

ORANGE COUNTY
BOARD OF EDUCATION

AGENDA ITEM ABSTRACT

Meeting Date: April 22, 2013

AGENDA ITEM No. 13-04-(2)-10

ACTION ITEM (Y/N) Y

SUBJECT: Student Assignment Study Discussion/Approval

INFO. CONTACT Michael Gilbert, Public Information Officer PHONE: 919-732-8126

ATTACHMENTS:

1. ITRE Proposed Tasks and Schedule Letter
2. Current SAPFO Worksheet
3. November 22, 2010 ITRE Presentation

PURPOSE: To provide the Board of Education the opportunity to discuss the possibility of engaging in a student assignment study.

BACKGROUND: The most recent student assignment study was conducted by North Carolina State University's Institute for Transportation Research and Education (ITRE) during the spring/summer of 2010 and presented to the Board at the November 22, 2010 Board of Education meeting.

The Operations Research and Education Laboratory (OR/Ed. Lab), a division of ITRE, works with K-12 school systems on issues pertaining to student assignment and long range school planning. OR/Ed.'s *Integrated Planning for School and Community (IPSAC)* incorporates enrollment forecasting, land use studies, residential growth forecasts, optimal school locations, optimally balanced attendance areas and "what-if" attendance scenarios to provide school districts with school planning solutions.

Using proven mathematical techniques and state-of-the-art decision science applications, OR/Ed. assists school districts dealing with difficult school redistricting plans and school planning challenges that are often conducted in a poorly articulated environment and with conflicting objectives. By approaching projects quantitatively as well as qualitatively, OR/Ed. can provide school planning solutions that are driven by data and supported by policies.

Staff has been in contact with ITRE for the purpose of conducting a possible student assignment study for OCS. This organization conducts student assignment studies throughout school districts in both North and South Carolina. ITRE has proposed a list of tasks and a schedule for the Board to review. We have attached a copy of their initial letter and schedule for you to review. The staff at ITRE will be modifying the scope of the study to encompass balancing enrollment at each of the district's schools, with the exception of our themed elementary and alternative schools.

The NCDPI-certified student membership number for the 2012-13 school was 7,420. The most recent NCDPI student membership projection for the 2013-14 school year is 7,501, which is an increase of 81 students. Currently, the district has three schools that exceed the Schools Adequate Public Facilities Ordinance (SAPFO); Cameron Park (103), New Hope (43) and Cedar Ridge (50).

FINANCIAL IMPACT: The cost of the ITRE assessment will be \$20,000.

RECOMMENDATION: The Superintendent recommends that the Board of Education discuss the proposal from ITRE and approve the assignment study.



ITRE

Institute for Transportation
Research and Education

April 1, 2013

Michael Gilbert
Public Information Officer
Orange County Schools
200 East King Street
Hillsborough, NC 27278

Dear Mr. Gilbert,

This letter outlines the project tasks and schedule for the Orange County Schools Redistricting Study. The primary objective of the study is to examine options for the overcrowding condition at the Cameron Park and New Hope Elementary Schools.

June 2013

- Collect Orange County GIS data and Orange County Schools student data
- Address-matching 2012-13 students
- Populate Planning Segments data, adjust Planning Segment geometry if necessary

July 2013

- Land use study update from the 2011 study. This will involve phone interviews to collect and updating existing, approved and planned subdivisions
- GIS parcel analysis of subdivisions

August 2013

- Present findings to the Orange County Schools including land use study updates, ten-year enrollment forecast, 2012-13 Out-of-Capacity worksheet, and preliminary recommendations addressing overcrowding
- Assist the Orange County Schools articulating directions on redistricting goals and constraints

September/October, 2013

- Update student population data and forecast using the 2013-14 student enrollment data
- Develop redistricting tools and solutions to address overcrowding

The cost of the study for Orange County Schools is \$20,000. If the Orange County Schools accepts this proposal, OREd will forward you an agreement to sign. If you have any questions about this proposal, please contact me at (919) 515-7931.

Sincerely,

Jeffrey C. Tsai

Jeff Tsai
Program Director
OR/Ed. Lab, ITRE-NCSU

A joint activity
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universities

NC A&T State University
NC Central University
NC State University
UNC Chapel Hill
Duke University

2010-2013 SAPFO Report Membership Comparisons

School	Year Built	Square Feet	Current SAPFO Capacity	2010 Membership (End of Year)	2011 Membership (End of Year)	2012 Membership (End of Year)	2013 Membership as of 4/15/2013	Current Difference Between SAPFO Capacity and Membership	Levels of Service
CPES	1956	70,812	565	631	632	646	668	103	
CES	1952	52,492	455	238	265	287	319	-136	
ECES	1952	64,316	497	405	443	458	458	-39	
GABES	1974	74,016	544	455	494	477	455	-89	
HES**	1952	51,106	471	410	408	421	443	-28	
NHES	1991	100,164	586	593	577	604	629	43	
PES	2000	85,282	576	483	478	472	449	-127	
Total Elementary School Capacity								-273	92.6%
ALS MS	1995	136,000	740	596	606	602	612	-128	
CWS MS	1968	107,620	726	565	579	627	615	-111	
GH MS	2006	123,000	600	492	504	481	466	-134	
Total Middle School Capacity								-373	81.9%
CRHS	1962	206,900	1,000	951	966	1,024	1,050	50	
OHS*	2002	213,509	1,399	1,159	1,144	1,150	1,196	-203	
Total High School Capacity								-203	93.6%
PA	2006	6,600	40	24	20	33	22	-18	

* New requested capacity based on the August 2012 DPI facility study for OHS.

** HES is projected to be above capacity for the 2013-14 school year.

M.O.U. Maximum Capacity:

Elementary Schools	105%
Middle Schools	107%
High Schools	110%

Gilbert 4/15/2013

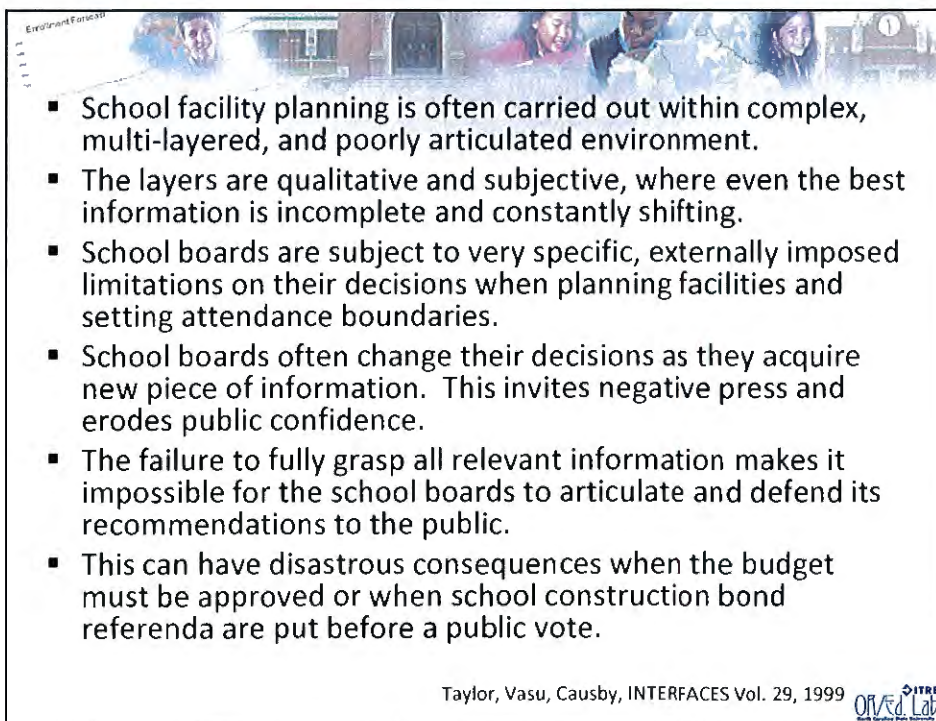


Integrated Planning for Schools and Community

Orange County Schools Hillsborough, North Carolina


November 22, 2010


Operations Research/Education Lab (OR/Ed. Lab)
Institute for Transportation Research and Education
North Carolina State University



- School facility planning is often carried out within complex, multi-layered, and poorly articulated environment.
- The layers are qualitative and subjective, where even the best information is incomplete and constantly shifting.
- School boards are subject to very specific, externally imposed limitations on their decisions when planning facilities and setting attendance boundaries.
- School boards often change their decisions as they acquire new piece of information. This invites negative press and erodes public confidence.
- The failure to fully grasp all relevant information makes it impossible for the school boards to articulate and defend its recommendations to the public.
- This can have disastrous consequences when the budget must be approved or when school construction bond referenda are put before a public vote.



Taylor, Vasu, Causby, INTERFACES Vol. 29, 1999





School Planning Layers


- Brick-mortar layer
 - Building capacity
 - Capacity expandability
 - Suitability for intended use
 - Building useful life
- Education layer
 - Grade configurations
 - Classroom size
 - Is academic performance tied to the school planning, how
- Location layer
 - School siting
 - Available parcel (size and cost)
 - Access to utilities
 - Cost for construction
- Growth management layer
 - New subdivisions
 - New student population growth
 - Age of the students
 - Build-out schedule
 - Impact to building capacity
- Attendance layer
 - Building utilization (enrollment/capacity)
 - Feeder pattern (clean or mixed)
 - Demographic balance (what and how much)
 - Natural and man-made barriers
 - Busing cost and safety considerations

Integrated Planning for School and Community (IPSAC)

Data-driven and policy-based model for forecasting school enrollment and determining the optimal locations for new schools and attendance boundaries.

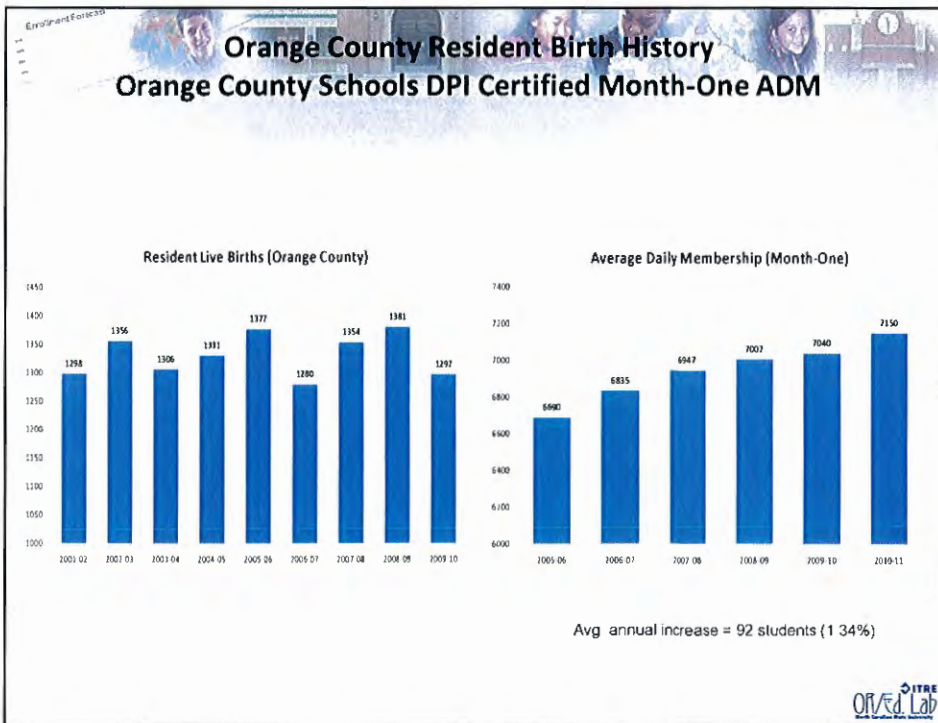
- Forecasting
- Land Use Studies
- Out-of-Capacity Analysis
- Attendance Boundary Optimization
- Scenario Builder

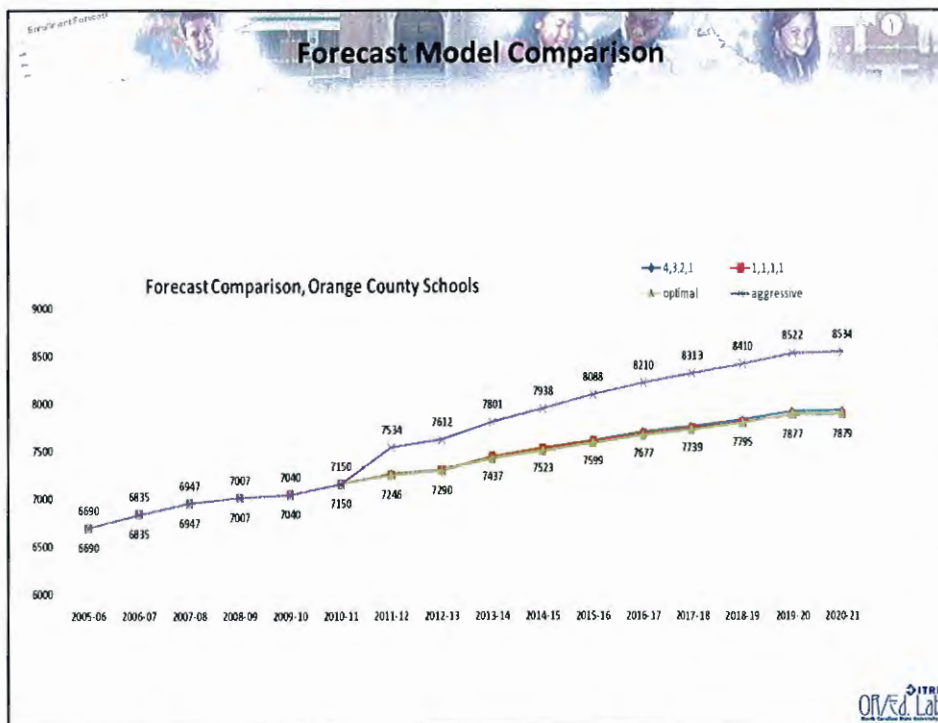
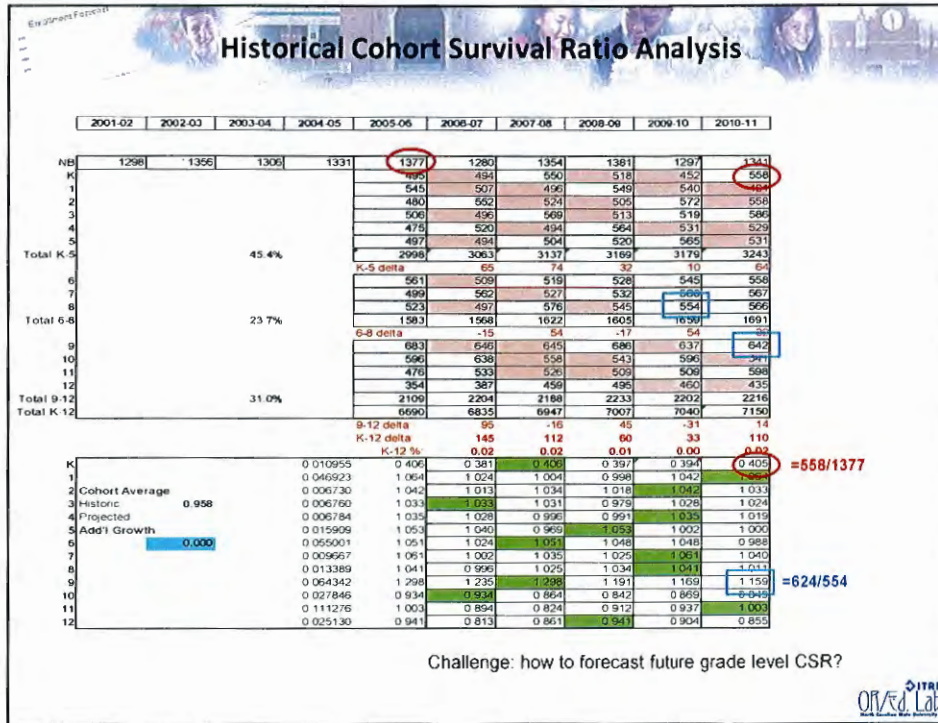


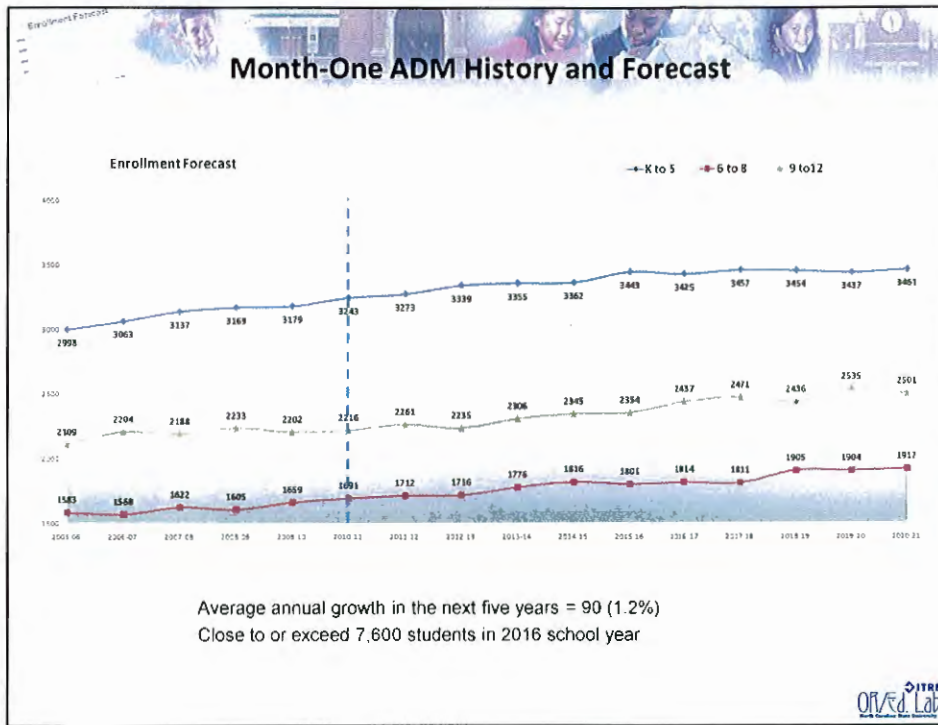
Enrollment Forecast

- Alamance County Schools - 02,03,06,07,08,09,10
- Asheboro City Schools - 04,05,06,07
- Bladen County Schools - 04
- Buncombe County Schools - 98,99
- Brunswick County Schools - 03,04
- Carteret County Schools - 09**
- Chapel/Carrboro Schools - 95,96,97,98,99,00,01,02,05,06,07
- Chatham County Schools - 03,05,06,07,08,09,10
- Craven County Schools - 96,97,98,99,00,01,02,04,05,06,07,08**
- Cumberland County Schools - 08, 09*
- Currituck County Schools - 10
- Cleveland County Schools - 08
- Duplin County Schools - 09**, 10
- Durham County Schools - 09, 10
- Edgecombe County Schools - 10
- Elizabeth City-Pasquotank County School - 07
- Franklin County Schools - 08
- Iredell-Statesville Schools - 98, 99, 00, 01, 02, 03, 04
- Jones County Schools - 09**
- Gaston County Schools - 98, 99, 00, 01, 02, 03, 04
- Granville County Schools - 02, 03, 04, 05, 06, 07, 08, 09, 10
- Guilford County Schools - 94, 95, 96, 97, 98, 09, 10
- Harnett County Schools - 98,99,00,01,02,03,06,07,08,09*, 10
- Haywood County Schools - 99
- Hoke County Schools - 99,98,09*
- Johnston County Schools - 95,96,97, 98,99,00,01,02,03,04,05,06, 07,08,09,10
- Lee County Schools - 08,09*
- Lenoir County School - 09
- Moore County Schools - 04,07,08,09*
- Mooresville Graded Schools - 99,00,01,04
- Nash-Rocky Mount Schools - 04,05,06,07,08,09,10
- New Hanover County Schools - 95,96,97,98,99,00
- Onslow County Schools - 03,04,05,06,07,08,09**,10
- Orange County Schools - 95,10
- Pamlico County Schools - 09**
- Pender County Schools - 09**
- Randolph County Schools - 05,06,07,08,09
- Richmond County Schools - 00,08*
- Robeson County Schools - 08*
- Rock Hill School District #3, S.C. - 02,03,04,05,06,07,08,09,10
- Rowan County Schools - 09,10
- Pitt County Schools - 90,91,92,93,94,95,96,97,98,99,00,01,02,03, 04,05,06,07,08,09,10
- Stokes County Schools - 05,06,08
- Union County Schools - 99,00,01,02,03,04,05,06,07
- Tupelo Public Schools, M.S. - 07
- Vance County Schools - 09,10
- Wayne County Schools - 95
- Wake County Schools - 97,04,05,06,07,08,09,10

* Base Realignment and Closure, BRAC-RTF
 ** Military Growth Task Force of NC Eastern Region





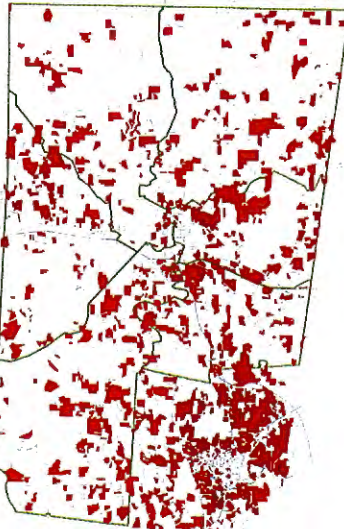
Land Use Studies

Land Use Interviews and GIS Parcel Analysis

- GIS Parcel Analysis
 - Subdivision Parcel Analysis
- Land Use Stakeholder Interviews
 - ✓ Key trend indicators
 - ✓ Growth - factors encouraging/constraining growth
 - ✓ Infrastructure - transportation, water/sewer
 - ✓ Anticipated non-residential development
 - ✓ Anticipated residential development

Enrollment Forecast


Subdivision Parcel Analysis



- 3463 students reside in single-family subdivisions
- 479 students reside in multi-family subdivisions

Attendance Area	Subdivision Student Generating Ratio
Cameron Elementary School	0.47
Central Elementary School	0.37
Efland-Cheeks Elementary School	0.42
Grady A. Brown Elementary School	0.34
New Hope Elementary School	0.41
Pathways Elementary School	0.44

Note: SGR for single-family subdivision only. Analysis is based on K-12 population aggregated to elementary attendance geographic area.





Enrollment Forecast

Land Use Study and Windshield Survey

Growth trends:

- Population growth rate less than state average or other areas in the Triangle
- Focus of residential growth—US 70 corridor
- Hillsborough growth—residential, distribution; and Mebane growth—residential, retail
- Lower land prices and taxes in Alamance Co. part of Mebane







Land Use Study and Windshield Survey

Growth drivers:

- UNC—Chapel Hill
- Proximity / good highway access to Duke & RTP
- Quality of life
- Mebane—location midway between RTP and Triad

Growth constraints:


- Rural Buffer—limits development density; no water or sewer extensions; no annexation
- Watersheds—limit development density
- Soils in northwest poor for septic systems
- Impact fees (\$1,785-\$3,749 per unit)





Land Use Study and Windshield Survey

Future growth:

- Eastward from Mebane
- Southeastern and northern Hillsborough
- Large (>100 houses) subdivisions in two areas:
 - Between I-40, Davis Road, Orange Grove Road
 - Between Hillsborough and Phelps Road, east from NC 86 to Lawrence Road
- Greatest number of approved undeveloped lots between Cane Creek Reservoir and Mebane / Efland







Land Use Study and Windshield Survey

Infrastructure—transportation:


- Good highway network—I-40 / 85, US 70, US 15-501, NC 54, NC 57, NC 86
- Major project—Elizabeth Brady Road Extension
- Recent sidewalk construction at Central Elementary
- Future projects—widening of I-40 and I-85, widening of South Churton Street, Hillsborough Western Bypass, realignment of Eno Mountain Road and Mayo Street at Orange Grove Road
- Future passenger rail station




Land Use Study and Windshield Survey

Infrastructure—water/sewer:

- Service providers—Hillsborough, Mebane, Orange-Alamance Water System, Inc., OWASA
- 2001 Water-Sewer Management, Planning, and Boundary Agreement
- Water—sufficient current capacity; planned increases in Hillsborough reservoir & treatment plant capacities
- Possible Jordan Lake allotment (1 MGD)
- Sewer—lack of Hillsborough surplus wastewater capacity; treatment plant upgrade/expansion planned by 2013
- Force main from Gravelly Middle School to Mebane







Land Use Study and Windshield Survey

Non-residential development:


- Current commercial—Tanger Outlets, Oakdale Village
- Future—3 economic development districts:
 - I-85 / Buckhorn Road
 - I-40 / Old NC 86 (Waterstone)
 - I-85 / US 70
- Other future potential:
 - I-85 / NC 86 area—Hampton Pointe, Paliourous, and Leland Little properties
 - NC 86 South—Moren property

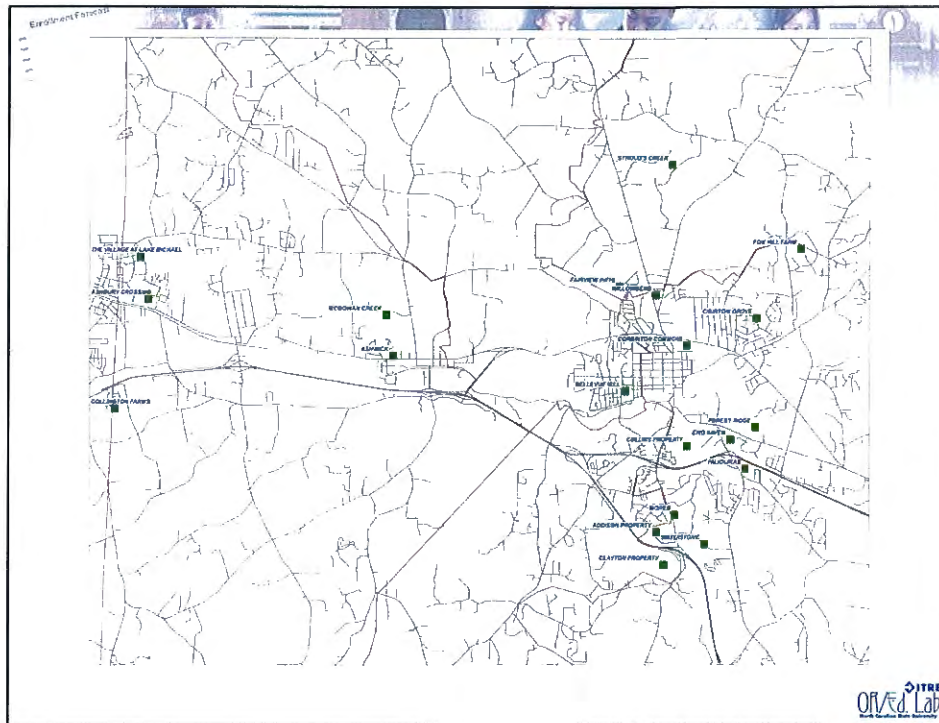



Land Use Study and Windshield Survey

Residential development—county:

- No recent Chapel Hill or Carrboro subdivision approvals in Orange Co. Schools attendance area
- Unincorporated area:
 - Current—Churton Grove (single-family & townhouses), Fairview Habitat for Humanity, Fox Hill Farm, Schley Road farm parcels
 - Future—Phelps Road, Fairview Habitat for Humanity Phase 2, Stroud's Creek





Land Use Study and Windshield Survey

Residential development—Hillsborough:

- Currently approved—Bellevue Mill, Corbinton Commons, Eno Haven, Peloquin, Riverbend, Waterstone, Willowbend
- Future potential—Clayton property, Collins property, Corbin Creek Woods, Forest Ridge, Moren, Paliouras


Residential development—Mebane:

- Currently approved—Ashbury, Collington, Village at Lake Michael

Residential development—Efland:

- Currently approved—Ashwick, McGowan Creek



ITRE
ORVed Lab



Land Use Study and Windshield Survey

“Wild Cards”


- Waterstone—degree of residential vs. commercial/office
- Collins property—mix of residential vs. commercial/office, and timing
- Forest Ridge—what, when?
- Mebane—not included in SAPFO
- Buckhorn area—what, when?

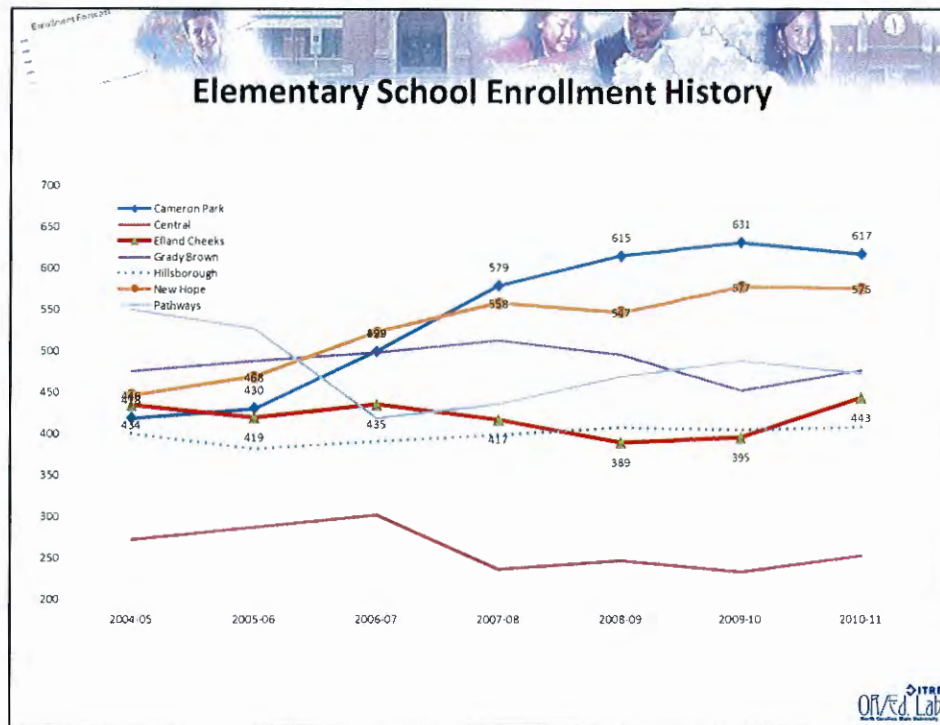


Land Use Study and Windshield Survey

Interviewees:

- Michael Harvey, AICP, CZO, Orange County Planning and Inspections Department Supervisor
- Margaret Hauth, AICP, Hillsborough Planning Director
- Kenneth Keel, PE, Hillsborough Town Engineer, Utilities Director
- Margaret Cannell, Hillsborough-Orange County Chamber of Commerce Director
- Edmund Purcell, PLS, Summit Consulting Survey Manager





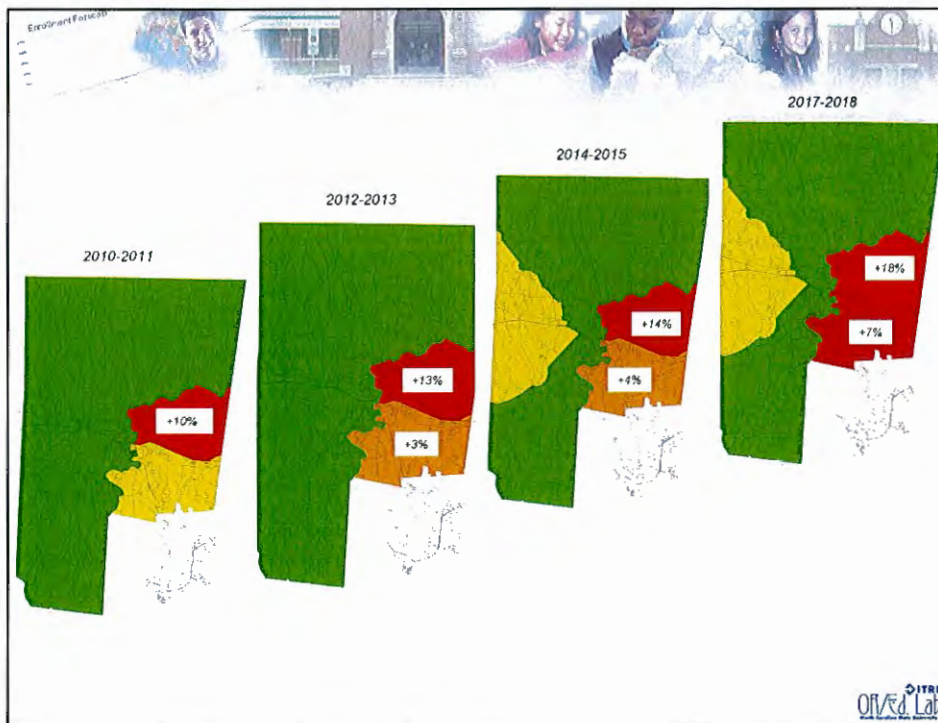
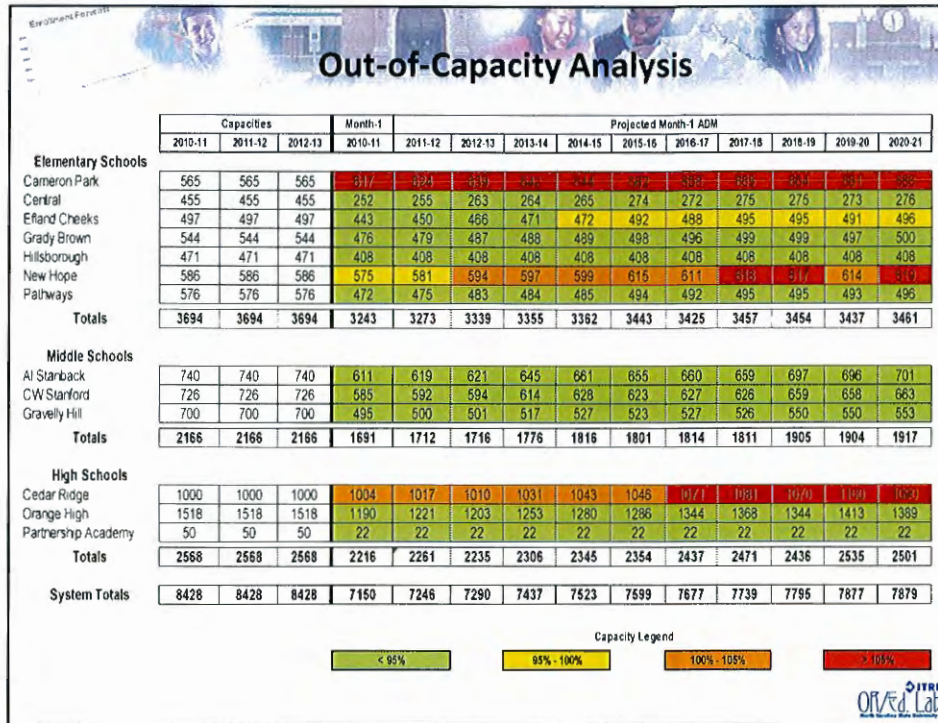
Allocation of Gain

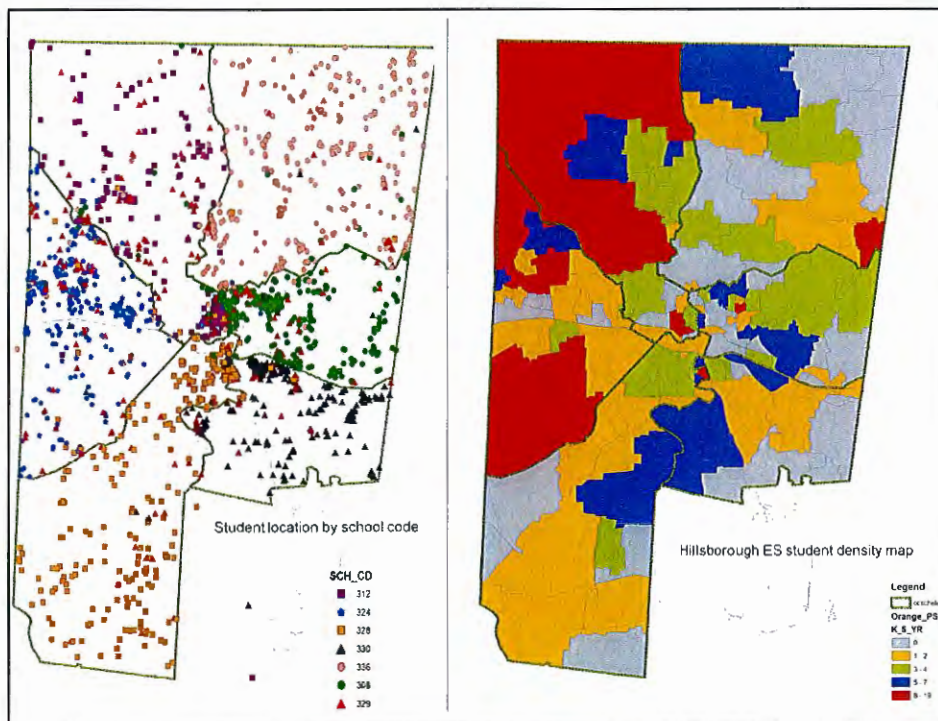
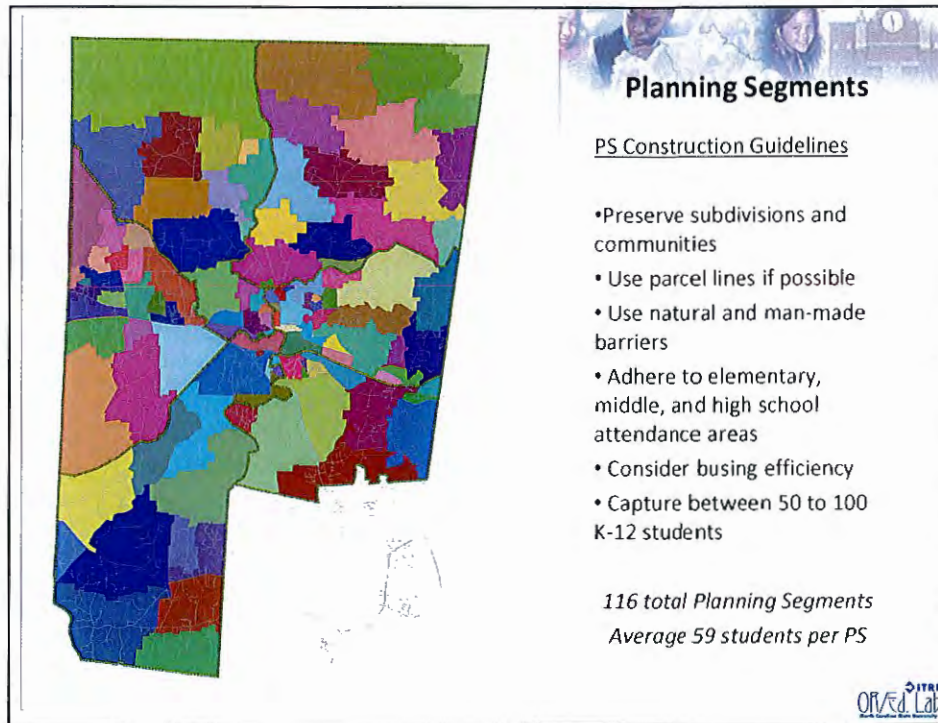
ES	SUMS >>> 1,0000	AOG	MS	1,0000	AOG	HS	1,0000	AOG
1 Cameron Park	0.2250		1 Al Stanback	0.4000		1 Cedar Ridge	0.3017	
2 Central	0.1100		2 CW Stanford	0.3442		2 Orange High	0.6983	
3 Eland Cheeks	0.2450		3 Gravelly Hill	0.2558		3 Partnership Academy	0.0000	
4 Grady Brown	0.1100		4 0	0.0000		4 0	0.0000	
5 Hillsborough	0.0000		5 0	0.0000		5 0	0.0000	
6 New Hope	0.2000		6 0	0.0000		6 0	0.0000	
7 Pathways	0.1100		7 0	0.0000		7 0	0.0000	

Feeders and Splits

ELEMENTARY SCHOOLS	MIDDLE SCHOOL		
	Al Stanback	CW Stanford	Gravelly Hill
Cameron Park	0.140	0.860	0.000
Central	0.630	0.370	0.000
Eland Cheeks	0.000	0.000	1.000
Grady Brown	0.902	0.000	0.098
Hillsborough	0.000	0.000	0.000
New Hope	1.000	0.000	0.000
Pathways	0.000	1.000	0.000

ELEMENTARY SCHOOLS	HIGH SCHOOL		
	Cedar Ridge	Orange High	Partnership Academy
Cameron Park	0.080	0.920	0.000
Central	1.000	0.000	0.000
Eland Cheeks	0.260	0.740	0.000
Grady Brown	0.000	1.000	0.000
Hillsborough	0.000	0.000	0.000
New Hope	0.000	1.000	0.000
Pathways	1.000	0.000	0.000






Impacts from Transfers

Attendance	Cameron Park (308)	Central (312)	Efland-Cheeks (324)	Grady A. Brown (328)	Hillsborough (329)	New Hope (330)	Pathways (336)	Membership (Domicile)
Cameron Park	532	9	1	4	68	11	13	638
Central	29	228	12	9	105	7	25	415
Efland-Cheeks	6	1	422	17	109	6	12	573
Grady A. Brown	6	1	0	412	43	11	3	476
New Hope	4	1	1	7	40	510	0	563
Pathways	15	2	1	4	31	2	396	451
Total								3116


Row: number of students in the ES attendance
 Column: number of students by school code in NCWISE
 Month one K-5 ADA is 3243

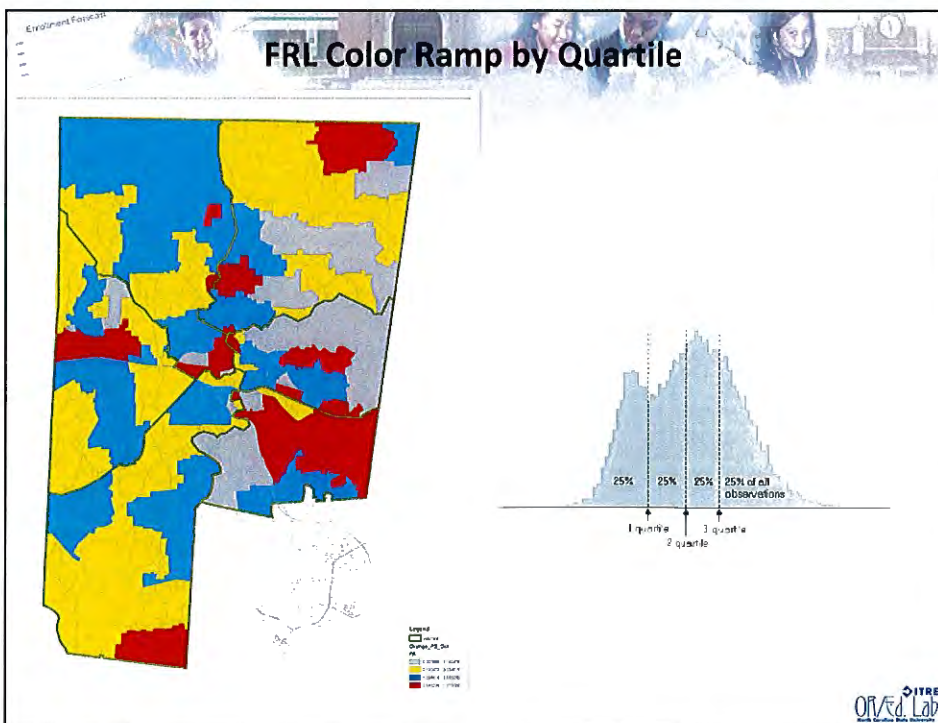
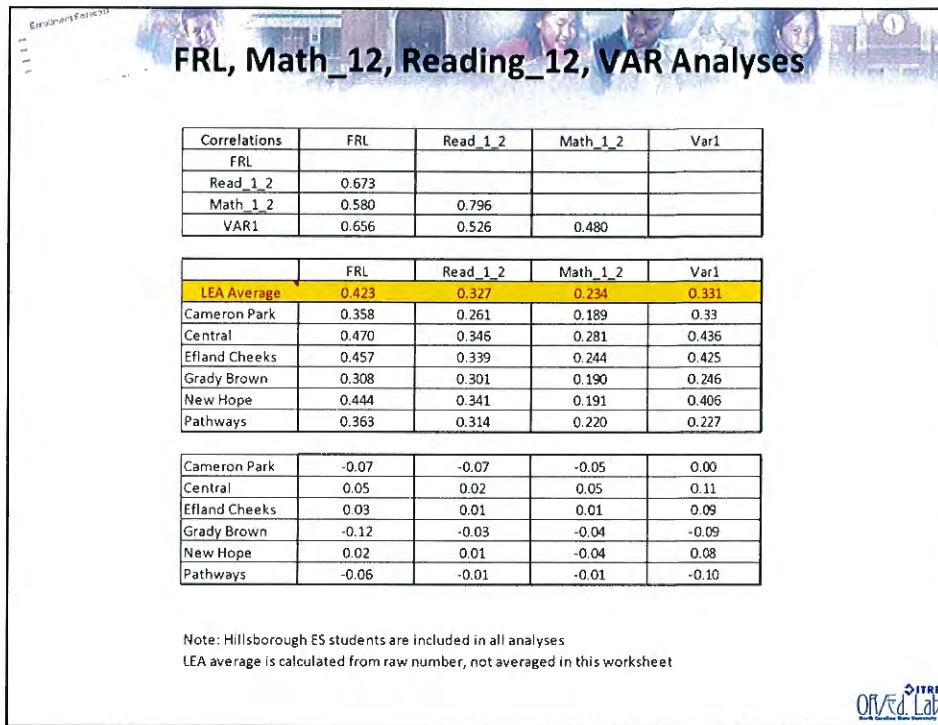
Attendance	Transf. Out		T.O. exclude YR	
Cameron Park	106	17%	38	7%
Central	187	45%	82	26%
Efland-Cheeks	151	26%	42	9%
Grady A. Brown	64	13%	21	5%
New Hope	53	9%	13	2%
Pathways	55	12%	24	6%

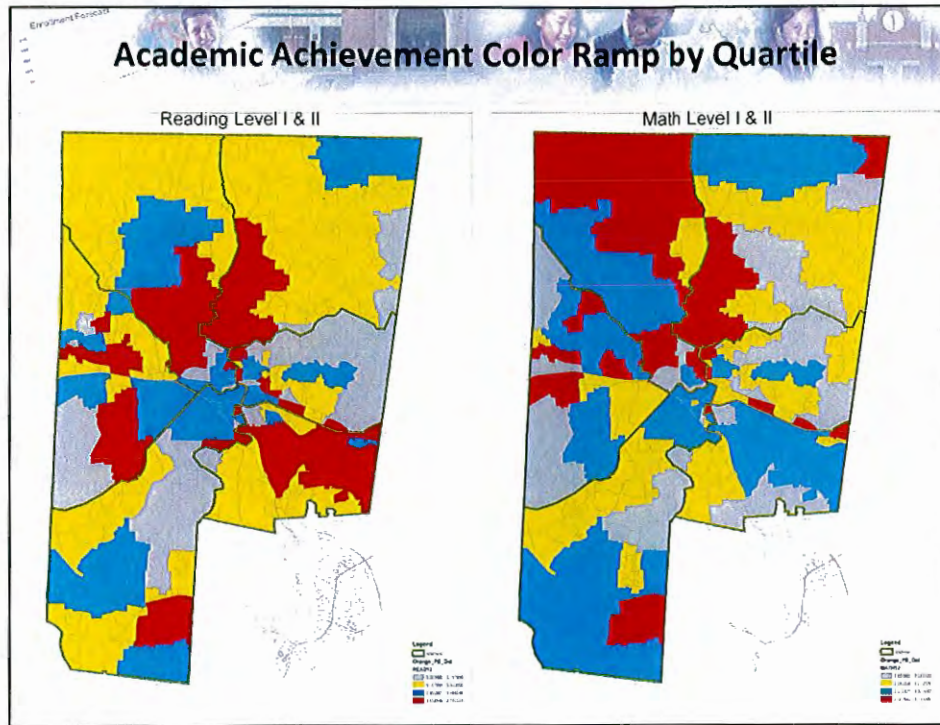


Demographic and Achievement Analysis

- Free or Reduce Lunch
 - ORED supplies OCS list of K-5 students for each planning segment
 - OCS exams the list and enters number of students receiving free or reduced lunch
- Level I & II on reading and math tests
 - ORED supplies OCS list of 3-8 students for each planning segment
 - OCS enters # of students tested and # of students performed at level I or II







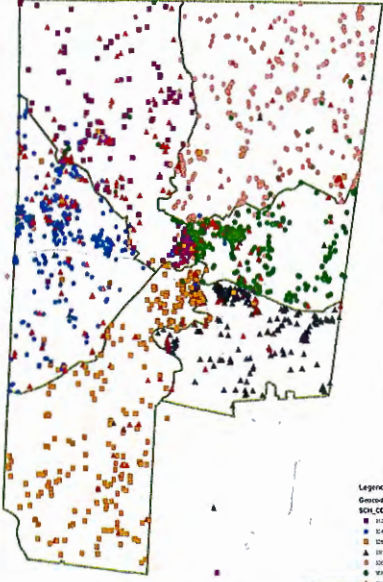
Summary of Findings and *Challenges*

- Efland Cheeks has the highest near-term growth potential
- Cameron Park and New Hope have the second highest near-term growth but the highest long-term growth potential
- *High growth areas are at the opposite ends of the district*
- *Cameron Park, Central, Pathways, and Grady Brown school site "cluster" is at the center of the district*
- *Pathways and Central have capacity for more students but at the expense of travel distance*
- *Grady Brown is sandwiched between two high growth areas, using reassignment to address over-crowding is a short term solution*

Enrollment Forecast

Summary of Findings and *Challenges*

- By domicile, there are no major disparities among socioeconomic and academic achievement levels among attendance areas
- Hillsborough YR school decreases over-utilization at Cameron Park and delays over-crowding at Efland Cheeks
- *YR school choice and transfers contribute to the under-utilization at Central*
- *19.8% of K-5 students do not attend their base school, 7% if Hillsborough ES is excluded*
- *Reassignment to balance utilization, socioeconomic, and academic achievement without addressing transfer policy will be ineffective*



Enrollment Forecast

Articulate School Planning Goals and Priorities

- Address current over-capacity and near-term growth?
- Address under-utilization?
- Address the above with or without Hillsborough students?
- Address the above with Hillsborough base attendance?
- Address the above with or without changing transfer policy?

