

# EXHIBIT A

## **STUDY OF TUSD SCHOOLS TO IDENTIFY POTENTIAL MAGNET SCHOOLS AND THEMES**

As a foundational component of the Comprehensive Integration Plan (CIP), the District convened a cross-departmental committee to conduct a study of multiple criteria and factors to identify potential magnet schools or programs.

The District's Chief Academic Officer (the Interim Assistant Superintendent of Curriculum and Instruction, and designated Director of Student Assignment) led the committee's work from the winter of 2018 through the summer of 2019. The committee included the Magnet director, Transportation director, the Senior Director of Desegregation, the Desegregation Research Project Manager, and the District Planner. Other relevant staff attended various meetings or sub-committee meetings, as needed. Additional collaborators included the Grants and Programs director, the ALE director, the GATE coordinator, and the Communications and Social Media Director. The District contracted with a program manager to manage the project, including weekly meetings from during the 2018-19 school year.

The study considered known variables, including but not limited to the following:

- travel distances to and from neighborhoods to schools
- racial/ethnic composition of neighborhoods based on external demographic data
- geographic location
- academic achievement
- facility condition and capacity
- demographics within school boundaries
- transportation costs and restraints
- existing magnet programs and pipelines

The study also included an exploration of proven successful magnet themes, a review of existing magnet reports, and evaluation of other relevant information. The primary purpose of the study was to identify potential magnet programs and to inform the development of other key components of the CIP, including non-magnet school integration and academic plans, and the transportation plan.

## A. Methodology

The District utilized the following five-part methodology to conduct the study:

- 1) Collected and analyzed specified criteria to identify initial magnet candidates
- 2) Calculated integration targets for each school
- 3) Identified specific geographical areas with targeted school age populations
- 4) Mapped the ACS<sup>1</sup> data to school location and attendance boundaries using ArcGIS<sup>2</sup>
- 5) Analyzed transportation factors based on distance, travel times, and routes

### 1) Identifying an initial group of magnet candidates

The CIP committee collected school-level data on each criterion, including current racial/ethnic enrollment, academic achievement information, school location feasibility (focusing on schools within eight miles of the District center at Broadway and Country Club), and facilities condition and capacity.

This task involved collating various types of information from multiple sources and pre-screening to eliminate certain schools from consideration based on existing evidence and data. Pre-screening analysis included the following criteria

- *Racial/Ethnic Composition.* What is the current racial/ethnic makeup?
- *Geographic Location.* Is the school within eight miles from the District's geographic center?
- *Academic Achievement.* Does the school meet academic achievement criteria for ELA and Math?<sup>3</sup>

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<sup>1</sup> ACS stands for the American Community Survey.

<sup>2</sup> ArcGIS is a geographic information system (GIS) for working with maps and geographic information, used for creating and using maps, compiling geographic data, analyzing mapped information, sharing and discovering geographic information, using maps and geographic information in a range of applications, and managing geographic information in a database.

<sup>3</sup> To meet this criterion, schools must meet or exceed District-level proficiency rates on math and ELA.

- *Facility Condition.* Does the school meet facilities condition criteria?<sup>4</sup>
- *Facility Capacity.* Does the school have current or future capacity for growth?
- *Boundary.* Would a future boundary change improve integration?
- *Other Considerations:* Does the school have special programming that could contribute to, or hinder, the development of a new magnet?

See Attachment 1, School Screening Tool.

## **2) Calculating integration targets for each school**

The committee used 40<sup>th</sup> day enrollment data to identify the targeted demographic groups needed for each school. These integration targets indicated the minimum number of students by race or ethnicity needed for the school to reach Integrated status. These calculations allowed the committee to begin to identify which schools could move significantly towards integration and which could not.

## **3) Identifying specific geographical areas with targeted school age populations**

The committee identified early on that the most recent available census data from 2010 was not a good source for analyzing demographic data in 2019. Therefore, the Committee used the 2017 American Community Survey (ACS) five-year demographic estimates by census tract to determine where appropriate school age populations resided within the District's geographic boundary.

Although an imperfect dataset, the ACS data allowed the committee to gain a better understanding of the demographic and geographic composition of the District, and provided a resource for determining which schools could become Integrated, or move closer towards integration, based on residential patterns, ethnicity, and school-aged populations.<sup>5</sup>

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<sup>4</sup> To meet this criterion, schools must score 2.4 or higher on the 2018 Facilities Condition Index (FCI).

<sup>5</sup> There were several drawbacks to using the ACS dataset. The 5-year ACS data are estimates, and for small population groups, such as African American students, the reported numbers have a wider band of uncertainty, and therefore somewhat less useful. This was less of a problem for this analysis since the District was interested primarily in identifying White and Hispanic populations for integration purposes. However, it reinforces the fact that these are

The committee used ACS data to calculate the number of students of certain target races and ethnicities in each census tract that were available to recruit for integration purposes. For evaluation purposes, the committee used an adjusted number of students in each census tract – uncaptured students. The committee focused on geographical areas that had more students than the District was currently attracting rather than areas that the District was already capturing. The number of uncaptured students in a tract was determined by subtracting the total number of students in the targeted demographic group living in the census tract from the number of students in the targeted demographic group living in that census tract currently attending TUSD schools.<sup>6</sup> The committee then created maps from this data (discussed below) to determine whether there were geographic areas to target for integration purposes. Development of the maps considered both travel times and existing bus route times. The identification and grouping of census tracts not only provided insight into potential magnet candidates, but also informed non-magnet school integration strategies including transportation options, as described below.

#### **4) Mapping ACS data to school location and attendance boundaries**

Planning Services created maps overlaying census tracts, school attendance boundaries, and areas with high numbers of targeted demographic groups<sup>7</sup>. (Attachment 2 – Maps for Grades K-4, 5-8, and 9-12). As shown in the attachment, the maps provided a visual representation for each grade level showing geographical locations with significantly sized targeted student groups to improve integration. This information informed the selection of magnet candidates, magnet and non-magnet transportation strategies, and was used by the committee to determine the geographical areas for each

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well-respected estimates. Another issue is the fact that the census data uses the federal definition to report student race/ethnicity, while the District uses the USP definition to report student race/ethnicity in desegregation analyses. The Committee recognized this issue, and accounted for any difference in integration targets when evaluating the potential of a school to become integrated. Despite these limitations, this method was adequate for the purpose at hand.

<sup>6</sup> For example, the ACS estimates indicated that there were 100 Hispanic K-4 students in census tract X. Our enrollment records indicate that 70 Hispanic students live in tract X and attend TUSD schools. Thus, there are 30 Hispanic “uncaptured students” in tract X. If a census tract included 30 or more uncaptured students of a particular targeted race or ethnicity, then the committee grouped that tract with others according to their targeted demographics.

<sup>7</sup> The committee selected tracts based on the criteria that there were a minimum of 30 or more uncaptured students of a particular targeted race or ethnicity in the tract. The committee then grouped that tract with others according to their targeted demographics.

school's integration plan, where practicable, and whether these areas were within or outside the school's boundary. The committee also used the maps to establish priorities where multiple schools are competing for the same target demographic groups.

## **B. Outcomes**

### **1) Identification of Potential Magnets**

The committee used a three-step process to identify potential magnet schools: (a) an initial screening process to remove schools from further consideration based on a set of criteria making it unlikely that these schools could serve as effective magnets promoting integration, (b) determination of a set of preferred magnet themes, and (c) a final review of remaining schools based on a second set of criteria including awareness of the preferred magnet themes.

The initial screening process began with 84 schools. Applying the initial likelihood of success criteria, the committee eliminated 67 schools as potential magnet candidates. In addition to considering travel times and distances, the committee used the following criteria:

- Existing magnet schools (13 schools)<sup>8</sup>
- Schools with specialized programs serving unique student populations (8 schools)<sup>9</sup>
- Schools outside of the eight-mile radius (12 schools)<sup>10</sup>
- Schools with no current or future growth capacity (10 schools)<sup>11</sup>
- Non-viable size to sustain a magnet (0 schools)

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<sup>8</sup> Bonillas, Borton, Carrillo, Davis, Holladay, Tully ES; Booth-Fickett, Drachman, Roskruge K8; Dodge and Mansfeld MS; Palo Verde and Tucson HS.

<sup>9</sup> Borman, Kellond, Lineweaver, Wheeler ES; Meredith K-12; Project MORE, TAPP, University HS.

<sup>10</sup> Banks, Collier, Dunham, Henry, Johnson, Soleng Tom, Vesey ES; Lawrence 3-8 and Robins K-8; Gridley and Secrist MS; Sabino HS.

<sup>11</sup> Gale Grijalva, Hughes, Miller, White, Wright ES; Miles, Rose K8; Cholla, Rincon HS. The committee considered physical capacity and facility condition in the context of creating new programs that would benefit as many students as possible. Ensuring the site can accommodate growth also means potentially fewer start-up costs.

- Underperforming schools (“School-Improvement” schools; schools not meeting AzMERIT ELA and Math proficiency rates, or a D or F letter grade (18 schools)<sup>12</sup>
- Schools with dual language programs (4 schools)<sup>13</sup>
- Racially concentrated schools near or above 85 % Hispanic (2 schools)<sup>14</sup>

Seventeen schools remained after the initial screening process.<sup>15</sup>

## 2) Exploration of Magnet Themes

The committee reviewed the 2016 Marzano report, which highlighted five possible themes. The themes included STEAM, Fine and Performing Arts, Dual Language, Gifted and Talented (GATE), and Early College Preparatory. Many of these programs are already offered at both Magnet and non-Magnet schools. Currently, the District operates 13 magnet schools and programs, organized into four general themes, as shown in the chart below.

Theme (General)	Theme (Specific)	Elementary	K8/Middle School	High School
<b>ARTS</b>	Creative Arts <sup>16</sup>	Carrillo ES		Tucson
	Fine Arts	Holladay ES		Tucson
<b>STEM/STEAM</b>	Science		Booth-Fickett K8	Tucson
	STEM/STEAM	Borton ES <sup>17</sup>	Mansfeld MS	Palo Verde
<b>ADVANCED LEARNING</b>	Dual Language	Davis ES	Roskruge K8	
	Open-Access GATE	Tully ES		
<b>ALTERNATIVE LEARNING</b>	Traditional Academics	Bonillas ES	Dodge MS	
	Montessori		Drachman K8	

<sup>12</sup> Blenman, Cavett, Erickson, Maldonado, Manzo, Myers-Ganoung, Ochoa, Robison, ES; Dietz, Roberts-Naylor, Safford K8; Magee, Pistor, Vail, Valencia and Utterback MS; Catalina and Santa Rita HS.

<sup>13</sup> Bloom and Mission View ES; Hollinger K8; Pueblo HS.

<sup>14</sup> McCorkle and Pueblo Gardens K8

<sup>15</sup> Cragin, Davidson, Ford, Fruchthendler, Howell, Hudlow, Lynn-Urquides, Marshall, Oyama, Sewell, Steele, Tolson, Warren, Whitmore ES; Morgan Maxwell, K8; Doolen MS; Sahuaro HS.

<sup>16</sup> Creative Arts includes a strong communications component.

<sup>17</sup> Borton ES uses systems thinking and project based learning to prepare students for STEM/STEAM courses at the secondary level, grades 6-12.

The District also has both Magnet and non-Magnet Dual Language and GATE schools, including a full-time GATE/ Dual Language program at Hollinger K-8. While not offered as Magnet programs, the District offers designated Early College Preparatory programs at University High (Advanced Placement focused curricula), Cholla (International Baccalaureate certification and Diploma program) and Santa Rita (Academic and CTE dual enrollment courses). The District also has both Magnet and non-Magnet Dual Language and GATE schools including a full-time GATE/ Dual Language program at Hollinger K-8. The one missing component identified by the Magnet department was a middle school Magnet Fine and Performing Arts program.

Having exhausted the Marzano report, the Magnet department expanded its review to explore magnet themes that have proven successful elsewhere. The two most-promising themes that emerged were health sciences and advanced technology.

### Health Sciences

Health Science Magnet Schools employ a curriculum that promotes student inquiry and fosters student interest in science. Several health science magnet schools have proven track records of success:

*Northridge Middle School's Medical and Health Career Magnet Center* provided a model curriculum that includes three theme-based academies: Biomedical Sciences and Health Careers, the Human Body System and Investigation of Interventions, Prevention, Diagnosis and Treatment of Diseases.<sup>18</sup>

*Hartsfield Elementary Animal and Environmental Science Magnet Program* provided specific thematic units and topics for each grade level. Each unit supports student learning centered around the link between the environment, health, science and math as they relate to the real world.<sup>19</sup>

<sup>18</sup> [www.northridgemiddleschool.org/cms/page\\_view?d=x&piid=&vpid=1505496781648](http://www.northridgemiddleschool.org/cms/page_view?d=x&piid=&vpid=1505496781648)

<sup>19</sup> [www.houstonisd.org/Page/158356](http://www.houstonisd.org/Page/158356)



*Franklin Academy is the Medical Sciences & Wellness Magnet School* in the Columbus Municipal School District includes a capstone project as part of their model curriculum.<sup>20</sup>

Elementary Health and Science Magnet schools, *such as Dr Sammy Lee Elementary Medical and Health Science Magnet* experienced higher attendance rates, lower suspension rates, and higher achievement scores than other L.A. Unified School District.<sup>21</sup>

The District explored a variety of community partners that could provide resources and professional development to increase teachers' knowledge about health science topics and to enhance their proficiency on teaching lessons related to the school theme. *InSciEd Out* and *Project Lead the Way* provide support and materials for teachers to engage students in authentic, engaging and experimental learning related to health sciences.<sup>22</sup>

The District met with the director of the *Southwest Environmental Health Science Center* as a potential partner to provide guest speakers and Health Science professional development for teachers on health related topics in order to develop students' understanding of Health Science concepts and spark interest in diverse health care career field.

### Advanced Technology

Technology-themed magnet schools move beyond simply focusing on the use of technology in the classroom, but integrate a variety of computer and digital courses, that can range from simple coding to the creation of digital art.

The Center for Design and Computer Sciences at Bugg Elementary, Wake County public school system, North Carolina introduces foundational computer science knowledge and competencies. Students can learn about coding, robotics, and digital art (see [www.wcpss.net/bugges](http://www.wcpss.net/bugges)).

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<sup>20</sup> [www.franklin.columbuscityschools.org/curriculum/](http://www.franklin.columbuscityschools.org/curriculum/)

<sup>21</sup> [www.explorelausd.schoolmint.net/school-finder/schools/1284](http://www.explorelausd.schoolmint.net/school-finder/schools/1284)

<sup>22</sup> See [www.insciEdout.org/](http://www.insciEdout.org/) and [www.pltw.org/blog/why-schools-should-teach-medical-detectives](http://www.pltw.org/blog/why-schools-should-teach-medical-detectives)

The Washington Technology Magnet School in Saint Paul Minnesota offers “signature” courses in technology courses through introductory courses in computer keyboarding to computer applications. Their objective is to not only develop students computer skills, but also the critical understanding and thinking about the use of technology (see [www.spps.org/washington](http://www.spps.org/washington)).

Broward County Schools Florida offer a continuum of Magnet schools with technology as their focus. Starting in K-5, students can participate in the Technology with Global Communications Program, and then as middle school students explore topical areas ranging from information technology, computer engineering and the digital arts. Finally in high school, under the Emerging Computer Technology program students can take courses ranging from computer applications, network administration, electronics, computer design, robotics and animation (see [www.browardschools.com](http://www.browardschools.com))

### **3) Preferred Magnet Choices**

This initial analysis resulted in the identification of 17 possible Magnet candidate schools, including 14 elementary schools, one K-8, one middle school and one high school. The committee then analyzed the 17 candidates to develop a list of preferred magnet choices.

Using the results of the comprehensive study, the committee eliminated seven elementary schools as possible magnet candidates due to one or more of the following factors: location, travel times, transportation, available geographical areas with targeted students, insufficient numbers of targeted students living within reasonable proximity of the schools (based on the identified census tracts and the maps). The committee eliminated another elementary school because there were two candidates located within a mile of each other.

The final list of preferred choices includes five elementary schools, one middle schools, one K-8 school, and one high school. Of these nine schools, three are currently integrated, two are racially concentrated, and four are not integrated or racially concentrated. Most of them have viable existing transportation routes from targeted census tracts; others need and could develop specific plans.

<b>Elementary</b>	<b>K-8</b>	<b>Middle</b>	<b>High</b>
Cragin, Davidson, Howell, Steele, Tolson, Whitmore	Maxwell	Doolen	Sahuaro

One of the considerations for the committee was to identify potential Magnet candidates who could fulfill existing district needs and support new Magnet themes. The potential candidates identified could support a dynamic Health and Medicine science magnet at both the Elementary and Middle school levels, and an advanced technology magnet at all school levels. However, at this point, the District does not have a viable middle school Fine and Performing arts option.

#### **4) Informing Non-Magnet Integration and Academic Plans**

##### **a. Potential for Integration**

The committee used the results of the comprehensive study to determine whether non-Magnet candidate schools could become integrated and where integration was not practicable. In completing this assessment, the committee grouped schools according to a number of characteristics. These factors included the location and number of students needed to integrate, the academic performance of the school, the design capacity of the school, whether a school was over-subscribed, and proximity to other schools competing for the same targeted demographic populations.

The Transportation department evaluated the maps and routes associated with schools that were not magnet candidates but identified as having a high potential for integration. Where transportation was a limiting factor, due to distance or travel times, the committee regrouped certain schools from high- or –moderate potential to low potential.

##### **b. Inform the Transportation Plan**

The Transportation department utilized the maps and census tract information to evaluate existing routes to develop transportation options by school and by targeted student populations. Once the committee narrowed magnet candidates to nine schools, Transportation evaluated all existing routes to those schools to identify opportunities for new routes, express shuttles, or other options.