

#### **IV. Application Narrative:**

**(A) Project Summary:** This grant will create a sustainable design and construction project for Canby's 100 most at-risk 7-12 students located at the Ackerman Academies. Students along with their teachers in science/engineering (environmental sustainability), math (building design), social studies (ethical issues surrounding sustainable learning) and language arts (opinion papers and advertising) will partner with environmental design consultants (Portland Alternative Dwellings), sustainable construction representatives (Habitat for Humanity), software developers (Autodesk) and a general contractor to design and build a "Tiny House" for sale. Proceeds from the house sale will fund the next improved design house along with excess staffing costs associated with the program. For most alternative high school students, applicable learning is critical. This project will involve all students at the Ackerman Academies in a real life application connecting classroom learning to both future careers and social consciousness. Once developed, the model will be shared with other South-Metro Salem STEM Partnership districts and other alternative schools in an effort to start an annual student built Tiny Home show.

**(B) Project Rational:** In the area of STEM, the City of Canby has a significant manufacturing industry. Some of the most signification products created in Canby are steel, steel tanks, precision springs, automotive batteries, medical supplies, precision machining, large-scale pumps, and competition swimming pool accessories. Many of these companies are currently seeking employees for their technical positions.

Over the last decade, Canby has seen a significant increase in both our Hispanic population (from 13% in 2000 to 27% in 2013 with 15% LEP) as well as our students in poverty (from 19% in 2000 to 43% in 2013). Canby's latest data indicates that over 8% of our students are currently considered homeless.

The Ackerman Academies are primarily comprised of underserved students in grades 7-12. The primary categories present are Hispanics (35%), Limited English Proficiency (10%), Students with Disabilities (18%), homeless students (20%), and students living in poverty (70%). Additionally, most of these students are working to overcome significant past trauma and emotional issues. Even within our underserved populations, these are the individual students least likely to graduate without significant interventions and innovative opportunities.

Prior to the creation of the Academies, these students were either sent to out-of-district placements or became dropouts. Few if any of these students consider going to college when they enter the Academies. Through an integrated curriculum approach, we will expand students' understanding of the wide variety of technical skills needed in building design and construction. The sustainability, marketing, customer service and environmental discussions will further expand this exposure.

Canby High School has a comprehensive program providing students with a wide variety of STEM and CTE opportunities. However, due to their lack of academic success in a large comprehensive high school, the Ackerman Academies students are not able to access most of these programs (a staggered schedule allows some Ackerman students to take one additional class at CHS per term). This grant will provide the cornerstone to introduce science and engineering into the Academies curriculum. Connecting a variety of academic subjects to the tangible construction project will enhance understanding and overall learning for students (such as social issues or marketing). For students not interested in the technical side of the home design, the construction experience may help them find work in the reemerging home construction industry.

With Canby not purchasing any full curriculum adoptions since 2003, our focus for the past three years has been to realign and supplement our past instructional materials by department and grade level to address either Oregon State or Common Core State Standards. This has been the case for all courses at Ackerman. In its three years of existence, teachers have continually modified courses to best meet individual student needs while improving how standards are addressed. Using the program development time from the grant, teachers will ensure connection of CCSS to the Tiny House design and construction for each content area at key times throughout the school year demonstrating the importance of a variety of content areas.

**(C) Project Plan:** Most Ackerman students are very intelligent but their life experiences have prevented them from engaging in and benefiting from education (this is the core of Canby's underserved population). They have not felt connected to the educational system or society in general. Last year, Ackerman created two similar smaller-scale cross-curricular integrated program opportunities around music and art where we saw unimaginable student engagement and ownership. Initial surveys of students show that they will connect to the Tiny House program in a similar manner. In an age where the average size of a garage in a new house is larger than the average size of a 1950's home, they embrace it as being counter-culture. To ensure buy-in, we understand it is critical for our students to participate in the development of all aspects of this program including the primary social improvement focus for each year.

The two primary project objectives are: 1) Improve Ackerman student attitudes and performance in science/engineering and math through applied curriculum and a social issues hook, and 2) Create a viable alternative education opportunity within Canby independent of the comprehensive high school thereby reducing district dropout and non-completer rates. These will be accomplished according to the following project plan (Appendix C) and assessment.

- With students, develop Construction Plan and Timeline. ECD: April 2014 (to include primary areas for year 1 research such as energy independence, environmental impact, construction code development, homelessness, etc.)
- Deployment of classroom iPads for project development. ECD May 2014
- With students, identify initial improvement “Focus Area” for the first Tiny House. ECD: May 2014
- With students, identify the cross-curricular connections points to be addressed in Language Arts, Social Studies, and Math. ECD: May 2014
- Develop Science/Engineering Class Scope and Sequence to align with design and environmental issues of the house project. ECD: June 2014
- Coordinate with Autodesk to identify and set up specific design software on new computers. ECD June 2014
- Develop Construction Class Scope and Sequence to align with CHS dual credit class. ECD: June 2014
- Work with PCC to explore viability of dual credit designation. ECD: TBD
- With students, research, identify and purchase tools needed for construction. ECD: Sept. 2014
- Complete design of initial Tiny House (with consultant assistance). ECD: Oct 2014
- Survey students and staff to determine needed program improvements and future focus. ECD April 2015
- Sell completed house and use sale advertising as marketing (along with assistance from Habitat for Humanity) to contract with next buyer for “customized” second Tiny House. ECD: June 2015

Adding science/engineering and CTE will fill out Ackerman curriculum so that students can complete all graduation requirements there. This will improve independence and school culture and remove current barriers to more underachieving students taking advantage of the Academies.

**(D) Evaluation Plan:** Key parameters of this program that will be monitored and evaluated are:

- Home Production Timeline: First house completed by June 2015 with detailed timeline milestones developed and monitored. This establishes model for annual program.
- Student Math & Science/Engineering credits earned: Current credit accumulation rates per student will be compared to future annual credit accumulation per student in Math and Science/Engineering for all Ackerman students.
- After-School participation in construction: The numbers of students enrolling in the extended day construction course will be monitored and reported. This course will allow students to take more than a full class load, which is critical for credit deficient students. Canby will explore the possibility of making the class dual credit through PCC.
- Student Attitudes toward Math & Science/Engineering: Surveys will be administered annually starting in the spring of 2014. Along with the student surveys, staff will be surveyed on their observations of student attitudes toward math and science/engineering classes.
- School enrollment trends for the school and by class will be tracked and reported.
- Student exit interviews for students leaving to determine reasons (when possible due to nature of students). This will include an annual exit interview with graduates to determine their future plans.

**(E) Sustainability Plan 5%:** In anticipation of this grant and due to continued program enrollment growth; a half-time science/engineering position is being added to the Ackerman

Academies in February 2013. The development of her curriculum will be aligned with this grant focus if approved. With grant approval, this position will be expanded to full time. Canby's past work with instructional technology will support student use of iPads and computers in the design aspect. This will be coordinated at the district level utilizing existing Canby High School expertise.

The grant provides funds to purchase tools and materials for the first house construction. The profits from selling this house will more than cover the costs of materials for future homes and tool replacement. Funds for curriculum and program development will not be needed after the first year. The ongoing expansion of the science/engineering position to full time will be covered through a combination of profits from home sales and planned continued student enrollment growth at Ackerman. Therefore, starting in the fall of 2015, the program will be self-supporting.

The current Canby High School construction cluster class provides dual credit through Portland Community College. During development, we will involve the construction cluster class CTE certified teacher to create alignment in an attempt to qualify this program for PCC credit. Once developed, this program will be easily replicated and will be shared with other South-Metro Salem STEM Partnership members. Autodesk (a South-Metro Salem STEM Partnership business) has agreed to donate all needed design software as well as explore how their employees can assist in the design and manufacture of the Tiny Houses.