Principles of Redistricting

Knox County Board of Education
Redistricting Committee

March 29, 2011

Principles of Redistricting

- Redistricting datasets
- Redistricting terminology and requirements
- Redistricting plans and plan evaluation

MPC Role Redistricting Process

- Lend assistance to the redistricting process by:
    - Providing accurate and objective data
    - Providing tools to support the decision-making process
- MPC does not seek to have any role in evaluating plan alternatives or in the outcome of process

Redistricting Data Sources

Census Data Sources

- Public Law 94-171 specifies that within 1 year of Census Day (decennial census), the Census Bureau must send each state the data it will need to redraw districts

- Census Bureau's *Redistricting Data* are specified for use in the redistricting of federal and state legislative districts

- City of Knoxville Charter specifies latest federal census data as well

  "Districts shall be reapportioned every ten (10) years based upon the most recent federal census "

2010 Census Results

Year	Population
2000	382,032
2010	432,226
Change	50,194 (13.14%)

Census Geographic Datasets

- The smallest level at which population data are available from the Census Bureau is the census "block"

- Census block characteristics
  - Generally small in urban areas, larger in rural
  - Bounded by physical features and, in some cases, political subdivisions such as corporate limits

Census Geographic Datasets

- Block data contain counts of population as well as age, race and ethnic makeup

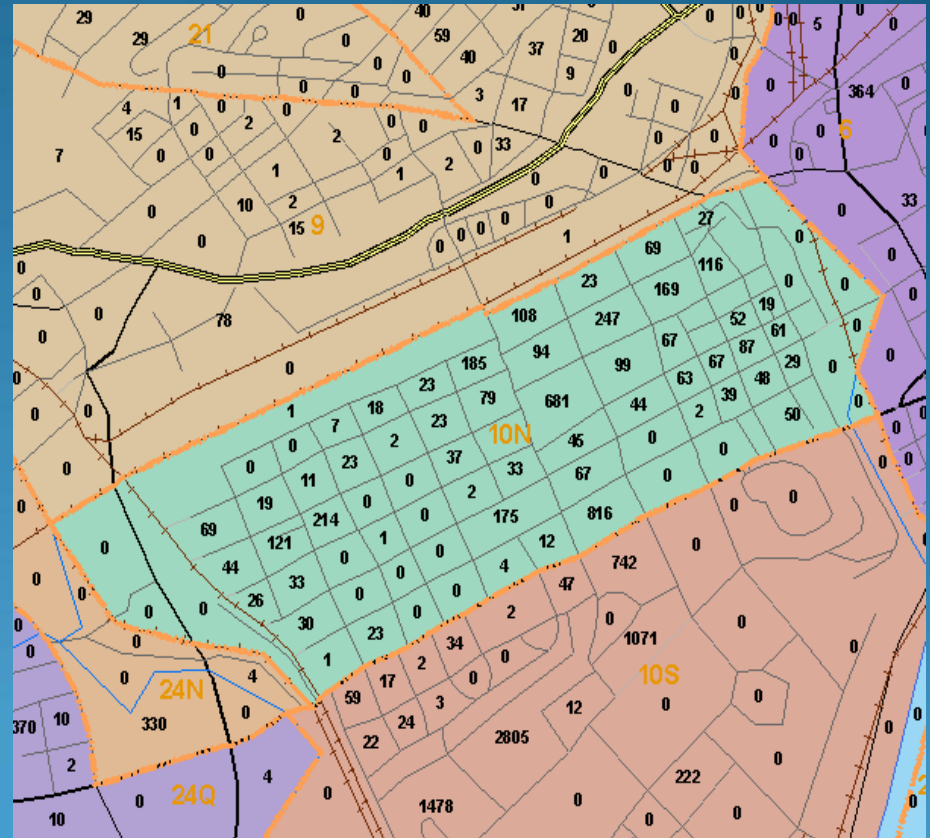- Total Population is used for redistricting
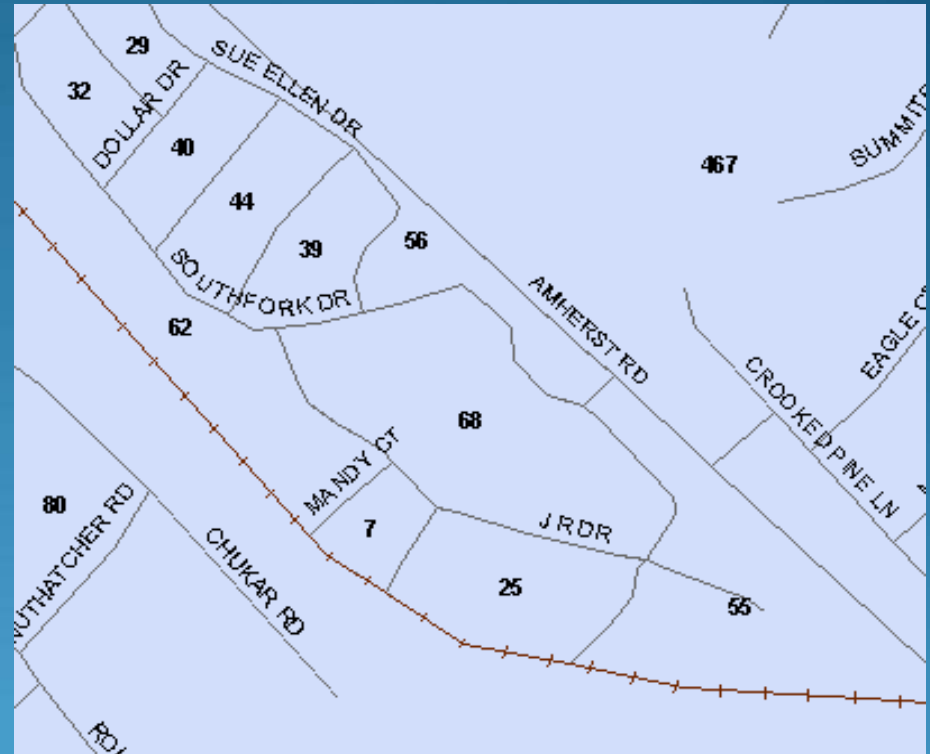
Amherst Ridge Mobile Home Park
2000 Census Block Population

Census Geographic Datasets

- Census blocks can be aggregated into larger geographic areas, such as wards or precincts

- Population and demographic summaries within precincts can be generated

2000 Census Block Population with Voting Precincts

Redistricting Terminology and Requirements

One Person, One Vote Standard

- Equal Population
- Operationalizing this principal
  - Ideal Population
  - Absolute and Relative Deviation
  - Overall Range

Ideal Population

- Target population for each district within legislative body's boundary
- Theoretical Principal
  - Impossible to obtain equal population within each legislative district

Ideal Population

- Formula:

$$\text{Ideal Population} = \frac{\text{Total Population}}{\text{Number of Districts}}$$

- Knox County Board of Education

    2000: 382,032 / 6 Districts = 42,448

    2010: 432,226 / 6 Districts = 48,025

- 5,557 person increase per district

Deviation

- Absolute Deviation
  - Difference between a district's actual population and the district's ideal population
- Relative Deviation
  - Absolute Deviation expressed as a percentage

Deviation

- Example:
  - Ideal population: 10,000
  - District population: 9,000
  - Absolute Deviation:

$$9,000 - 10,000 = -1000$$

(District population – Ideal Population)

  - Relative Deviation:

$$-1,000 / 10,000 = -10\%$$

(Absolute Deviation / Ideal Population)

Overall Range

- Difference between the districts with the highest and lowest relative deviation

- 10 Percent Rule:
    - Generally accepted standard is that overall range should not exceed 10 percent
    - Redistricting Plans can exceed 10 percent, but officials should prepare a defense

Overall Range

- Example
  - Total Population: 20,000
  - Ideal Population: 10,000
  - 2 Legislative Districts:
    - District 1 Population: 9,000 (-10%)
    - District 2 Population: 11,000 (10%)
  - Overall Range

$$10\% - \text{-}10\% = 20\%$$

(Max. Deviation – Min. Deviation = Range)

Other Considerations

- Compactness and Contiguity

  "Districts shall be reasonably compact and contiguous and shall not overlap"

  TCA 5-1-111, Section E

- Minority Representation and the Voting Right Act

Redistricting Plan Development

Redistricting Plans

- Do we have to reapportion?
  - A legislative body is required to reapportion if it is determined that it no longer meets the standard of equal representation
- When is reapportioning permitted?
  - Change to number of districts or representatives
  - Population change requires it based on latest decennial census

Redistricting Plans

- Redistricting involves moving census blocks between districts to achieve equal representation
  - 2009 County Commission Process Moved whole precincts/wards; no precincts were split

Redistricting Plans

- Finite number of district configurations probably exists
  - Don't know what that number is; computers can't just tell us
  - Multiple plans that could be generated meeting the overall range requirements
- When a 10% overall range has been achieved, proceed with evaluating the plan

Redistricting Data and Software

- Using ESRI's *ArcGIS* software
    - Software upon which City, County, and MPC GIS functions are standardized
    - Districting Extension available free of charge from ESRI

Plan Evaluation

- MPC role limited to plan validation, not evaluation
- Two means of evaluating a redistricting plan's merit
  1. Objective Evaluations – Data
  2. Subjective Evaluations – Community Values

Knox County Commission Redistricting

Redistricting Plan #3A

☐ Knox County Wards/Precincts

▨ Wards/Precincts Moved

Wards/Precincts Key:
06 - Green Elem
09 - Moses Center
10N - Ft Sanders Elem
10S - University Center
11 - Central United Methodist
12 - Eastport Elem
13 - Fair Garden Comm Ctr
14E - Austin-East High
14M - Walter P Taylor Ctr
15 - John T O'Conner Ctr
16N - Larry Cox Sr Ctr
16S - Belle Morris Elem
17 - Christenberry Comm Ctr
18 - Lincoln Park Elem
19 - SOAR Ministries Youth Ctr
20 - Beaumont Elem
23N - Bible Church of God
23S - Westview Elem
24N - Pellissippi State Tech
30 - Sarah M Greene Elem
33 - Richard Yoakley / Alice Bell
34 - Fountain City Library
37 - Inskip Elem
38 - Inskip Elem
39 - Inskip Rec Ctr
40 - Norwood Elem
41 - Norwood Library
42 - Pleasant Ridge Elem
43 - West Haven Elem
50N - West High
50S - West High

Print Date: 6/29/2009

0 2 4 8 Miles
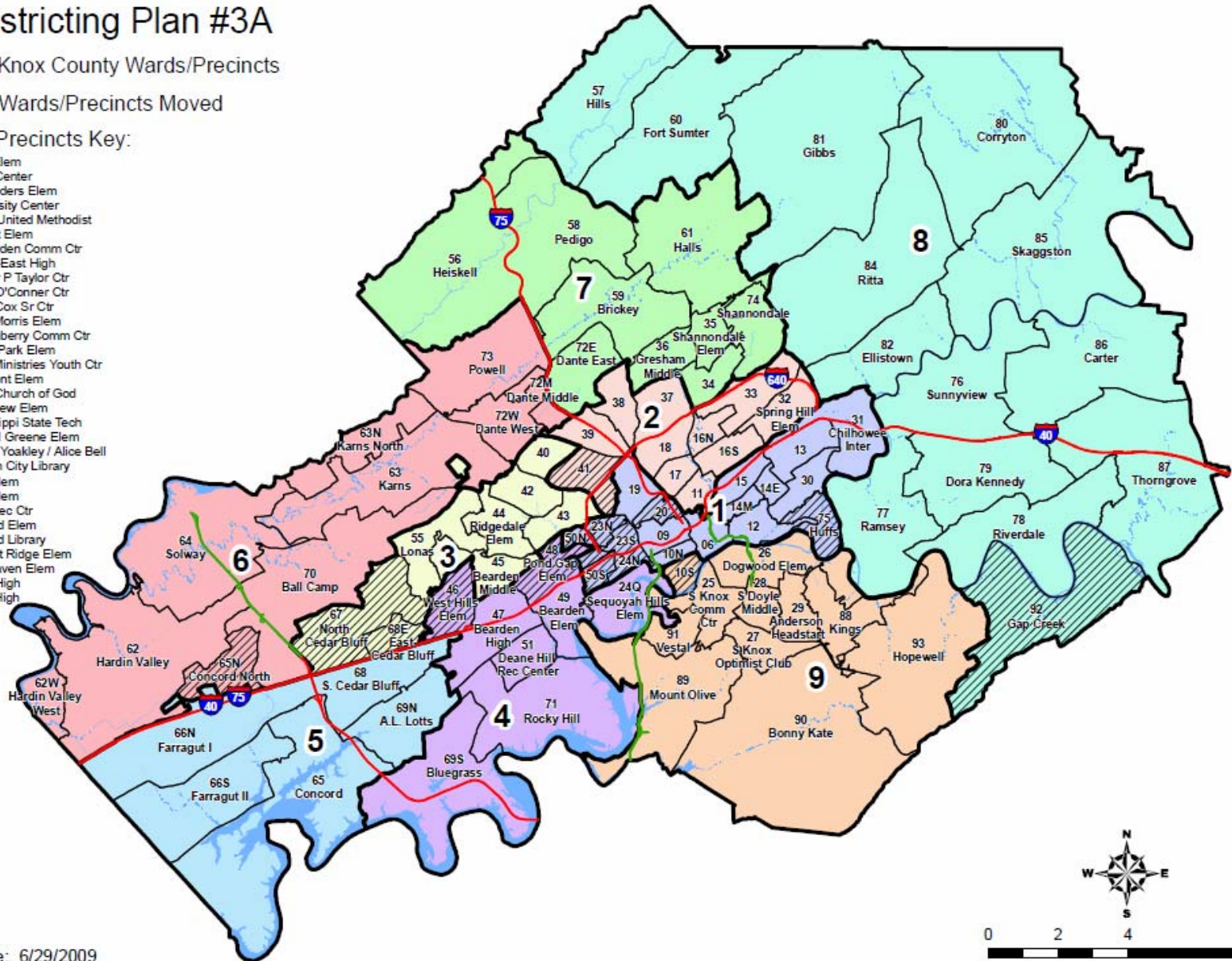
Redistricting Plan 3A Statistics

Ideal Population per District: 42,448

District	Total Population	Absolute Deviation	Relative Deviation	White		Black		Other		Total Minority		# Voters Moved	Incumbents
1	42,655	207	0.49%	21,214	49.73%	19,128	44.84%	2,313	5.42%	21,441	50.27%	6895	2
2	42,736	288	0.68%	37,406	87.53%	3,707	8.67%	1,623	3.80%	5,330	12.47%	3408	2
3	41,749	-699	-1.65%	37,075	88.80%	3,037	7.27%	1,637	3.92%	4,674	11.20%	16170	3
4	44,622	2,174	5.12%	41,351	92.67%	1,567	3.51%	1,704	3.82%	3,271	7.33%	4696	2
5	42,659	211	0.50%	39,932	93.61%	998	2.34%	1,729	4.05%	2,727	6.39%	18519	2
6	42,024	-424	-1.00%	40,171	95.59%	896	2.13%	957	2.28%	1,853	4.41%	0	2
7	41,551	-897	-2.11%	40,195	96.74%	623	1.50%	733	1.76%	1,356	3.26%	0	2
8	41,869	-579	-1.36%	40,217	96.05%	1,086	2.59%	566	1.35%	1,652	3.95%	0	2
9	42,167	-281	-0.66%	39,010	92.51%	1,945	4.61%	1,212	2.87%	3,157	7.49%	2477	2
	382,032		07.23	336,571	88.10%	32,987	8.63%	12,474	3.27%	45,461	11.90%	52,165	

| District	Hispanic		Knoxville Population	Knox Cnty Population	Farragut Population	2006 Est. Population	Registered Voters	Democratic Voters	Republican Voters
1	699	1.64%	42,647	8	0	41,312	24,888	4,900	1,314
2	645	1.51%	42,732	4	0	43,967	24,797	4,720	3,256
3	660	1.58%	20,569	21,180	0	42,954	27,266	4,080	5,013
4	741	1.66%	28,752	15,870	0	47,231	32,999	5,587	8,190
5	557	1.31%	1,114	23,827	17,718	50,395	38,658	4,622	9,485
6	367	0.87%	292	41,732	0	50,529	33,955	4,064	7,842
7	365	0.88%	11,662	29,889	0	46,673	29,765	3,871	7,219
8	282	0.67%	106	41,763	0	45,961	26,666	3,351	6,541
9	487	1.15%	26,016	16,151	0	42,950	25,909	3,399	4,400
	4,803	1.26%	173,890	190,424	17,718	411,972	264,903	38,594	53,260

Plan Evaluation

- All plans will meet the basic requirements of overall range, compactness, contiguity and no overlap
- Subjective Compactness Criteria
  - "The ability of citizens to relate to each other and their representatives"
- Objective Compactness Criteria

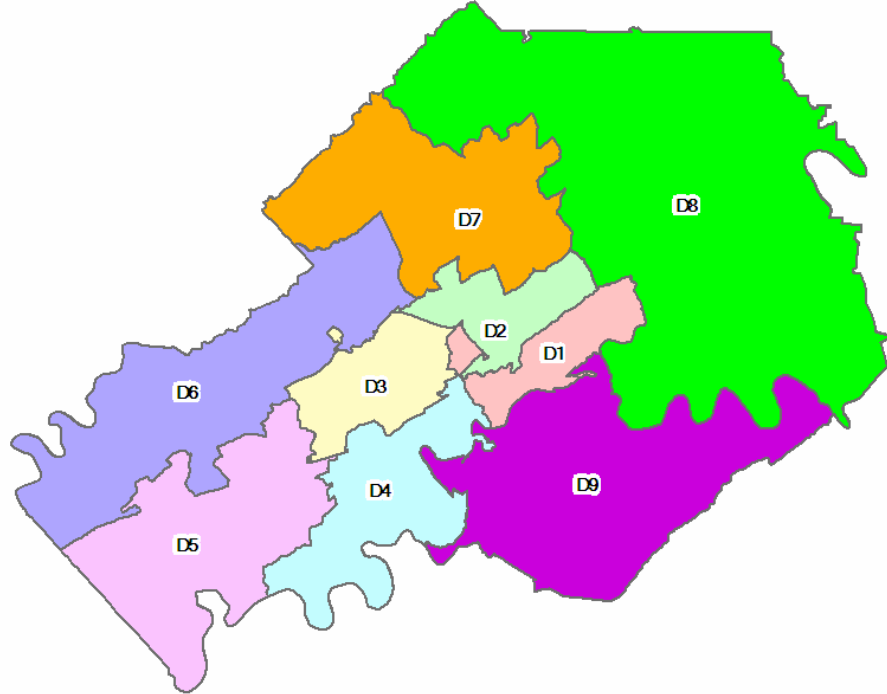**2000-2009**
Commission
District 1
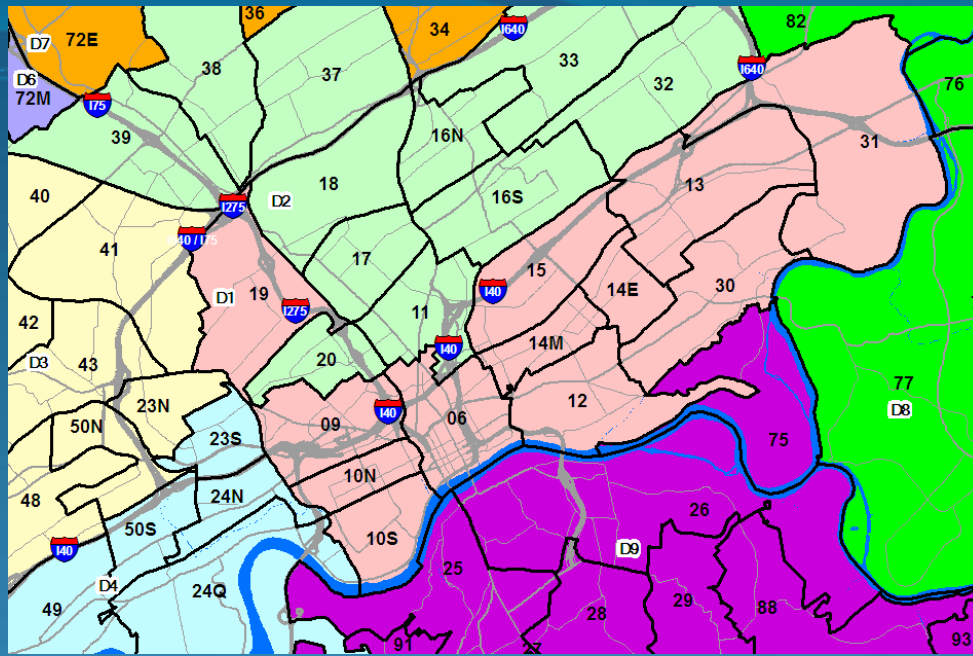
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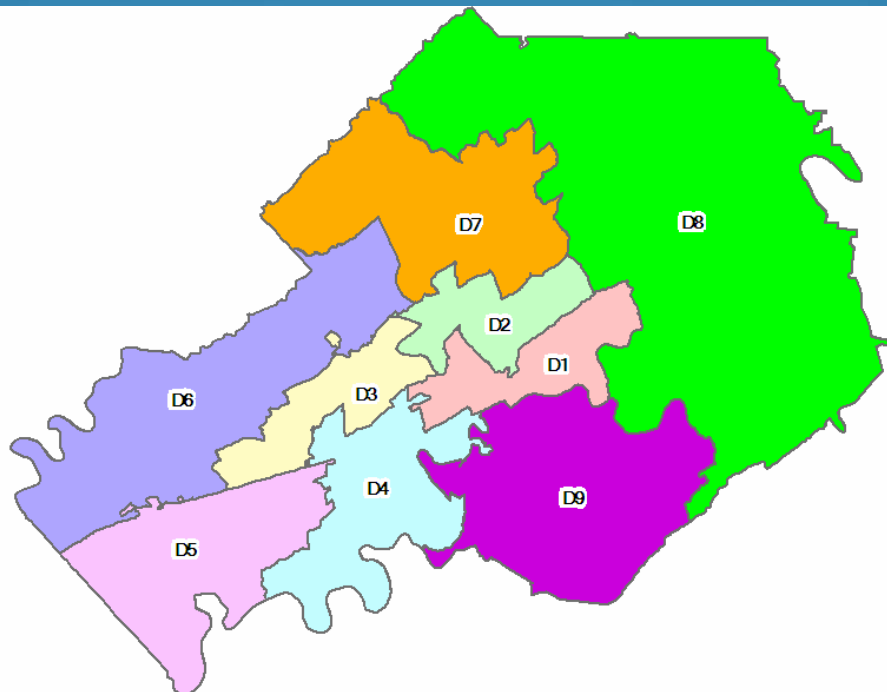0.0151

**Current
(Plan 3A)**
Commission
District 1
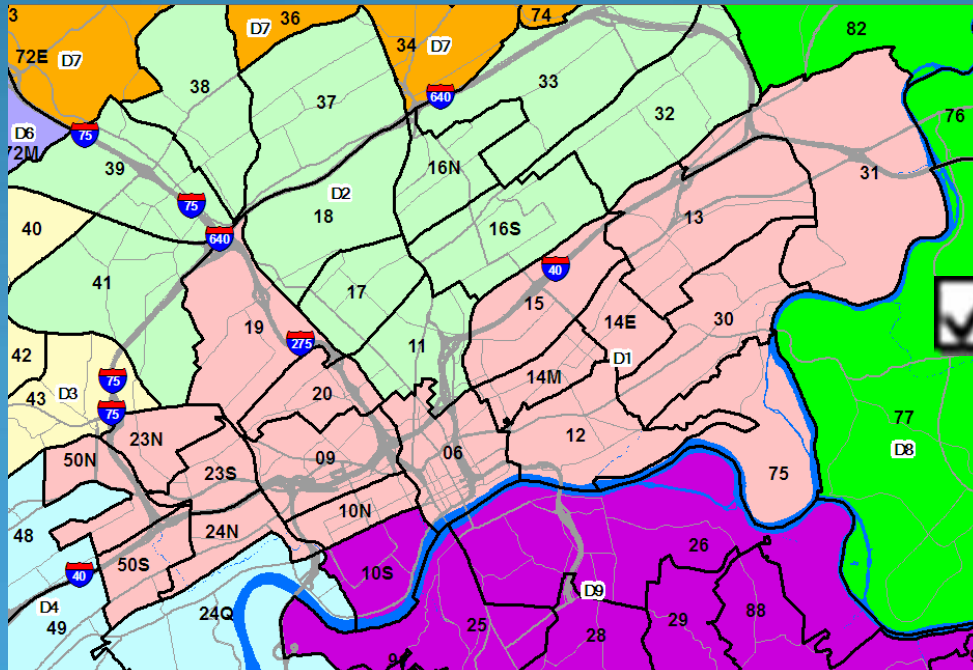
Compactness:
0.0182

2000-2009 Commission Districts

Compactness: 46,994

Current (Plan 3A) Commission Districts

Compactness: 47,876

2010 District-Level Population Totals

Preliminary 2010 Results

2010 Knox County Population: 432,226
Preliminary 2010 School Board Ideal Population: 48,025

Board District	Total Population	Absolute Deviation	Relative Deviation
1 - Deathridge	43,712	-4,313	-8.98%
2 - Kincannon	43,275	-4,750	-9.89%
3 - Buttry	45,229	-2,796	-5.82%
4 - Fugate	44,858	-3,167	-6.59%
5 - Carson	52,533	4,508	9.39%
6 - Deakins	55,947	7,922	16.50%
7 - Sepesi	51,785	3,760	7.83%
8 - McMillan	49,394	1,369	2.85%
9 - Trainor	42,217	-5,808	-12.09%
Split Blocks[1]	3,276	N/A	N/A

Total 432,226 **Overall Range:** 28.59%

Compiled by: Knoxville-Knox County Metropolitan Planning Commission
Source: Census Blocks, P.L. 94-171 Redistricting Dataset, US Bureau of the Census, 2010
Notes:

[1]Census blocks represent the smallest geography at which population data is available. Because several census blocks are split by the current Knox County School Board Districts, assignment to a district was not possible and these blocks were not included in the deviation and range determinations.

Legend

- **School Board Districts**
- **Split Census Block**

BRIDGEDALE

KINGSTON

NORTH WINSTON

JACK DANCE

CRESTHILL

COLERIDGE

RAY MEARS   RAY MEARS

HAYDEN

MONTVUE

STRATTON

LIVINGSTON

DANBURY

SILVER MAPLE

FORESTOAK

WINDVIEW

ENGLISH VILLAGE

MORRELL

DEANE HILL

SCHOOL ACCESS

GLEASON

ELDERBERRY

TEABERRY

FLANDERS

KENDALL

BOSWORTH

NAVARRE

TWINING

MONETA

DEANE HILL

LAWFORD

GALLAHER VIEW

STURBRIDGE

RAMSGATE

LUXMORE

BARDON

HANSMORE

HAYSLOPE

5

SANTA FE

ALPS

BUCKEYE

GILA

SABRE

NOBSCOT

POCANNO

LUSCOMBE

WESTACRES

POETS CORNER

BIG BEN

DARTFORD

MADRID

BRASILIA

ANKARA

WOODBROOK

CHISHOLM

CIMARRON

KINGSDALE

NORAGATE

CESSNA

AERONCA

PIPER

WACO

LUSCOMBE

WESTLAND

VISTA DEL MAR

GREEN HILLS

WESTCOURT

SUSSEX

DEVONSHIRE

BERLIN

BATAVIA

DUBLIN

BROOKTREE

WESTBROOK

MIDSOUTH

NUBBIN RIDGE

ANTRIM

YORKLAND

RAIN FOREST

RAINDROP

IVY GREEN

CAMBRIDGE CREST

STATION VIEW

NORMANDY

MONTACRES

WICAR

TRANQUILLA

HAMPSON

HAWTHORNE

MOUNTAIN PASS

IDLEWOOD

SHADYWOOD

PIMBROOK

4

Preliminary 2010 Results

2010 Knox County Population: 432,226
Preliminary 2010 School Board Ideal Population: 48,025

| Board District	Total Population	Absolute Deviation	Relative Deviation
1 - Deathridge	43,712	-4,313	-8.98%
2 - Kincannon	43,489	-4,536	-9.45%
3 - Buttry	45,229	-2,796	-5.82%
4 - Fugate	45,518	-2,507	-5.22%
5 - Carson	54,902	6,877	14.32%
6 - Deakins	55,947	7,922	16.50%
7 - Sepesi	51,818	3,793	7.90%
8 - McMillan	49,394	1,369	2.85%
9 - Trainor	42,217	-5,808	-12.09%

Total **432,226** **Overall Range:** **28.59%**

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Source: Census Blocks, P.L. 94-171 Redistricting Dataset, US Bureau of the Census, 2010
Notes:
[1]Census blocks represent the smallest geography at which population data is available. Because several census blocks are split by the current Knox County School Board Districts, assignment to a district was not initially possible. Using rules of contiguity, precinct lines and residential address points, assignment of split census blocks were made. These assignments resulted in some additional blocks, previously assigned to other districts, to become disconnected from their original district. These blocks were moved with the surrounding blocks to new district in order to restore their contiguity.

School Board and County Commission District Comparison

Existing School Board Districts
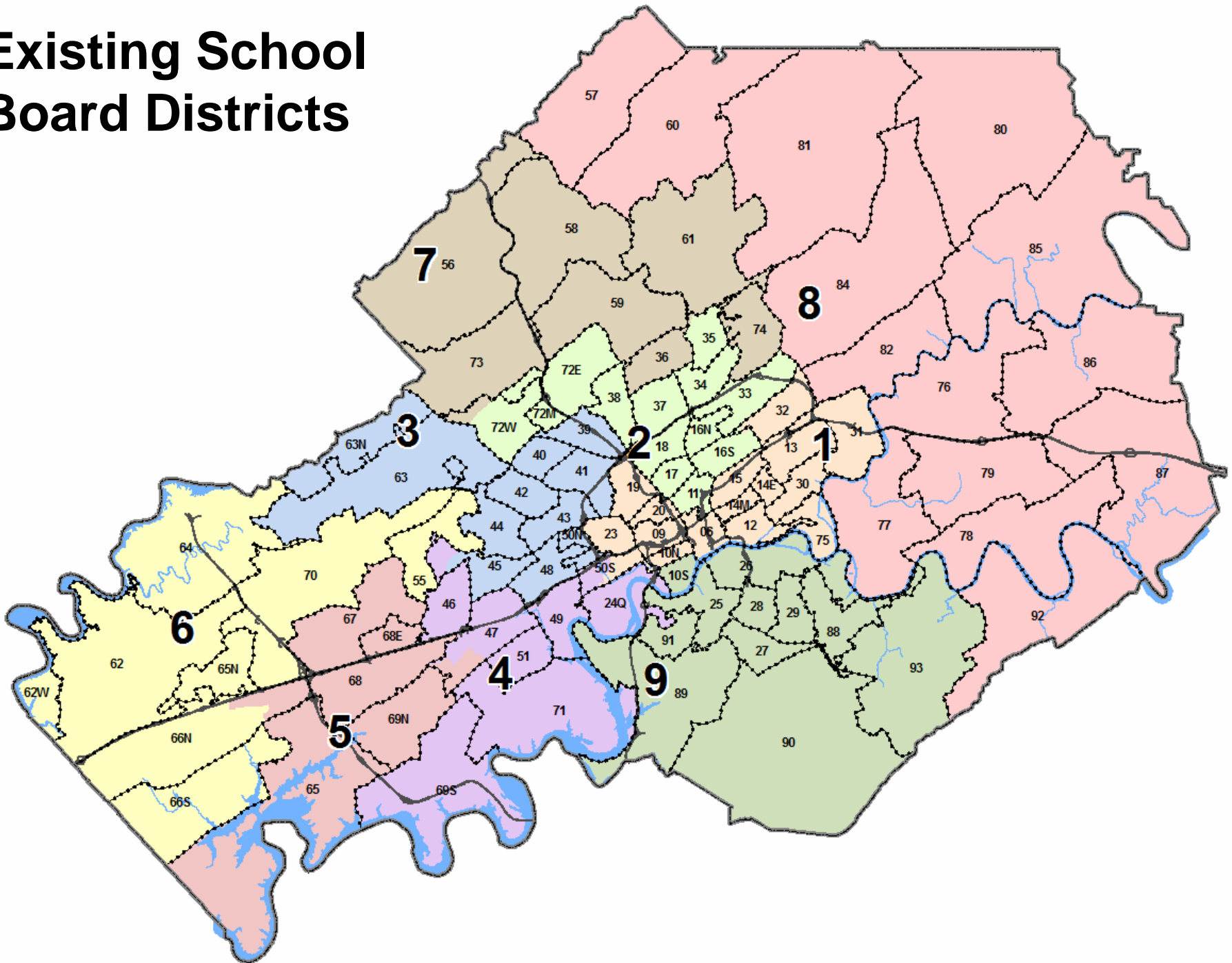
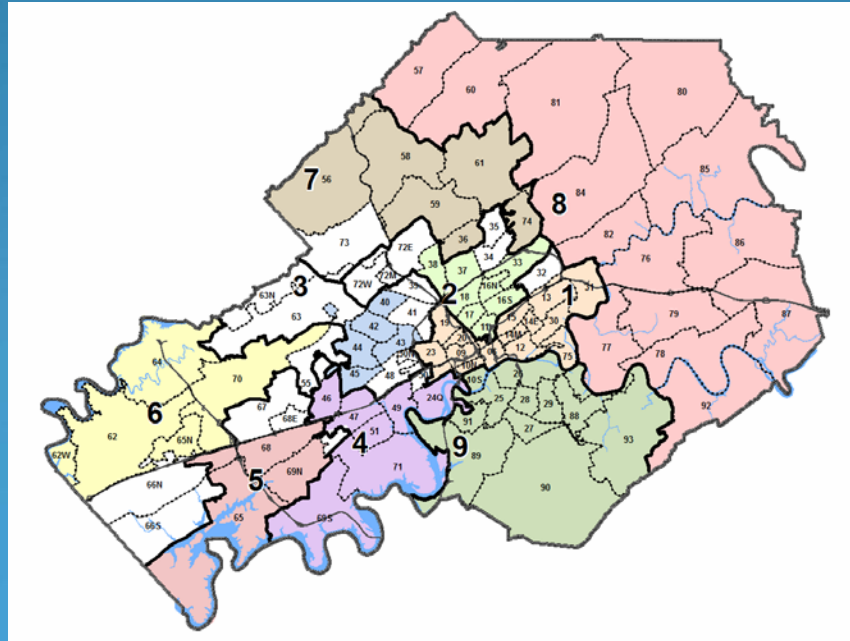**Existing County Commission Districts**
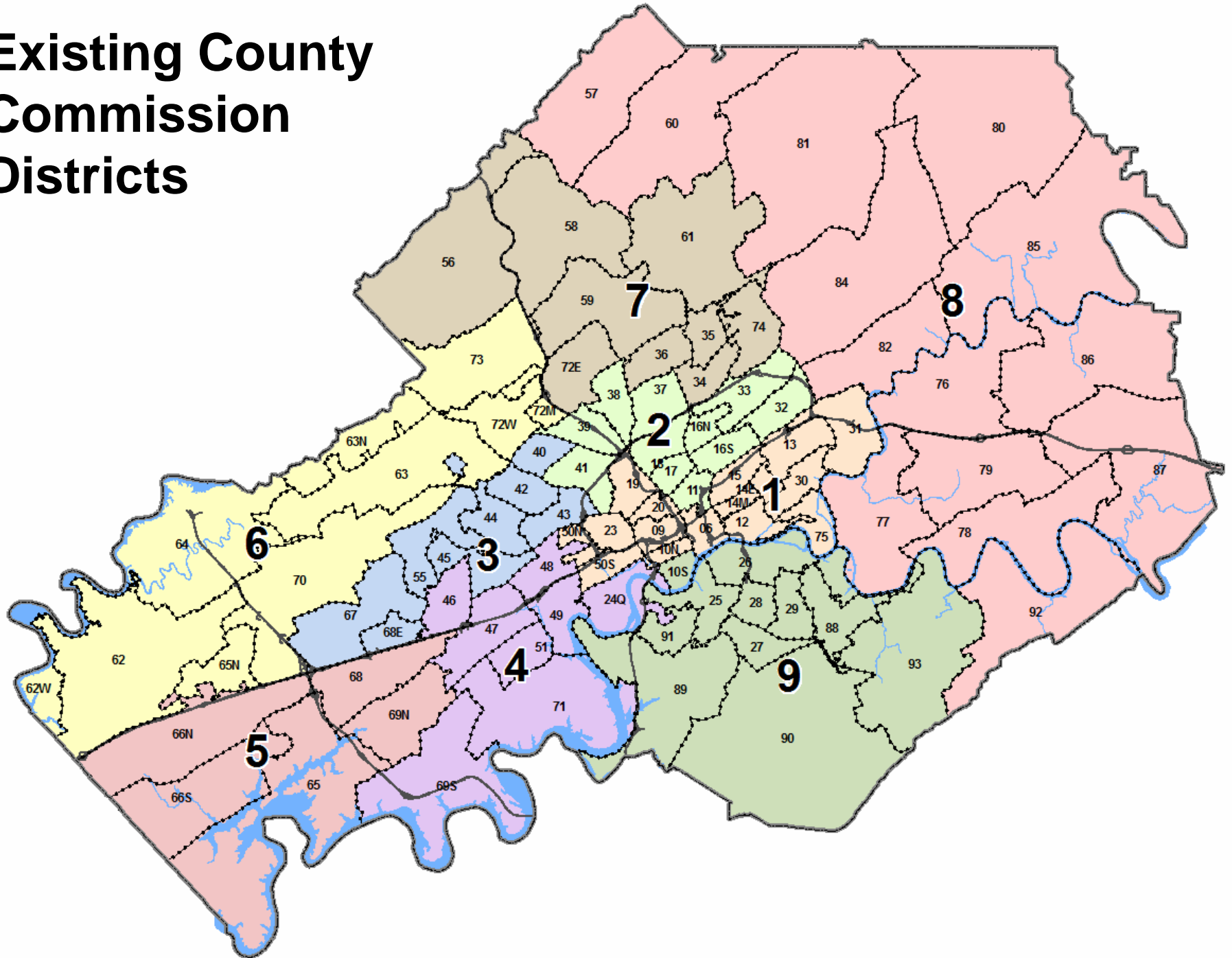
"Common Ground"

- 327,070 people reside in the same School Board District and County Commission District
- Represents 75.7% of Knox County residents

School Board

Commission

"Common Ground"
Agreement between
County Commission
Districts and School
Board Districts