

**WAKE COUNTY PUBLIC SCHOOL SYSTEM
WAKE COUNTY, NORTH CAROLINA**

LONG-RANGE SCHOOL BUILDING PLAN

PHASE II – STUDENT POTENTIAL DISTRIBUTION MODEL

PREPARED AND SUBMITTED BY
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OR/Ed. Lab

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Wake County Public School System Long-Range Building Plan
OR/Ed. Lab, ITRE @ NCSU Centennial Campus
June 16, 2006

OVERVIEW

Phase II of the Operations Research and Education Laboratory’s (OR/Ed. Lab) Wake County Public School System (WCPSS) Long-Range Building Plan represents the culmination of nearly 18 months of coordinated effort between the OR/Ed. Lab, the 13 planning agencies in Wake County, and WCPSS. This summary document presents the results of that effort: a data-driven 20-year student population distribution among 13 planning jurisdictions called the Student Potential Distribution Model. In Phase III, the projections produced by the Model will be used to scientifically determine optimal locations for new schools through the forecast window and provide WCPSS with valuable planning tools to meet the needs of a rapidly increasing student population in Wake County.

The OR/Ed. Lab wishes to thank the following 13 planning departments for their critical contributions and continued support for this very important project:

Town of Apex	Town of Cary	Town of Fuquay-Varina
Town of Garner	Town of Holly Springs	Town of Knightdale
Town of Morrisville	City of Raleigh	Town of Rolesville
Town of Wake Forest	Town of Wendell	Town of Zebulon
	Wake County	

BACKGROUND

November 2004 – August 2005, Construction of Project Framework.

- The OR/Ed. Lab at the North Carolina State University’s Institute for Transportation Research and Education (ITRE) participated in several Wake County planning community meetings facilitated by Wake County Community Services Department to discuss how WCPSS and county/municipal planners may collaborate in long-range school facility planning processes.
- A framework for the collection and analysis of land use plans from the 13 planning jurisdictions was developed utilizing the OR/Ed. Lab as a “Land Use Planning Service Bureau”. Within this framework, *Land Use data from county and municipal planners would be used to identify areas of student population growth potential which would lead to the location of school sites to meet the demands of that growth.*
- The OR/Ed. Lab and representatives from WCPSS visited each of the 13 planning departments to discuss the data collection process and municipal land use plans, and

to form a network for future communication between the OR/Ed. Lab, WCPSS, and Wake County planning jurisdictions.

- In response to planners' concerns over the upcoming Capital Area Metropolitan Planning Organization (CAMPO) studies and the duplication of data, the OR/Ed. Lab collaborated with CAMPO's data collection efforts and coordinated procedures so that the completed database would be useful to both agencies. CAMPO is the coordinating agency for the Capital Area Long-Range Transportation Plan.

September 2005 – April 2006, Collection of Land Use Data and Development of Student Potential Distribution Model

- GIS workshops were conducted jointly by the OR/Ed. Lab and CAMPO to present strategies for data collection tasks. On a parcel level resolution, planners were asked to input a future land use class for each parcel within their Urban Service Area (USA). Additionally, planners estimated future residential densities, residential and non-residential acreages, and residential build-outs for each Planning Region within their USA.
- After the Land Use data was collected in January and February 2006, the Lab error-checked and calibrated the Model with submitted data. Two iterations of data verification and Model calibration were performed with additional meetings with municipal planners; the second of these was Draft 2 distributed to all planning departments on April 13, 2006. The projections presented here represent modifications made during these iterations.

Due to the rapid rate of development in Wake County, the data used to generate the projections shown here reflect the current state of county and municipal Land Use plans. It is an assumption of this Model that land use plans will change and periodic updates of the Land Use data are included in its design.

May – June 2006, Location of Target Areas for School Sites.

Using the Student Potential Distribution Model projections as input, the Lab will use Operations Research techniques to produce optimal target areas for new school facilities based on capacity needs. This phase is scheduled to be completed in June 2006.

PROJECTED STUDENT POPULATION DISTRIBUTION

The Operations Research and Education Lab presents the projected student population distribution by municipal Urban Service Area for select years in Table 1 and Figure 1. Please refer to the map Distribution Regions for a description of the areas used.

Please note:

1. *The projections shown in the tables and graphs below are based on the current state of the Student Potential Distribution Model and land use data as of June 16, 2006.*
2. *The municipal projections are a distribution of the county-wide student population projection provided by the Wake County Student Projection model (November 29, 2005 + 1% CIP version).*

For a detailed description of the Student Potential Distribution Model and a list of model assumptions, please refer to the OR/Ed. Lab document Technical Description of Phase II, dated June 16, 2006. A year-by-year version of these projections by elementary, middle, and high school level for each municipal USA is available to planners in electronic form.

Please note also the final graph (Figure 2) illustrating the proportion of projected student population for select years by municipal USA.

Table 1: Projected Student Population by Municipal Urban Service Area.

USA	Projected				
	2006	2010	2015	2020	2025
Apex	8245	12372	16412	18766	20706
Cary	22637	25821	27361	30345	33163
Fuquay-Varina	7250	10859	15578	17843	19455
Garner	8490	11895	16723	20315	23494
Holly Springs	4549	6938	8348	9608	10862
Knightdale	3886	5522	8580	10879	13279
Morrisville	1743	2132	2352	2476	2529
Raleigh	52632	62015	66737	75283	83589
Rolesville	790	1516	2751	3341	3899
Wake County	8850	10435	13158	16459	19585
Wake Forest	4557	6014	7244	8510	9765
Wendell	2362	3832	5170	6023	6852
Zebulon	1521	3021	5224	6476	7486
TOTAL	127513	162371	195639	226325	254665

Figure 1: Projected Student Population by Municipal Urban Service Area.

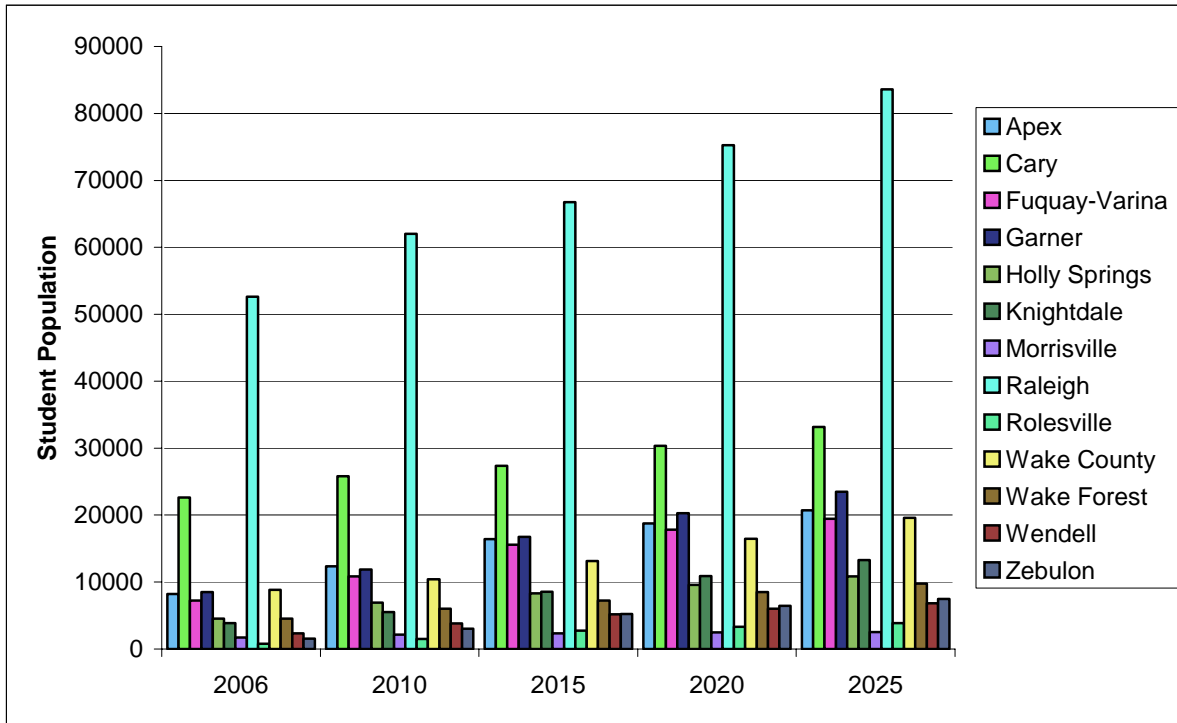


Figure 2: Proportion of Projected Student Population by Municipal Urban Service Area.

