COST ANALYSIS:

GEORGIA STATE
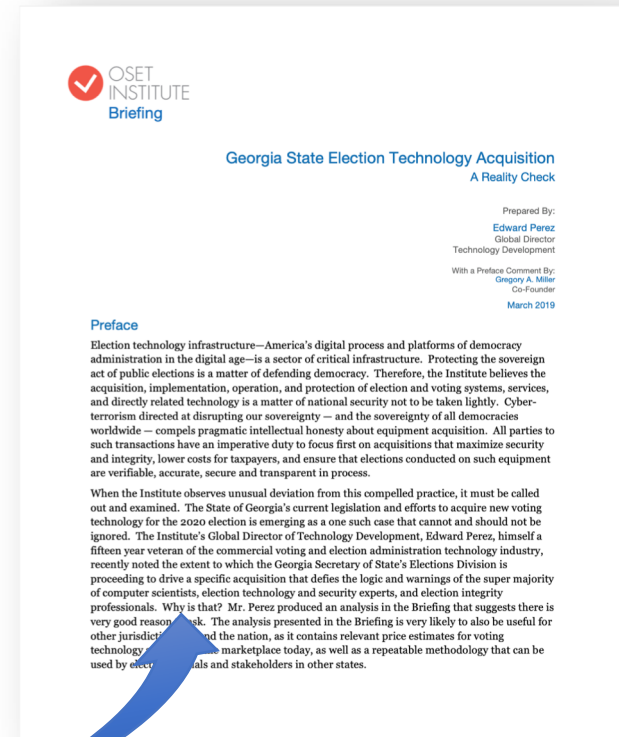## VOTING TECHNOLOGY ACQUISITION

Edward Perez

Global Director of Technology Development

INTRODUCTION & BACKGROUND

- **January 10, 2019**: GA Commission for Safe, Accessible & Fair Elections (SAFE Commission) *rejects* cybersecurity recommendations for HMPB

- **February 26, 2019**: GA Director of Elections takes unusual step of posting memo claiming to be *"comprehensive inquiry into the cost of implementing HMPB."*
  - Questions were raised about its methodology and conclusions; for example…
    - Incomplete information to estimate costs;
    - Questionable assumptions about printing paper ballots;
    - No attempt to compare the costs of hand-marked paper ballot system to cost of an all-BMD implementation
    - Essentially, a "hit piece"

- **March 2019**: OSET Institute publishes a "reality check"

OSET INSTITUTE

Briefing

Georgia State Election Technology Acquisition
A Reality Check

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With a Preface Comment By:
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Preface

Election technology infrastructure—America's digital process and platforms of democracy administration in the digital age—is a sector of critical infrastructure. Protecting the sovereign act of public elections is a matter of defending democracy. Therefore, the Institute believes the acquisition, implementation, operation, and protection of election and voting systems, services, and directly related technology is a matter of national security not to be taken lightly. Cyber-terrorism directed at disrupting our sovereignty — and the sovereignty of all democracies worldwide — compels pragmatic intellectual honesty about equipment acquisition. All parties to such transactions have an imperative duty to focus first on acquisitions that maximize security and integrity, lower costs for taxpayers, and ensure that elections conducted on such equipment are verifiable, accurate, secure and transparent in process.

When the Institute observes unusual deviation from this compelled practice, it must be called out and examined. The State of Georgia's current legislation and efforts to acquire new voting technology for the 2020 election is emerging as a one such case that cannot and should not be ignored. The Institute's Global Director of Technology Development, Edward Perez, himself a fifteen year veteran of the commercial voting and election administration technology industry, recently noted the extent to which the Georgia Secretary of State's Elections Division is proceeding to drive a specific acquisition that defies the logic and warnings of the super majority of computer scientists, election technology and security experts, and election integrity professionals. Why is that? Mr. Perez produced an analysis in the Briefing that suggests there is very good reason to ask. The analysis presented in the Briefing is very likely to also be useful for other jurisdictions around the nation, as it contains relevant price estimates for voting technology in the marketplace today, as well as a repeatable methodology that can be used by election officials and stakeholders in other states.

WHAT I BRING TO THIS TOPIC...

✓ Complex financial modeling for voting system solutions

✓ Former Director of Product Management; industry-wide competitive intelligence research

✓ Former Manager of Professional Services

✓ Regularly provided support for Request for Proposal (RFP) responses for major procurements of election technology

✓ Solution architecture, contractual terms and requirements, industry-standard terminology and practices

METHODOLOGY

Compare costs to implement…

Hand-marked paper ballot system w/ limited BMDs for accessible voting ("HMPB system")
   vs.
Universal Ballot Marking Devices for all voters ("BMD system")

- Detailed analysis and total cost estimate over a period of 10 years

- Two models for HMPB system:

    - **"Moderate" ballot printing**
    - **"High" ballot printing**

METHODOLOGY Continued…

Detailed summation of costs associated with…

- Hardware

- Software

- Project management

- Training

- Installation

- Annual maintenance and license fees

- Consumables such as paper

METHODOLOGY Continued…

- We based estimates on the same quantities of devices used in
  GA Election Director's memo

- Pricing similar to major vendors' responses to SAFE Commission
  Request for Information (RFI)

- Turnout data based on GA historical records for total ballots cast
  in various types of statewide elections

All assumptions are identified in *Assumptions and References*, in the *Appendix*.

YEAR 1: COST TO ACQUIRE HW, SW AND TO IMPLEMENT

Hand-marked paper ballots (optical scan + ballot marking devices for ADA only)
Moderate Printing Estimate
Year 1 Hardware, Software, Support

Line Items	Quantity	Unit Cost	Total Cost
Polling place scanner	3,500	$5,800	$20,300,000
Ballot marking device (for ADA only)	4,730	$3,500	$16,555,000
Central scanning device	163	$40,000	$6,520,000
Election Management Software (EMS) - counties	163	$30,000	$4,890,000
Election Management Software (EMS) - state	1	$50,000	$50,000
Hardware installation for polling place scanners	3,500	$115	$402,500
Hardware installation for ADA BMDs	4,730	$105	$496,650
Hardware installation for central scanners	163	$1,000	$163,000
EMS installation	163	$2,250	$366,750
Proj mgmt., acceptance and training days	200	$1,700	$340,000
Onsite support for Election Day	163	$4,700	$766,100
TOTAL - Year 1 Hardware, Software, Support			**$50,850,000**

YEAR 2: ANNUAL MAINTENANCE FEES ("Right to Use")

Annual maintenance and software license fees - Year 2

Line Items	Quantity	Unit Cost	Total Cost
Polling place scanner maintenance	3,500	$110	$385,000
BMD maintenance	4,730	$75	$354,750
Central scanner maintenance	163	$1,900	$309,700
Polling place scanner SW license fee	3,500	$80	$280,000
BMD SW license fee	4,730	$65	$307,450
Central scanner SW license fee	163	$1,575	$256,725
EMS SW license fee - counties	163	$8,000	$1,304,000
EMS SW license fee - state	1	$50,000	$50,000
TOTAL - Year 2 Maintenance and License Fees			**$3,247,625**

YEARS 3-10: MAINTENANCE FEES RISE EVERY YEAR!

Year 3 Maintenance and License Fees @3.5% annual increase $3,361,292

Year 4 Maintenance and License Fees @3.5% annual increase $3,478,937

Year 5 Maintenance and License Fees @3.5% annual increase $3,600,700

Year 6 Maintenance and License Fees @3.5% annual increase $3,726,724

Year 7 Maintenance and License Fees @3.5% annual increase $3,857,160

Year 8 Maintenance and License Fees @3.5% annual increase $3,992,160

Year 9 Maintenance and License Fees @3.5% annual increase $4,131,886

Year 10 Maintenance and License Fees @3.5% annual increase $4,276,502

TOTAL - Years 2 thru 10 Maintenance and License Fees **$33,672,986**

EVERY ELECTION: BALLOT PRINTING (pre-print, or BMD supplies)

Consumable Costs - Ballot Printing - MODERATE, based on upward adjustments from historical ballots cast

Election	Ballots Printed	Unit Cost	Total Cost
2020 Presidential Preference Primary (Mar)	3,500,000	$0.40	$1,400,000
2020 General Primary (May)	2,500,000	$0.40	$1,000,000
2020 Presidential General (Nov)	6,500,000	$0.40	$2,600,000
2022 General Primary (May)	3,000,000	$0.42	$1,260,000
2022 General (Nov)	6,000,000	$0.42	$2,520,000
2024 Presidential Preference Primary (Mar)	4,000,000	$0.44	$1,760,000
2024 General Primary (May)	3,500,000	$0.44	$1,540,000
2024 Presidential General (Nov)	7,000,000	$0.44	$3,080,000
2026 General Primary (May)	4,000,000	$0.46	$1,840,000
2026 General (Nov)	6,500,000	$0.46	$2,990,000
2028 Presidential Preference Primary (Mar)	4,500,000	$0.48	$2,160,000
2028 General Primary (May)	4,500,000	$0.48	$2,160,000
2028 Presidential General (Nov)	8,000,000	$0.48	$3,840,000
TOTAL - Ballot Printing Costs			**$28,150,000**

Year 1 HW/SW Installation
+ Year 2 Fees
+ Years 3-10 Fees
+ Ballot printing every election
GRAND TOTAL

And the Big Reveal…

GRAND TOTALS

Estimated 10-Year Costs

HMPB implementation with "moderate" ballot printing   **$112,672,986**

HMPB implementation with "high" ballot printing   **$181,762,986**

All-BMD implementation with on-demand ballot printing   **$203,296,732**

TAKEAWAYS

- 10-year cost of all-BMD implementation is almost **2X** a realistic HMPB solution

- These estimates do _not_ include all costs
  (e.g., storage and transportation; labor costs)

- Monetary cost does _not_ capture **risks to public confidence if things go awry**

  - All-BMD solution is much harder to store, manage, configure, and set up

  - Requires more personnel resources and places more burdens on election officials and poll workers at a time when they are under increasing threat of harassment

- Monetary cost does _not_ capture **risks associated with disinformation**
  ("black box" software and non-transparent vendors)

- Compared to 2019, today's risk/reward profile is **even worse**

ADDITIONAL RESOURCES

https://www.osetfoundation.org/research

https://bit.ly/OSETtale2trails

http://bit.ly/OSETgavotetech