City of Powers – Powers Elementary School
Baseline Data Evaluation Report

FINAL July 27, 2022

Introduction

This case study evaluation measures the impacts of Oregon Safe Routes to School (SRTS) 2021 Competitive Construction Grants in communities across the state. The evaluation will assess the effectiveness of individual SRTS projects, techniques, and programs designed to reduce barriers to biking and walking to and from school. Evaluation research questions include:

- What are the impacts for standalone construction grants, and combined outreach and education and construction grants?
- How do different combinations of interventions effectively address the barriers identified by communities and affect mode shift; safety; and perceptions of safety, program lifespan, and equity?

This Baseline Data Evaluation Report represents the "pre-construction" data and provides an overview of existing travel conditions and school site attributes. This report summarizes the funded improvement project, demographics of affected schools, and data from Oregon Department of Transportation (ODOT) and local roadway authority crash records, caregiver surveys, and student travel hand tallies. It is intended to contain the majority of the information needed to plan for the post-construction data collection.

Plan for the Final Case Study Evaluation Report

The Final Case Study Evaluation Report will represent the "post-construction" data. A draft outline for this report is included in Appendix A. For data consistency, the post-construction data will be collected as soon as possible after construction is complete, likely starting in Fall 2022. This will reduce weather-related impacts and also allow time during the school year for families to establish or change their travel habits. In addition to the standard caregiver surveys and student travel hand tallies, post-construction data collection methods for the evaluation report may also include: caregiver focus groups and surveys or interviews with school staff.

The Final Case Study Evaluation Report will measure shifts using the evaluation metrics laid out in this document to identify the successes of SRTS projects and provide insight on opportunities for further improvement. SRTS performance metrics measured during this evaluation process will include:

- **Mode split:** Are more students walking and biking to school after a project's completion than at the time of baseline data collection?
- **Access to safe infrastructure:** Do students have better access to sidewalks, bike lanes, or safe crossing locations on their route to school after the completion of the project?
- **Safety/perception of safety:** Do caregivers and students feel safer or more comfortable walking and biking to school after the project's completion?
- **Program lifespan/partnerships:** Is the SRTS program functioning efficiently and providing adequate support for partner jurisdictions, schools, and districts?
- **Equity:** Are students from a diversity of ethnic/racial and socioeconomic backgrounds benefiting from the investments being made?

In addition to reporting on grant effectiveness, data presented in the Baseline Data Evaluation Report and the Final Case Study Evaluation Report could be used for a variety of transportation and program planning purposes at the local level. Having a comprehensive set of quantitative data and qualitative feedback on transportation conditions and trends around these sites could help inform decisions on school/district policy, SRTS event and program planning by schools/districts/local jurisdictions, and planning for future infrastructure projects, as well as provide supporting documentation for future grant applications.

Baseline SRTS Snapshot: Powers Elementary

Summary

Powers Elementary School is a public elementary school serving students in the City of Powers and rural Coos County. Powers Elementary School is a Title 1 school, with more than 86% of students eligible for the Federal Free and Reduced-Price Lunch Program. English and Spanish are the primary languages spoken by students.

City staff identified Powers Elementary School as a high priority site for SRTS improvements due to the absence of existing sidewalks and designated safe pathways or signage, particularly at major intersections and highway crossings.

The Oregon SRTS 2021 Competitive Grant included adding developed pathways, high-visibility crosswalks, school zone signage, and educational encouragement to remove barriers and allow for all students to walk or bike to school equally.

In addition to these planned infrastructure improvements, the Safe Routes to School team held SRTS walk audits and community meetings and communicated information about the event and the project to encourage participation by use of social media, city email notification lists, flyers, the mayor's monthly newsletter, and City Council meetings.

Key information from Powers Elementary surveys and staff interview:

- Seven caregivers live within a mile of the school.
- Approximately 50% of students ride in a family vehicle to school with 35% using this mode to travel home; 0% of students take the school bus to school with 0% taking the bus home; and 25% of students walk to school with 40% walking home.
- Caregivers report that travel time is the most common barrier to walking/biking to school. Other barriers include:
    - Lack of facilities or bike parking
    - Poor driver behavior
    - Bad weather
- Many caregivers recognize the value of walking/biking to school—8 out of 11 described it as healthy, and 5 out of 11 described it as fun for their student.

Contact Information

JURISDICTION:	City of Powers
CONTACT:	Matt Shorb, mshorb@powersschools.com
SCHOOL DISTRICT:	Powers School District
CONTACT:	SuPowersperintendent, (541) 439-2291
OTHER CONTACTS:	Robert Kohn, Mayor, (541) 439-3331

Enrollment and Demographics

Powers Elementary School is a Title 1 public school enrolling 73 students in Kindergarten through 6th grade. The school serves low-income populations in the City of Powers; approximately 86.1% of students are eligible for the Free and Reduced-Price Lunch Program. English is the primary language spoken by students, and less than 5% are registered to be Ever English Learners.[1]

ENROLLMENT: 73[2]	GRADE LEVELS SERVED AND SCHOOL TYPE: K-6th, Public
STUDENT ETHNIC/RACIAL DEMOGRAPHICS: American Indian/Alaska Native: 8% Asian: 0% Hispanic or Latino: 15% Native Hawaiian/Pacific Island: 0% Multiracial: 22% Black/African American: 0% White: 55%	PREDOMINANT LANGUAGE SPOKEN IN THE POWERS SCHOOL DISTRICT: [3] English: 126
STUDENTS LIVING WITHIN ONE MILE OF SCHOOL: NA	TITLE 1 STATUS: Yes[4]
EVER ENGLISH LEARNERS: NA[5]	FREE AND REDUCED-PRICE LUNCH ELIGIBILITY: 86.1%[6]

[1] Unless otherwise noted below, demographic data are from the Oregon Department of Education Fall Membership Report SY2020-2021 Data, https://www.oregon.gov/ode/reports-and-data/students/Pages/Student-Enrollment-Reports.aspx
[2] Oregon Department of Education, SY 2020-2021 https://www.ode.state.or.us/data/reportcard/Media.aspx
[3] Oregon Department of Education Language Use Survey, SY 2020-2021 https://www.oregon.gov/ode/schools-and-districts/grants/ESEA/EL/Pages/LanguageUseSurvey.aspx
[4] Title 1 schools are schools where 40% or more of students are enrolled in USDA's Free and Reduced-Price Meals Program. Oregon Department of Education, SY 2018-2019 https://www.oregon.gov/ode/schools-and-districts/reportcards/reportcards/Pages/Accountability-Measures.aspx
[5] Oregon Department of Education, SY 2020-2021 https://www.ode.state.or.us/data/reportcard/Media.aspx
[6] Oregon Department of Education, SY 2020-2021 https://www.oregon.gov/ode/students-and-family/childnutrition/cacfp/Documents/Site%20Eligibility%20for%20CACFP%20and%20SFSP.pdf

Community Context and Place Type

Place type describes attributes of a built environment, including: access to destinations, density, walkability, mixing of uses, and presence of transit. The evaluation team compiled Oregon Department of Land Conservation and Development's (DLCD) measures of place type for each community studied.[7] Each attribute is rated as **"Very Low, Low, Medium, or High"** by block group. Place type characteristics provide important context for transportation opportunities and challenges in a community and influence the transportation decisions people make.

Powers Elementary School is located in the City of Powers. According to the Place Type Tool, the area surrounding Powers Elementary School is categorized as Low Density/ Rural meaning it has very low densities of jobs and/or housing, and has auto dependent transportation. Due to low densities of jobs and services with 1,427 people residing and 998 people working within the census block group. The area has a very low level of access to regional employment centers and destinations, and a high mix of uses; however, the overall level of street connectivity in the area is characterized as "very low."

AREA TYPE describes the role of each neighborhood district compared to the rest of the region (regional center, close-in community, suburban/town, low density/rural)	Low Density / Rural • Very low densities of jobs and housing • Very low accessibility to jobs and services • Generally, outside of UGB or undeveloped areas within UGB • Auto dependent transportation, due to low densities of jobs and services
DEVELOPMENT TYPE describes more detailed physical characteristics of each neighborhood (transit supportive development, mixed use, employment, residential, rural/ low density):	Low Density / Rural • Very low densities of housing and jobs • Very low accessibility to jobs and services • Generally, outside of UGB, or undeveloped areas within UGB • Auto dependent transportation, due to low activity densities
JURISDICTION POPULATION (ACS 5-YEAR ESTIMATES):	City of Powers 1,427 people
CENSUS BLOCK GROUP POPULATION (2010):	998 people
NUMBER OF JOBS IN CENSUS BLOCK GROUP (2010):	144 jobs
ACCESS TO DESTINATIONS describes the number of regional jobs within 5 miles:	Very Low
DENSITY LEVEL- jobs and households per acre within ¼ mile:	Very low
DESIGN LEVEL- level of street connectivity, pedestrian-oriented street density:	Very Low
DIVERSITY LEVEL- Mix of housing and employment:	Very low
TRANSIT LEVEL- Afternoon peak hourly transit service within ¼ mile:	Very Low

[7] More information about OLCD's Place Type Tool is available at: www.oregon.gov/lcd/CL/Pages/Place-Types.aspx

Project Description

A map of the project improvements from the Powers Elementary grant application is included in Appendix B.

PROBLEM STATEMENT:	The existing conditions of the pedestrian pathways to the local schools are in extremely poor condition and in numerous high traffic areas. In addition to these issues, there are no existing sidewalks or designated safe pathways. Lastly, there are no designated crosswalks or signage, particularly at major intersections and highway crossings.
DESCRIPTION OF BARRIERS TO WALKING AND BIKING:	The north side neighborhoods in Powers include two low-income trailer parks, both of which are adversely impacted by not having access to developed sidewalks or pedestrian/bike paths for their children to walk or bike to school. Numerous families in these parks do not have vehicles to transport the kids to school, and the children are forced to walk or bike in the roadways, along muddy and unsafe terrain in the rights of way, and to cross the highway without clearly marked crosswalks. The project will address this disparity by providing the necessary infrastructure and signage to enable safe use of sidewalks and pathways constructed under the project.
PROJECT DESCRIPTION:	The City's partnership with ODOT and the local school district will provide essential developed pathways, high-visibility crosswalks, school zone signage, and educational encouragement to remove barriers and allow for all students to walk or bike to school equally.
ESTIMATED PROJECT TIMELINE:	September 2022 Completion
PRIORITY SAFETY CORRIDOR?[8]	Yes
OUTREACH AND EDUCATION:	The City of Powers held SRTS walk audits and community meetings, held on October 15 and 16, 2019. Staff communicated information about the event and the project to encourage participation by use of: social media, city email notification lists, flyers, the mayor's monthly newsletter, and during city council meetings. The walk audits and meetings were well attended by interested community members and families of school students. Feedback from the community was recorded and integrated into the plan by Alta Engineering to assist in identification of project goals and needs. The draft plan was available for public comment for two weeks in February 2020 and subsequently adopted by the City Council in March. The district has not participated in SRTS education or engagement programs. The district will engage with disadvantaged families to prioritize improvements that connect these communities to schools, to implement a SRTS education program focused on benefitting students from low-income families, to support the use of active and transportation to school in conjunction with other health initiatives, to share relevant educational

[8] A road where the posted speed or 85th percentile speed of traffic is 40 mph or greater OR where two of the following apply: posted speed limit of 30 mph or greater, more than two lanes or a crossing distance greater than 30 feet, 12,000 AADT or greater, or a demonstrated history of crashes related to school traffic.

materials through its school wellness programs and regular communication channels, to organize a community-wide school safety campaign to increase the visibility of school speed zones, to partner with the local police department to engage students in bicycle and pedestrian safety events and activities.

Access Analysis for Students Walking and Biking to School

The project team conducted an analysis to estimate the number of people who would gain walking and biking access to Powers Elementary School when the project improvements are constructed, shown in Table 1 and Figure 1. First, the project improvements were evaluated to understand the geographic areas that would gain safe access to the school once the funded project was constructed. Next, American Community Survey (ACS) data was used to estimate the number of people and the number of school-age children that live within the new access areas.

This analysis estimates that approximately 25 students, or 12% of the school-aged population living within a mile of the school, would gain safer walking or biking access to the school.

Table 1. Access Analysis Results[9]

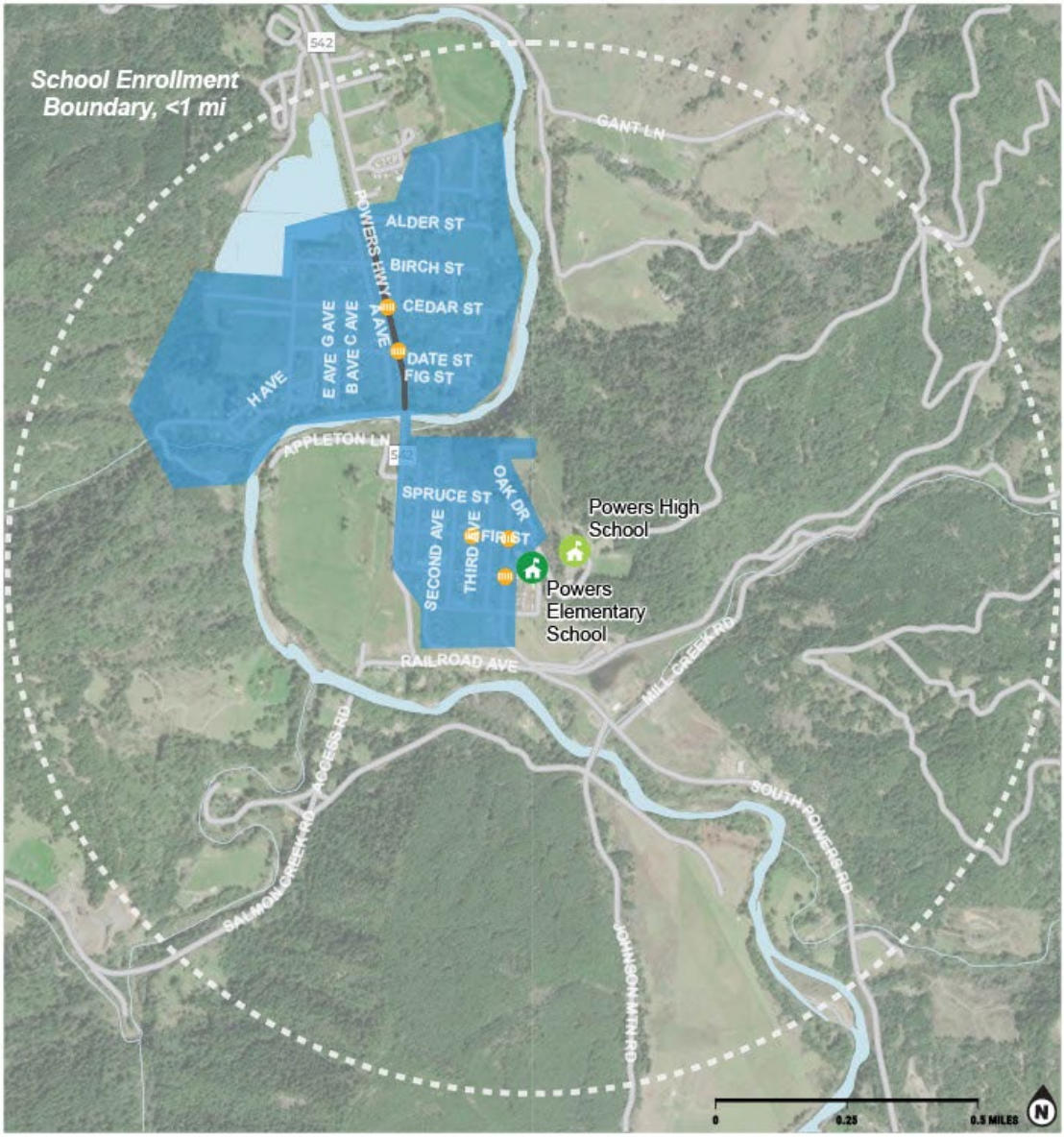
METRIC	VALUE
Total Population of New Access Areas	171
School Age Population of New Access Areas[10]	25
Percentage of Students within the School Areas Gaining Access[11]	12%

[9] Due to the lack of residential zoning in the surrounding area, the population served is based on the proportion of land coverage in the new access area compared to the School Area, assuming an even distribution of population density across the area.

[10] Calculated using the proportion of school-age children (5-17 years old) within the block group containing the City of Powers.

[11] The School Area is defined as the area within the school enrollment area that is within one mile of the school.

Figure 1. Powers Elementary New Access Area for Students Walking and Biking



Powers Elementary School
Students with New Access to Walking and Biking

Estimated Number of Students: 25
Proportion of Students within 1 Mile: 12%
To view the methods for this analysis, please see Appendix.

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- Applicant School
- Other School
- New Access Area
- New Crossing Improvement
- New Sidewalk Improvement

Baseline Data

The following section presents pre-construction data, which will be compared against similar data collected after the project has been constructed, in order to estimate the impact of the improvements.

Staff Interview

DATE COLLECTED:	**February 8, 2022**
DATA COLLECTION PROCESS:	Staff interview with Matt Shorb, District Superintendent / Principal

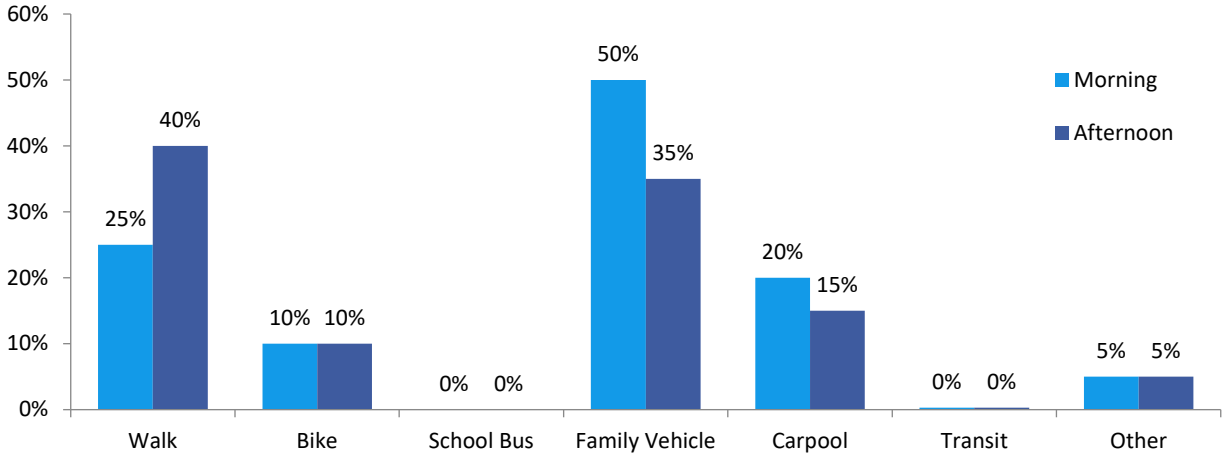
SUMMARY OF DATA COLLECTION AND METHODOLOGY

Due to the COVID-19 pandemic and the risk in conducting in-person travel tallies at Powers Elementary, Matt Shorb the superintendent, provided the Alta Planning + Design Safe Routes to School team an account of current travel conditions at Powers Elementary. Matt Shorb answered questions about typical travel mode-share to and from Powers Elementary at the time of the interview.

SUMMARY OF RESULTS

Powers Elementary staff interview data from 2022 indicates that a majority of students traveled by family vehicle in the mornings (50%) (see Figure 2). Walking to school was the second most common mode, with 25% of students using this mode to get to and from school. Bikes were used by 10% of students to get to school and home, and carpool was used for 20% of students to get to school with 15% of students used carpool to get home. No students traveled by school bus.

Figure 2. Student Mode Split by Time of Day, 2022 Staff Interview Data



Note: Percentages may not total 100% due to rounding.

Caregiver Surveys

DATE COLLECTED:	May 2022
DATA COLLECTION PROCESS:	The Oregon Department of Transportation SRTS caregiver survey was distributed electronically and on paper copies to caregivers at Powers Elementary School to assess family perceptions about school travel options and behavior. The survey was available in English and Spanish.
NUMBER OF SURVEYS:	14 total - 12 in English, 2 in Spanish

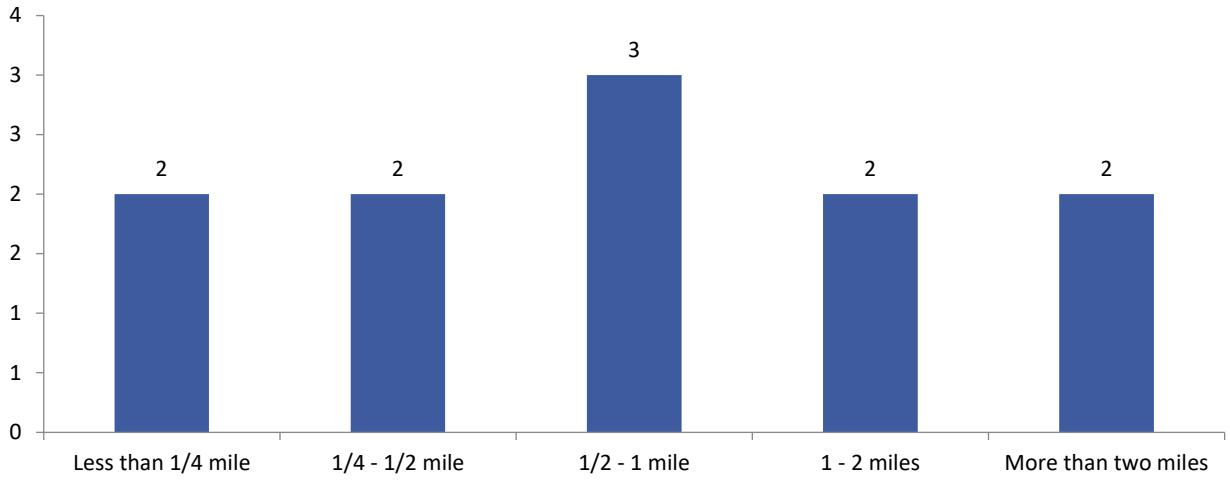
SUMMARY OF DATA COLLECTION AND METHODOLOGY

The caregiver survey data included in this report was collected from March 14 through March 18, 2022 from 14 participants with students attending Powers Elementary. Alta Planning + Design staff created a promotional flier which included details about the Safe Routes to School program, project contact information, a link to the online survey and instructions on where to return hard copies of the paper surveys. Caregivers who completed the survey were entered into a raffle for a walking/biking safety kit. *Note: due to the small sample size, the following charts are provided as raw numbers as they do not provide a representative sample of the total population.*

SUMMARY OF RESULTS

Caregiver survey analysis revealed that seven respondents live within one mile of Powers Elementary, with an additional two living between one and two miles of the school site (see Figure 3). Another two surveyed caregivers live more than two miles from the school.

Figure 3. How Far Does Your Family Live from School?, 2022 Caregiver Survey



Walking was the most commonly used transportation option for students living less than a quarter mile from the school; however, family vehicle was the most common mode for those living between a quarter mile and a half mile from school, a half mile and one mile from school, and two miles or farther from school (see Figure 4 and Table 2). Additionally, 50% of students who lived between a half mile and one mile used shared modes. Only five students (all living under a half mile from school) walked to/from school.

Figure 4. Mode Split by Distance from School, 2022 Caregiver Survey

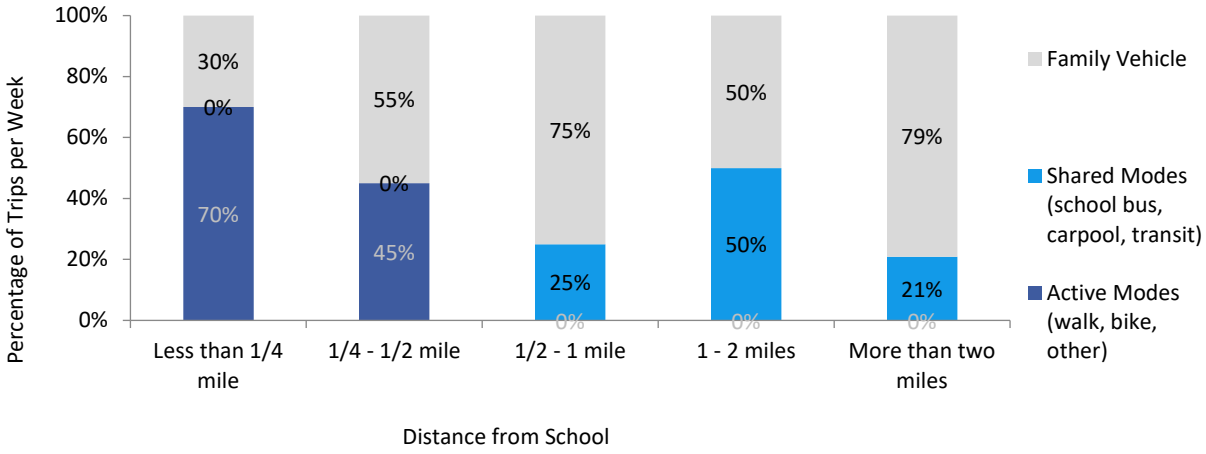
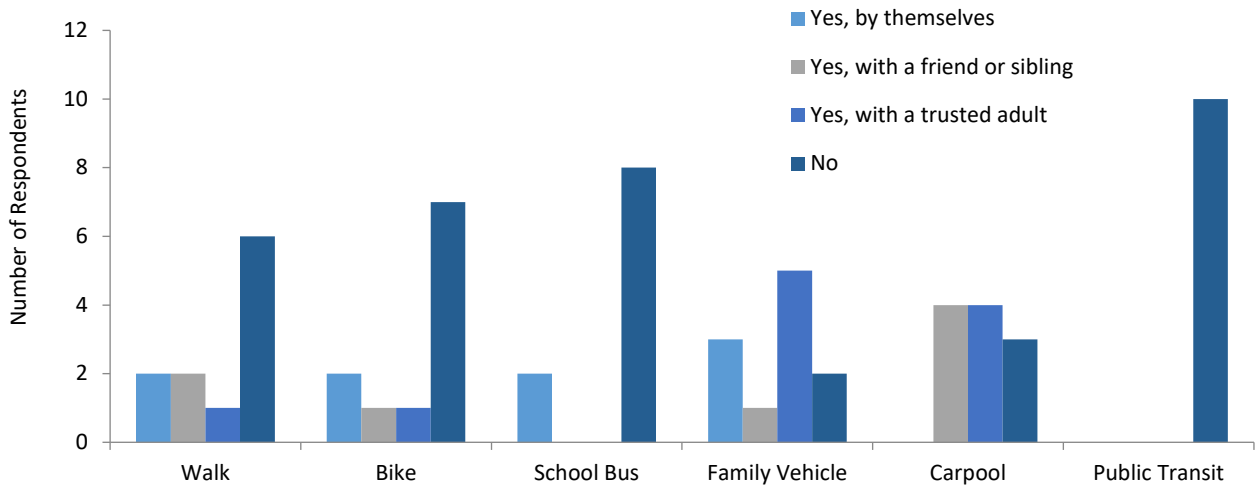


Table 2. Count of Trips by Distance the Family Lives from School, 2022 Caregiver Survey

DISTANCE	WALK	BIKE	SCHOOL BUS	FAMILY VEHICLE	CARPOOL	TRANSIT	OTHER
Less than 1/4 mile	14	0	0	6	0	0	0
1/4 mile up to 1/2 mile	9	0	0	11	0	0	0
1/2 mile up to 1 mile	0	0	0	30	10	0	0
1 mile up to 2 miles	0	0	0	5	5	0	0
More than 2 miles	0	0	0	19	1	0	0

As Figure 5 illustrates, six caregivers surveyed reported that they would not allow their student to walk to/from school. However, one responded that they would allow their student to walk if they were accompanied by a trusted adult, and another two would allow them to walk with a friend or sibling or by themselves. Two said they would allow them to walk alone. Seven said they would not allow their student to bike, two said they would allow them to bike alone, and only one would allow biking with a trusted adult present or with a sibling or friend.

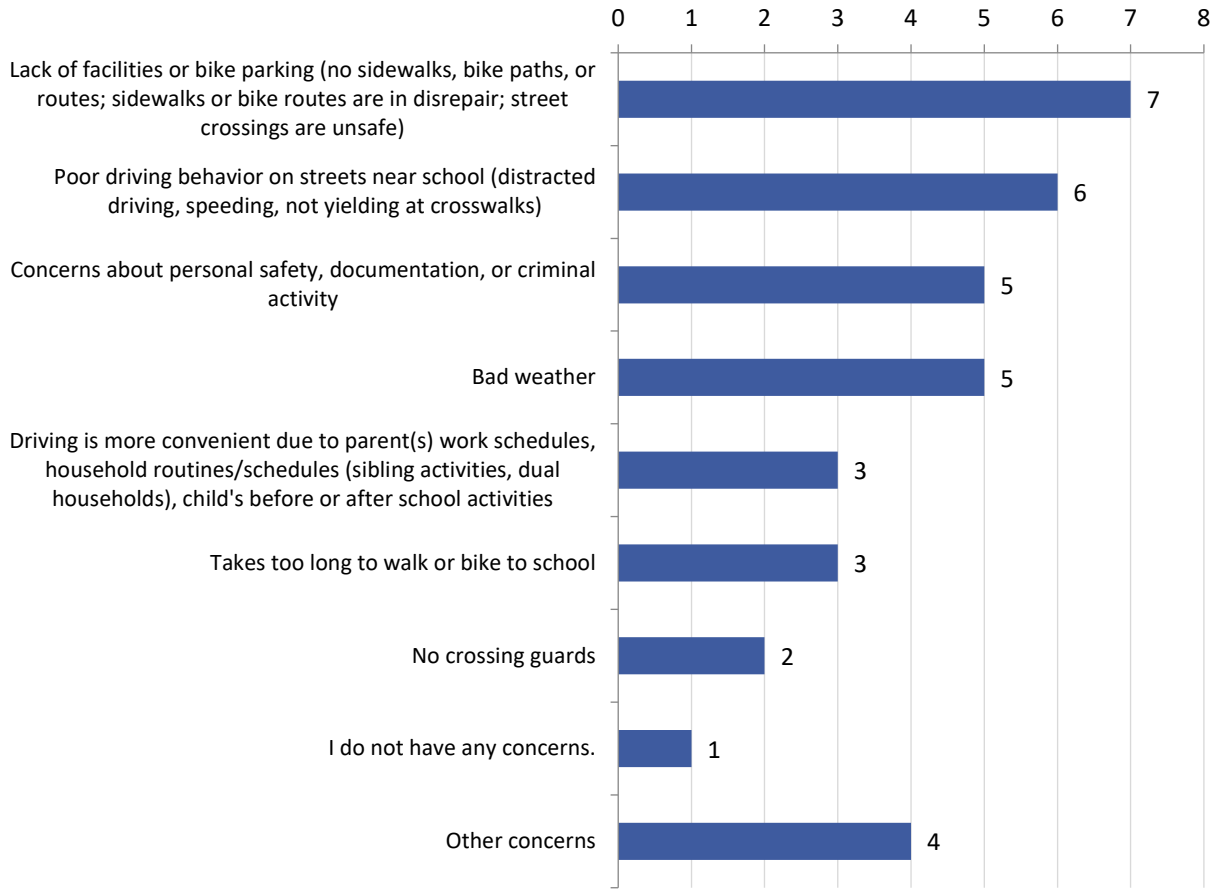
Figure 5. Do You Allow This Student to Travel to School in the Following Ways?, 2022 Caregiver Survey



While caregivers reported varying concerns that limit their student's ability to walk or bike to school, some were more commonly expressed than others (see Figure 6). Many surveyed caregivers faced barriers:

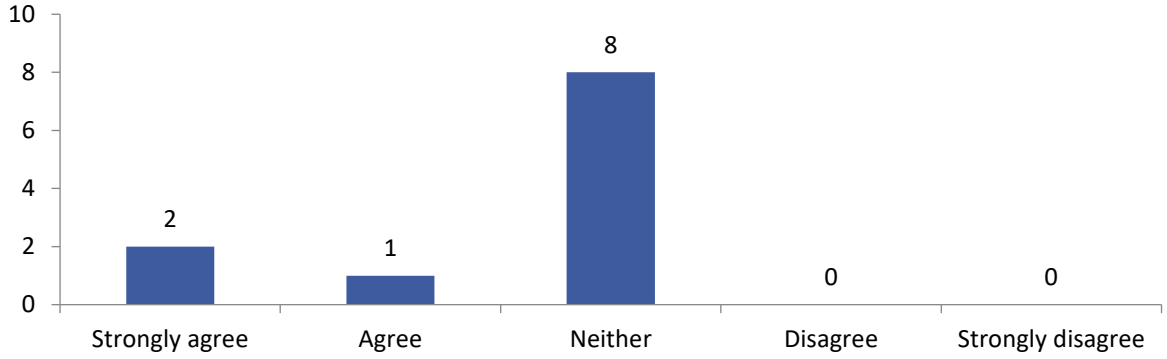
- Lack of facilities or bike parking
- Poor driver behavior
- Bad weather
- Concerns about safety, documentation, or criminal activity
- Other concerns

Figure 6. What Concerns Limit Your Student's Ability to Walk or Bike to/from School?, 2022 Caregiver Survey



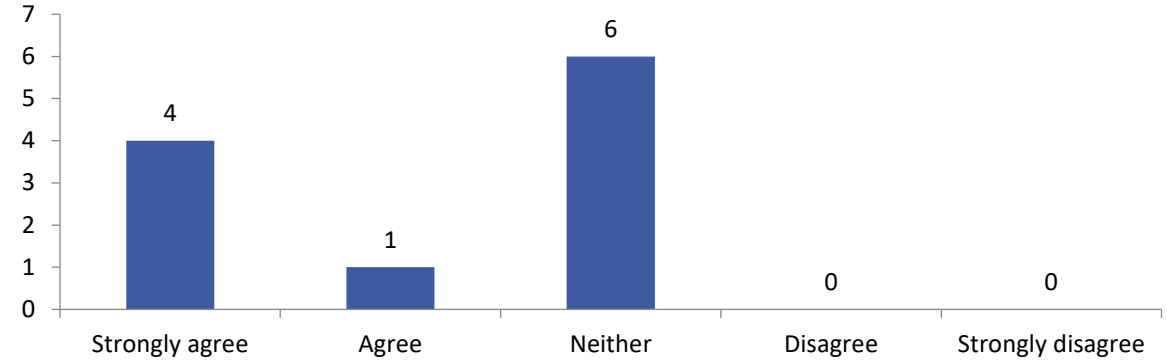
Only three caregiver respondents surveyed indicated that Powers Elementary encouraged walking and biking to school. However, eight felt that Powers Elementary neither encouraged nor discouraged students from walking and biking to school at the time of the survey. None of the respondents characterized the school as discouraging walking and biking (see Figure 7).

Figure 7. Agree/Disagree: Walking/Biking to/from School Is Encouraged by My Student's School, 2022 Caregiver Survey



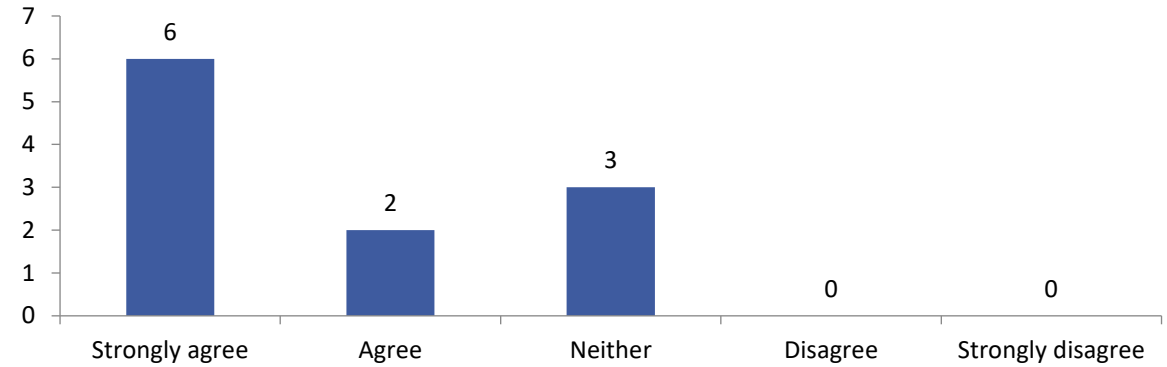
At the time of the survey, five caregivers agreed that walking or biking to school would be a fun activity for their students, while none believed the activity would be boring. An additional six were neutral or unsure on whether their student would enjoy walking and biking to school (Figure 8).

Figure 8. Agree/Disagree: Walking/Biking to/from School Is Fun for My Student, 2022 Caregiver Survey



A majority of caregivers recognized the health benefits of active transportation, with eight agreeing that walking or biking to school would be healthy for their student. An additional three were neutral regarding the health benefits of walking and biking, none felt that the activities would be unhealthy for their student (see Figure 9).

Figure 9. Agree/Disagree: Walking/Biking to/from School Is Healthy for My Student, 2022 Caregiver Survey



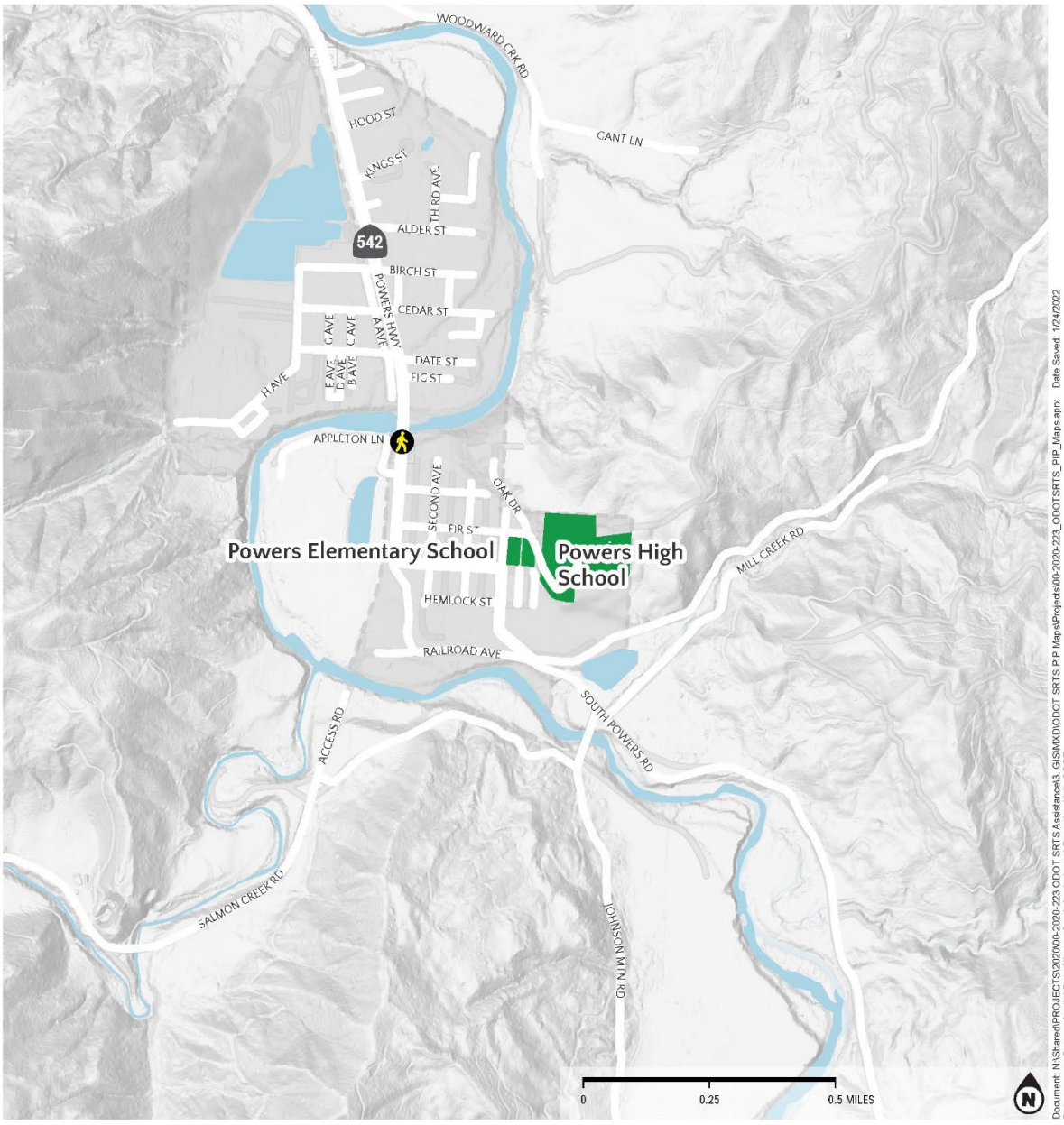
Crash Data

DATE COLLECTED:	2014-2018
DATA COLLECTION PROCESS:	Crash data included in this report originates from relevant roadway jurisdictions, as well as the ODOT SRTS Web Map Application between the years 2014-2018. This analysis does not determine whether the grant intervention *caused* any change in the occurrence of crashes, due to small sample size. Additionally, due to insufficient mode split data to calculate crash *rates*, this report offers a count and description of reported incidents.
NUMBER OF REPORTED CRASHES INVOLVING BIKES AND PEDESTRIANS WITHIN ONE MILE OF SCHOOL:	Between 2014 and 2018, 1 crash involving a bicyclist or pedestrian were reported within one mile of the school.
TIME OF REPORTED CRASHES INVOLVING BIKES AND PEDESTRIANS WITHIN ONE MILE OF SCHOOL*:	The reported crash occurred on July 7th, 2018. A vehicle struck a person walking along the Highway 542 bridge in Powers between 3 – 4 pm in the afternoon. ** For these analyses, school commuting hours are defined as 6 AM to 9 PM.*
NUMBER OF REPORTED INJURIES BY SEVERITY WITHIN ONE MILE OF THE SCHOOL:	The one reported crash resulted in a non-fatal pedestrian injury. Figure 10 illustrates the location of the crashes by type and injury severity.
ADDITIONAL CRASH DATA CONSIDERATIONS:	N/A

Notes on Community Context or Other Relevant Information:

None.

Figure 10: Powers Elementary School Bicycle & Pedestrian Collisions (2014-2018)



COLLISIONS WITH PEOPLE WALKING AND BIKING 2014-18

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Pedestrian Collisions
- Pedestrian Injury
- 2 or more Pedestrian Injuries
- Pedestrian Fatality

Bicyclist Collisions
- Bicyclist Injury
- 2 or more Bicyclist Injuries
- Bicyclist Fatality

- Railroad
- School Property
- Parks
- Water
- City Boundary

Follow-Up Data Collection Plan

Timeline

Post-grant field visits to collect follow-up data will be scheduled to take place following the completion of each grant intervention. The City of Powers estimates the project will be completed by September 2022. Project elements and timeline may change due to increasing construction costs.

Follow-Up Data Collection Process

METHOD	PLANNED AT THIS SITE?	TARGET SAMPLE SIZE	TARGET FIELD WORK DATE
STUDENT HAND TALLIES:	Yes	At least 2 classrooms per grade per school	Spring 2023 (assuming project completion)
CAREGIVER SURVEYS:	Yes	At least 30 caregivers per school	Spring 2023 (assuming project completion)
CAREGIVER FOCUS GROUPS:	Yes	4-10 caregivers	Spring 2023 (assuming project completion)
STAFF SURVEYS:	Yes	1-3 school staff and administration	Spring 2023 (assuming project completion)
COMMUNITY SURVEYS:	Yes	At least 20 community members	Spring 2023 (assuming project completion)
CRASH DATA:	TBD	N/A	(2023-2027 will likely be available in 2030)
OTHER:	None	N/A	N/A

Appendix A. Final Report DRAFT Outline

Note: The following Final Report outline is subject to change.

Chapter 1. Introduction

- Description of SRTS Construction Grant Program
- Description of Final Report purpose and contents

SUMMARY OF FUNDED INFRASTRUCTURE IMPROVEMENTS

- Project description
- Map of improvements
- Project timeline

BACKGROUND

- School demographics
- Summary of Non-Infrastructure SRTS Work
- Place Type

Chapter 2. Data Collection and Results

HAND TALLY DATA

- Data Collection Methods
- Change in walking and biking rates

CAREGIVER SURVEY DATA

- Data Collection Methods
- Change in mode split by distance from school
- Change in barriers to walking and biking
- Change in perceptions of walking and biking
- Other observations

FOCUS GROUPS

- Data Collection Methods
- Change in barriers to walking and biking
- Change in perceptions of walking and biking

CRASH DATA

- Data included in analysis
- Change in crash data (*If available, otherwise this will provide updated baseline crash data from ODOT)*

Chapter 3. Findings

- Impact of Infrastructure improvements on mode split
- Impact of Infrastructure Improvements on Access to Safe Infrastructure
- Impact of improvements on safety/perception of safety
- Impact of infrastructure improvements on Program lifespan/partnerships
- Impact of infrastructure improvements on equity
- Other Findings
- Next Steps and Recommendations

Appendix B. Competitive SRTS Infrastructure Grant Funded Project Map

Figure 11a. Powers Elementary Competitive SRTS Infrastructure Improvement Recommendations

Legend

Proposed Improvements

- Crosswalk Improvement
- Sidewalk Improvement
- Asphalt w/ Ped Improvements
- Curb Ramp
- Bike Parking
- S1-1, W16-9P
- S1-1, W16-7P
- W11-2, W16-9P
- W11-2, W16-7P
- S4-3P, R2-1, S4-2P
- S5-3
- One-Way with S4-1P, S4-6P
- R1-6c

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Map produced Nov 2019

Figure 12b. Powers Elementary Competitive SRTS Infrastructure Improvement Recommendations

Powers School District

Improvement Recommendations

SafeRoutes
Oregon Safe Routes To School

1 **Powers Elementary School Grounds**
a. Add additional bike parking and replace old racks with racks that provide two points of contact with the bicycle frame. Consider fencing, covered bike parking, and lighting to provide additional security and shelter for bikes.

2 **Railroad Avenue/1st Avenue**
a. Enhance safety and comfort for students traveling north of the Coquille River. Options include:
Option 1: Widen asphalt along east side of highway from Fig St to the County Park entrance and include buffer to create a dedicated walking area, such as striping, or physical separation such as flexible bollards. Relocation of utility poles may be required.
Option 2: Construct sidewalk with curb and gutter along east side of highway from Fig St to Alder St. Relocation of utility poles may be required.
Option 3: Pave existing soft surface trail along west side of highway from County Park and extend to north side of bridge. If the paved path extension is aligned directly adjacent to the street south of W Date St, include buffer to create a dedicated walking area, such as striping, or physical separation such as flexible bollards. Install paved connections between the trail and the west side of Highway 542 at Alder St and King St.
b. Remove School Speed Limit Assemblies north and south of bridge along highway. Incorporate Speed Limit Assemblies (S4-3P, R2-1, S4-2P) on Fir St and Poplar St facing eastbound traffic 500 ft in advance of Powers Elementary School. Supplement relocated School Speed Limit Assemblies with 'End School Speed Limit' signs (S5-3) on the opposite side of the road (westbound).
c. Remove existing marked crosswalks and crossing associated signage on the north and south side of the bridge. Construct a high visibility marked crosswalk at the intersection of Railroad Ave at Date St. Further investigation will be required to determine the appropriate location of the crossing. Install Pedestrian Crossing (W11-2 with W16-7P) and Pedestrian Advance Crossing (W11-2 with W16-9P) Assemblies in both directions. Install in-street signage reminding drivers to stop for pedestrians in crosswalk per state law (R1-6c) for both the northbound and southbound approaches of the crosswalk.
d. Work with City leadership and residents along the east side of Railroad Ave to interpret and enforce city code to create an unobstructed and safe route for students to walk along the sidewalk within the right-of-way.

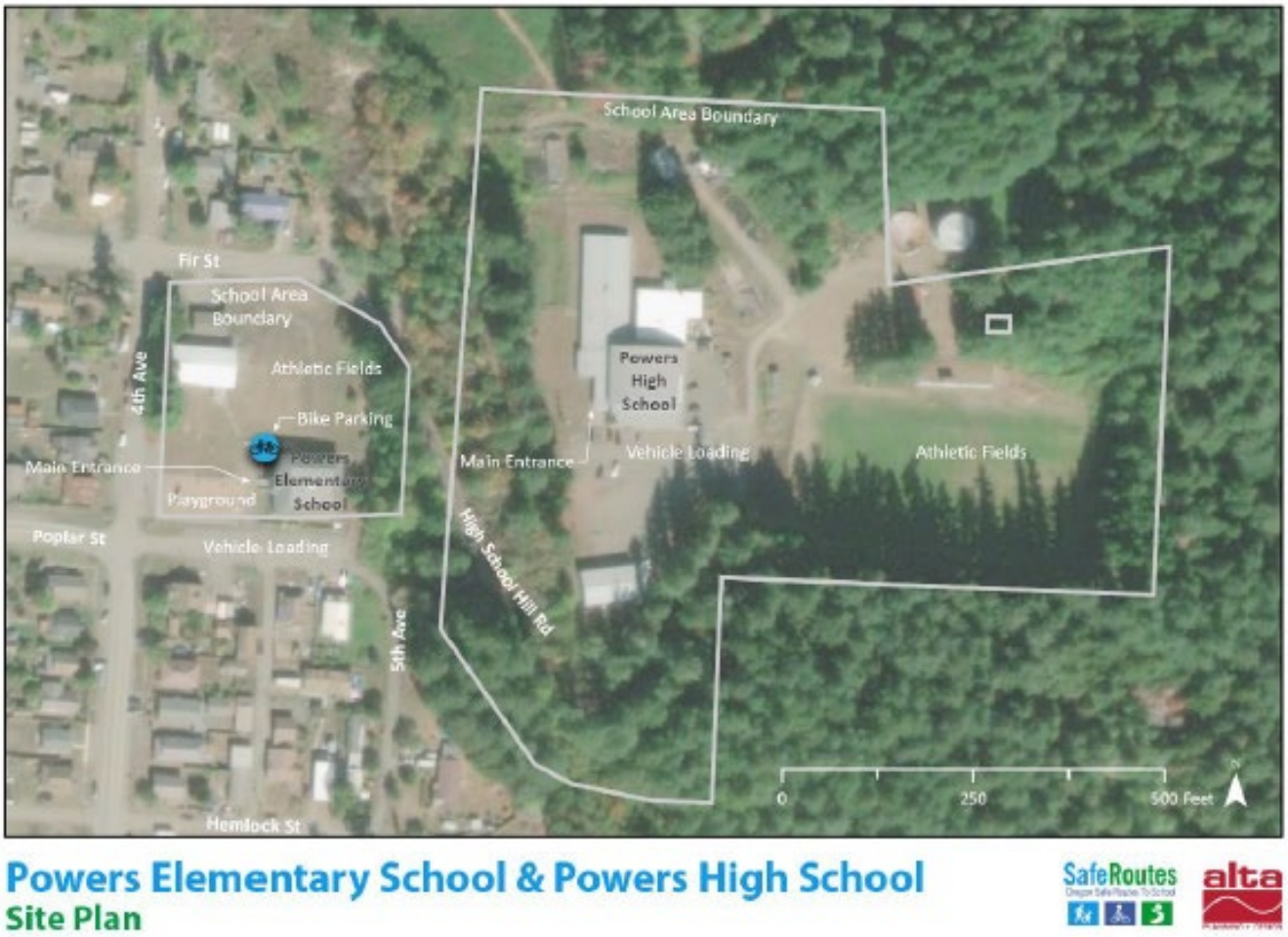
3 **Fir Street**
a. Construct a high visibility marked crosswalk and curb ramps across the east side of the intersection of Fir St at 1st Ave.
b. Reconstruct damaged sidewalk and fill in sidewalk gaps along the south side of Fir St between 1st Ave and 4th Ave.
c. Construct a high visibility marked crosswalk and curb ramps across the south side of the intersection of Fir St at 4th Ave.
d. Work with City leadership and residents along the north side of Fir St to interpret and enforce city code to create an unobstructed and safe route for students to walk along the sidewalk within the right-of-way.

4 **Poplar Street**
a. Remove existing speed limit sign and replace with School Speed Limit Assembly (S4-3P, R2-1, S4-2P).
b.Replace existing signage at the entrance to the school parking lot with ONE WAY TRAFFIC ONLY 7:30-8:30 AM 2:30-3:30 PM MON-FRI (S4-1P with S4-6P). Install signage to direct users to the preferred vehicle loading route (South on 4th Ave to 5th Ave, east on 5th Ave to loop north onto Poplar St).
c. Construct sidewalk along east side of 1st Ave between Fir St and Poplar St.
d. Reconstruct damaged sidewalk and fill in sidewalk gaps on north side of Poplar St between 1st Ave and 4th Ave.
e. Construct a high visibility marked crosswalk and curb ramps on the north side of the intersection of Poplar St at 4th Ave. Consider establishing a 4-way stop at Poplar St and 4th Ave, including curb ramps and high visibility crosswalks on all sides.

5 **4th Avenue**
a. Construct asphalt path adjacent to existing trees to align with existing sidewalk segments on east side of street between Fir St and Poplar St.

6 **High School Hill Road**
a. Construct asphalt path adjacent to existing trees to align with existing sidewalk segments on east side of street between Fir St and Poplar St.
b. Construct an asphalt path on the north side of Fir St between 4th Ave and the trail junction.
c. Construct a high visibility marked crosswalk and School Crossing Assembly (S1-1 with W16-7P) across High School Hill Rd at the point that the trail crosses the street onto Elementary School grounds. Install School Advance Crossing Assembly (S1-1 with W16-9P).
d. Address safety concerns along trail. Consider installing additional lighting, construct/reinforce stairs, address seasonal flooding and uneven terrain.

Figure 12. Powers Elementary School & Powers High School Site Plan Map



Appendix C. Access to SRTS Detailed Methodology

Purpose

The access map analysis was designed to estimate the number of students with new or significantly improved access to school upon the implementation of a proposed walking or biking facility. While determining the number of students who benefit from a proposed project is not an exact science, this analysis provides a common approach that utilizes school district boundaries, census population data and local zoning codes to generate rough estimates. These estimates lend greater insight into the impact of a particular Safe Routes to School project, allowing facility improvements to be compared and thus aid in prioritizing investments. This memo outlines the data sources, methods, and assumptions that inform the access map analysis described in this report.

Data Sources

Three primary data sources were used in this analysis in conjunction with the information provided in each project application:

Name	Source
American Community Survey (ACS) Population Estimates	US Census Bureau
Oregon School District Boundaries	Oregon Department of Education
2017 Oregon Statewide Zoning Map	Oregon Department of Land Conservation and Development

Methods

The analysis establishes two geographical areas in which census block population data are apportioned to: 1) the school area and 2) the access area. The school area is defined as the area that is within a one-mile radius of the applicant school or within the enrollment boundary, whichever is closer. This area covers residents within reasonable walking or biking distance of the school. The access area is the area that covers all residents who would experience new or significantly improved access to school upon the implementation of the proposed walking or biking facility.

Once both of these areas were established, the consultant team identified the census blocks that intersect each. We then apportioned the population data from the census blocks to the school area and the access area, based on the relative coverage of each census block. To account for varying residential densities in each census block, we used residential zoning data to determine the proportion of the population that should be attributed to the school area and access area.

After the estimated populations of both the school area and the access area are calculated, the local jurisdiction's youth rate is applied to each to get the number of people ages 5-17 in those areas, which we refer to as the "school age population." Finally, the school age populations of the access area and the school area are compared. The percentage of school age students with new or improved access to school represents

the proportion of students impacted by the project out of all the students in the school area who could reasonably walk or bike to school.

Defining the Access Area

The boundary of the school area is readily calculable using GIS and the rules described above. By contrast, the access area boundary was determined manually based on the project description and professional judgement of impact. While this method inherently includes subjective judgement, the high variability and nuance in the transportation context surrounding the proposed project makes this method more suitable for determining the residential areas apportioned that would benefit from its implementation than a purely GIS-based workflow. The following assumptions and rules of thumb were adopted in order to make the assessment of the access areas as uniform as possible:

1. The analysis assumes people are willing to "walk around the block" half the distance of their street in the opposite direction of school in order to utilize a safe path to school.
2. The analysis assumes that Google Earth street view imagery is up to date, as this was used to determine sidewalk connectivity and condition, which informed the access areas.
3. Places without sidewalks, particularly in small towns, are considered walkable if the street is narrow, residential, and designed for a low volume of traffic (i.e., lacks a centerline)
4. The access areas consider ADA accessibility and account for those in wheelchairs or other mobility devices.
5. The access areas may include residents who have to walk more than one mile to school, based on the available street network.
6. Even if some residents may have already had access to school, they might be included in the access area if the proposed project would significantly improve their access to school.

Apportioning Census Population Data

As described above, census population data was apportioned to both the school area and the access area based on how much a census block covered them. However, to account for varying population densities across census blocks, residential zones in the census blocks were identified.

The statewide zoning data provided by the Oregon Department of Land Conservation and Development groups residential zones across all jurisdictions in the state into 13 categories of increasing density. Our team further consolidated these categories into just 4: Low Density, Medium-Low Density, Medium-High Density, and High Density. We then weighted these categories by their relative density compared to Low Density:

Residential Zone Group	Population Density Factor
Low Density	1
Medium-Low Density	2
Medium-High Density	5

Residential Zone Group	Population Density Factor
High Density	15

These factors serve to more accurately distribute the population data across the residential zones within the census block. In other words, if the census block contained only Low Density residential zones, then the population of any given area within that census block is equal to the proportion of the census block that that area covers. By contrast, if a census block contains Low Density residential zones and High Density zones, we attribute 15 times the population of the census block to the High Density zones than the Low Density zones. The density factors were determined using the typical number of dwellings per acre in each zone.

The analysis uses these four zoning categories to identify the spatial distribution of the population of the census block and apportion it to the overlaying school area and access areas based on how much those areas cover the residential zones of the census block.

General Assumptions

- This analysis assumes that the Oregon Statewide Zoning code reflects the actual residential densities of the current built environment.
- Areas that were zoned for housing that had no development on them according to the latest satellite imagery (and therefore significantly impacted the output) were removed from the analysis in order to improve the accuracy of the estimates. This was only utilized in a few low-population jurisdictions.
- For rural schools with no local residential zoning reported, the population of the appropriate block group is assumed to be evenly distributed across the school zone and the percentage of people served is equal to the percentage of the school zone covered by the new access area.
- This analysis assumes that families are evenly distributed between each of the four residential zone groups.
- The reported number of school-age students includes all students ages 5-17, not just elementary or middle school students. Thus, the number of students who actually attend the applicant school is likely much lower than the reported figure.