

Knox County

Walk to School Improvement Project

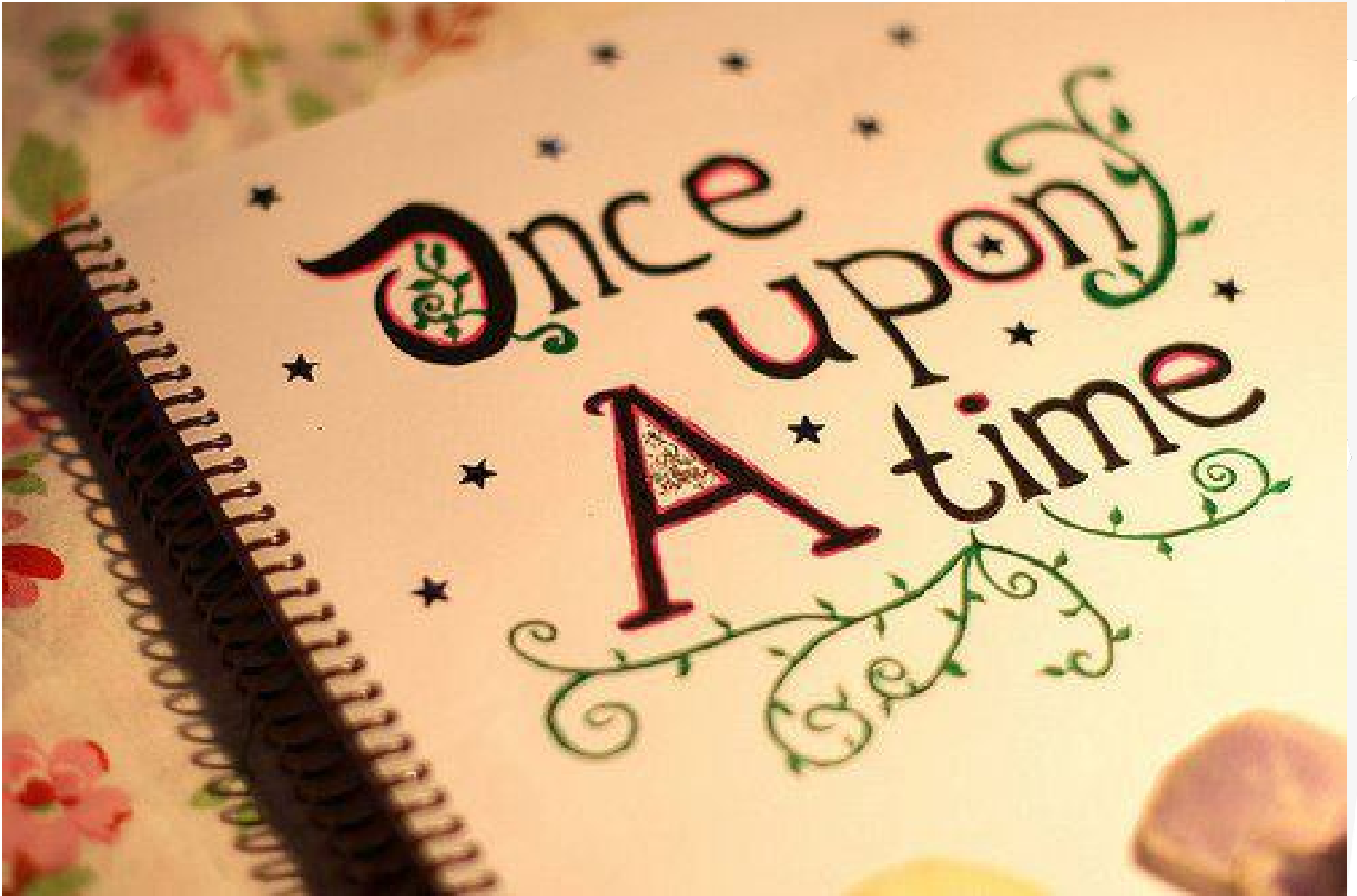
Prioritizing Pedestrian Improvements for Walk-to-School Trips

Knox County, Tennessee

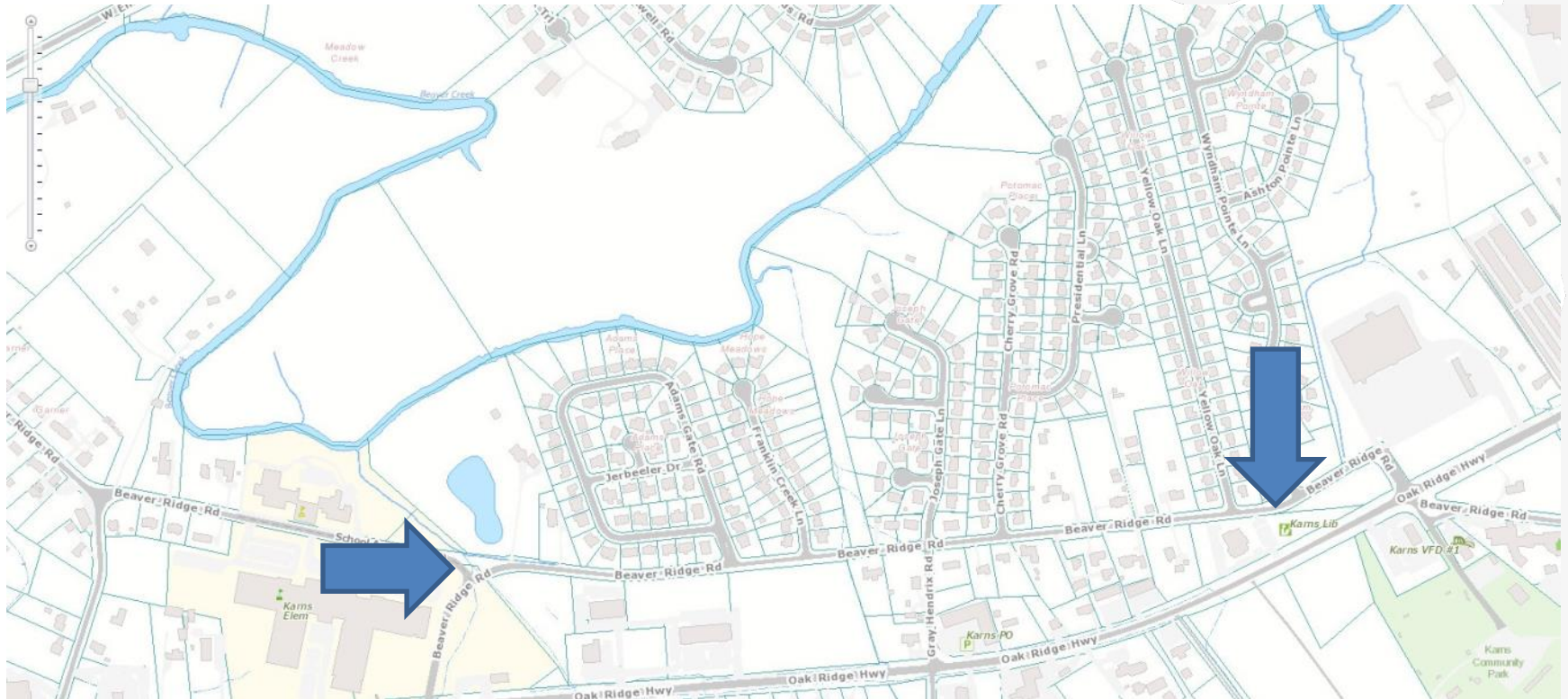


TENNESSEE
SUSTAINABLE TRANSPORTATION
AWARDS AND FORUM

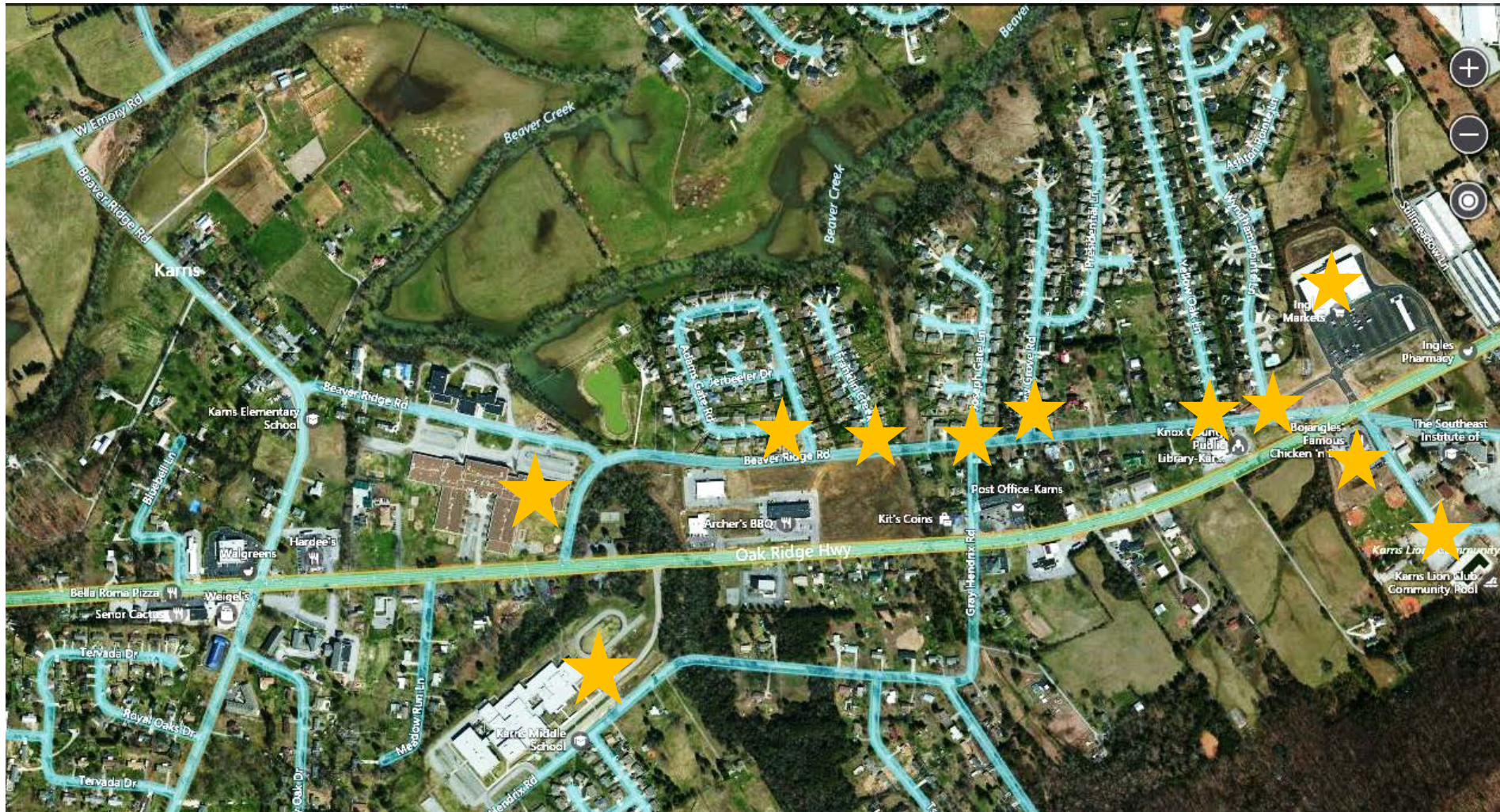




The Initial Request



Design Contract



Beginning of the Queue



Credit: Knox County Dept. of Engineering

More Constraints



Ribbon Cutting



Completed Project



Before and After



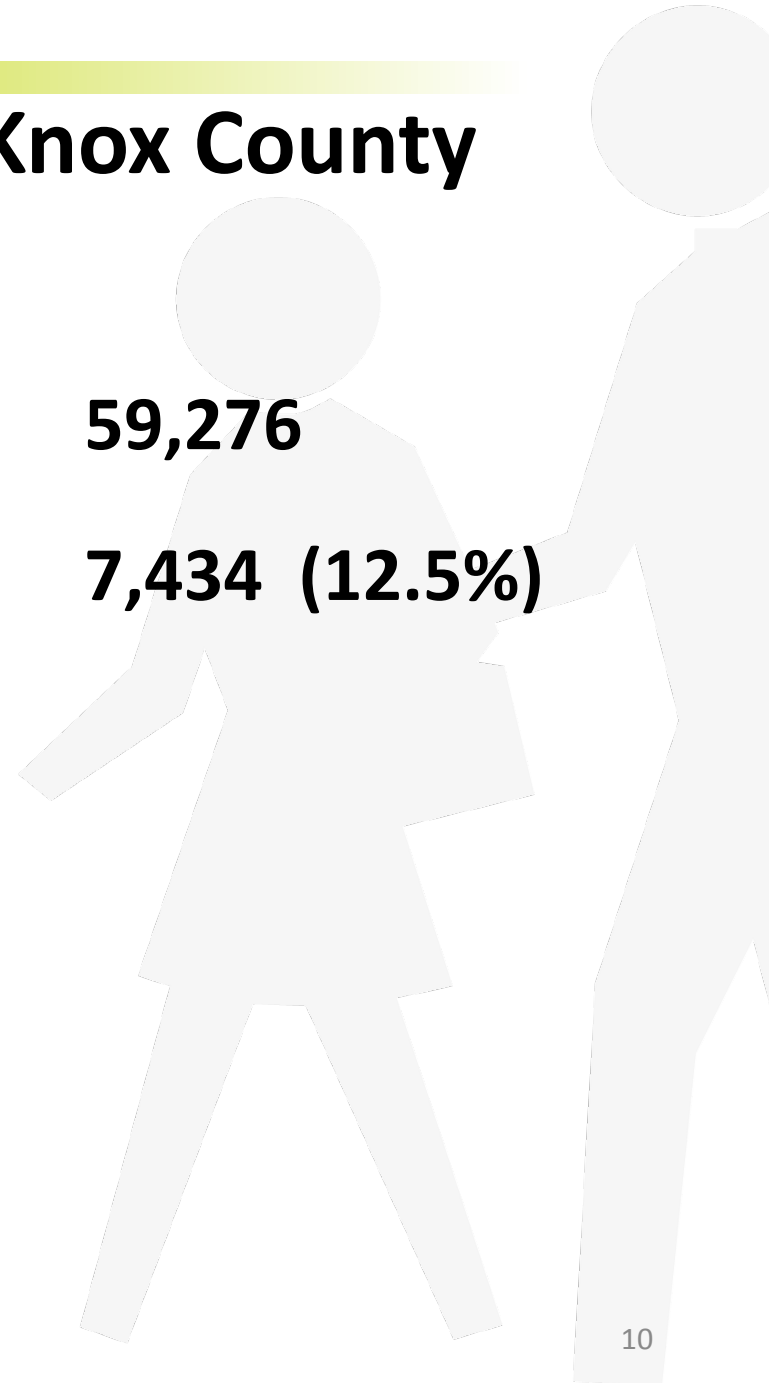
Schools in Unincorporated Knox County

Total number of students in Knox County

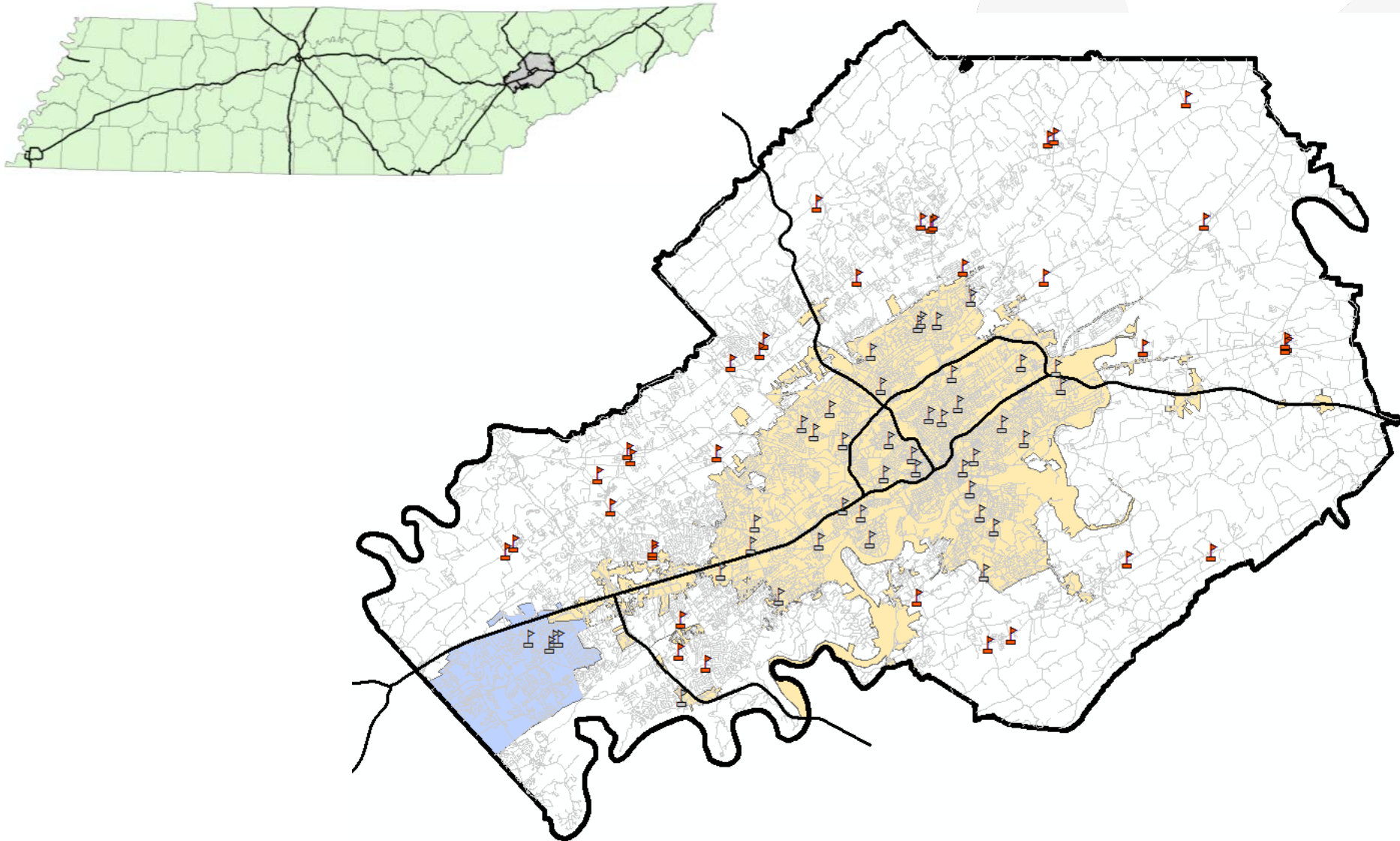
59,276

Total potential number of daily walk-to-school trips (from analysis)

7,434 (12.5%)



Schools in Unincorporated Knox County





The Objective

Identify the locations in Knox County having the greatest amount of walk-to-school pedestrian activity (both potential and realized).



Knox County Walk to School Improvement Project

In 1969, 48 percent of children 5 to 14 years of age usually walked or bicycled to school.

In 2009, 13 percent of children 5 to 14 years of age usually walked or bicycled to school.

Source: The National Center for Safe Routes to School (2011). *How Children Get to School: School Travel Patterns from 1969 to 2009*.

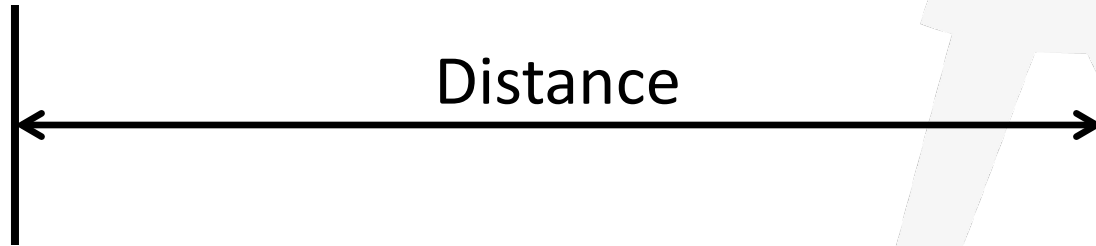


Cedar Bluff Middle, 1964

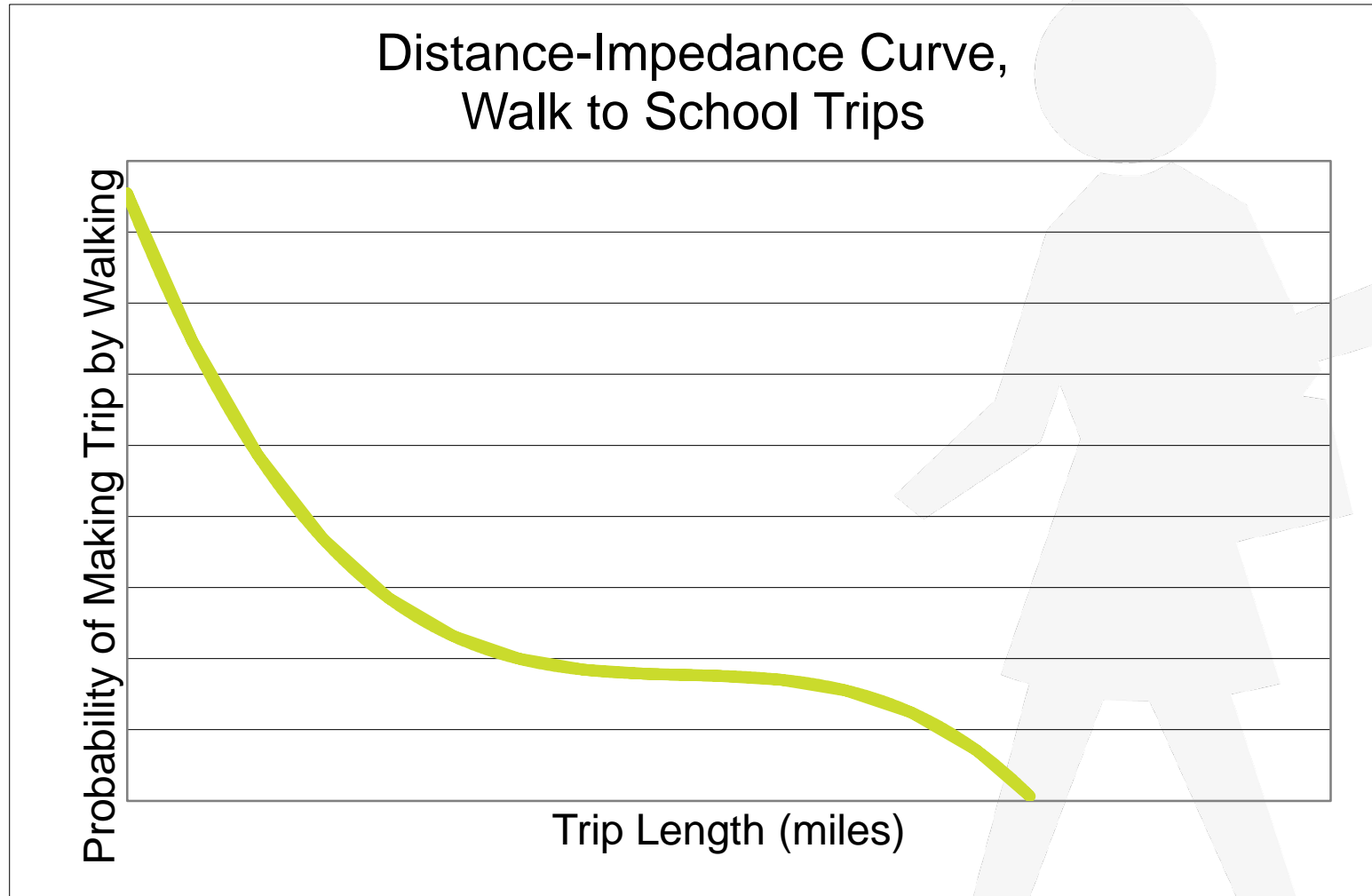


Carter Elementary, 2013

Quantifying the Trips

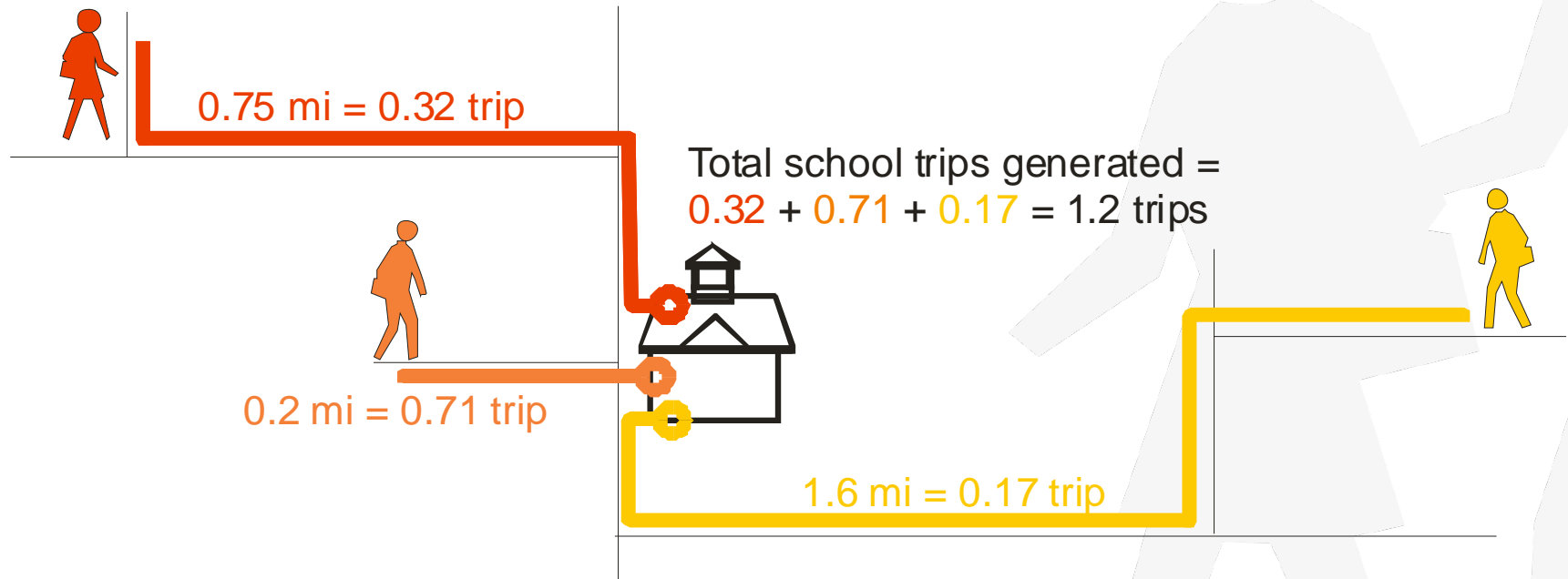


Quantifying the Trips

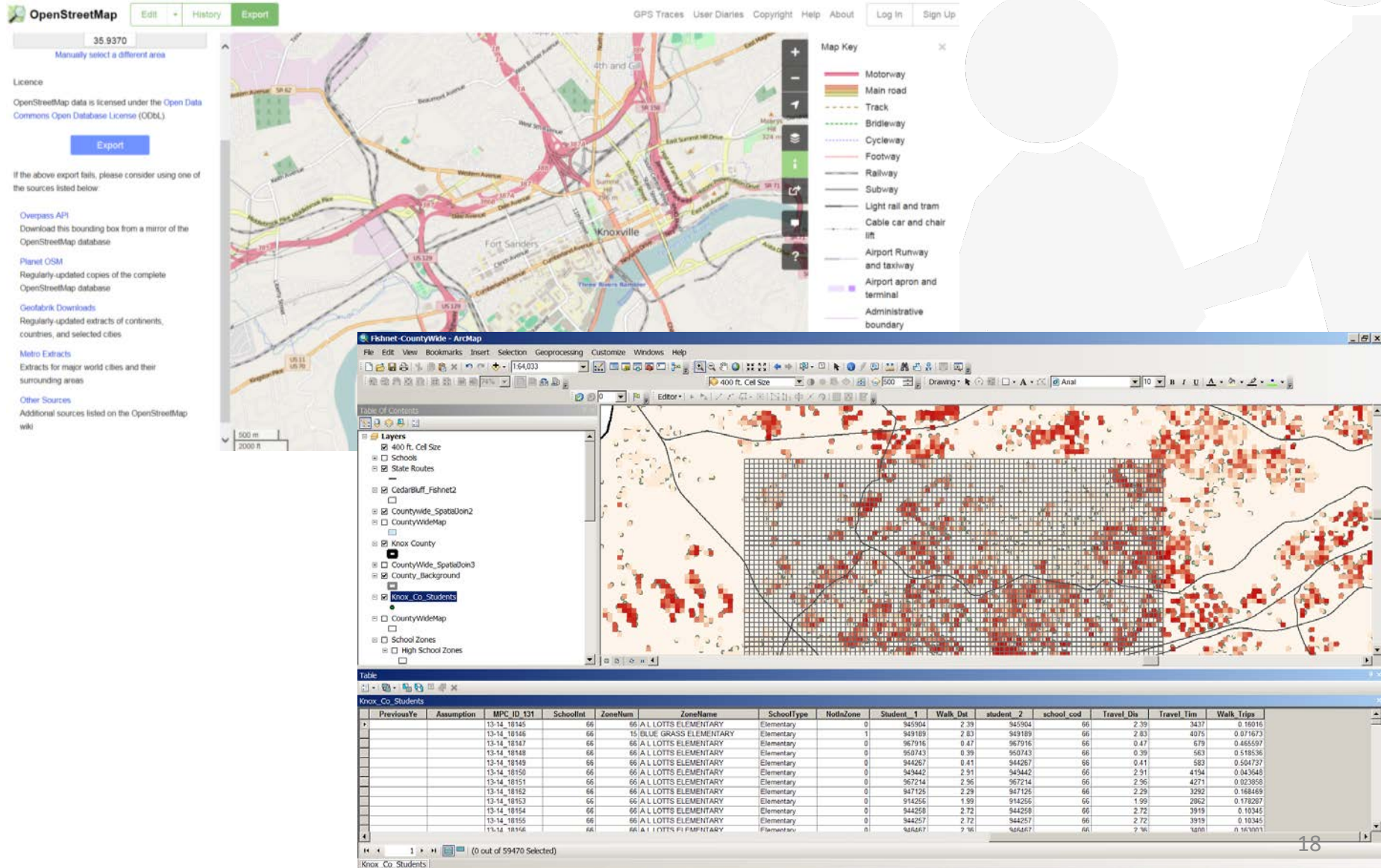


Source: RPM analysis of data from the National Household Travel Survey (NHTS)

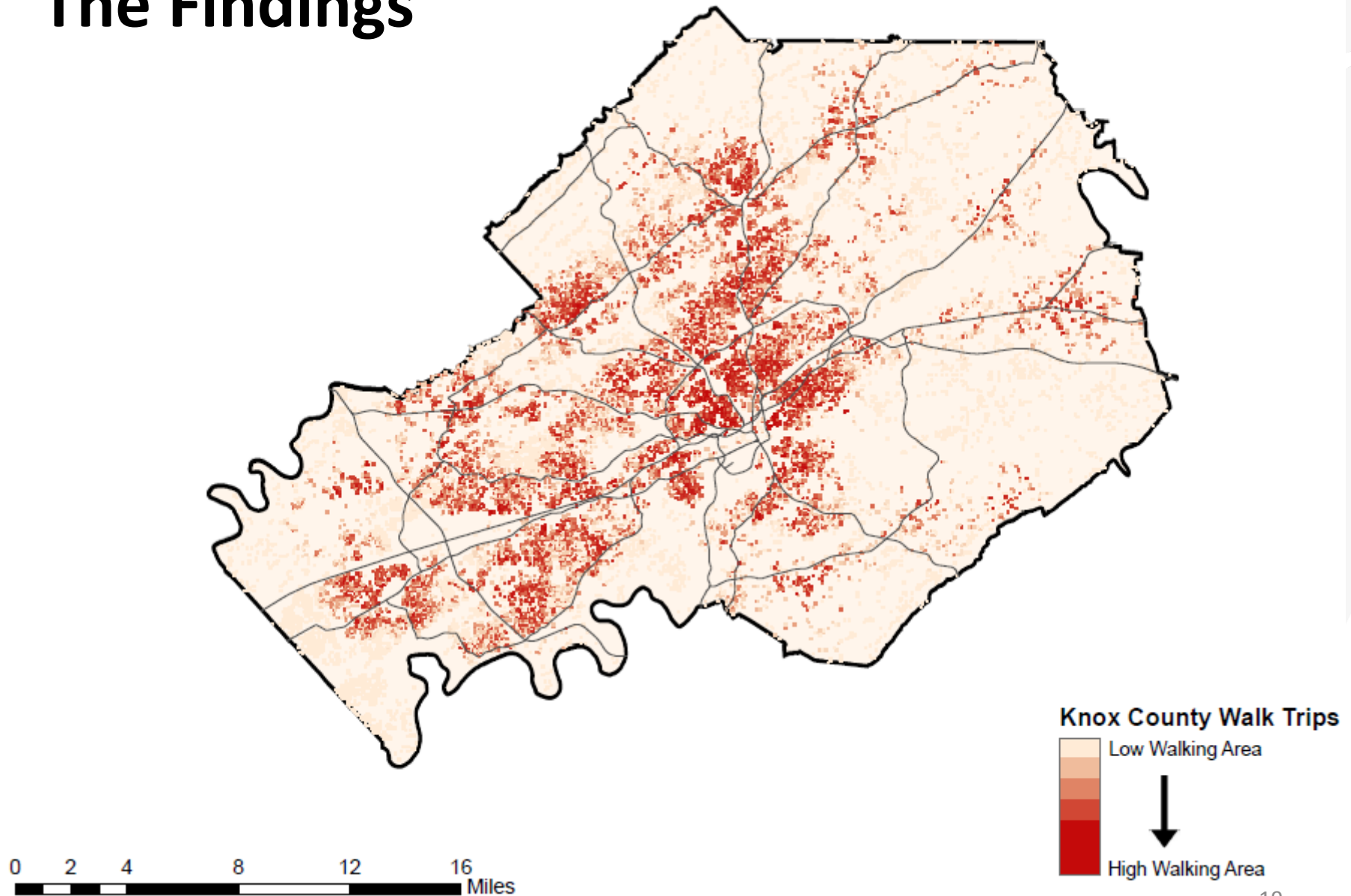
Quantifying the Trips



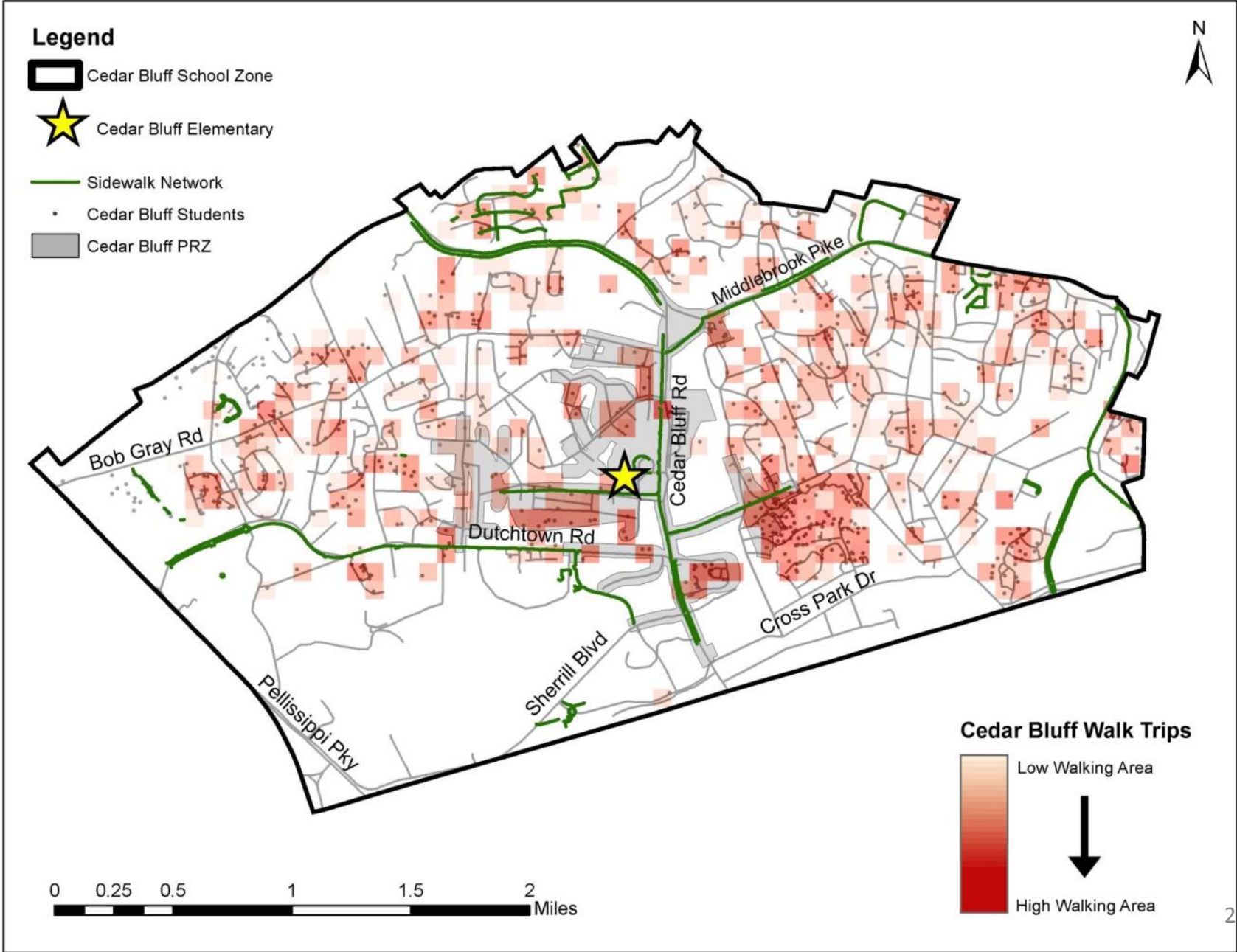
Quantifying the Trips



The Findings



Knox County Walk to School Improvement Project



The Findings



The Findings

Composite scoring:

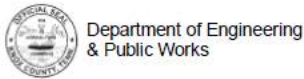
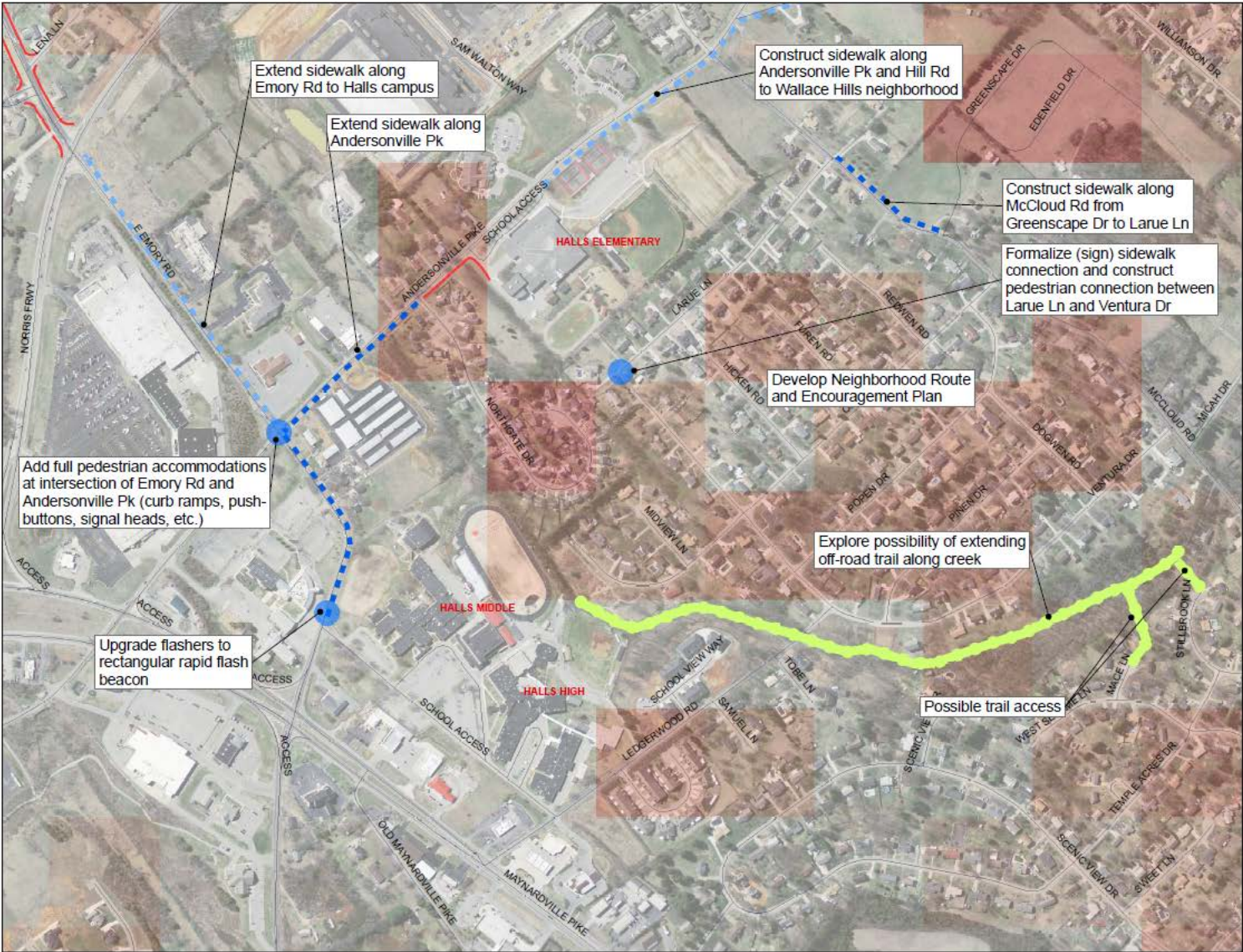
- # trips within PRZ
- # trips outside PRZ
- Type of school
- % change PRZ enrollment

| School | Trips inside PRZ (Actual) | Trips inside PRZ (Score x 5) | Trips outside PRZ (Actual) | Trips outside PRZ (Score x 3) | School type (Score x 3) | % Change in PRZ (Actual) | % Change in PRZ (Score x 2) | TOTAL SCORE |
|---------------------------|------------------------------|---------------------------------|-------------------------------|----------------------------------|----------------------------|-----------------------------|--------------------------------|----------------|
| CEDAR BLUFF ELEMENTARY | 51 | 25 | 162 | 27 | 18 | 46% | 10 | 80 |
| BLUE GRASS ELEMENTARY | 106 | 45 | 68 | 12 | 18 | -4% | 0 | 75 |
| KARNS ELEMENTARY SCHOOL | 41 | 20 | 90 | 15 | 18 | 75% | 16 | 69 |
| AMHERST ELEMENTARY | 16 | 5 | 109 | 21 | 18 | 100% | 18 | 62 |
| HALLS MIDDLE SCHOOL | 43 | 20 | 77 | 15 | 27 | -2% | 0 | 62 |
| POWELL ELEMENTARY | 53 | 25 | 90 | 15 | 18 | 2% | 2 | 60 |
| POWELL HIGH SCHOOL | 75 | 35 | 60 | 9 | 9 | 12% | 4 | 57 |
| CEDAR BLUFF MIDDLE SCHOOL | 44 | 20 | 56 | 9 | 27 | -38% | 0 | 56 |
| WEST VALLEY MIDDLE SCHOOL | 40 | 15 | 54 | 9 | 27 | 18% | 4 | 55 |
| POWELL MIDDLE SCHOOL | 46 | 20 | 39 | 6 | 27 | -7% | 0 | 53 |
| HALLS ELEMENTARY | 35 | 15 | 81 | 15 | 18 | 5% | 2 | 50 |
| ADRIAN BURNETT ELEM | 41 | 20 | 71 | 12 | 18 | -7% | 0 | 50 |
| HALLS HIGH SCHOOL | 52 | 25 | 78 | 15 | 9 | -18% | 0 | 49 |
| KARNS MIDDLE SCHOOL | 26 | 10 | 49 | 9 | 27 | 0% | 0 | 46 |

Concept Planning



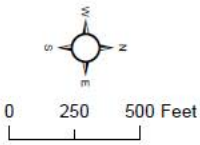
Concept Planning



**Pedestrian Improvements
Concept Plan**
**Halls Elementary,
Middle, and High
Schools**

- Spot Recommendations
- ■ ■ New sidewalk
- ■ ■ New sidewalk (secondary)
- ■ ■ New trail connection
- ■ ■ New trail (secondary)
- Existing Sidewalks

- Production of Walk Trips**
- Fewer Trips Produced
 - More Trips Produced



Concept Planning

Pedestrian Improvements Concept Plan Supplemental Information

School Information:

| 2013-14 Enrollment | % in PRZ | 15-yr student population growth in PRZ | Economically disadvantaged | Total walk trips | Walk trips in PRZ |
|--------------------|----------|--|----------------------------|------------------|-------------------|
| 1,276 | 16% | -18% | 32% | 130 | 52 |

There are 35 schools located in unincorporated Knox County. Halls High ranks 13th in pedestrian improvement priority based on composite data.

Assessment:

Efforts to improve walk to school trips for the Halls Middle and High School campus should focus on the neighborhoods immediately north of the campus. A few recent developments along Ledgerwood Road (Ledgerwood Square and Matthew Place Condos) have increased density in the area, but significant new growth in proximity to the school is not anticipated. The existing trail connection from Oaken Drive should be the focus of encouraging new walk trips from the nearest neighborhoods.

Recommendations:

- Develop a Neighborhood Route and Encouragement Plan for neighborhoods north of Halls High (Bonna Vista, Midview Estates, etc.).
- Investigate the possibility of extending a trail along the North Fork of Beaver Creek. With added possible connections to streets like Mace Lane and/or Stillbrook Lane, this trail could ultimately serve as a viable spur to the Halls Greenway system.
- See Halls Middle and Elementary School for other related improvements.



Connecting the Halls school campuses with sidewalk along E. Emory Road and Andersonville Pike will benefit this community beyond the strict walk-to-school needs by connecting churches and businesses as well as the schools and residences.

Department of Engineering
and Public Works



Halls High School 4321 Emory Road



With construction of sidewalk along E. Emory Rd, this crosswalk will get more usage and upgrades should include rectangular rapid-flash beacons.



The trailhead from Oaken Drive allows pedestrian access from the adjacent neighborhoods. Increased trips from these neighborhoods are the most likely and require limited new infrastructure to encourage trip realization.



Extending and paving a trail along the North Fork of Beaver Creek, along with some local street accesses would bring new walk to school trips and could ultimately serve as a Halls Greenway spur trail.

Pedestrian Improvements Concept Plan Supplemental Information

School Information:

| 2013-14 Enrollment | % in PRZ | 15-yr student population growth in PRZ | Economically disadvantaged | Total walk trips | Walk trips in PRZ |
|--------------------|----------|--|----------------------------|------------------|-------------------|
| 1,293 | 12% | 46% | 48% | 213 | 51 |

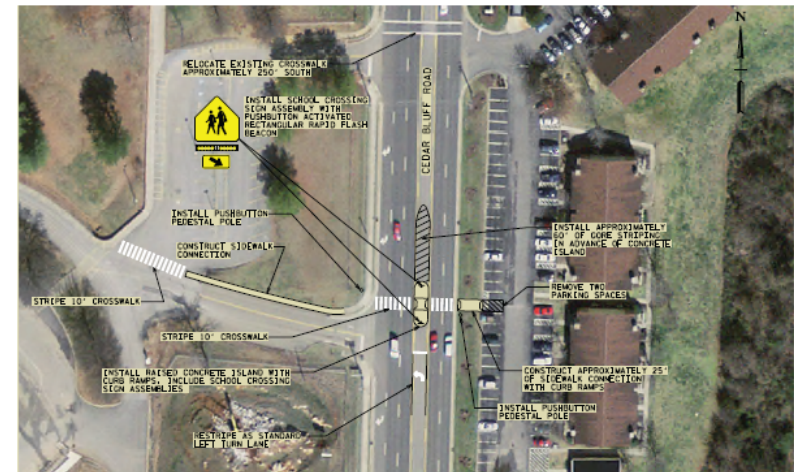
There are 35 schools located in unincorporated Knox County. Cedar Bluff Elementary ranks 1st in pedestrian improvement priority based on composite data.

Assessment:

Located directly on Cedar Bluff Road, this five-lane road presents a substantial barrier to walk trips from residences on the east side of the road. Facilities along Cedar Bluff Road are adequate, though a relatively narrow sidewalk width and the speed and volume of traffic make walking along the road less than desirable. Aside from the neighborhoods immediately adjacent to Cedar Bluff Elementary, a significant source of walk to school trips is expected from the multifamily residential neighborhoods along Park Village Drive. These walk distances are further, but the number of potential walk trips and a good start to pedestrian accommodations make improvements in this area worth the effort.

Recommendations:

- Relocate current Cedar Bluff crosswalk 250' south to north side of school driveway. This will allow construction of a crossing median island to be constructed in the center of Cedar Bluff Road (construct 25' sidewalk into apartments parking lot on east side of Cedar Bluff Road).
- See Cedar Bluff Middle School for other related improvements.



Department of Engineering
and Public Works



Providing a more protected crossing of Cedar Bluff Road will help where protected (signalized) crossings are infrequent. A pedestrian hybrid beacon could be used if more traffic control is desired.

Concept Planning

Phase 1: Process and prioritization

Phase 2: Concept plans – top 14 schools

3 miles sidewalk, 1.3 miles off road trail

6 intersection improvements

6 unsignalized crossing improvements

other misc improvements

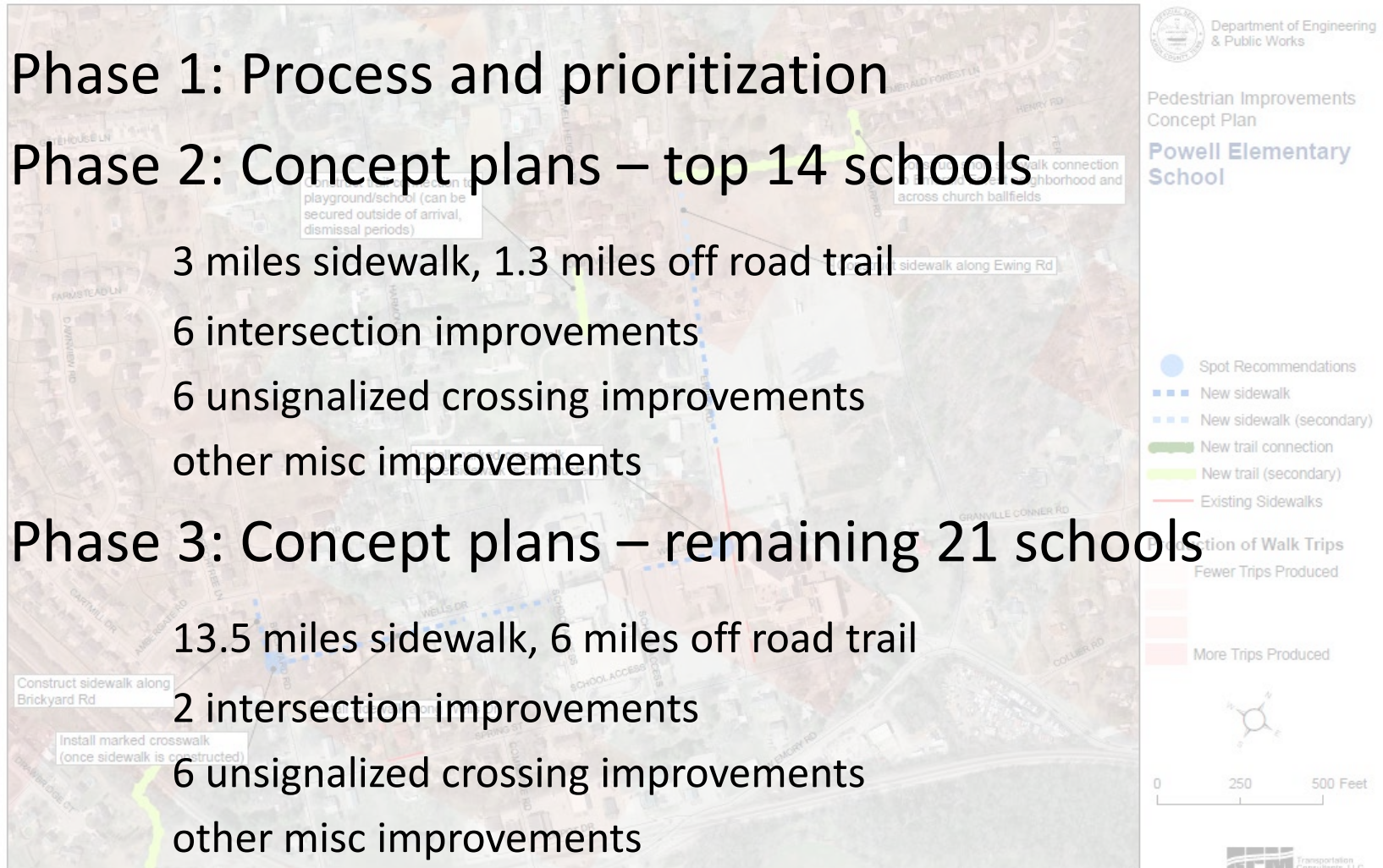
Phase 3: Concept plans – remaining 21 schools

13.5 miles sidewalk, 6 miles off road trail

2 intersection improvements

6 unsignalized crossing improvements

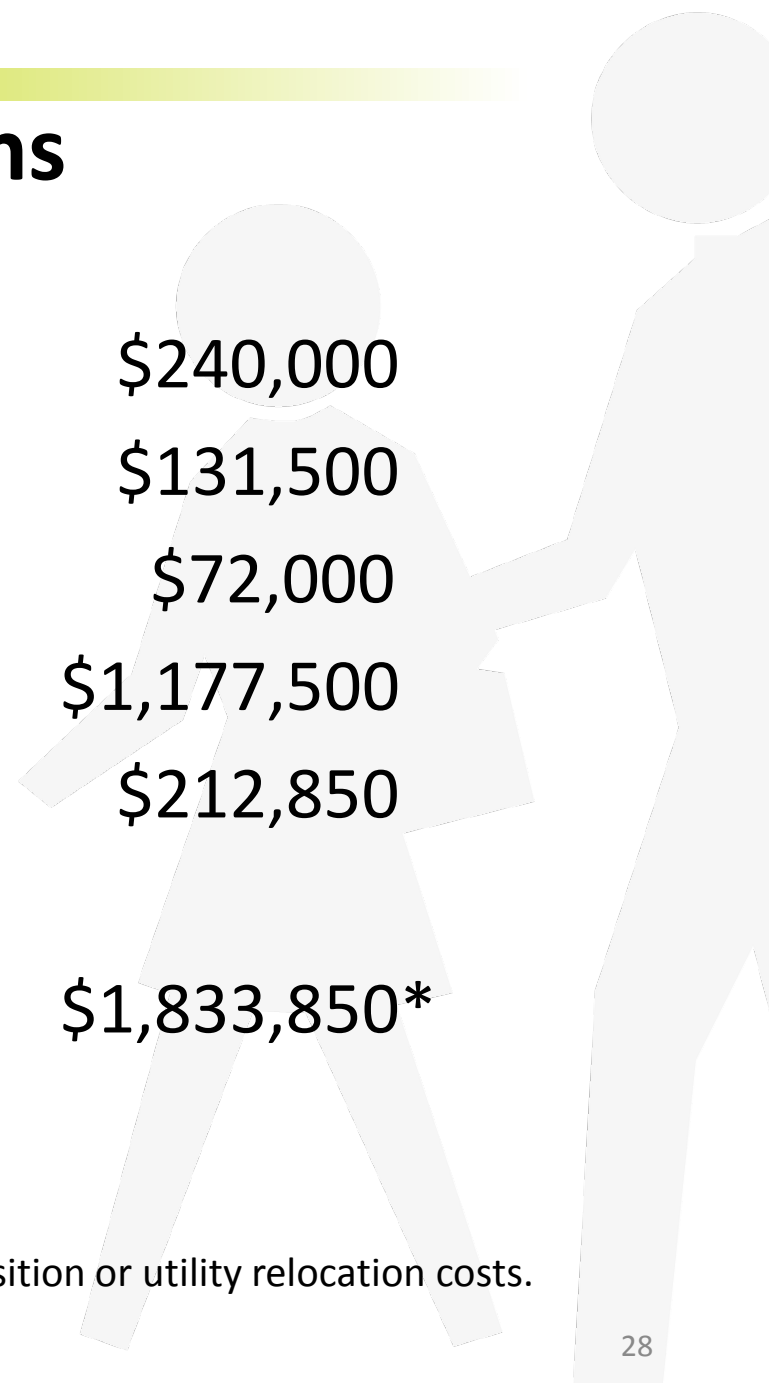
other misc improvements



Knox County Walk to School Improvement Project



Phase 2 Recommendations



| | |
|---------------------------------|--------------|
| 1) Intersection Improvements | \$240,000 |
| 2) Misc. Spot Signing/Markings | \$131,500 |
| 3) Crossing Island Construction | \$72,000 |
| 4) New Sidewalk Construction | \$1,177,500 |
| 5) Off-Road Trail Construction | \$212,850 |
| Total | \$1,833,850* |

*Estimates do not include engineering, right-of-way acquisition or utility relocation costs.

Status

Currently Underway

- Designed and Constructed ~3,700' of sidewalk at Powell Middle School; Construction contract was for \$153,437
- Designed 2,000' of sidewalk at Powell Elementary School; engineer's estimated construction cost is \$267,900
- Designed and contracted to begin construction of pedestrian crossings, upgrading intersections for ADA compliance, RRFB installations, etc.; Construction contract is for \$476,274
 - Cedar Bluff – 1 pedestrian crossing island
 - Blue Grass Elementary – 5 pedestrian crossing islands
 - West Valley Middle – 2 pedestrian crossing islands

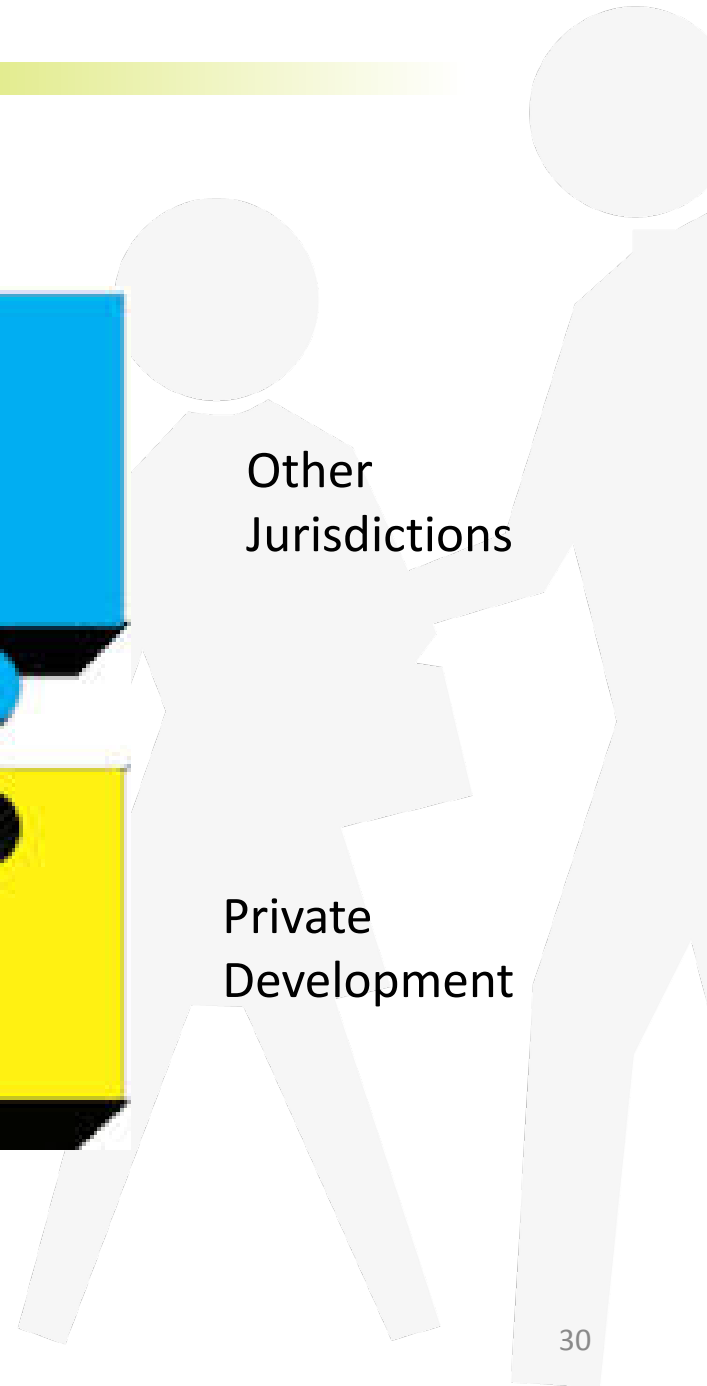
Knox County Walk to School Improvement Project

TDOT

Knox
County

Other
Jurisdictions

Private
Development



What's Next?

- Future Plans
 - 1) Ask for funding in Fiscal Year 2018
 - 2) Construct 1,000 feet of sidewalk at Powell Elementary School
 - 3) Begin design for two more sidewalk projects



Contacts

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