

# Post-Election Audit Summary

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## May 6, 2014 Primary Election

*Governor/Lieutenant Governor*

*Judge of the Court of Common Pleas (Domestic Relations Division) UTE 1/12/17*

*Issue 6 – Shaker Heights CSD Tax Levy*

On June 3, 2014 we conducted a Risk-Limiting Post-Election Audit for the May 2014 Primary Election. There were 186,239 total ballots cast in the election. Total ballots cast for each of the audited contests are as follows:

*Governor/Lieutenant Governor (DEM) – 115,973 ballots*

*Judge of the Court of Common Pleas (Domestic Relations Division) UTE 1/12/17 (REP) – 48,363 ballots*

*Issue #6 – Shaker Heights CSD Tax Levy – 7,704 ballots*

Our Risk-Limiting Audit was based upon the Kaplan-Markov method as explained by Philip B. Stark and Mark Lindeman. Auditing best practices recommend we split up the total ballots cast by precinct into multiple batch types. We utilized five batch types each consisting of one single ballot type category: Absentee, Election Day, Provisional, Post Absentee, and Post Election Day.

A master spreadsheet was created with statistical formulas to determine the number of batches that must be audited in order to reach a 90% confidence level. This confidence level means the audit has at least a 90% probability of leading to a full recount if the apparent outcome is incorrect.

We used a “Probability Proportional to Error Bound with Replacement” selection method. We assigned five digit numbers ranging from 00000 through 99999 for each batch within the contest. Unique ranges of numbers were allocated to specific batches based upon their error bound - i.e. the greater the possibility of a miscount within a batch, the more numbers assigned, and the more likely it is to be selected. To obtain the precinct batch number we rolled five differently colored dice numbered 0 - 9, each one of the colored dice representing one digit of the five digit number. We rolled the dice a total of 80 times in order to select batches to audit for the contests.

In conclusion, we inspected a total of 4,984 ballots from the audited races in the May 6, 2014 Primary Election. There were no discrepancies in vote totals and only one page discrepancy among all ballot pages audited, giving us a 99.98% accuracy rate for the election. Within the Court of Common Pleas contest, it was determined that one blank ballot was inadvertently scanned twice due to operator error during the canvass. Because the ballot is blank, this does not affect the outcome of the race and we do not need to amend certification due to the double scan.

RACE	TOTAL BALLOTS CAST	REQUIRED BATCHES	TOTAL BALLOTS AUDITED	COST
Governor/Lieutenant Governor (DEM)	115,973	5	454	\$131
Judge of the Court of Common Pleas (Domestic Relations Division) UTE 1/12/17 (REP)	48,363	63	2,994	\$2,496
Issue #6 – Shaker Heights CSD Tax Levy	7,704	12	1,536	\$132



**May 6, 2014 Post Election Audit**  
**Cost Breakdown**

<b>Audit Totals</b>	
<b>Total Cost of Post-Election Audit</b>	<b>\$2,759</b>
<b>Cost Per Ballot (Ballots Cast in Audited Contests Only)</b>	<b>\$0.55</b>
<b>Cost Per Ballot (Ballots Cast in Entire Election)</b>	<b>\$0.02</b>

