testing for scanners is more time-consuming and more complicated than such testing for lever machines. They anticipate needing to hire additional staff to conduct the quarterly and pre-election testing. As of this writing, however, a hiring freeze is in effect and BOE budgets are to be at a 0% growth rate.³³ *The dilemma this presents to County X is outside the scope of this document.*

5.e Mandatory 3% manual audit.

Proposed Section 6210.18 of New York State Regulations³⁴ requires a hand-count audit of the ballots:

“from no less than 3% of each type of voting machine or system used within the county, provided, however, that there shall be a manual count of at least one of each type of voting machine or system used therein for each public office and any questions or proposals appearing on the ballot.”

³⁰ “6210 Regulations,” page 17.

³¹ "Guidelines for Creating a Deck of Test Ballots." By John Washburn <http://www.washburnresearch.org/archive/TestingGuidelines/GuidelinesForCreatingTestBallots.pdf>

³² Interviews with Election Commissioner Y.

³³ Interviews with Election Commissioner Y.

³⁴ “Proposed Audit Procedure for 6210.18 Regulations.” Page 28

County X BOE understands this to mean that the BOE will hand count all the votes in all contests on ballots scanned by two of the 58 scanners used on election day. In addition, if any contests do not appear on those ballots, the BOE will hand count the votes for each of those contests on ballots scanned by one other scanner. Since there are 19 different ballot styles in each election,³⁵ we estimate that there will be 17 additional contests to count.

Commissioner Y estimates that the hand-counting for ballots from each of the first two scanners would require one team of counters per scanner for two days at \$10.00 per hour.³⁶ Each team would consist of 2 BOE personnel and 2 citizens hired as counters.

We have assumed that hand-counting additional contests would require two extra teams for two days. Each extra team would require four hired people because the BOE does not have sufficient staff to provide half the personnel for these extra teams. Thus the minimum cost of auditing an election would be **\$1,920 per election; \$3,840 per year.**

If discrepancies are found, the BOE could be required to hand count up to 100% of all ballots cast via all 58 scanners (a full audit). This would be done by one team per scanner for 2 days. BOE staff would be entirely engaged in managing the audit. Therefore we estimated hiring 58 teams of 4 people each for two days – **\$37,120 per election; \$74,240 year.**

	Minimum Audit	Full Audit
Counting teams	4	58
Staff counters	4	0
Hired counters (Min. 2 teams of 2, 2 teams of 4) ³⁷	12	232
Days per audit	2	2
Hours per non-staff counters (8 hours per day)	16	16
Total non-staff person hours	192	3,712
Cost of auditing one election	\$1,920	\$37,120
Audit Cost per Year (two elections)	\$3,840	\$74,240

5.f Transporting and securing equipment and ballots.

The cost of transporting scanners and ballots is unlikely to be significantly higher than the cost of transporting levers. The cost of providing the necessary security is unknown.

- **Equipment transportation.** The cost of transporting lever machines to and from poll sites is approximately \$1,326 per election, or \$2,652 per year.

County X paid **\$2,791** to transport 22 BMDs to and from poll sites in 2008.

Commissioner Y estimates the cost of transporting 58 ImageCast machines to and from poll sites (36 units to be used as scanners only and 22 units to be used as scanners and BMDs) will cost \$4,000 per election; \$8,000 per year.³⁸ The cost for transporting the 36 scanners needed to replace levers would be (\$8,000) x (36/58), or **\$4,966** per year.

The cost of transporting 36 scanners minus the cost of transporting levers would be \$4,966 minus \$2,652 per year, yielding an increased cost of **\$2,314** per year.

³⁵ Interviews with Election Commissioner Y.

³⁶ “County X NY 2010 Budget new costs.”

³⁷ For the minimum audit, 2 people would be hired for each of the first two teams and BOE staff would serve as the other team members; 4 people would be hired for each of the extra two teams. For the full audit, 4 people would be hired per team.

³⁸ “County X NY 2010 Budget new costs.”

Transportation to and from poll sites	Per Election	Per Year
Transporting 58 units (36 scanners, 22 BMD/scanners)	\$4,000	\$8,000
Transporting 36 scanners	\$2,483	\$4,966
Transporting levers	(\$1,326)	(\$2,652)
Increased transportation cost	\$1,157	\$2,314

Most accessories are likely to be transported in the ballot box of each scanner and in the additional bins the county plans to purchase. The ballots needed for the election districts to be served by each scanner may also be transported in the ballot boxes and bins. Before the election, the memory cards that hold ballot programming for each scanner must be programmed, and then inserted and secured in their scanner ports; therefore memory cards would be transported with the scanners.

- **Equipment security.** When ImageCast machines are used as scanners for counting votes on paper ballots, it is necessary to provide security for the scanners, ballots, accessories, and memory cards while in transit, at the poll sites, and after the election until the election is certified and possibly longer. The cost of providing that security is unknown.

Locks are provided for locking each scanner to its ballot box, locking the ballot box main door, and locking the ballot box auxiliary slot. Locks can also be affixed through security loops to secure the memory cards in their ports and to secure the printer compartment. Tamper evident seals can also be used on the openings of any compartments. Additional protection, such as security personnel, may also be required.³⁹

5.g Replacing consumed accessories.

For most consumables the lifespan and cost of replacement in future years is unknown. It will depend on the:

- Longevity of the extended life batteries for the additional 36 machines.
- Number of keys (3 to 6 per scanner) lost or not returned to the BOE after each election.
- Longevity of the memory cards.
- Number of privacy sleeves taken by voters or otherwise lost or damaged.

Sequoia appears to recommend using one fresh roll of report paper in each scanner for each election; the BMD portion of the ImageCast does not use a paper roll.⁴⁰ The cost of a paper roll is \$25.00.

The following table shows the annual estimated cost of paper rolls for 58 scanners.

Election Type	Scanners	Paper Rolls	Cost Each	Cost Total
Primary	58	58	\$25	\$1,450
General	58	58	\$25	\$1,450
Total				\$2,900

³⁹ “5.0 Requirements & Requirements Response from Sequoia.” Page 124.

⁴⁰ “5.0 Requirements & Requirements Response from Sequoia.” Page 8.

5.h. Replacing equipment.

Sequoia states that the rated life of each ImageCast precinct scanner is 100,000 ballots scanned. At a maximum of 2,000 scans per election (4,000 scans per year), this claim suggests that the scanners will last for 25 years. At that time County X would have to replace all its scanners with new equipment. This cost would be borne by the county.

However, it is extremely rare for computerized equipment to last 25 years, especially if it is repeatedly jostled by trucking from storage to poll site and back. It is likely that the county would need to replace the scanners much sooner and at an increased cost per unit.

6. Storage, tracking, disposal.

The ongoing costs of storage, inventory control and tracking, maintaining and replacing ImageCast equipment and the one-time cost of disposing of lever machines are unknown. It is unlikely that HAVA funds will cover these costs, which include:

- Storage for ImageCast units between elections.
- Recharging batteries before elections.
- Storing ballots after elections.
- Tracking and replacing equipment and accessories.
- Quarterly testing of scanners.
- Disposal and recycling of scanner-related consumables and ballots
- Storage of lever machines until disposed of.
- Disposal of lever machines, a one-time cost.

6.a Storage for the 36 additional scanners between elections.

Storage facilities for the 36 additional ImageCast scanners must be environmentally controlled and physically secure, and must provide electricity for recharging the 36 batteries before each election.

We assume that quarterly testing will be conducted at the storage facility. The space per unit must be large enough to accommodate the number of employees needed to perform testing. The facilities must also provide sufficient room to accommodate observers.

6.b Recharging batteries before elections.

County X is using a trickle charge to keep the batteries in its current ImageCast units charged. Batteries for each of the 36 additional ImageCast scanners are likely to be kept charged in the same way. It is unknown how much electricity and how much staff time will be required. It is assumed that the cost will be negligible.

6.c Storing ballots after elections.

Federal law requires that ballots voted in a federal general election be securely stored for 22 months. Section 3-222 of state election law requires that all ballots, voted and unvoted, be stored.⁴¹ Such storage requires storage boxes or other appropriate containers, storage facilities, and personnel to manage and secure the facilities.

⁴¹ State of New York 2008 Election Law.” Page 46

During the first two years of scanner use, the number of ballots the BOE plans to print for each election equals 200% of the active registered voters.⁴² The following calculations show the minimum secured area required to store boxes of ballots for these first two years, assuming a 17-inch ballot. Although the number of ballots to be stored will probably decrease after two years, sufficient storage area will always be required for two years of ballots; as time passes, one election’s ballots will replace the ballots from the comparable election two years before.

Number of ballots in box	1000
Height of box (inches)	9
Length of box (inches)	18
Width of box (inches)	9
Cubic feet per box	$\frac{3}{4} \times 1\frac{1}{2} \times \frac{3}{4} = 0.84375$
Active registered voters	42,385
Number of ballots per election	84,770

	Ballots to Store	# Boxes	x 0.84375	# Cubic Feet Needed
Primary Election 2010	84,770	85	=	72
General Election 2010	84,770	85	=	72
Primary Election 2011	84,770	85	=	72
General Election 2011	84,770	85	=	72
Total	339,080	340		288

Storing the ballots for two years would require a secure storage area approximately 6 feet by 6 feet by 8 feet high plus additional room for aisles and possibly shelving.

6.d Tracking, repairing, and replacing equipment and accessories, tracking ballots.

Procedures for tracking the 36 additional scanners and their associated accessories must be developed. Ballots must also be tracked. Personnel must be allocated to:

- Track the location and maintenance status of each additional scanner.
- Test, schedule maintenance for, and supervise repairs to and replacements for each scanner.
- Track the location and status of accessories.
- Order, receive, store, install, and track replacements for consumables.
- Track the location and status of ballots.

6.e. Quarterly testing of scanners.

New York State Regulation 6210.2 requires quarterly testing of each piece of equipment according to prescribed procedures.⁴³ The quarterly testing procedures for ballot marking devices⁴⁴ is currently available in draft form. No equivalent document is yet available for testing scanners.

However, the BMD procedures include many steps that apply to the equipment itself, not the BMD functions. These same procedures would be used for the 36 new scanners, in addition to testing the scanning function of all 61 scanners (58 for poll site use and 3 for training).

⁴² Interviews with Election Commissioner Y.

⁴³ “6210 Regulations.” page 4.

⁴⁴ “Lot 2 BMD Interim Quarterly Maintenance Procedure.” Version 7.4.

Quarterly maintenance is a ten-step process. Pre-election testing, which can replace the quarterly maintenance for the quarter in which it occurs, includes these same steps, along with testing scanner accuracy on the test decks. For each unit, the process includes:

- Verifying serial numbers, security seals, and inventory of accessories; and inspecting the unit for damage.
- Verifying functionality. In pre-election testing, this step includes scanning the test deck and verifying results. A bipartisan team must perform this step for all units. The NYSBOE instructions say:

“If security seals must be removed during this step, the bipartisan team must reseal the BMD and record the security seal information on the Interim Quarterly Maintenance Log once all maintenance is completed.”

- Preparing the unit for re-storage or transport to poll sites.
- Updating the maintenance log with test information and new security seal numbers, and notifying the State Board of test results.

The county currently conducts testing on its 25 BMDs that are already deployed. However, each election using the scanners would require the addition of testing scanner functions on those 25 machines (the 22 used in poll sites as well as the 3 extra) and fully testing the 36 new scanners. The following table shows the total staff and/or technician time required to test all 61 scanners per election, with three different estimates of the time required to test each scanner.

We estimate the **additional** testing time for scanners to be between 16.2 and 48.5 hours.

<u>Quarterly Testing Required</u>	<u>-----Time per Unit-----</u>		
	<u>20 minutes</u>	<u>30 minutes</u>	<u>60 minutes</u>
Full testing of 36 new scanners	12 hours	18 hours	36 hours
	<u>10 minutes</u>	<u>20 minutes</u>	<u>30 minutes</u>
Additional testing for 25 current units	4.2 hours	8.3 hours	12.5 hours
Total Additional Testing Time	16.2 hours	26.3 hours	48.5 hours

6.f Disposal and recycling.

If the county replaces its lever machines with 36 ImageCast scanners, the following costs must be considered:

- Storing lever machines for an appropriate length of time before disposal.
- Disposing of, selling, or recycling lever machines.
- Disposing of toxic scanner batteries when they are no longer rechargeable.
- Disposing of toxic UPS batteries when they are no longer rechargeable.
- Recycling ballots when storage periods expire.

7. Vendor Support

Sequoia’s response to New York City’s request for information includes recommendations for Sequoia’s one-time support in the following areas:⁴⁵

- Project Initiation
- Transition Planning
- Development of Plans and Procedures
- Implementation and Rollout

We assume that Sequoia’s recommendations for the City are the same as for all ImageCast customers. Sequoia’s costs for support are as follows, depending on the job title of the support person:

Type of Vendor Support	Low Cost	High Cost
On-site support, first day per support person	\$2,900	\$4,500
On-site support, each additional day per support person	\$1,600	\$3,200
Off-site support, hourly per person	\$175	\$350

County X’s BOE has not yet determined how much on-site and off-site support they will require for the first year’s elections. They will not know how much support they will need until after their training is complete. If possible, they will avoid purchasing election-day troubleshooting from Sequoia. If they need support, they hope to receive it from the State Board or share the costs with adjoining counties. The county did not purchase on-site support from Sequoia for the 2008 elections, during which only the BMD functionality was used.⁴⁶ Any on-site support costs would be associated with lever replacement.

On-site Support Costs Example. Three vendor representatives on site for three days of election support would cost the county between \$18,300 and \$32,700.

# Support people	-----Lowest per diem-----		Low cost	-----Highest per diem-----		High cost
	Day 1	Days 2 & 3		Day 1	Days 2 & 3	
1	\$2,900	\$3,200	\$6,100	\$4,500	\$6,400	\$10,900
2	\$5,800	\$6,400	\$12,200	\$9,000	\$12,800	\$21,800
3	\$8,700	\$9,600	\$18,300	\$13,500	\$19,200	\$32,700

8. Additional Staff and Consultants

Additional staff and/or consultants may be needed for these tasks and possibly others:

- Quarterly testing of scanners (Section 6.e)
- Charging batteries before each election (Section 6.b)
- Pre-election testing of scanners (Section 5.d)
- Training poll workers (Sections 4.a and 4.b)
- Educating voters (Section 4.f)
- Purchasing and tracking ballots (Sections 5.c and 6.d)

⁴⁵ “5.0 Requirements & Requirements Response from Sequoia.” Pages 153, 155-158

⁴⁶ Interviews with Election Commissioner Y.

- Ballot layout and/or ballot programming (Section 5.a and 5.b)
- Transporting and securing ballots, scanners, and accessories (Section 5.f)
- Tracking/repairing/replacing scanners (Section 6.d)
- Tracking/purchasing consumable accessories (Section 6.d)

Currently the county is in a hiring freeze, which presents the BOE with a dilemma that is outside the scope of this document.

9. Summary of Lever Replacement Costs

9.a First year lever-replacement costs we were able to estimate.

The first year lever replacement costs we estimated in previous sections are shown below. These estimates are lower than the full costs County X will face because they do not include costs for which our information was limited (see Section 9.b).

Initial Costs that can be Estimated	First Year Estimated Cost
36 ImageCast Scanners (Sec. 2.a)	\$262,800
Additional equipment and training	
Privacy booths (Sec. 2.b)	\$19,250
First year accessories (Sec. 2.c)	\$17,390
Computers and peripherals for EMS (Sec. 2.d)	\$11,000
EMS installation & implementation (Sec. 3.a)	\$7,300
EMS license fee for one year (Sec. 3.a)	\$75,000
Training and public education (Sec. 4)	\$20,441
Total, additional equipment and training	\$150,381
Per-election Costs (Primary & General Elections)	
Ballot printing (Sec. 5.c)	\$96,638
Emergency ballots for levers ⁴⁷ (Sec. 5.c)	(\$1,100)
Lever strips ⁴⁸ (Sec. 5.c)	(\$14,040)
Test decks (Sec. 5.d)	\$7,980
Manual audit (minimum) (Sec. 5.e)	\$3,840
Transportation for scanners (Sec. 5.f)	\$4,966
Transportation for levers (Sec. 5.f)	(\$2,652)
Report paper rolls (Sec. 5.g)	\$2,900
Total Per-election Costs for Two Elections	\$98,532
Total Initial Costs that can be Estimated	\$511,713

⁴⁷ Savings from not needing 50 emergency ballots printed for each of 22 poll sites.

⁴⁸ Savings from not needing lever strips printed and installed for 70 lever machines.

9.b First year costs for which our information is too limited to estimate.

County X's first year costs will be higher than summarized in the section above because we were unable to estimate all costs. The following costs were not estimated for the first year:

Environmentally-controlled storage for new electronic equipment and accessories	???
Laying out ballots in the new format	???
Security for ballots and memory cards before, during, and after election day	???
Storage for ballots after elections	???
Inventory control and tracking for equipment and accessories	???
Replacement of consumable accessories	???
Security for equipment while out of the warehouse for election use	???
Compensation for additional staff and consultants	???

Additional unestimated costs for the first year may include:

Additional poll worker training facilities	???
Additional training that proves necessary	???
Vendor support if unexpected problems occur	???
Reprinting ballots when the layout changes after the initial printing	???
Escalating manual audits if discrepancies are found in the 3% audit	???

Savings from not using lever machines. Replacing lever machines would result in savings from costs not expended on lever machine usage. However, we have shown that such savings are likely to be insignificant compared to the estimated and unestimated costs of the new system. In addition to the estimated savings in Section 9.a, first-year savings include:

Lever machine maintenance and repair	(???)
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9.c Continuing annual costs of lever replacement.

For Year 2. In Year 2, costs of lever replacement for which ranges can be estimated include:

Year 2 costs that can be estimated	Year 2 Cost
EMS annual license fee (Sec. 3.a)	\$75,000
Two Elections (Primary and General)	
Ballot printing (Sec. 5.c)	\$96,638
Emergency ballots for levers ⁴⁹ (Sec. 5.c)	(\$1,100)
Lever strips ⁵⁰ (Sec. 5.c)	(\$14,040)
Test decks (Sec. 5.d)	\$7,980
Manual audit (minimum) (Sec. 5.e)	\$3,840
Transportation for scanners (Sec. 5.f)	\$4,966
Transportation for levers (Sec. 5.f)	(\$2,652)
Report paper rolls (Sec. 5.g)	\$2,900
Total	\$173,532

⁴⁹ Savings from not needing 50 emergency ballots printed for each of 22 poll sites.

⁵⁰ Savings from not needing lever strips printed and installed for 70 lever machines.

For Year 3. County X may print fewer ballots after voters have become familiar with marking paper ballots. The following table reflects that decrease in cost.

Year 3 and after, costs that can be estimated	Recurring Annual Cost
EMS annual license fee (Sec. 3.a)	\$75,000
Two Elections (Primary and General)	
Ballot printing for 110% of voters ⁵¹ (Sec 5.c)	\$53,150
Emergency ballots for levers ⁵² (Sec. 5.c)	(\$1,100)
Lever strips ⁵³ (Sec. 5.c)	(\$14,040)
Test decks (Sec 5.d)	\$7,980
Manual audit (minimum) (Sec 5.e)	\$3,840
Transportation for scanners (Sec. 5.f)	\$4,966
Transportation for levers (Sec. 5.f)	(\$2,652)
Report paper rolls (Sec. 5.g)	\$2,900
Total	\$130,044

Starting in Year 2, unknown recurring annual costs include:

Environmentally-controlled storage for new electronic equipment and accessories	???
Laying out ballots in the new format	???
Security for ballots and memory cards before, during, and after election day	???
Storage for ballots after elections	???
Inventory control and tracking for equipment and accessories	???
Replacement of consumable accessories	???
Security for equipment while out of the warehouse for election use	???
Compensation for additional staff and consultants	???
Possible vendor support if unexpected problems occur	???
Possible costs for reprinting ballots when last-minute changes are made	???
Possible costs for escalating manual audit of ballots if discrepancies are found	???

Savings from not using lever machines. Replacing lever machines would result in savings from costs not expended on lever machine usage. However, we have shown that such savings are likely to be insignificant compared to the estimated and unestimated costs of the new system. In addition to the estimated savings above in this section, annual savings include:

Lever machine maintenance and repair	(???)
--------------------------------------	-------

⁵¹ Assumes printing ballots for 110% of the active registered voters, after 2 years of voter education.

⁵² Savings from not needing 50 emergency ballots printed for each of 22 poll sites.

⁵³ Savings from not needing lever strips printed and installed for 70 lever machines.

9.d Maintenance and support contracts after expiration of the 5-year warranty.

Section 6209.9(a)(2)(ii) of New York State regulations requires vendors to provide a 5-year warranty for parts, service, and shipping at no cost to the county.⁵⁴ After the 5-year warranty expires on the scanners, the county may need to hire additional voting machine technicians. Such technicians may require increased compensation due to their computer expertise, compared to current technicians who work with the mechanical lever machines.

Alternatively the county may sign a new maintenance and support contract with Sequoia. In Sequoia's response to New York City's request for information, the company declined to quote the cost of maintenance and support contracts after the 5-year warranty period expires.⁵⁵

Although Sequoia declined to quote the cost of post-warranty maintenance and support, **for comparison only**, the following table shows the currently quoted costs of three maintenance and support contracts offered by ES&S for its DS200 units.⁵⁶

Assuming Sequoia's costs would be comparable, the table also shows maintenance costs for the 36 scanner units needed for County X to replace its levers. The table does not include the fees for scanners on County X's 25 ImageCasts that are currently used for their BMD capabilities only, which the county will need to maintain even if levers are not replaced.

For Comparison: ES&S Currently Quoted Costs for Maintenance/Support Contracts

	<u>Per Unit</u>	<u>36 Units</u>
1 Year Hardware Preventative Maintenance and Support:	\$213	\$7,668
1 Year Firmware Maintenance and Support:	\$91	\$3,276
Total Cost for 1 Year, under One-year Contract		\$10,944
Cost per Year		\$10,944
3 Year Hardware Preventative Maintenance and Support:	\$672	\$24,192
3 Year Firmware Maintenance and Support:	\$288	\$10,368
Total Cost for 3 Years, under Three-year Contract		\$34,560
Cost per Year		\$11,520
5 Year Hardware Preventative Maintenance and Support:	\$1,178	\$42,408
5 Year Firmware Maintenance and Support:	\$505	\$18,180
Total Cost for 5 Years, under Five-year Contract		\$60,588
Cost per Year		\$12,118

⁵⁴ "6209 Regulations." Page 24

⁵⁵ "5.0 Requirements & Requirements Response from Sequoia." Page 175.

⁵⁶ Costs were quoted in ES&S' response to New York City's RFI. "5.0 Requirements & Requirements Response from ES&S." Page 107.

9.e Unexpected additional costs

Nationwide, after implementing electronic election equipment, many counties have faced additional and unexpected expenses. In previous sections, this document points out some hidden costs that have surprised counties in other states, but it is still likely that County X's transition to scanners will result in other, unanticipated costs. For example:

- A news story in June, 2009 about Wyoming County, New York reported:⁵⁷

“Supervisors approved a resolution urging the state Assembly, Senate, governor and Board of Elections to authorize the continued use of lever-style voting machines.

“The resolution was proposed as a solution to expenses county taxpayers have incurred through the purchase of electronic voting machines through the federal Help Americans Vote Act.

“Berwanger said hidden costs have included purchase of a special "air-ride" trailer to transport the county's 20 electronic machines to locations throughout the county, along with the extra work the county's Information Technology staffers have assumed while transporting and maintaining the new machines.

“Supervisor Joseph Gozelski of Castile noted the older machines could be kept in cold weather and other conditions, and weren't as environmentally sensitive as the electronic voting units.”

- A previous study by the authors,⁵⁸ using public documents only, showed that first-year costs of replacing lever machines in New York City could add up to \$23 million more than HAVA funds that the city would receive for this purpose.

However, Mayor Bloomberg sensed that the City's costs would be significantly greater than our compilation from public documents. His Office of Management and Budget budgeted \$50 million of tax-levy funds for purchase of new voting machines, and the City's Capital Budget included an additional \$47.2 million for “other purposes” in the first year, including outfitting of office and warehouse space.⁵⁹

⁵⁷ “Wyoming County supervisors shoot down rifle resolution.”

⁵⁸ “Lever Replacement Costs: New York City Case Study.”

⁵⁹ “Hearing on the Fiscal 2010 Executive Budget for the Board of Elections.”

10. Use of HAVA Funds

10.a County X, as of 2007.

As of June 2008, County X had been granted a total of \$849,763 in HAVA funds, including interest earned. As a condition for receiving Section 251 funds, HAVA requires each state to appropriate funds equal to 5% of the total amount of its Section 251 program. County X paid \$28,836 in matching funds. We included these funds in the chart since they are intended for Section 251 expenditures, even though they are a County expense rather than a HAVA grant.

The following two tables show the County's HAVA funds by category.⁶⁰

Category	HAVA Funds
Title I, Section 101 Funds	\$12,531
Title I, Section 102 Funds	\$194,247
Title II, Section 251 Funds	\$547,877
Interest earned	\$95,108
Total HAVA	\$849,763
County's Match for 251 Expenditures	\$28,836
Total for HAVA Expenditures	\$878,599

<p>Title I, Section 101 County has \$12,531</p>	<p>Intended for:</p> <ol style="list-style-type: none"> 1. Improving the administration of elections for Federal office. 2. Educating voters about voting procedures, voting rights, and voting technology. 3. Training election officials, poll workers and election volunteers. 4. Developing a plan for managing Section 251 funds. 5. Improving, acquiring, leasing, modifying, or replacing voting systems. 6. Improving the accessibility and quantity of polling places. 7. Providing assistance to voters with limited English proficiency. 8. Establishing toll-free telephone hotlines for voters.
<p>Title I Section 102 County has \$194,247</p>	<p>Intended for:</p> <ul style="list-style-type: none"> - Replacing punch cards or lever machines.
<p>Title II, Section 251 County has \$547,877</p>	<p>Intended for:</p> <ol style="list-style-type: none"> 1. Procuring voting systems that comply with the requirements of Title III, Section 301, such as accessibility. 2. Implementing provisional voting. 3. Providing required information to voters in the polling place. 4. Developing and implementing a statewide voter registration list. 5. Implementing ID requirements for first-time voters who register to vote by mail. 6. Improving the administration of elections for federal office.

⁶⁰ Interviews with Election Commissioner Y.

10.b County X, as of June, 2009.

County X spent \$4,876 in 2006 and \$2,040 in 2007 for costs related to HAVA compliance.

County X's 2008/2009 reimbursable purchase orders totaled \$565,340 for purchase of 25 ImageCast units used as BMDs in 2008, BMD ballot programming and transportation in 2008, and 36 additional ImageCast units to be used as scanners in the future.⁶¹

HAVA Funds by Source	\$101, \$251	\$102	Total all \$s
Title I, Section 101	\$12,531		\$12,531
Title I, Section 102		\$194,247	\$194,247
Title II, Section 251	\$547,877		\$547,877
Interest earned	\$71,528	\$23,580	\$95,108
County's Match for 251 Expenditures	\$28,836		\$28,836
Total Funds	\$660,772	\$217,827	\$878,599
County's Expenditures			
2006, related to HAVA compliance	(\$4,876)		(\$4,876)
2007, related to HAVA compliance	(\$2,040)		(\$2,040)
2008/2009 Outstanding Purchase Orders			
25 units used as BMDs in 2008 ⁶²	(\$293,750)		(\$293,750)
BMD programming & transport, 2008 ⁶³	(\$8,791)		(\$8,791)
36 units to be used as scanners in 2010		(\$262,800)	(\$262,800)
Total Expenditures as of June 2009	(\$309,457)	(\$262,800)	(\$572,257)
Funds Minus Expenditures, to June 2009	\$351,315	(\$44,973)	\$306,342

County X's Section 102 funds for lever replacement – \$194,247 plus interest – will not cover the \$262,800 purchase price of 36 scanners along with their estimated \$150,381 expenses for accessories, privacy booths, EMS hardware, software, and training (Sec. 9.a).

But the county also faces per-election costs for ballot printing, audits, scanner transport, and paper rolls, estimated at \$98,532 for 2010 (Sec. 9.a), plus \$8,791 per year for programming and transport of BMDs in 2009 and 2010 (Sec. 5.b and 5.f), plus costs we were unable to estimate. The county's remaining HAVA funds appear insufficient to cover the first year costs of lever replacement.

Thus, county taxpayers may directly bear some first year costs of lever replacement and will bear all recurring, annual costs thereafter, which may exceed \$130,000 per year. (Sec. 9.c).

Funds Minus Expenditures, to June, 2009	\$351,315	(\$44,973)	\$306,342
Additional initial costs for lever replacement		(\$150,381)	(\$150,381)
Two elections in 2009, ballots and audits		(\$98,532)	(\$98,532)
BMD programming & transport (2009, 2010) ⁶⁴	(\$17,582)		(\$17,582)
Funds Minus Expenditures after 2010	\$333,733	(\$293,886)	\$39,847
Costs we were unable to estimate			(?..?)

⁶¹ Interviews with Election Commissioner Y.

⁶² Calculated value. 25 BMDs at \$11,500 each + \$250 delivery charge per machine.

⁶³ Sec. 3.a: \$6000 for BMD programming per year. Sec. 5.f: \$2,791 for BMD transport per year.

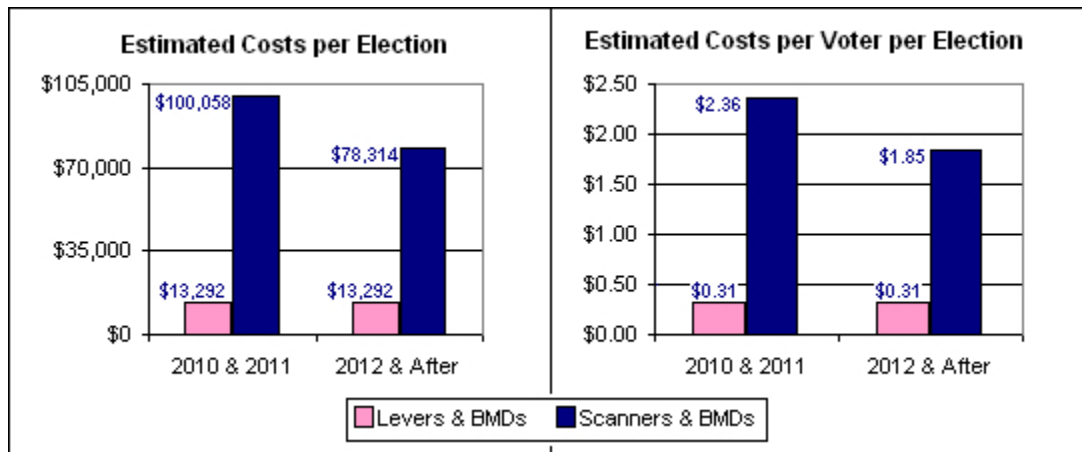
⁶⁴ BMD programming and transport per year, times 2. (See previous footnote.)

Appendix A. Cost Comparison: Levers & BMDs vs. Scanners & BMDs

This appendix compares costs we could estimate for using levers and BMDs vs. using scanners and BMDs: per year, per election, and per voter per election. Totals do not include the initial purchase costs for equipment and accessories, nor future replacement or upgrade costs. Costs we were unable to estimate are listed in Section 1.b.

Annual Costs for 2010 & 2011	Levers & BMDs	Scanners & BMDs
EMS annual license fee (Sec. 3.a)		\$75,000
Paper products: Ballot printing for scanners (Sec. 5.c)		\$96,638
Test decks (Sec. 5.d)		\$7,980
Report paper rolls (Sec. 5.g)		\$2,900
Emergency ballots for levers (Sec. 5.c)	\$1,100	
Lever strips (Sec. 5.c)	\$14,040	
Manual audit (minimum) (Sec. 5.e)		\$3,840
Transportation: For scanners (Sec. 5.f)		\$4,966
For levers	\$2,652	
BMD programming & transport	\$8,791	\$8,791
Cost per year	\$26,583	\$200,115
Cost per election	\$13,292	\$100,058
Cost per voter per election	\$0.31	\$2.36

Annual Costs for 2012 & After	Levers & BMDs	Scanners & BMDs
EMS annual license fee (Sec. 3.a)		\$75,000
Paper products: Ballot printing for scanners (Sec. 5.c)		\$53,150
Test decks (Sec. 5.d)		\$7,980
Report paper rolls (Sec. 5.g)		\$2,900
Emergency ballots for levers (Sec. 5.c)	\$1,100	
Lever strips (Sec. 5.c)	\$14,040	
Manual audit (minimum) (Sec. 5.e)		\$3,840
Transportation: For scanners (Sec. 5.f)		\$4,966
For levers	\$2,652	
BMD programming & transport	\$8,791	\$8,791
Cost per year	\$26,583	\$156,627
Cost per election	\$13,292	\$78,314
Cost per voter per election	\$0.31	\$1.85



Appendix B. Software License Fees in a Sampling of Other Jurisdictions

The EMS license fee varies widely among Sequoia customers. This table shows a sampling of fees and indicates the jurisdiction, the year to which the fee applies, the number of registered voters in the jurisdiction when the contract was signed, and the software to which the license applies.

Jurisdiction	Year	Voters	Software Licensed	Annual Fee
Alameda County, CA 400-C scanner and Edge touchscreens	2007 - 2009	678,765 ⁶⁵	WinEDS License fee	\$67,500 ⁶⁶
	After 2009			Up to 5% increase
Camden County, NJ Advantage DRE	2005	304,871 ⁶⁷	WinEDS License fee	\$30,000 ⁶⁸
	After 2005			Up to 5% increase
Essex County, NJ Advantage DRE	2005 – 2009	403,302 ⁶⁹	WinEDS License fee	\$30,000 ⁷⁰
	After 2009			Up to 10% increase ⁷¹
Santa Clara County, CA 400-C scanner and Edge touchscreens	2003 - 2008	731,633 ⁷²	WinEDS License and maintenance (free upgrades)	Fee waived ⁷³
	2009- 2012			\$52,500
	2013			\$72,500
	After 2013			Up to 5% increase
Snohomish County, WA 400-C Scanner Edge touchscreens	2002	318,170 ⁷⁴	WinEDS License fee	\$40,000 ⁷⁵
	After 2002			Up to 3% increase

⁶⁵ <http://www.acgov.org/rov/v064/results.pdf>

⁶⁶ http://accurate-voting.org/contracts/CA/Alameda/CA_alameda_2006.pdf. Page 30.

⁶⁷ http://www.state.nj.us/state/elections/2005results/05_generalelection/generalelectionchart-2005-rev..pdf

⁶⁸ http://accurate-voting.org/contracts/NJ/Bergen/NJ_bergen_2001.pdf. Page 10

⁶⁹ http://www.state.nj.us/state/elections/2005results/05_generalelection/generalelectionchart-2005-rev..pdf

⁷⁰ http://accurate-voting.org/contracts/NJ/Essex/NJ_essex_2005.pdf. Page 18.

⁷¹ http://accurate-voting.org/contracts/NJ/Essex/NJ_essex_2005.pdf. Page 20.

⁷² <http://www.sccvote.org/portal/site/rov/agencyarticle?path=%252Fv7%252FRegistrar%2520of%2520Voters%2520%2528DEP%2529&contentId=93368b12b4aa4010VgnVCM2200049dc4a92>

⁷³ http://accurate-voting.org/contracts/CA/Santa_Clara/CA_santaclar_2003.pdf. Page 7.

⁷⁴ <http://www.co.snohomish.wa.us/ElectionResults/sov/25.htm>

⁷⁵ http://accurate-voting.org/contracts/WA/Snohomish/WA_snohomish_2002.pdf. Page 26.

Jurisdiction	Year	Voters	Software Licensed	Annual Fee
Palm Beach County, FL 400-C scanner and Edge touchscreens	2001 – 2005	671,783 ⁷⁶	WinEDS License fee	\$52,500 ⁷⁷
	After 2006			Up to 10% increase
Bergen County, NJ Advantage DRE	2001	490,986 ⁷⁸	WinEDS License fee	\$37,500 ⁷⁹
	After 2001			Up to 5% increase

⁷⁶ <https://doe.dos.state.fl.us/voter-registration/archives/2001/June/YTDTTotal.pdf>

⁷⁷ http://accurate-voting.org/contracts/FL/Palm_Beach/FL_palmbeach_2001.pdf. Page 40.

⁷⁸ http://www.state.nj.us/state/elections/2001results/01generalelection/2001g_turnout.pdf

⁷⁹ http://accurate-voting.org/contracts/NJ/Bergen/NJ_bergen_2001.pdf. Page 10

Appendix C. Reference Documents

1. “5.0 Requirements & Requirements Response from Sequoia.” The Board of Elections in the City of New York. January 20, 2009, http://www.vote.nyc.ny.us/pdf/documents/boe/rfi/2009/80_SequoiaResponse/Sequoia%20Requirements%20Response%20012009%20for%20Web.pdf
2. “6209 Regulations.” <http://www.votersunite.org/info/NY6209Regs.pdf>
3. “6210 Regulations.” Officially entitled “Subtitle V of Title 9 of the Official Compilation of Codes, Rules and Regulations. Part 6210. Routine Maintenance and Testing of Voting Systems, Operational Procedures, and Standards for Determining Valid Votes.” <http://www.elections.state.ny.us/NYSBOE/law/6210Regulations09052008.pdf>
4. “County X 2010 Budget New Costs.” http://www.votersunite.org/info/CountyX_NY2010Budget_new_costs.pdf.
5. “Democracy Suite EMS Express System (< 100 ED's)” http://www.votersunite.org/info/EMSEXPRESSYSTEMSALESORDER_p2.pdf
6. “Hearing on the Fiscal 2010 Executive Budget for the Board of Elections.” The Council of the City of New York Finance Division. May 18, 2009. Page 3. www.wheresthepaper.org/ExecutiveBudget2010_NYCBOE_May18_09.pdf
7. Interviews with Election Commissioner Y, conducted by Ellen Theisen, Director, VotersUnite.Org, via telephone and email. April, May, June, and July 2009.
8. “Lever Replacement Costs: New York City Case Study.” Teresa Hommel and Ellen Theisen. June 2009. http://www.votersunite.org/info/LeverToOpScanCost_NYC.pdf
9. “Lot 2 BMD Interim Quarterly Maintenance Procedure.” Version 7.4. New York State Board of Elections. February 25, 2009. <http://www.votersunite.org/info/Lot2BMDInterimQuarterlyMaintenanceProcedurev7.4.pdf>
10. “Memo from State Board of Elections to County Boards of Elections.” June 23, 2006. Stanley Zalen and Peter Kosinski, Co-Executive Directors. Subject: Use of Funds Provided by Counties as Matching Funds Equal to 5% of the Total Available Requirements Payment. http://www.wheresthepaper.org/HAVA_AllocationToCountyBOEs.pdf
11. “NYS Voter Enrollment by County, Party Affiliation and Status.” New York State Board of Elections. April 1, 2009 http://www.elections.state.ny.us/NYSBOE/enrollment/county/county_apr09.pdf
12. “Proposed Audit Procedure for 6210.18 Regulations.” Version 8. NYSBOE http://www.votersunite.org/info/AuditVer8_6210.18_Procedures.pdf.
13. “Reports on State Expenditures of HAVA Funds - New York: 2008 report.” Received via FOIA request to EAC. http://www.votersunite.org/info/NY_251_FY08_redactions.pdf.

14. "Sequoia Response to New York State Office of General Services Pricing Forms." IFB #21231. Centralized Contracts for the Acquisition of Voting Systems and Ballot Marking Devices. http://www.ogs.state.ny.us/purchase/spg/pdfdocs/2230021231pl_sequoia.pdf
15. "Sequoia Sales Order: Columbia County." http://www.votersunite.org/info/EMSEExpressSystemSalesOrder_p1.pdf
16. "State Governments' Use of Help America Vote Act Funds." 2007. U.S. Election Assistance Commission. http://www.eac.gov/election/HAVA%20Funds/docs/2007-report-on-hava-spending-by-states/attachment_download/file
17. "State of New York 2008 Election Law." Amended Through October 31, 2007. <http://www.elections.state.ny.us/NYSBOE/download/law/2008NYElectionLaw.pdf>
18. "Wyoming County supervisors shoot down rifle resolution." The Daily News. June 10, 2009 By Matt Surtel. <http://www.thedailynewsonline.com/articles/2009/07/05/news/5605914.txt>.
Archive: <http://www.votersunite.org/article.asp?id=8461>