2007-240

Information Technology Business Case
and Recommended Solutions

Project Title:	**VBM Transition**
Project Subtitle:	**Tabulation Upgrade**
Project Number: (If Existing Project)	
Date of Submittal:	**March 30, 2007**
Agency/Department:	**REALS, DES**
Business Sponsor:	**Paul Tanaka**
Prepared By:	**Bill Huennekens**

Project Primary Benefit Alignment:

	Accountability/Transparency	Customer Service/Access	Efficiency	Risk Management
Check one only	☐	☐	☒	☐

Business Outcomes: *(Check all that apply)*

Efficiency	☒	Offers a positive return on investment (ROI)
	☒	Improves productivity and/or reduces future expenditures
Public Access & Customer Service	☒	Improves accessibility of public records
	☒	Improves accessibility to county services, resources, and/or officials
	☒	Improves the quality and/or usability of internal and/or external county services
Transparency and Accountability for Decisions	☒	Makes decisions and decision-related materials more easily available
	☐	Supports ability to track long-term outcomes
	☒	Supports visibility into the decision process
	☐	Supports input and feedback related to countywide decisions
Risk Management	☒	Intended to improve security and provide legally mandated services and basic operations support
Other	☒	Fulfill regulatory requirements
	☒	Provide tactical agency operational improvements
	☐	

Technical Outcomes: *(Check all that apply)*

Increases architectural flexibility	☐	Utilizes open standards
	☐	Employs web-based technologies
	☒	Utilizes commercial off the shelf software
	☒	Leverages and/or extends integration architecture
Improves data management	☒	Increases data security
	☐	Increases data privacy
	☐	Improves data accuracy
	☒	Reduces data redundancy
Improves technology operations	☒	Enhances system reliability
	☒	Consolidates hardware/software
	☒	Standardizes or streamlines existing operations
Other	☐	

Project Type: *(Will Help Determine PRB Review Plan)*

	Implementation	Business Case/Study/Plan	IT Equipment Replacement
Check One Only	☒	☐	☐

Project Phase: (Underline project phase applicable to this submittal)

Budget Request:

☐ Conceptual Review - Provide a concise, informative, high level summary for sections 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, and 2.0. Conceptual review summaries should be 1-3 pages only.

☐   Formal Budget Request

Project Review Board Business Case Deliverables

☒   **Phase II - PRB Business Case Presentation**
- o Update for any major changes to scope, schedule, and budget if significantly different from the Budget Request Business Case.
- o OMB and agency to confirm baseline (current)/ target measurements and identify and plan for future budget actions prior to PRB review.

☒   **Other** – This business case is responsive to Council Ordinance 15623 that provisos HAVA grant funding for the purchase of an updated tabulation system for King County.

Change Summary from previous submittals of Business Case:

1) Describe any important or significant changes to project scope, schedule, and budget from previous version of business case submittal.
The target date for transition to vote by mail is a special election in 2008.

2) Describe any important or significant changes to expected benefits or ongoing O&M costs and other operational impacts from previous version of business case submittal.
NA, no previous business case submitted.

Executive Summary

The transition to an entirely vote-by-mail elections system will streamline operations, allowing resources to be focused on the single process that voters have self-selected in increasing numbers. Preparing for the new elections environment brings the need for greater tabulation efficiency and accountability to the forefront.

The equipment currently employed for absentee ballot tabulation has been in operation since 1998 and is operating at capacity, a capacity that cannot accommodate the anticipated number of mail ballots in upcoming countywide vote by mail elections. King County's current equipment is and extremely slow compared to the technology currently on the market.

An upgraded tabulation system will allow for increased capacity and speed when tabulating by creating greater efficiency, accountability and security resulting in the need for fewer tabulators. Upgraded equipment will allow King County to pre-process and tabulate all ballots available on Election Day and report more results on election night. The proposed, state-of-the-art technologies will meet King County's expected population growth for years to come.

In order to continue to count the number of ballots we expect to receive in countywide elections, King County must replace its current tabulation equipment in the near future. King County received $1.5 million in grant funds through the Help America Vote Act and $772,836 for staffing to support the transition to all-mail voting.

Similar to any project or business transition, there are assumptions and associated risks that must be evaluated. These assumptions and risks will help form the foundation by which the work for the transition to vote-by-mail is conducted. Baseline assumptions and associated risks fall into the categories of security, equipment, oversight, communications, management and leadership.

After extensive research based on criteria outlined in this business case, King County Elections recommends purchasing new digital scanners and Central Tally System software by Diebold Election Systems Inc. This system has been found to meet all technical requirements and provides a seamless integration with the elections information management system, tabulation software, and the accessible voting equipment implemented successfully in 2006. Once implemented, King County will be equipped to successfully transition to vote-by-mail in 2008.

1.1 Problem Statement/Vision and Goals

The number of ballots tabulated by central count technologies will increase by approximately a third when King County transitions to vote-by-mail (VBM), creating the need for higher capacity and speed equipment to report a high percentage of results election night. Tabulation equipment currently on the market allows for high speed and capacity scanning along with the pre-processing of ballots, a digital imaging process. This imaging process

would replace the current manual duplication process, which is both paper and labor intensive.

The popularity of absentee voting in Washington State and King County's transition to vote-by-mail require a vote tabulation system upgrade that will allow a greater number of ballots to be tabulated by Election Day. Ballot processing and tabulation currently occur simultaneously and in a compressed timeframe, beginning at 7 a.m. on Election Day. To meet the strict timeline, the current system has been expanded to include 40 AccuVote tabulators, as many as possible, to operate at full capacity. The current scanners are nearly 10 years old and must be replaced in order to move to all-mail voting in 2008. In a countywide primary or General Election, the existing system is labor-intensive given the number of scanners needed and is only able to tabulate around 100,000 ballots in a day. The estimated increase in mail ballots in a vote-by-mail environment will make it not feasible to tabulate all ballots with the current ballot tabulation technology.

Resolving problem ballots is inefficient within the current system. This includes ballots that require duplication due to the voter not following instructions. Ballot duplication currently relies exclusively on a manual process that is both labor and paper intensive and inefficient.

King County Elections intends to upgrade to a tabulation system that will be sustainable for the next 8 to 10 years. Fewer tabulating machines, the pre-processing of ballots and improved ballot accountability will create greater security and reduce the number of temporary employees hired in any given election.

1.2 Overview / Background

December 20, 2005: King County Executive, Ron Sims, announced his desire to adopt an all mail voting system in King County. The Executive directed the Records, Elections and Licensing Services Division (REALS) to prepare a preliminary report on moving the county to VBM with options for implementation in 2006 or 2007.

January 2006: A core planning team was commissioned by the REALS Director to research alternatives and produce a report. The report provided analysis and information to guide a decision on how to transition from the current dual voting system (polls and absentee) to an all-mail system in accordance with state law, within the scope of the defined vision and desired objective. The report can be found at http://www.metrokc.gov/elections/VoteByMail.pdf.

March 2006: The Elections Section applied for federal grant funding through the Help America Vote Act (HAVA) to purchase and support the transition to VBM, including selection and implementation of an upgraded ballot tabulation system and mail ballot tracking and accountability technology.

June 2006: The Office of the Secretary of state awarded $4.2 million in HAVA grants to King County to support the transition to VBM.

June 19, 2006: The King County Council adopted ordinance 15523, directing elections in King County be conducted entirely by mail in 2007 or 2008, after certain conditions have been met. Those conditions, along with additional requirements adopted by the Council, create certain dependencies and serve as major milestones in the transition schedule.

February 15, 2007: As required by Council motion 12299, a report was submitted to the Council outlining the plan and process by which King County will transition to conducting all elections entirely by mail. The report included a plan for regional voting centers and ballot drop boxes in addition to the preliminary criteria and guidelines used with this ballot tabulation system business case and recommended solution.

1.3 Constraints and Dependencies

By law, all ballot tabulation systems in Washington State must be federally and state certified. Both processes take a substantial amount of time and neither the vendor nor King County can control the timing of the process once a system is submitted. This is the largest constraint for upgrading a tabulation system. In federal certification, the system must undergo successful testing against the Federal Voluntary Voting System standards. The Office of the Secretary of State verifies the federal certification and tests the system for compliance with Washington State election law.

Implementation timing for an upgraded tabulation system is also dependent on the elections calendar. Washington State election law allows up to six elections each year, creating a complex election calendar of almost continual election activity with overlapping times between the initiations of one election and certification of another. Candidate filing and the primary occupy most of the summer. The certification of the General Election occurs at the end of the November with work for the February special election beginning mid-December. The March, April, and May special elections occur with an increasing overlap between certification of the previous election and the start of the next election. The current election calendar provides a small window in December for ideal implementation; a time when no election activities are underway to allow for system upgrades.

1.4 Specific Business Objectives

Implementing an upgraded ballot tabulation system is necessary to support a vote-by-mail elections system and will in turn increase accountability, transparency and security of the entire process. The following business objectives apply towards the primary goal of transitioning to vote-by-mail:

- Preprocessing of ballots, the ability to run ballots through a scanner before Election Day, to capture ballot image data to facilitate faster tabulation on Election Day.
- Improve the ability to report results on all ballots ready for tabulation on Election Day.
- Increase the database capacity of the vote tabulation system or mitigate current limitations in order to avoid capacity issues experienced in recent large elections.
- Provide planning and management tools specifically designed for complex election administration activities.

- Limit ballot movement and human contact throughout the process.
- Leverage existing systems and previous investments to minimize risk and increase sustainability.
- Simplify election administration in King County for voters, elections staff, and other stakeholders.

1.5 Project Assumptions and Risks

In the process of moving towards implementation, there are several baseline assumptions and known risks that have been documented. The following list of assumptions relate specifically to upgrading the ballot tabulation system and form the foundation by which all future work will be built.

Security
- The County Council will work collaboratively with King County Elections and the Office of the Secretary of State to ensure the integrity and security of the new elections system; updating and revising the existing security plan as necessary.

- Security will serve as the primary element in the consideration and evaluation of vendor solutions for upgrading ballot tabulation and ballot tracking and accountability.

Equipment
- The selected equipment and software solutions will be available and ready to integrate as scheduled. Otherwise, timely certification and implementation in 2008 may not be possible.

Transition Schedule
- It is assumed that there will be no unforeseen or unanticipated King County, Washington State, and/or federal legislative changes that will impede the transition to vote-by-mail in King County.

- The schedule for transition to vote-by-mail in 2008 incorporates the assumption that the 2007-2008 elections calendar will not be altered unexpectedly. This includes the presidential preference primary in February or March 2008 and the issue of elected or appointed auditor in November 2009.

Oversight
- King County Elections will continue to look to the recommendations of the Citizens' Election Oversight Committee (CEOC) and other oversight groups as the transition to all-mail voting continues.
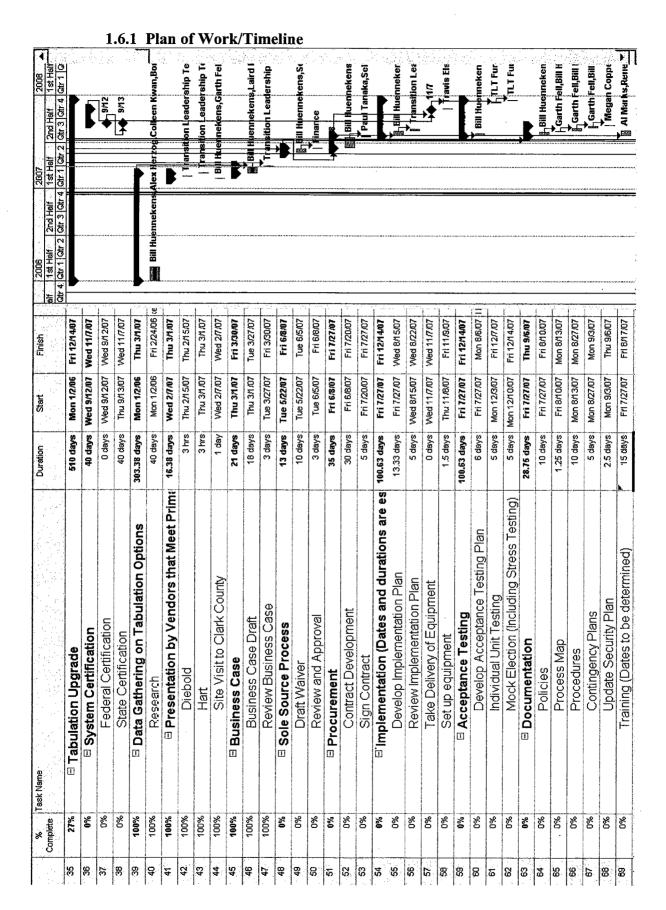
Communications
- King County Elections will maintain open lines of communication with all stakeholder groups and individuals in order to seek input to implement the optimal system.

- Through education and communication, King County Elections will provide system and equipment information and implementation updates regularly to voters and other stakeholder groups.

- To help ensure success, King County Elections will clearly communicate transition progress internally so that all Elections' staff is aware of the goals, objectives, status, and issues surrounding the transition.

Management and Leadership
- King County Elections will continue to demonstrate improvements through results in successful elections before the transition to vote-by-mail to continue building public trust and confidence now and in the future.

1.6 Plan of Work/Timeline, Approach, Key Milestones

ID	% Complete	Task Name	Duration	Start	Finish
35	27%	Tabulation Upgrade	510 days	Mon 1/2/06	Fri 12/14/07
36	0%	System Certification	40 days	Wed 9/12/07	Wed 11/7/07
37	0%	Federal Certification	0 days	Wed 9/12/07	Wed 9/12/07
38	0%	State Certification	40 days	Thu 9/13/07	Wed 11/7/07
39	100%	Data Gathering on Tabulation Options	303.38 days	Mon 1/2/06	Thu 3/1/07
40	100%	Research	40 days	Mon 1/2/06	Fri 2/24/06
41	100%	Presentation by Vendors that Meet Prime	16.38 days	Wed 2/7/07	Thu 3/1/07
42	100%	Diebold	3 hrs	Thu 2/15/07	Thu 2/15/07
43	100%	Hart	3 hrs	Thu 3/1/07	Thu 3/1/07
44	100%	Site Visit to Clark County	1 day	Wed 2/7/07	Wed 2/7/07
45	100%	Business Case	21 days	Thu 3/1/07	Fri 3/30/07
46	100%	Business Case Draft	18 days	Thu 3/1/07	Tue 3/27/07
47	100%	Review Business Case	3 days	Tue 3/27/07	Fri 3/30/07
48	0%	Sole Source Process	13 days	Tue 5/22/07	Fri 6/8/07
49	0%	Draft Waiver	10 days	Tue 5/22/07	Tue 6/5/07
50	0%	Review and Approval	3 days	Tue 6/5/07	Fri 6/8/07
51	0%	Procurement	35 days	Fri 6/8/07	Fri 7/27/07
52	0%	Contract Development	30 days	Fri 6/8/07	Fri 7/20/07
53	0%	Sign Contract	5 days	Fri 7/20/07	Fri 7/27/07
54	0%	Implementation (Dates and durations are es	100.63 days	Fri 7/27/07	Fri 12/14/07
55	0%	Develop Implementation Plan	13.33 days	Fri 7/27/07	Wed 8/15/07
56	0%	Review Implementation Plan	5 days	Wed 8/15/07	Wed 8/22/07
57	0%	Take Delivery of Equipment	0 days	Wed 11/7/07	Wed 11/7/07
58	0%	Set up equipment	1.5 days	Thu 11/8/07	Fri 11/9/07
59	0%	Acceptance Testing	100.63 days	Fri 7/27/07	Fri 12/14/07
60	0%	Develop Acceptance Testing Plan	6 days	Fri 7/27/07	Mon 8/6/07
61	0%	Individual Unit Testing	5 days	Mon 12/3/07	Fri 12/7/07
62	0%	Mock Election (Including Stress Testing)	5 days	Mon 12/10/07	Fri 12/14/07
63	0%	Documentation	28.75 days	Fri 7/27/07	Thu 9/6/07
64	0%	Policies	10 days	Fri 7/27/07	Fri 8/10/07
65	0%	Process Map	1.25 days	Fri 8/10/07	Mon 8/13/07
66	0%	Procedures	10 days	Mon 8/13/07	Mon 8/27/07
67	0%	Contingency Plans	5 days	Mon 8/27/07	Mon 9/3/07
68	0%	Update Security Plan	2.5 days	Mon 9/3/07	Thu 9/6/07
69	0%	Training (Dates to be determined)	15 days	Fri 7/27/07	Fri 8/17/07

Approach

Implementation of an upgraded tabulation system is a collaborative and inclusive effort that will involve every staff member in the Elections Section, and will transform King County Elections' business processes. This necessitates the entire organization's input, involvement and commitment to success.

1.6.2 Key Milestones

- March 30, 2007: Completion of upgraded tabulation system business case and recommended solution
- July 27, 2007: Completion of contract
- November 2007: Delivery of equipment
- December 2007: Acceptance testing
- January 1, 2008: Production ready

1.7 Benefits and Other Impacts

An upgraded ballot tabulation system is needed in the very near future, due to the steady increase in the number of voters casting absentee ballots, regardless of the transition to an entirely vote-by-mail elections process. Transitioning to vote-by-mail makes these upgrades a requirement.

In general, upgraded equipment and software will create a more efficient, accountable, and transparent tabulation of ballots. New equipment and software will contribute to the restoration of public trust and confidence in the elections administration processes in King County.

1.7.1 Customer Benefits and Other Impacts

Benefits of an upgraded ballot tabulation system to voters, candidates, parties, observers and the general public include:

- Upgraded equipment will allow King County to tabulate all ballots available on Election Day and report more results on Election Night.
- Increased transparency of the ballot duplication process with a new process that resolves ballots from an image that is more easily viewed by observers.
- Greater accountability in the ballot resolution (duplication) process because actual ballots do not have to be handled by staff, the electronic system has audit logs, and only the issues or candidates on the ballot that need resolution are touched. In the current manual duplication process, every race is duplicated in the process.
- Fewer tabulators will be required, increasing ballot security, accountability and transparency of the process for observers.

1.7.2 Employee Impacts

Employee impacts include:

- Reduced numbers of staff required to process and tabulate ballots; remaining staff will pre-process ballots over a longer period of time.

- Impact on tabulation and processing support staff is still to be determined.
- Fewer decisions will be required by staff doing the actual processing of ballots through the scanner, increasing the accountability and transparency of the system.
- Training:
  - Training for the ballot tabulation processors will remain essentially the same.
  - Greater training will be required for IT systems administrators.
  - Greater training will be required for the resolution workers (performing ballot duplication); this task will require a completely different skill set (the current process is manual and the new process will be PC based).

1.7.3 Business Process Benefits and Other Impacts

Three main business process benefits will be realized by upgrading King County's ballot tabulation equipment and software:

1. Upgrading the ballot tabulation equipment and software will allow King County to take advantage of new security features and systems, never before available in the elections industry.
2. The ability to pre-process ballots in advance of an election will allow more time to quality check and audit the process. The additional 10 to 15 days will allow for a greater accountability of the tabulation process.
3. Electronic resolution (duplication) of ballots will result in greater increases in efficiency, transparency and accountability over the current manual process.

1.7.4 Technology Infrastructure Benefits and Other Impacts

When compared to tabulation technologies currently on the market, the tabulation infrastructure King County Elections' uses is slow and labor intensive, requiring significant maintenance. The current equipment has been in use for nearly 10 years; numerous advances in hardware, software, and technology have occurred during this period that will allow greater efficiency and effectiveness in our business process.

The most significant benefit of this upgrade will be that King County Elections will be able to report results for all ballots that have been received, signature verified, opened, and electronically duplicated by mid-afternoon of Election Day. This is estimated to include 50 percent of the total vote, providing a significant improvement over the current reporting process of approximately 25 percent of the total vote (based on estimates from the 2006 General Election). This improvement will be achieved by use of higher speed scanners and by changing business practices that will allow the electronic processing of ballots to start 10 to 15 days before the election, spreading the workload over many days. This will require fewer scanners, fewer temporary employees to run the scanners, less physical space, and will create a reduction in the supervisory requirements over the entire process.

Pre-processing of ballots will allow staff to process ballots prior to Election Day. This pre-processing involves scanning the physical image into an electronic image and creating data that facilitates resolution of problem ballots. Current resolution of

problem ballots involves many manual processes by the ballot duplication staff or by the tabulation scanning staff. With the proposed equipment, resolution of most problem ballots will be done electronically, rather than physically duplicating the ballot. This provides a more efficient manner of resolving ballot issues, saving manpower and decreasing the probability of errors. Electronic resolution will have a positive impact on the speed of the scanning process. Currently, tabulation operators stop the tabulation process repeatedly for a variety of reasons when the voter does not follow instructions or for an overvote or voter correction. The new system would handle problem ballots electronically, increasing the throughput of the scanning process. This pre-processing does not perform any tabulation activity.

Security of ballots and results will be vastly improved with the recommended tabulation equipment. Since problem ballots will be electronically resolved, paper ballots will be handled less. A more detailed audit trail of any changes made will be created and maintained during electronic resolution. Additional criteria discussed in this document require that pre-processed and tabulated data be less accessible than it is currently, utilizing hashing the data or other means of detecting any changes.

King County Elections anticipates minimal impact on existing infrastructure as the tabulation system is not permitted to be connected electronically to an external network.

1.7.5 Cost Benefit Analysis

Overall, moving to a vote-by-mail system will limit the rising cost of conducting a dual elections system, however it will not reduce existing costs nor stop escalating costs altogether. Since the solution recommended in this business case is needed regardless of the decision to move to an all-mail system, moving to this system will leverage the capacity and investments, allowing efforts to be focused on a single system.

Cost benefits are also significantly impacted by the availability of grant resources to support procurement of the recommended solution. Failure to move forward on this proposal and take advantage of the grant opportunity would only delay the inevitable acquisition of an upgraded tabulation system and that would then come at a significant cost to King County.

1.8 Benefit Realization Measurements

The main benefit that can be measured from an upgraded tabulation system is an increased ability to tabulate ballots in a timely manner. By tabulating a higher percentage of ballots of available ballots on Election Day, expectations of public (voters, candidates, and media) will be met, ensuring support for a vote-by-mail elections system. Additional benefits include the ability to enhance accountability becuase the process will be spread out allowing more time to perform quality control. The process will be more transparent because fewer scanner operators will be needed, allowing observers to watch fewer scanning stations.

1.9 Project Governance

Elections administration is at the core of public service and local government. The electorate demands that all ballots are tabulated accurately, efficiently, and transparently. King County Elections, the King County Executive, and the King County Council and their respective staffs have established requirements and guidelines to meet and exceed these expectations for the transition to vote-by-mail.

The King County Council has put a proviso into place on the funding for an upgraded tabulation system, pending approval by motion of this information technology business case and recommended solution.

Implementation of the solution will be performed under the governance of the OIRM Project Review Board to ensure appropriately managed scope, schedule, budget and risk.

1.10 Project Management

The Vote-by-Mail transition will be guided and directed by the Vote-by-Mail Transition Leadership Team (TLT), a team of managers from the Records, Elections, and Licensing Services (REALS) Division and the Elections Section. This team will set the scope for the transition, monitor risk and quality, and make recommendations for the transition.

Vote-by-Mail Transition Leadership Team

Name	Position	E-mail address
Jim Buck	Interim Director, REALS	jim.buck@metrokc.gov
Sherril Huff Menees	Assistant Director, REALS	sherril.huffmenees@metrokc.gov
Sean Bouffiou	Finance and Human Resources Administrator	sean.bouffiou@metrokc.gov
Bill Huennekens	VBM Transition Manager	bill.huennekens@metrokc.gov
Bobbie Egan	Communication Specialist	bobbie.egan@metrokc.gov
Scott Baynard	Superintendent of Records and former Quality Assurance and Improvement Coordinator for REALS	scott.baynard@metrokc.gov
Garth Fell	Acting Election Program Manager, Ballot Processing and Delivery	garth.fell@metrokc.gov
Sandy McConnell	Acting Election Program Manager, Elections Operations	sandy.mcconnell@metrokc.gov
Laura Lockard	Acting Election Program Manager, Voter Services	laura.lockard@metrokc.gov
Laird Hail	Technology Services Manager	Laird.hail@metrokc.gov
Harry Sanders	GIS Supervisor/Special Projects Manager	harry.sanders@metrokc.gov

1.10.1 Transition Planning Sessions

Meetings are held weekly, as the election schedule allows, to review work documents, materials, risks, issues and information. Meetings currently last for three hours each Thursday afternoon.

1.10.2 Facilitation

Meetings of the Transition Leadership Team are facilitated by the Transition Manager with the support of Waldron & Co. staff.

1.10.3 Materials and Documentation

Materials and documentation for meetings are distributed to team members the afternoon of the day before the meeting to give individuals adequate time to prepare for the meeting.

1.10.4 Meeting Agendas and Minutes

Meeting agendas are prepared by the Transition Manager and minutes are taken by the Transition Administrator. These documents are archived in a shared drive accessible by team members.

1.11 Project Staffing

The Transition Leadership Team will be supported by a team of staff dedicated to accomplishing the transition process, the Vote-by-Mail Transition Team.

Vote-by-Mail Transition Team

Name	Function	E-mail address
Bill Huennekens	Transition Manager	bill.huennekens@metrokc.gov
Courtney Caswell	Functional Analyst, focused on regional voting centers	courtney.casewell@metrokc.gov
Colleen Kwan	Functional Analyst, focused on ballot tracking and accountability	colleen.kwan@metrokc.gov
Megan Coppersmith	Communication Specialist, internal and external communications	megan.coppersmith@metrokc.gov
Bonnie Duncan	Fiscal Specialist, HAVA grant accounting	bonnie.duncan@metrokc.gov
Alex Herzog	Administrative Specialist, transition administration and ballot drop locations	alex.herzog@metrokc.gov
Jim Hunt	Functional Analyst	james.hunt@metrokc.gov
TBD	Technical Writer	

1.11.1 Weekly Team Meetings

Transition Team meetings are held weekly, each Monday morning, to discuss transition progress, ideas from the previous TLT meeting, and plan the upcoming

week's activities and work schedule. Members of the Transition Team also attend the weekly TLT meeting each Thursday afternoon.

1.11.2 Meeting Facilitation
Weekly meetings of the Transition Team are facilitated by the Transition Manager.

1.11.3 Meeting Agendas and Minutes
Meeting agendas are prepared by the Transition Manager and minutes are taken by the Transition Administrator. These documents are archived in a shared drive accessible by team members.

1.12 Architecture and Interoperability

The upgraded tabulation system needs to be interoperable with the DIMS voter registration system currently used by King County Elections. This interface occurs through removable media, such as a CD or jump drive. Direct connection between the tabulation system and any other system is not allowed. The tabulation system must be able to produce an export of results data that can be used to post results to the web or to develop reports.

It is not anticipated that an upgraded tabulation system will have an impact on the current IT environment. Integration with DIMS is a mandatory requirement, thus removing any impact on that part of the architecture.

1.13 Alternatives and Feasibility

The viable alternatives for an upgraded ballot tabulation solution are limited by state and federal certification requirements and a limited vendor pool; defining the four possible options: Diebold Elections System Inc., Elections System & Software (ES&S), Hart InterCivic and Sequoia Voting Systems.

1.14 Preferred Approach

The upgraded tabulation system would allow for the following business process enhancements in a secure, accountable, and transparent environment:
- The ability to pre-process and tabulate all ballots available and ready for tabulation on Election Day.
- The ability to automate the "duplication" of ballots from a manual process to an electronic system.

1.15 Opposing Arguments and Responses

Opposing arguments and views surrounding upgraded ballot tabulation equipment and software in King County mainly revolve around the integrity and security of electronic voting, specifically direct recording electronic (DRE) equipment, one of two tabulation components currently used at polling places. In a vote-by-mail elections environment, regional voting centers will offer voting solely on these electronic voting units.

The majority of concerns surround the potential risk of hacking and altering vote totals by individuals, vendors or elections administrators. These concerns and views have been growing and circulating among policy makers and the academic community for the last 4 years and are intertwined with the Help America Vote Act (HAVA) and the 2000 and 2004 presidential elections.

Many jurisdictions across the country have implemented systems relying solely on DRE equipment for polling place voting by deploying several thousand DRE units on Election Day. King County did not follow this approach, but rather complied with the disability access provisions of HAVA by purchasing and leasing 600 DRE units; with one device at each polling place for accessibility. This approach minimized the risks and costs associated with complying with the federal requirements in 2006.

Transitioning to vote-by-mail will further mitigate these concerns and allow King County Elections to better manage the security and integrity of the DRE equipment. In a vote-by-mail environment, King County will deploy five to ten DRE units at each regional voting center. These regional voting centers will be closely managed and will involve far fewer employees than are typically deployed on Election Day. Employees at regional voting centers will undergo much more extensive equipment and procedure training prior to each election.

By upgrading our tabulation system now, King County Elections will be able to take advantage of the more robust federal certification process resulting from HAVA. The two vendor systems in the final selection process have been developed in the last few years, allowing vendor enhancements for the equipment to operate at the heightened level of security required of voting systems since the 2000 presidential election.

2.0   Budget

King County was awarded $1.5 million HAVA grant funds from the Office of the Secretary of State to purchase upgraded ballot tabulation equipment and software. Project team work is being supported by $772,836 of loan in funds.

2.1 Bid Proposals
2.1.1 Hart

KING COUNTY, WASHINGTON

REQUEST FOR PRICING

King County

H A R T
Interactive

PRICING FOR HART VOTING SYSTEM

QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	TOTAL PRICE
Voting System Hardware				
200	eSlate®	Electronic voting device (includes 3-year warranty)	$ 2,500.00	$ 500,000.00
200	Disabled Access Unit™ (DAU) upgrade	Additional module for accessibility (includes 3-year warranty)	$ 500.00	$ 100,000.00
40	Judge's Booth Controller™ (JBC)	Controller for polling place equipment (includes 3-year warranty)	$ 2,500.00	$ 100,000.00
200	Verifiable Ballot Option™ (VBO)	Voter verifiable paper audit trail unit (includes 1-year warranty)	$ 1,000.00	$ 200,000.00
100	eSlate voting booths	Standard voting booths for standard eSlate voting units	Included	No Charge
100	eSlate accessible voting booths	Wheelchair-accessible voting booths for DAU-equipped eSlate voting units	Included	No Charge
240	Mobile Ballot Boxes™ / audio cards	Flash memory cards and audio cards	Included	No Charge
240	Additional Mobile Ballot Boxes / audio cards	Spare flash memory cards and audio cards	$ 60.00	$ 14,400.00
25	eSlate caddy	Storage unit for 8 voting booths	Included	No Charge
25	Caddy wheels	Set of 4 wheels for storage caddy	$ 100.00	$ 2,500.00
200	Jelly switches	Low-impact input switches for DAU module	$ 167.00	$ 33,400.00
16	eSlate Cryptographic Module™ (eCM)	Electronic security device	$ 60.00	$ 960.00
Voting System Software				
1	Election Management Software System	BOSS™, Tally™, Ballot Now™, and SERVO™ voting system software	$ 125,100.00	$ 125,100.00
11	Extra Ballot Now license	License for additional Ballot Now workstations	$ 60,000.00	$ 660,000.00
1	InFUSION™	Election management system import software	$ 10,000.00	$ 10,000.00
1	FUSION™	Tabulation integration software	$ 15,000.00	$ 15,000.00
1	SCORE™	Election results reporting software utility	$ 4,000.00	$ 4,000.00
Total Hart Voting System Hardware and Software				$ 1,765,360.00
Third-Party Hardware				
1	Personal computer	BOSS and InFUSION workstations	$ 3,000.00	$ 3,000.00
36	Personal computer	Ballot Now and BNIP workstations	$ 3,000.00	$ 108,000.00
1	Personal computer	Tally and FUSION workstations	$ 3,500.00	$ 3,500.00
1	Laptop computer	SERVO workstation	$ 3,500.00	$ 3,500.00
12	Laser printer	Low-volume laser printer	$ 1,050.00	$ 12,600.00
2	Laser printer	High-volume laser printer	$ 4,400.00	$ 8,800.00
12	Scanner	Kodak i830 high-volume scanner	$ 66,000.00	$ 792,000.00

QUANTITY	UNIT	DESCRIPTION	UNIT PRICE		TOTAL PRICE	
Third-Party Hardware (continued)						
12	Flat Screen	30-inch Dell flat screen for Ballot Board	$	2,200.00	$	26,400.00
12	Scan Aid Kit	Scanner aid/maintenance kit	$	620.00	$	7,440.00
12	Scanner Replacement Lamp Unit	Replacement lamp unit	$	80.00	$	960.00
12	Extended Warranty Care Kit	1-year extended warranty for i830 scanners	$	8,100.00	$	97,200.00
Total Third-Party Hardware					**$ 1,063,400.00**	
Professional Services						
50 days	Project Management	Number of project management days	$1,750.00 / day		$	87,500.00
30 days	Additional Election Support	Number of support days	$1,750.00 / day		$	52,500.00
20 days	Training	Number of training days	$1,750.00 / day		$	35,000.00
3 days	Professional Engineering Services	Number of engineering services days	$2,000.00 / day		$	6,000.00
35 days	Custom Engineering	Number of service days	$2,000.00 / day		$	70,000.00
Total Professional Services					$	251,000.00
Software License and Support						
First year	First Year License and Support	License and support for the first year (includes 12 Ballot Now licenses)	$	182,620.00	$	182,620.00
Total Acquisition Cost						
Total Price for Equipment					$	2,014,660.00
Total Price for Software					$	814,100.00
Total Price for Services					$	251,000.00
Initial Annual Fee					$	182,620.00
First Year Preferred Escrow Beneficiary Fee					$	1,500.00
State and Local Taxes (if any)				8.8%	$	287,221.44
Total System Price					$ 3,551,101.44	
Less Special County Discount					$ (420,000.00)	
Purchase Price					$ 3,131,101.44	
Optional Extended Warranty						
2 Years	Optional Extended Warranty	Extended warranty for eSlates, DAU-equipped eSlates, and JBCs	$	12,000.00	$	24,000.00
4 Years	Optional Extended Warranty	Extended warranty for VBOs	$	10,000.00	$	40,000.00
Optional Extended Warranty					$	64,000.00
Total Purchase Price (including Optional Items)					**$ 3,195,101.44**	

Pricing Notes

Coverage for the Hart Voting System hardware and software under the extended warranty is the same as under the original warranty. See Exhibit A, *Hart Voting System Warranty, Support, and License Agreement*, Section 1, Warranty Terms.

2.1.2 Diebold

DIEBOLD
ELECTION SYSTEMS

1253 Allen Station Pkwy
Allen, Texas 75002
Fax: 214-383-1596
Main: 900-433-8683

2007 CENTRAL SCANNER QUOTE FORM

Rev.   02/28/07

CUSTOMER: King County REALS Division
King County Admin Building #553
500 Fourth Avenue
Seattle, WA. 98104

SHIP TO: King County TEAC
9010 East Marginal Way South
Tukwilla, WA. 98108

QUOTE DATE	CUST. PO#	SALES REP	SHIP VIA	CONTACT PERSON	
3/1/2007		Knecht		Bill Huennekens	
				Phone	206-296-9932

QTY			PART#	UOM	UNIT PRICE	EXTENSION
	CENTRAL SCANNER - HARDWARE					
18	Scanner - includes 19" LCD Monitor, Keyboard/mouse (Shipping & Tax not included)			1	$ 42,340.00	$762,120.00
10	Adjudication Workstation - includes 30" (2560x1600 resolution) flat wide screen monitor w/ video card (Shipping & Tax not included)			1	$ 2,600.00	$26,000.00
	CENTRAL SCANNER - SOFTWARE					
18	Scanner Central Tally Software (CTS) License	Absentee Volume*: 1,200,000		1	$ 27,500.00	$495,000.00
10	Workstation CTS License			1	$ 2,500.00	$25,000.00
	CENTRAL SCANNER ACCESSORY ITEMS					
1	Optional Printer ($2,500 to $5,500) for reports / ballot images			1	$5,500.00	$5,500.00
	* need to discuss					$0.00
	SCANNER IMPLEMENTATION SERVICES					
3	Staff Training Classes - 1 Instructor per class. Includes training software and one copy of documentation. Includes travel: Class schedule for Dec. State Certification, April and August elections					$8,541.00
	Documentation and Resource Customization. Includes electronic copy of document. Does not include printing.		per Hour	$135.00	$0.00
1	Project Management/Consulting Services. Includes Travel / Expenses. November 2007 thru August 2008					$295,536.00
2	Local Technical Assistance during installation and testing of equipment. Includes Expenses. 1.5MM during November and December testing and certification		2 staff/3 wks ea			$14,580.00
1	Technical Specialist Onsite Support. To assist with oversight of Acceptance Testing labor, warehouse review, database testing, etc. Includes travel 3.5 MM during term of November 2007 thru August 2008		1 staff / 3.5 mm			$55,235.00
				WORK ORDER TOTAL		$1,687,512.00
				PLUS FREIGHT		$2,100.00
						$0.00
	Unit Prices Quoted are valid for 90 Days. Total Price may vary due to scope and quantity changes that occur during configuration of any resulting order.			TOTAL ESTIMATE		$1,689,612.00

	EXTENDED WARRANTY/MAINTENANCE			UOM	UNIT PRICE	EXTENSION
18	Scanner Additional Year Hardware Warranty			per unit/year	$2,500.00	$45,000.00
18	Scanner Additional Year Software Maintenance			per unit/year	$ 4,950.00	$89,100.00
	Workstation Extended Hardware Warranty			n/a	Third Party pass through	
10	Workstation Software Maintenance			per unit/year	$500.00	$5,000.00

3.0 Vendor Background

Vendor	System	Technology	Certification Date	Jurisdictions using vendor tabulation technology
Diebold Elections Systems Diebold Corporations purchased Global Elections Systems 1991.	DRS Scanners and CTS software interface for GEMS system.	Digital Imaging	Certification of new system is anticipated sometime in Aug. - Sept. 2007 Current system certification Feb. 1,2006	In WA: Klickitat County. LA County, and the entire states of Ohio, Georgia, Utah, Mississippi and Maryland plus many other jurisdictions in California, Arizona, Kansas, and Florida
Elections System & Software (ES&S) The precursor to ES&S was American Information Systems	Model 650 Scanners and ES&S software	Optical Scan	July 17, 2005	In WA: Adams, Cowlitz, Douglas, Grant, Grays Harbor, Jefferson, Pend Oreille, Spokane, Thurston, Wahkiakum, Walla Walla, & Whitman. States with jurisdictions that utilize the vendor include Alabama, California, Colorado, Florida, Iowa, Indiana, Michigan, Montana, North Carolina, Nebraska, New Jersey, Oregon, South Carolina, Texas, and West Virginia
Hart InterCivic Hart InterCivic, a nearly 100 year old company entered the voting system industry in 2000.	Kodak i830 scanners and Hart Intercivic software.	Digital Imaging	June 17, 2006	In WA: Asotin, Benton, Chelan, Clallam, Clark, Columbia, Ferry, Garfield, Island, Kittitas, Lewis, Lincoln, Mason, Okanogan, Pacific, San Juan, Skagit, Skamania, Stevens, and Yakima. Orange County, CA and Harris Count, TX and the city of Philadelphia in addition to other local jurisdictions in Kentucky, Texas and Virginia.
Sequoia Elections Systems Sequoia is based in Oakland, CA and provides a full range of elections solutions for local jurisdictions. The parent company of Sequoia is Smartmatic Corporation.	400-C scanners and Sequoia software	Optical Scan	April 10, 2006	In WA Franklin, Kitsap, Pierce, Snohomish, and Whatcom. Maricopa County, AZ, Cook County and the City of Chicago, the City of San Francisco, San Bernardino County and the state of Nevada in addition to jurisdictions in Alabama, Arizona, California, Colorado, Florida, Idaho, Iowa, Missouri, New Jersey, New Mexico, North Carolina, Oregon and Wisconsin.

3.1 Current Vendor

King County Elections acquired the current tabulation system from Global Elections System Inc. in 1998, during the transition from a punch card voting system to an optical scan paper

ballot system. Since then, Global Elections System Inc. was purchased by Diebold Inc. and now operates as Diebold Elections Systems Inc. This system features precinct tabulators used a polling places, a central count system utilizing the precinct count tabulators with automatic feeders for tabulating absentee ballots and the Global Election Management System (GEMS) for ballot building and results accumulation. The central count environment was expanded in 2004 to increase the number of tabulation stations to 40.

In 2006, direct recording electronic (DRE) units were added to comply with the accessibility provisions of the Help America Vote Act. Modem feeds into GEMS were disconnected in an effort to prevent the possibility of tampering and to improve security. Memory cards from precinct count tabulators and accessible voting units at the polling places are manually returned to King County Elections as opposed to being transmitted on-line.

3.2 Selection Process Overview

In line with historical trends, King County Elections assumes more than 900,000 ballots will be returned and tabulated through a central count tabulation system for the 2008 General Election in an all-mail environment. With this assumption, the process to select an upgraded tabulation system began by establishing five mandatory criteria.

- **Certification**

  King County Elections can only employ tabulation technology that meets Federal and State voting system standards and certification. This certification provides the most basic and primary criteria for evaluation. Only vendors that are active in the state of Washington and have certified systems or systems currently in the certification process have been investigated as possible solutions. (RCW 29A.12.020-.030)

  RCW 29A.12.005 defines a voting system as "(1) The total combination of mechanical, electromechanical, or electronic equipment including but not limited to, the software, firmware, and documentation required to program, control, and support the equipment." Voting system vendors certify their system as a whole, meaning that King County must employ the entire system, as opposed to different components from different vendors.

- **System Compatibility**

  King County's election management and voter registration system software, Data Information Management System (DIMS), maintains the database of all registered voters, jurisdictions, candidates, and races in King County. This information is used to build ballots, maintain the current voter file, determine voter eligibility, and mail ballots to registered voters. Fundamentally, the ballot tabulation system must integrate with the DIMS election management and voter registration system with minimal effort.

- **Basic System Requirements**

  The selected tabulation system must have three basic system components to operate in King County Election's vote-by-mail environment:
    1. Ballot building,
    2. Central count tabulation equipment,
    3. Direct recording electronic (DRE) equipment that meets the accessibility requirements for use at regional voting centers.

  A system requirement for regional voting centers, the DRE equipment will be used because of the flexibility, efficiency and security advantages of an electronic ballot. Providing paper ballots from either preprinted ballot stock for over 2,500 precincts or a print on demand system would create a complex administrative task and possible security risk.

- **Technical Requirements**

  King County Elections must employ a tabulation system with the ability to manage the high volume, complexity and database requirements of a large jurisdiction. In Washington, a construct of overlapping elections is created between initialization and certification, with six possible election dates per year. With approximately 1 million registered voters, nearly 300 jurisdictions, and more than 2,500 precincts, King County Elections conducts some of the most complicated elections of any jurisdiction in the nation. Thus, a potential vendor's ability to manage high volume and complex database requirements are crucial factors in the selection of an upgraded tabulation solution.

- **Business Process Needs**

  To manage the anticipated volume of ballots that will be required to be tabulated in a vote by mail environment, pre-processing ballots, as they are received from voters, is a significant comparative advantage. Pre-processing ballots is simply converting the physical ballot to an electronic image followed by processing the data to determine if there are errors that will cause problems with later tabulation. Once created, the electronic image is saved for tabulation on Election Day.

  No actual tabulation activity occurs at this point in time as RCW 29A.40.110 requires that the "tabulation of absentee ballots must not commence until after 8:00 p.m. on the day of the primary or election." The conversion of the physical ballot to an electronic image is the most time consuming part of the tabulation process, while the actual counting of the votes from an electronic image is very fast and will only happen after 8:00 p.m. on election night.

  The ability to pre-process ballots will redistribute the workload for preparing ballots for tabulation and will decrease the overall number of tabulators. This process offers significant security and accountability advantages and will allow for a much larger proportion of ballots to be tabulated and reported on Election Day.

The Elections Operations Management Audit conducted by the Election Center and submitted to the County Council on October 3, 2005 recommended that "County decision makers may be interested in exploring other options to accelerate its mail-in ballot counting processes." (page 50) The requirement that a system allow for preprocessing meets this recommendation.

There are four active election vendors in Washington State: Elections Systems & Software, Diebold Elections System, Hart InterCivic, and Sequoia Voting Systems. Members of the Transition Leadership Team used the following sources of information to determine whether the vendors met the mandatory criteria outlined above:

- Information obtained in a formal RFI in the summer of 2005;
- Additional requests for information in January of 2006 and December of 2006;
- Interviews with elections administrators in 18 jurisdictions;
- Consultation with the Office of the Secretary of State.

Vendors meeting all the mandatory criteria were invited to give demonstrations of their systems and equipment. After careful review of the criteria, two vendor solutions remained as options for King County: Diebold and Hart InterCivic. Diebold provided a demonstration on February 15, 2007 and Hart InterCivic provided a demonstration on March 1, 2007. Staff visited Clark County Washington on February 7, 2007 to observe the Hart system in use during a live election.

Members of the Transition Leadership Team used information from the demonstrations, Clark County visit, and documentation from the vendors to rate the final two vendors based upon previously established selection criteria outlined in section 3.3. Ratings from individual members of the Transition Leadership Team were reconciled in a team meeting and final ratings agreed upon by all team members.

Further technical information on the Hart system was obtained during a web-based session. Elections staff members logged into Hart's Web site to view the system engineer's desk top and a demonstration of various aspects of the system. Additional information was obtained though a conference call with elections administrators in Orange County, California who employ the Hart System. Orange County is the largest and most complex election jurisdiction using Hart InterCivic solution and most comparable to a county the size of King. This information was also used to complete the final ratings.

3.3   Selection Criteria

The following criteria were used to rate the Diebold and Hart InterCivic systems. These criteria are divided into high, medium and low priorities for the purpose of evaluation for this business case. High priority items will be more heavily weighed than medium and low priority items in the evaluation process.

High Priority

System security

System security is paramount to the actual and perceived integrity of the election system. King County Elections employs a security plan that relies on many components to ensure the security and integrity of elections. These components include: open and transparent election environment, physical and personal security, legal and procedural security, and technical systems security.

Tabulation and image data stored in the database must be protected from both intentional and accidental modification. This involves several layers of security. Access to the server must be controlled and restricted to an extremely limited number of individuals. Access to the tabulation database/application[1] must be similarly limited. It is highly desirable that both the server and the application use two factor authentications (e.g. smart card, finger printer reader, token, etc.) to control access. The system must be configurable such that two individuals may gain access to the tabulation application.

Access to menus, commands, or any other means of initiating actual tabulation of results prior to 8 p.m. on election night should be protected; ensuring only limited individuals (preferably more than one) can initiate tabulation. It is highly desired that this also include two-factor authentication.

The data in the database must be protected such that even with access to the tabulation application, data can not be altered, thus eliminating any ability to change election results. The ability to assign a digital signature, hash code, or certificate to both the application and the database is required to provide the ability to authenticate that the application is the same as that certified, and that data has not been changed from some previous specified time.

The tabulation system must provide the ability to access and audit any and all modifications to the system and database including ballot building activities.

The system and/or tabulation application and database must be able to be backed up and restored to protect the application and data from loss from any circumstance – foreseen and unforeseen.

System cost capital/operating

Capital cost evaluation is based on the amount available from the Federal HAVA Grant, $1.5 million.

Operating cost evaluation will be based on hardware and software maintenance costs.

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[1] The term tabulation application/database includes not only actual tabulation results/processing but all data and processing activities from the actual scanning of ballots through reporting of tabulated results.

System integration with DIMS
Integration with DIMS is a mandatory requirement, as explained above. Systems and applications will receive ratings based on their relative ease and seamless interface; the easiest and most seamless applications considered more desirable, receiving more points.

Impact on VBM transition schedule
Based on previous implementation experience, best practices from other jurisdictions, principals of project management, and the goal of phasing-in transition components, the vote-by-mail schedule targets the complete transition in early 2008. The certification of the system or the anticipated timing of certification for the system and the associated risks and the totality of the change required to implement the system and the associated risks require consideration when evaluating impacts to the VBM transition schedule.

Space on printed ballot
Because of the complexity of King County's elections and the large number of jurisdictions involved, ballot real-estate must be used as economically as possible. Multiple card ballots create possible tabulation risks and significantly increase the amount of time required to process ballots. As such, King County strives to avoid multiple card ballots to the maximum extent possible. To do so, we require a large ballot and a ballot building process that provides maximum flexibility in the design of the ballot. This includes flexibility in number of columns and font sizes, among other things.

Medium Priority

Machine sorting processing
The ability to physically and/or electronically sort ballots based on pre-defined criteria or rules is an element impacting the business processes employed during scanning. This functionality allows for the efficient handling of ballots with scanning issues, ballots containing write-in votes, overvotes, and ballots required for recounts.

Institutional knowledge
King County Elections' institutional knowledge of the voting and tabulation system combined with the vendor's knowledge of King County Elections' practices and procedures along with Washington state election law are important. With the transition to vote by mail transforming the way elections are conducted and administered in King County, the more institutional knowledge, the lower the risk for the project and better opportunities for success.

Demonstrated capacity to serve a large complex jurisdiction
King County conducts some of the most complex elections in the United States. It is important that the voting system have the technical ability and capacity to meeting the needs of King County and have actual, demonstrated experience and success in other, large, complex jurisdictions.

Some of the metrics in recent elections demonstrate the complexity of elections in King County:

Primary 2006
Races = 5,235 (121 w/o precinct committee officers)
Polling Places = 510
Precincts = 2,555 (with splits = 3,507
Ballot Styles = 5,196

General 2006
Races = 125
Polling Places = 511
Precincts = 2,555 (with splits = 3,507)
Ballot styles = 146
Cards Cast = 635,753
Batches = 3,000

Customer service
Customer service in the elections industry is critical and unique. The selected vendor must demonstrate the availability to respond to questions or problems within a very short time frame. King County Elections expects on-site vendor support during the first election, primary, and General Election that the system is used. The customer service rating and experience of other jurisdictions is also critical.

Data availability for report writing
After an election, many internal and external reports are produced. With the current system and vendor software, many of these reports (like ones necessary to perform the 4 percent AVU audit) are not standard reports and must be created using different criteria. Many require different sorting and grouping functions than the system currently provides.

As a result, King County requires the ability to develop reports with whatever specifications are necessary without vendor involvement. This includes sorting, grouping and formatting specifications. In order to accomplish this, analysts need either read access to the tabulation database data through an export utility that provides access to all rows and columns of data, or a full featured report writer that allows the ability to specify selection, sorting, grouping and formatting criteria.

These desired criteria must be balanced for system security discussed earlier.

Maintenance and serviceability
The frequency, ease of performance and cost of servicing and maintaining the hardware and software of the system must be considered in the selection process. Elements to consider: recommended maintenance cycles (per number of ballots), mean failure time of parts and equipment, off-the-shelf parts versus proprietary parts, accessibility of

mechanical elements of the equipment, and the ability to perform basic maintenance with county staff versus through vendor contracts.

Lower Priority

Ballot printing process

The impacts of the system on ballot design and ballot printing processes include the duration, ease and complexity of the ballot building process, ability to produce full color ballots, data export processes for ballot printing, and availability of vendors for ballot printing.

Practical tabulation speed

The practical throughput in the tabulation process, including the machine throughput and factoring in operator issues and timing of when processing can begin, among other issues.

Physical space requirements

The physical space requirements for the tabulation devices, servers, ballot resolution stations and operation requirements around each device (number of operators, monitor size, cabling, work staging areas) must be considered. This also includes any difference between the systems in the proximity of work functions to ensure cabling of the system in a secure, transparent manner.

Image processing time

It is King County Elections' desire to tabulate and report all received and prepared ballots on Election Day by 8:30 p.m. With pre-processing of ballots, the most time consuming part of the processing will have already been completed. Therefore it is important that the system's time requirements for image processing not present a significant delay in the release of results

3.4 Potential Vendors

There are currently four certified vendors in Washington State Diebold, Elections System and Software, Hart InterCivic, and Sequoia. Using the mandatory criteria outlined in 3.2 as shown in the following diagram, the initial field of four vendors as been narrowed to two. ES & S falls out for lack of a DRE and Sequoia falls out for lack of the ability to pre-process ballots.

King County Vote By Mail Transition - Ballot Tabulation System Vendors - Primary Analysis						January 2007

Mandatory System Requirements

	Certification	System Compatibility	Basic System Requirements	Technical Requirements	Business Process Needs	
	Vendor product is federally & state certified or in the process of certification.	Basic integration with DIMS Election Management and Voter Registration System	Ballot building, central count and direct recording electronic (DRE) equipment for accessibility.	Ability to manage complexity and database size requirements	Pre-processing of ballots as they are received allowed by digital scanning	Final Two Vendors for Analysis
Diebold	YES	YES	YES	YES	YES	YES
ES&S	YES	YES	NO DRE			
Hart	YES	YES	YES	YES	YES	YES
Sequoia	YES	YES	YES	YES	NO Pre-Processing	

Diebold

Diebold's tabulation system meets all of the mandatory criteria: the system is currently in the federal certification process, it integrates with the DIMS system, contains the basic system requirements, can manage the complexity and database size requirements and can pre-process ballots as they are received.

Elections System and Software (ES&S)

The Elections Systems and Software solution does not meet all the primary criteria. ES&S does not have a direct recording electronic device certified in Washington, nor is it in the certification process. For accessibility, ES&S relies on a product called the AutoMARK in Washington. The AutoMARK is a poor choice for King County as it requires a pre-printed paper ballot at the time the individual votes. Providing paper ballots at regional voting centers presents administrative complexity and potential security risks.

The ES&S system does not meet the technical requirement of handling the volume and complexity of a system necessary for a jurisdiction the size of King County. ES&S product documentation lists the maximum number of precincts supported by their central count tabulator, the Model 650 tabulator, at 1,640 precincts. King County currently has more than 2,500 precincts; a number expected to continue growing. Partitioning work to different tabulators may serve as a work around to this technical limitation but significant risks would be associated with such procedures. Thurston County recently reported that they have run into problems that the system could not handle over 700 offices/ PCOs and they had to split the election. In the 2006 primary, King County had over 5,000 candidates.

Pre-processing of ballots is not an option with the ES&S system. The Model 650 scanner accumulates vote totals in real time as ballots are scanned through the equipment. This prevents taking advantage of the 10 to15 day period before Election Day for pre-processing ballots as they are received.

Hart InterCivic

Hart InterCivic's system meets all of the primary criteria: the system is federally and state certified, it integrates with the DIMS system, contains the basic system requirements, can manage the complexity and database size requirements and can pre-process ballots as they are received.

Sequoia

The Sequoia system does not meet the primary criteria. The system does not provide for the preprocessing of ballots as they are received. This prevents taking advantage of the 10 to15 day period before election day for pre-processing ballots as they are received.

3.5 Vendor Rating

Criteria	Rating Guide	Hart Evaluation	Diebold Evaluation
System Security	The highest rating (8-10) is for systems that best provide for security in each of the security layers employed in King County. Specifically regarding technical security, systems with the highest rating will provide for security of data, two factor authentication for access to data, the application and the server. Finally the highest rating is reserved for systems that provide the ability to detect if the application or data have been altered in an unauthorized way and to backup the application and data for restoration in the event of a disaster. A system shall receive a moderate rating (5-7) if it does not have one of the features outlined above. A system shall receive a low rating (0-4) if it does not have two or more of the features outlined above.	Uses two-factor authentication for database access through hart application. Does not use for server logon but county can configure with Windows. Does not encrypt database. Uses hash code checking automatically to ensure database has not been changed. Application is not automatically checked as being the same as the certified version, but county can run manual hash code check. Back ups are not easy since databases are kept separate. **SCORE: 7**	Database is encrypted preventing individuals from changing the database. SmartCard required for specific functions within CTS application (including commit (i.e. tabulating) function.) Two factor authentication can be configured through Windows for log-on and application launch. Application checks certificate on launch to verify application is same as authorized. Backup of database is easy with all workstations networked. There is no automatic way to check if database has changed as with Hart, but County can run manual hash code check. **SCORE: 7**

Criteria	Rating Guide	Hart Evaluation	Diebold Evaluation
System Cost Capital	A system shall be rated (10) if the vendor price quote is 10% or more below the $1.5 million budget A system shall be rated (9) if the vendor price quote is 5% or more below the $1.5 million budget. A system shall be rated (8) if the vendor price quote is equal to or below the $1.5 million budget. Systems shall be rated with the following points based on the percentage above the $1.5 million budget: 7 points 10% or less above $1.5 million 6 points 20% or less above $1.5 million 5 points 30% or less above $1.5 million 4 points 40% or less above $1.5 million 3 points 50% or less above $1.5 million 2 points 60% or less above $1.5 million 1 point 70% or less above $1.5 million 0 points 80% less or more above $1.5 million	The Hart quote is for $3,195,101.44, which is greater than 80% above the budget. **SCORE: 0**	The Diebold quote is for $1,687,512 which is greater than 10% above the budget and less than 20%.. **SCORE: 6**
System Cost Operating	The system vendor with the lowest yearly software and hardware maintenance costs shall be rated a 10 and the other vendor shall rated according to the following schedule: 9 points if the cost is up to 10% more 8 points if the cost is up to 20% more 7 points if the cost is up to 30% more 6 points if the cost is up to 40% more 5 points if the cost is up to 50% more 4 points if the cost is up to 60% more 3 points if the cost is up to 70% more 2 points if the cost is up to 80% more 1 point if the cost is up to 90% more 0 points if the cost is up to 100% more	The total yearly software and hardware maintenance costs are $292,620. This cost is 70% more. **SCORE: 3**	The total yearly software and hardware maintenance costs are $176,926.78. **SCORE: 10**

		Hart	Diebold
Criteria	Rating Guide	Evaluation	Evaluation
System Integration With DIMS	Systems that integrate easy and seamless with DIMS shall receive the highest rating (8-10). A system that requires a cumbersome or difficult integration with DIMS shall receive a moderate rating (5-7). A system that requires redundant data entry because of integration problems or the sharing of data with DIMS is excessively time consuming shall receive a low rating (0-4).	Based on Clark County visit this is not seen as entirely seamless and easy. The demonstration also did not go as well as expected. Both vendors use file export as integration method. Both equally easy for DIMS to tabulation system. Hart does not have a way to transfer from tabulation system to DIMS. **SCORE: 6**	System currently integrates and is working to expectations. System uses file export as integration method. Both systems equally easy for DIMS to tabulation system. **SCORE: 9**
Impact on VBM Transition Schedule, factor 1 certification.	The highest rating (8-10) is reserved for system that is certified and available now for the April 2008 Special Election. A system shall be moderately rated (5-7) if certification is eminent with little risk the certification could impact the April 2008 Special Election. A system shall receive a low rating (0-4) if certification is only in process and moderate risk is associated with certification being obtained to allow implementation for the April 2008 Special Election.	Hart is currently certified and available immediately. **SCORE: 10**	Diebold is currently in the certification process (only vendor in the process). Certification is expected in time for timely implementation **SCORE: 4**
Impact on VBM Transition Schedule, factor 2 totality of change.	The highest rating (8-10) is reserved for system that requires the least amount of change and minimizes risk. A system shall be moderately rated (5-7) if moderate change is required resulting in a moderate risk for impacting the project schedule. A system shall receive a low rating (0-4) if significant or complete change is required resulting in a high risk to the project schedule	This would be a complete system change Would be required to replace all DREs/AVUs. Would require complete re-training of staff on the DREs/AVUs. Would require completely new procedures and training for all parts of the ballot building and tabulation process, including software. Would require more acceptance testing because it would encompass more equipment. **SCORE: 3**	No changing to the AVUs or training for them. System would only require new procedures for the scanning and resolution of ballots, ballot building software would remain the same. **SCORE: 8**

Criteria	Rating Guide	Hart Evaluation	Diebold Evaluation
Space on Printed Ballot	A system shall be rated high (8-10) if it provides flexible ballot building and a relative large ballot size. A system that has either inflexible ballot building or a relatively small ballot size shall be rated moderately (5-7). A system that has both inflexible ballot building and a relatively small ballot size shall be rated low (0-4)	Can accommodate large format ballots (11" x 17") but the ballot building system is not flexible. **SCORE: 7**	Ballot building is more flexible but can not accommodate quite as large a ballot format. **SCORE: 8**
Machine Sorting Process	A system shall be rated the high (8-10) if it has the ability to both electronically and physically sort ballots. A system shall be rated moderate (5-7) if it can sort in only one way, either electronically or physically. A system shall be rated low (0-4) if it can not sort at all.	Can only sort electronically, no physical sorting of the ballots. **SCORE: 5**	Scanners can sort with two different out-stack trays. Which ballot goes to which trays is completely controllable. Ballots can also be sorted electronically. **SCORE: 9**
Institutional Knowledge	A system shall be rated the high (8-10) if the county and vendor each have a great degree of institutional knowledge and the vendor has a high degree of knowledge of Washington state election law. A system shall be rated the moderate (5-7) if the county and vendor each have a moderate degree of institutional knowledge and the vendor has a moderate degree of knowledge of Washington state election law. A system shall be rated the low (0-4) if the county and vendor each have a low degree of institutional knowledge and the vendor has a low degree of knowledge of Washington state election law.	Strong familiarity with WA state, used in 20 counties in WA and works with Secretary of State. This would be starting over of building a relationship and business practice for King County. Requires retraining and learning a new system. **SCORE: 6**	Many staff are knowledgeable with the system. Vendor has extensive knowledge of both county & state. County has extensive knowledge of vendor systems. **SCORE: 8**

		Hart	Diebold
Criteria	**Rating Guide**	**Evaluation**	**Evaluation**
Demon-strated capacity to serve a large and complex Jurisdiction	A system shall be rated high (8-10) if it has been used extensively in other large complex jurisdictions and the vendor has significant experience with other large complex jurisdictions. A system shall be rated moderate (5-7) if it has been used only moderately i other large complex jurisdictions and the vendor has only moderate experience with other large complex jurisdictions. A system shall be rated low (0-4) if it has been used at all or only on a limited basis in other large complex jurisdictions and the vendor has little or no experience with other large complex jurisdictions.	Not many large jurisdictions with the number of VBM ballots in King County and the complexity of the ballot in King Count. **SCORE: 7**	Vendor has experience with many large jurisdictions but the scanners are new equipment in the United States and not tested in other jurisdictions. **SCORE: 7**

| **Customer Service** | A vendor shall be rated high (8-10) if it has demonstrated quality customer service, proved availability and other jurisdictions have rated the vendor as excellent.

A vendor shall be rated moderate (5-7) if it has demonstrated average customer service, limited availability and other jurisdictions have rated the vendor as adequate.

A vendor shall be rated low (0-4) if it has demonstrated poor customer service, unavailability and other jurisdictions have rated the vendor as poor. | Elections side has good reputation in Washington – some concern with the customer service experienced by the King County Recording office.

SCORE: 8 | Difficult past history with customer service – improving customer focus.

SCORE: 5 |

		Hart	Diebold
Criteria	**Rating Guide**	**Evaluation**	**Evaluation**
Data Availability for report writing	A system shall be rated high (8-10) if it provides report writing capability in an easy and quality way through one of the three methods outlined in the explanation of the criteria. A system shall be rated moderate (5-7) if it provides report writing capability through one of the three methods outlined in the explanation of the criteria but the process is burdensome or difficult A system shall be rated low (0-4) if no report writing capability is provided or it is provided through one of the three methods outlined in the explanation of the criteria but it is excessively difficult or time consuming.	Hart provides the capability to do reporting through their Fusion and InFusion applications. The data elements that are needed require a series of exports and are not performed easily. The ability to report results data by batch does not exist unless a very burdensome process with memory cards is employed. This would limit the ability to conduct audits of the central count environment by batches of ballots. **SCORE: 4**	Diebold promises a data export routine in next version that will provide all data that we can import into our own database application to do reporting from. This is required because in next version the data will be encrypted. Some reports would be limited to canned reports from the system limiting flexibility. **SCORE: 7**
Maintenance and Serviceability	A system shall be rated high (8-10) if it has a low frequency rate, and cost for maintenance and maintenance can be performed easily on the equipment. A system shall be rated moderate (5-7) if it has a moderate frequency rate, and cost for maintenance and maintenance is not necessarily easily performed on the equipment. A system shall be rated low (0-4) if it has a high frequency rate, and cost for maintenance and maintenance is not performed easily on the equipment.	Off the shelf product, vendor does not support hardware, closed paper path. In response to written questions about "the time frame in which regular maintenance takes place," Hart responded that the recommended Kodak scanners "should be maintained according to the manufacturer's instructions." Research indicates that some internal parts of the scanners need to be cleaned after 8 hours of use. **SCORE: 6**	Ability to perform most maintenance in house; open paper path with easily accessible consumables. Consumable (pickup separator pads and feed wheels, etc.) are inexpensive. Diebold documentation indicates that there are 12 feed wheels on the scanners and that they are easily replaced when worn. Documentation further indicates that preventative maintenance occur every 40,000 ballots processed. Given the scanning rates provided by Diebold the highest number of ballots (11") that could be scanned in a day is approximately 28,000. At this rate preventative maintenance would need to occur every day and half or two days. **SCORE: 8**

Criteria	Rating Guide	Hart Evaluation	Diebold Evaluation
Ballot Printing Process	A system shall be rated high (8-10) if the ballot design and printing processes are smooth, easy to perform and flexible in regards to the elements for consideration outlined in the explanation of the criteria. A system shall be rated moderate (5-7) if the ballot design and printing processes are not necessarily smooth or easy to perform and inflexible in regards to the elements for consideration outlined in the explanation of the criteria. A system shall be rated low (0-4) if the ballot design and printing processes are difficult to perform and not flexible in regards to the elements for consideration outlined in the explanation of the criteria.	The ballot printing process based on the visit to Clark County and conference call with Orange County CA is not necessarily smooth, easy and flexible. Some processes are time and labor intensive. Has good feature of using table of English/Chinese translations for use on a global basis. A ballot is printed for each voter which is time consuming and creates very large files. It is also significant that a new ballot printer and contract would be required with this system. Specific issues related to ballot building include: no display of fold lines on ballot during build process, inability to change font sizes for different contest on the ballot, can only use predetermined column layout designs, and color on the ballot can only be dropped in by the printer in advance of ballot printing. **SCORE: 4**	Integrates nicely with DIMS; has configuration and ballot layout flexibility. Some aspects of completing Chinese language ballot are difficult. Ballot build is a much easier process with GEMS requiring fewer steps and less time. Staff in Clark County that has experience with both systems strongly prefers the GEMS solution for ballot building. No change of printing vendor required. **SCORE: 8**

		Hart	Diebold
Criteria	Rating Guide	Evaluation	Evaluation
Practical Tabulation Speed	A system shall be rated high (8-10) if the practical tabulation speed allows for all the ballots available for tabulation on election day are able to be processed and tabulated with fewer than 20 scanners and with little or no operational risks. A system shall be rated moderate (5-7) if the practical tabulation speed allows for a majority of the ballots available for tabulation on election day are able to be processed and tabulated with fewer than 20 scanners and with little or no operational risks. A system shall be rated low (0-4) if the practical tabulation speed allows for only a minority of the ballots available for tabulation on election day to be processed and tabulated and increasing the practical tabulation speed would result in more than 20 scanners or an increased operational risk.	Hart's system exceeds this requirement with a combination of preprocessing and higher speed scanners. **SCORE: 9**	Diebold's system exceeds this requirement with a combination of preprocessing and higher speed scanners. **SCORE: 9**
Physical space Requirements	A system shall be rated high (8-10) if reasonable space requirements necessary for the elements outlined in the criteria, the system allows flexibility in terms of the proximity of various components in a transparent manner and the system will fit in the less square footage than the current system. A system shall be rated moderate (5-7) if large space requirements are necessary for the elements outlined in the criteria, the system is inflexible in terms of the proximity of various components ion a transparent manner, and the system will fit in the same square footage as the current system. A system shall be rated low (0-4) if excessive space requirements are necessary for the elements outlined in the criteria, the system is not flexible in terms of the proximity of various components in a transparent manner and the system will not fit in square footage than the current system.	Two work stations must be attached to each scanner and the data for resolving ballots can not be shared with other work stations. **SCORE: 8**	Scanner is essentially also a PC so only a monitor and key board are required. **SCORE: 8**

Criteria	Rating Guide	Hart Evaluation	Diebold Evaluation
Image processing time	A system shall be rated high (8-10) if it can tabulate images from 600,000 8.5"x 11" ballots under 10 minutes. A system shall be rated moderate (5-7) if it can tabulate images from 600,000 8.5"x 11" ballots in 10-20 minutes. A system shall be rated low (0-4) if it takes longer than 20 minutes to tabulate 600,000 8.5"x 11" ballot images.	Hart Testing indicates that the total time for all 600,000 Ballots on 10 Mobile Ballot Boxes (MBB) was less then 1 minute and 30 seconds. Each MBB took approximately 8 seconds to tabulate by Tally. **SCORE: 10**	Diebold testing of the software indicates that 6 million ballots were processed in under 25 minutes. This would equate to 600,000 ballots being tabulated in 2.5 minutes. **SCORE: 10**

Weighted Ratings of the Vendors Meeting the Mandatory Criteria

Criteria	Un-weighted Rating		Weighting	Weighted Rating	
	Hart	Diebold		Hart	Diebold
High Priority					
System Security	7	7	x3	21	21
System Cost Capital	0	6	x3	0	18
System Cost Operating	3	10	x3	9	30
System Integration With DIMS	6	9	x3	18	27
Impact on VBM, Transition Schedule, factor 1 certification.	10	4	x3	30	12
Impact on VBM Transition Schedule, factor 2 totality of change.	3	8	x3	9	24
Space on Printed Ballot	7	8	x3	21	24
Medium Priority					
Machine Sorting Process	5	9	x2	10	18
Institutional Knowledge	6	8	x2	12	16
Demonstrated capacity to serve a large and complex jurisdiction	7	7	x2	14	14
Customer Service	8	5	x2	16	10
Data Availability for report writing	4	7	x2	8	14
Maintenance and Serviceability	6	8	x2	12	16
Low Priority					
Ballot Printing Process	4	8	x1	4	8
Practical Tabulation Speed	9	9	x1	9	9
Physical Space Requirements	8	8	x1	8	8
Image processing time	10	10	x1	10	10
Total				**211**	**279**

3.6   Vendor Recommendation and Justification

Based on the ratings of the systems outlined above, the recommended vendor system solution for upgrading King County Elections vote tabulation system is Diebold Elections System Inc.

Following thorough evaluation, Diebold's system provides advantages over Hart's system in the tangible elements evaluated above:

- Integration with the DIMS Election management and Voter Registration System;
- Space on the printed ballot;
- Sorting of ballots by the scanners;
- Maintenance and serviceability of the scanners;
- Data availability; and
- Ballot Printing Process.

Ballot printing was originally assigned as a lower priority criterion by the Transition Leadership Team. However, given what has been learned about the inflexibility and time consuming process for ballot building and printing process with the Hart system this is an area of significant concern. Diebold's system has a distinct advantage in this area. Given the complexity of ballots in King County, the demanding elections calendar, the inflexibility and time consuming process of the Hart ballot building process the hart solution would present a significant risk to the administration of elections in King County.

Costs are also an important factor and Diebold has a significant advantage in this area. The county would have to appropriate an additional $1.5 to $2 million in order to purchase the Hart system plus additional project and education and outreach costs. The Diebold quote is much closer to the budgeted number and Elections will negotiate with Diebold during contract negotiations in an attempt to come in below the $1.5 million amount.

In the following areas the ratings found the system equal:

- System Security
- Practical tabulation speed
- Physical Space Requirements
- Image Processing Time

On the intangible criteria: impact on the transition schedule, institutional knowledge, demonstrated capacity to serve a large jurisdiction, Hart has a slight advantage. This is due in part because of the strong customer service record of Hart by other jurisdictions in Washington and the moderate risk to the transition schedule associated with the certification of the Diebold system. This slight advantage is significantly outweighed by the other factors outlined above.

Other issues considered:

- System Certification

  The Diebold system is currently in the certification process and as outlined above that is an area of risk because the timing for certification is unknown. However by going through the certification processes at this point in time the Diebold system will have been through the most recent set of federal Voluntary Voting System Standards developed through the Election Assistance Commission with the assistance of the National Institute of Standards

and Technology. Washington State law makes the certification process and the Voluntary Voting System Standards a requirement. (RCW 29A.12.080(6)) The current standards adopted in 2005 and effective at the beginning of this year significantly increase security requirements and expand access. Further, the certification process is much improved over the past processes with a test laboratory accreditation program and further involvement and consultation from NIST. More information on the certification process and 2005 Voluntary voting system Standards is available at: http://www.eac.gov/voting_sys_cert.htm.

The Hart system was certified using the 2002 Voluntary Voting System Standards developed through a system previously under the Federal Elections Assistance Commission and the National Association of State Elections Directors.

- Scanner endorsement ability

The Diebold scanners have the ability to add an endorser that could put a mark on each ballot as it is scanned. While not a requirement previously established by King County or an item directly addressed in one of the rating criteria endorsing ballots after they are tabulated offers potential advantages that merit exploring. The Kodak scanners identified by hart do not provide the option for endorsing ballots as they are tabulated.

Finally the issue of security needs to be addressed in more detail as this is a primary concern. The rating based on the criteria outlined in section 3.5 could lead some to believe that both systems are inadequate. The ratings are a result the way the rating guide was structured and not a reflection on the system. The guide instructed that if only one of the security features was missing a moderate rating was to be assigned and if two of the features were missing a low rating was assigned. This rating system inadvertently gives the appearance that theses tabulation solutions are insecure, when in fact each of these systems have distinct security advantages.

Detailed Security Features

Security Feature	Hart's System Ability	Diebold's System Ability
Tabulation and image data stored in the database must be protected from both intentional and accidental modification.	Database protected from third party tools by the database engine and user access rights in the Hart application	Database is encrypted and access is protected by user rights in the CTS application.
Access to the server must be controlled and restricted to an extremely limited number of individuals using two-factor authentication.	Accomplished through Windows tools. Tally also requires use of eSlate Crytographic Module (eCM) Key	Accomplished through Windows tools
Access to the tabulation database must be limited using two factor authentication.	eCM Key and protected from user access by application.	Accomplished through use of Windows tools and the database is encrypted
Access to the application must be limited using two factor authentication.	Requires use of eCM key	Accomplished through use of Windows tools

Access to menus, commands, or any other means of initiating actual tabulation of results, from scanned images, prior to 8:00 p.m. on election night should be protected, ensuring only limited individuals (preferably more than one) can initiate tabulation. It is highly desired that this also include two factor authentication.	User rights and system configuration can be set for different functions	Uses smart card to kick off the Commit process
The data in the database must be protected such that even with access to the tabulation application, data can not be altered, thus eliminating any ability to change election results.	eCM Key and protected from user access by application.	Accomplished through use of Windows tools and the database is encrypted
The ability to assign a digital signature, hash code, or certificate to both the application and the database is required to provide the ability to authenticate that the application is the same as that certified, and that data has not been changed from some previous specified time.	Hash codes the database. No certification or hash code of application although user can hash code separately.	Applies certificate to application and checks every time application is launched. Does not hash code database (which is encrypted) but database is separate file that can be hash coded by user.
The tabulation system must provide the ability to access and audit any and all modifications to the system and database including ballot building activities.	Yes	Yes
The system and/or tabulation application and database must be able to be backed up and restored to protect the application and data from loss from any circumstance – foreseen and unforeseen.	Cumbersome backups – scanner/resolution stations are not networked requiring that each be backed up separately	Scanner/resolution stations are networked and can be configured to share data allowing data from all to be backed up in a single process.