APPLICATION COVER PAGE
(Please Print or Type – All Fields Must Be Completed)

Project Name:
Amount Requested: $496,266

Project Director: Andy Byerley, K-12 STEM TOSA		
District, School or ESD: Newberg School District 29j (#2254)		
Address: 714 E 6		
City: Newberg	State: OR	Zip: 97132
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Grant Fiscal Agent Contact: Gwen Gardner, CFO		
District, Charter School or ESD: Newberg School District 29j (#2254)		
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Superintendent: Dr. Kym LeBlanc-Esparza		
District or ESD: Newberg School District 29j (#2254)		
Address: 714 E 6		
City: Newberg	State: OR	Zip: 97132
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	Participating High School or Middle School Name (add additional rows as needed)	Lead Contact Name	Grade Levels	Student Enrollment
	Chehalem Valley M.S.	Jon Franco, Principal	6-8	642
	Mountain View M.S.	Wayne Strong, Principal	6-8	559

	Newberg High School	Dan Malone, Principal Blue School & CTE Coordinator	9-12	1508

Please check all that apply:

___ This project directly involves Career and Technical Student Organizations

_X_ This project has a clear connection to STEM

Please note page of proposal that describes this relationship. Page: 1-7, 9, 12-13

Purpose and Scope of Project

In 2009 Newberg School District set a district goal to "…enhance student learning and development through the arts, professional and technical opportunities, extra-curricular activities, and other enrichment experiences." The district's "CTE 21" project will not only help to meet this goal, but is also an important pathway to 21st Century learning, career, post-secondary education, and citizenship, developing a more robust career and technical education program in the district, and improving our ability to meet workforce needs in our community.

Through "CTE 21," Newberg School District will:

- ➢ Increase participation in CTE pathways at an earlier age through Project Lead The Way (PLTW)-inspired after school programming for middle school students;
- ➢ Offer introductory, basic, and capstone engineering courses for high school students;
- ➢ Increase rigor through innovative engineering curriculum from nationally-recognized Project Lead The Way;
- ➢ Improve teacher knowledge and practice through professional development, work-place site visits, content resources, and instructional guidance from a dedicated STEM Teacher on Special Assignment (TOSA);

- ➢ Increase relevance to academic content and engage students through internships, mentorships, job shadows, site visits and classroom speakers;
- ➢ Improve and sustain partnerships with business, industry, labor and educators through an advisory group and ongoing collaboration with teachers and a new School-to-Business Specialist.

Innovation

Newberg's "CTE 21" project is innovative in the inclusion of middle school students in the Project Lead The Way (PLTW) program. Involving 6th – 8th grade students, enticing them with a series of after school opportunities that build interest in the district's established CTE programs as well as the new engineering program, and actively recruiting for and involving them in PLTW and the exploration of CTE-centered projects is at the heart of the "CTE 21" project. By the time these students reach high school, they will have had multiple opportunities to explore many facets of STEM education and the CTE opportunities the district offers.

With bond funding, the district completed the construction of STEM classrooms at each of the middle schools last summer and adopted new STEM and Science curriculum. These projects were central to the district's bond, demonstrating the community's support of district goals, as well as a commitment to 21st Century learning and STEM education. With the addition of the "CTE 21" project, Newberg's middle school students will have many opportunities to experience STEM education, both during the regular school day and through the "CTE 21" summer program.

In addition to including middle school students in the project, "CTE 21" is innovative in that it creates direct pathways to career and higher education with PLTW, the ad-

ditional engineering courses, and the active involvement of local manufacturing businesses and Portland Community College (PCC) – Newberg campus dual credit course offerings. The support and opportunities provided by PCC and local businesses allow students to gain the knowledge and experience required to succeed in a global economy while building a workforce to meet local needs.

Integration

Newberg's "CTE 21" project creates connections throughout the district, local community, and higher education. Middle school students gain exposure to the district's established CTE programs, the new engineering courses, STEM-focused education, and future career options. High school students gain a solid foundation in Engineering, career experience and paths, higher education, STEM-focused education, community connections and resources, as well as focused attention to Oregon Diploma requirements in all core academic areas and Essential Skills. Connecting CTE experiences and opportunities beyond high school with core academics highlights the importance of a strong 21st Century skill foundation to all students.

This project will also strengthen and expand existing partnerships and establish new partnerships within the local community, providing more opportunities for students to connect with the world around them. Partners will be a resource for teachers and students, coming into the classroom to offer expertise and real-world experiences, bringing learners to the workplace, and strengthening the bond between education, community, and career.

Outside this project, Newberg is committed to creating a K-12 STEM education focus. The construction of STEM classrooms at the middle schools, inclusion of middle

school students in PLTW, and the expansion of the high school CTE offerings is the beginning of this K-12 focus. One of Newberg's elementary schools with a strong history of project-based learning has adopted a STEM-based science curriculum with the intention of becoming a STEM-focused K-5 option for students. This will lay the foundation for STEM education district wide and beyond, as well as strengthening core academics and Essential Skills well before middle and high school.

Expansion and Growth

Currently, Newberg's CTE program includes a well-rounded collection of programs that challenge students in the areas of Robotics, Agriculture, Marketing, Culinary, and Computer Programming. The district has many established and valuable partnerships in the community for these programs. Students have been very successful in regional, statewide, and national competitions in current CTE areas, but participation is not optimal and tends to fade by 11th grade. Expanding the CTE offerings to include PLTW, foundation engineering courses, additional workforce-based learning experience, related college dual credit opportunities, and most importantly, involving middle school students, will expand and grow Newberg's CTE program. The district is committed to expanding the CTE program in all directions: forward to beyond high school, pre-high school to include middle school students, and laterally with additional partners and opportunities for students to experience higher education as well as the world beyond academia.

The district is adopting an aggressive timeline to bring PLTW-inspired after school projects on board in the fall of 2014 introducing 120 middle school students to CTE opportunities at the high school throughout the 2014-15 school year. By the sum-

mer of 2015, Newberg will expand the after school program to include a series of community-based summer camps to serve 80 additional middle school students, growing not only the out-of-school CTE introduction program, but also the high school CTE programs as middle school students opt to continue their CTE exploration in high school. Ultimately, the district's goal is to increase not only the number of students participating in CTE at the high school level, but also the number of students graduating with college credit for CTE coursework and experience in student internships, mentorships, and career/college placements through CTE programs – a group of 21st Century global citizens ready for college and/or career.

Experiential Learning

Through Newberg's established CTE programs and the new PLTW engineering-focused program, students will engage in hands-on learning beginning with the middle school out-of-school camps. These project-based camps are designed with the idea that students will be exploring a specific CTE program in a STEM context. The projects will be real-world and problem-based, allowing students to collaborate, use critical thinking and analysis skills, strengthen core academic skills, and experience career-related situations guided by the PLTW program, district teachers, and business and local partners. The out-of-school camps will engage middle school students in true 21st Century global learning, enticing them to later participate in CTE at the high school level and further their career and college exploration.

Partnership expansion provides all students with increased opportunity for real-world experience through internships, mentorships, site visits, and job shadows within the local business community. Partners will also provide in-class demonstrations and

hands-on problem solving opportunities in all CTE program areas at the high school level, as well as serve as resources for teachers in developing real-world curriculum. Opportunities with PCC for dual credit coursework will include training in the trades and technology, providing another avenue for problem-based real-world learning for CTE participants.

Outside this project, the new STEM classrooms at the middle schools provide pre-CTE experience and hand-on learning opportunities, strengthening students' STEM skills as well as Essential Skills necessary to 21st Century learning. The planned elementary level STEM-based curriculum will bolster this skill foundation, eventually incorporating 21st Century and hands-on project-based learning K-12.

PART 4 – REQUIRED GRANT NARRATIVE

PROJECT DESCRIPTION

A. Project Outcomes and Progress Markers

The "CTE 21" project will achieve a total of eleven outcomes across the CTE Revitalization Grant's five broad areas. The project's main focus areas are to build the current CTE program through the addition of an Engineering CTE strand using PLTW; revitalize and expand CTSOs; bolster the high school CTE program by engaging middle school students in CTE programs through after school PLTW-inspired camps; to expand partnerships, addressing local workforce needs; to introduce the BSCS "Oregon Champions for STEM" program in the district; and to support instruction throughout the district through a STEM TOSA to help develop STEM-based projects and curriculum, and model effective STEM instruction, especially at the secondary level.

The following chart outlines each of these outcomes, along with the related measure and progress marker.

Newberg High School CTE Revitalization Project Project Outcomes and Progress Markers		
Improved student access to CTE programs of study		
Outcome	Measure	Progress markers and outcomes
Increase the number of middle school students who experience CTE concepts via the out-of-school CTE camps	Number of Middle School students who participate in the out-of-school programs	Baseline: 0 students; *Summer 2013.* 20 students; *Fall 2013* Progress marker: 120 students; *2014-15 school year* Project outcome: 200 total students; *Summer 2015*
Increase the number of CTE courses incoming NHS 9 students forecast for enrollment by 25% per year	Incoming freshman students for enrollment in CTE courses	Baseline: 661 course forecasts; *Fall, 2013* Progress marker: 826 course forecasts; *Fall 2014* Project outcome: 1033 course forecasts; *Fall 2015*
Expand the CTE opportunities by adding engineering courses to the current CTE offerings	Additional courses added to current CTE offerings (PLTW courses)	Baseline: 0 pre-engineering; *Fall 2013* Progress marker: 1 pre-engineering course offered; *Fall 2014* Project outcome: 2 pre-engineering courses offered; *Fall 2015*
Demonstrations/presentations to middle school students of CTE program offerings prior to forecasting for high school courses	Showcase of CTE offerings at end of 1st CTE students present to middle school students	Baseline: 0 presentations; *Jan 2013* Progress marker: CTE showcase and NHS CTE student presentations; *Jan 2014* Project outcome: CTE showcase and NHS CTE student presentations; *end of each 1*
Increased career opportunities		
Outcome	Measure	Progress markers and outcomes
By the spring of 2015, at least 12 NHS students will access an increased career opportunity with local business(es) in a CTE area	Students placed in internships, mentorships, or job shadows	Baseline: 0 students; *Fall 2013* Progress marker: 6 students; *Fall 2014* Project outcome: 12 students; *Spring, 2015*

Expanded career and technical student organizations opportunities by revitalizing existing CTSOs and explore additional CTSOs	Revitalize existing CTSOs and explore additional CTSOs	Baseline: FFA; *Fall 2013* Progress marker: FFA, FBLA, DECA (revitalize); *Fall 2014* Project outcome: FFA, FBLA, DECA, SkillsUSA (new); *Spring 2015*
Increased rigor in technical and academic content aligned to diploma requirements, industry-recognized technical standards such as the Oregon Skill Sets, and employability skills.		
Outcome	Measure	Progress markers
Expand STEM opportunities at the middle school, including the out-of-school camps, to increase rigor	STEM project-based learning through PLTW and increased use of STEM classrooms at middle schools	Baseline: 0 PLTW-related opportunities, initial STEM classroom use and STEM-related clubs (FLL robotics, etc.); *Fall 2013* Progress marker: After school PLTW-inspired opportunities, increased STEM classroom use and STEM-related clubs; *Fall 2014* Project outcome: Expand out-of-school camps to summer 2015, 20 hours of formal professional development for secondary classroom teachers, continued enhancement of STEM lab use; *Fall 2015*
Expand STEM-focused instruction throughout the district through the creation of a 1.0 FTE STEM TOSA to help teachers incorporate STEM across the curriculum, model STEM instruction, and help develop STEM-based projects and curriculum, particularly at the secondary level	Creation of 1.0 FTE STEM TOSA	Baseline: 0.5 FTE STEM & Science TOSA (K-12); *Fall 2013* Progress marker: 1.0 FTE STEM TOSA (K-12); *Fall 2014* Project outcome: 0.5 STEM TOSA (K-5), 20 hours of professional development for secondary teachers, district plan for K-12 STEM programming; *Summer 2015*
Expand STEM-focused instruction throughout the district through the Oregon Champions of STEM program	Implement program with Cohort #1 in the summer of 2014	Baseline: No Oregon Champions of STEM; *Fall 2013* Progress marker: Cohort #1 training; *Summer 2014* Project outcome: Cohort #2 led by trainers from Cohort #1; *Summer 2015*

Improved and sustainable partnerships with business, industry, labor, and educational providers.		
Outcome	Measure	Progress markers
Expand number of partners offering educational, internships, mentorships, site visits, speakers, and job shadow opportunities to NHS students	Number of partners offering educational, internships, mentorships, site visits, speakers, and job shadow opportunities to NHS students	Baseline: 4 businesses; *Fall 2013* Progress marker: 6 businesses; *Fall 2014* Project outcome: 10 businesses; *Fall 2015*
Create and fund a classified position (1.0 FTE) to serve as a business and educational partner liaison between the CTE program and the local business community	Creation of 1.0 FTE School-to-Business Specialist	Baseline: 0 FTE; *Fall 2013* Progress marker: 1.0 FTE; *Jan 2014* Project outcome: 1.0 FTE; *Fall 2015*
Improved ability to meet workforce needs in the region.		
Outcome	Measure	Progress markers
Expanded CTE area offerings providing additional training and experience opportunities for NHS CTE students specifically in the area of engineering	Additional CTE area offerings aligned to workforce needs in region	Baseline: 4 CTE area offerings; *Fall 2013* Progress marker: 5 CTE area offerings; *Fall 2014* Project outcome: 5 CTE area offerings; *Fall 2015*

B. Career and Technical Education Program of Study Design

The “CTE 21” project will both enhance the district’s existing CTE program and develop an additional CTE pre-engineering pathway. Central to both the expansion and development of the district’s CTE program is the use of PLTW at the middle and high school levels. In introducing PLTW engineering design basics at the middle school level in the first week of the after school camps and recruiting middle school students for the high school PLTW Introduction to Engineering Design course, students’ higher education and career opportunities will increase, as will academic rigor, participation in other high school CTE programs, and involvement with local CTE partners. Continuing PLTW as part of a newly developed Engineering CTE program at the high school will

provide additional educational, career, and training opportunities for high school students, access to high wage/high demand jobs with local employers, as well as an increase in the available trained workforce for local businesses, helping the local community and economy.

"CTE 21" programming elements include a series of six six-week middle school after school camps using PLTW basics for the first two weeks to teach the fundamentals of engineering design, followed by four weeks of a problem-based business partner collaboration project. One example of such a project centers around manufacturing. Several of our business partners employ machinists who work with a variety of technology. Our high school currently has a machine shop that is part of an existing CTE program around robotics. This after school course would involve employees from the business partner coming to the high school as well as hosting students at their business to help teach students the skills of machining, from milling to 3D printing, in the context of a relevant and real problem. A key element of the after school program is that students will have the opportunity to work directly with local business partners on their project and will market their product or design solution at the end of the camp session. High school CTE students will serve as camp counselors, increasing the high school students' involvement in CTE and providing the middle school students with peer-led instruction and experience in CTE. These high school students would then be able to recruit for their program, expanding a current CTE pathway, and middle school students would also be recruited for the new PLTW pre-engineering pathway. Other such projects would be designed to introduce middle school students to the full set of CTE program

areas available at the high school: Agriculture, Culinary, Marketing/Business, Computer/ Robotics, and the new area of Engineering.

The PLTW curriculum will be a common component to the middle school after school projects and the high school CTE program, addressing state and national standards, including the new Oregon Science Standards (Next Generation Science Standards). The after school program will be STEM-focused and a project-based learning experience for students who have just completed 6th, 7th, and 8th grade. Implementing the PLTW coursework at the middle school level builds a foundation of CTE experience prior to high school, exposing middle school students to the realm of CTE, career, and higher education possibilities while reinforcing STEM-focused learning. Through this middle school exposure to CTE, participation levels in high school CTE program will increase.

At the high school level, this project offers increased access to CTE programs through the addition of the PLTW Pathway to Engineering strand and through active partnerships with local businesses. The addition of a 1.0 FTE School-to-Business Specialist creates additional opportunities for career and content resources, as well as opportunities to earn college credit and receive practical workplace skill training. Beginning in fall of 2014, teachers will access PLTW training and develop curriculum for the high school Pathway to Engineering program, starting with an Intro to Engineering Design (IED) course. An additional engineering-focused CTE course, Principles of Engineering (POE) will be added in the fall of 2015. Eventually, the engineering CTE program will include a capstone course, such as Aerospace Engineering, Biological Engineering, or Engineering Design and Development. Through the introduction of PLTW as

a pre-engineering pathway and the Oregon Champions for STEM program, designed to bring K-12, higher education, and business partners together to develop a community plan for PK-20 STEM programming, high school CTE students will graduate with advanced STEM-focused skills, ready to pursue advanced training, college education, or enter the workforce with ready skills in a range of high paying/high demand positions within the local community.

Tying the middle and high school CTE experience together is the addition of a 1.0 FTE STEM TOSA at the secondary level. This position will work directly with secondary level teachers in all areas to develop STEM-focused curriculum, model STEM-focused instruction, and bolster the middle and high school CTE programs and instruction. The STEM TOSA will be actively involved in PLTW, both with the middle school after school camps and the high school CTE program, serving as a resource for teachers and students alike. In addition, a STEM focus district wide will be accomplished through the implementation of the Oregon Champions for STEM training through BSCS in Colorado. This 15-month program (per cohort) for K-12 teachers, administrators, higher education partners, and business partners aims to change the culture around teaching and learning STEM with a formalized district wide professional development initiative around STEM. The STEM TOSA will be an active participant and will facilitate the training for a second cohort of participants beginning in the summer of 2015. The training includes the articulation of a foundational college and workforce skill set in STEM for students in any of the 40/40/20 pathways, as well as the development of a district and community vision. This program will also present the opportunity to showcase lessons, units, and experiences to model effective practices for all K-12 teachers.

C. Underserved Students

The district will actively recruit underserved students to both the middle school after school camps and the high school CTE program by connecting with students and their parents. Underserved groups include English Language Learners (ELLs), ethnic minorities, first generation college-going, students with disabilities, economically disadvantaged, and gender in non-traditional areas of study. The communication plan for the project involves the district's Welcome Center (ELL/Migrant Education), Latino Parent Group, school counselors, teachers, and other staff to help connect with and recruit underserved students. The STEM TOSA will help connect with all students by bringing STEM-focused instruction as well as CTE areas of study in to the classroom throughout the secondary grade levels. In addition to communicating with underserved student groups and their parents, the district removes barriers to participation in the middle school after school camps by making them free, selecting students based on a random lottery system, and by providing transportation for all students attending the camp.

D. Diploma Connections

The "CTE 21" project will help all secondary students meet the core academic credit and Essential Skills requirements in the Oregon Diploma. The STEM-focused instruction inherent in the PLTW program and infused in secondary level instruction by the STEM TOSA will boost student skills as well as support career related learning. Within the CTE program, students will have the opportunity to enhance their critical thinking skills and apply technology and teamwork in real-world problem solving projects. The PLTW curriculum addresses the new Oregon Science Standards with a strong engineering design component and several "Science and Engineering Practices" that tie in

with Common Core State Standards. Several of the CTE partners represent global companies, and as such will contribute to students' global literacy and community engagement. Students in the CTE program will graduate ready for higher education and trained to enter the workforce in high paying/high demand local jobs.

E. Sustainability and Communication

The "CTE 21" project will be sustained and communicated to others through the following.

1. Allow leaders to work across conventional boundaries.

The district will empower the STEM TOSA and School-to-Business Specialist to implement the vision of a robust STEM/Engineering pathways program complimented by relevant industry opportunities. In addition, the School-to-Business Specialist will collaborate across K-12 schools and throughout the business community. Leaders will work across the school year and school day boundaries to implement the summer programming for middle school students and workplace internships during or after the school day and year. Lastly, teachers will visit workplaces and invite local business partners into their classrooms to gain a better understanding of local business workplace needs, realize resources available to their classrooms, and to better guide CTE students in their job shadow, mentorship, and internship opportunities.

2. Affirm, recognize and celebrate valuable actions, initiatives, and leadership.

The district will provide professional development opportunities for the STEM TOSA, School-to-Business Specialist and teachers that include PLTW and other related training, the Oregon Champions for STEM program, and visiting/collaborating with existing successful programs in Oregon. Within the district, a CTE educator PLC will be

formed for continued growth and program development. The PLC will involve CTE teachers, the STEM TOSA, and the School-to-Business Specialist. The goals of this PLC will be to increase our CTE pipeline to serve all students in the 40/40/20 vision, hone effective practices, bring coherence to our programming, and provide continual professional development opportunities for teachers and district staff. A recognition program for students and business/industry partners will be established to promote the project. In addition, on-going reporting of program activities, accomplishments, and competitions will help to recognize and celebrate the project and CTE program.

The Oregon Champions for STEM program is designed to create a sustainable plan for STEM and CTE instruction by partnering Newberg teachers and staff with experts from BSCS, a "100Kin10" National Partner. Newberg will work with BSCS to train one cohort of teachers in effective practices in teaching and learning STEM, lesson and unit design, and participate in classroom instructional coaching. The district is committed to training a second cohort during the 2015-16 school year. The focus on STEM will improve instruction in several core content areas, as well as purposefully integrate CTE pathways into each student's academic experience.

3. Use the media to build your profile and a relationship with the public.

The district will continue to work with local and regional media to pitch story ideas around expanded CTE programming, events, and achievements, highlighting the new project and expanded partnerships with local businesses and PCC. The district will also collaborate with and leverage business and industry partner communication channels and networks to communicate program activities, including achievements and the impact on education for Newberg students. Current FFA, Robotics, and Greenhouse CTE

programs in the district have earned highly regarded reputations in the community, among local businesses and industry, as well as across the nation. The district will build on these well-established programs to promote the expanded CTE options and the added middle school component. School and district communication channels will be used to inform and engage parents in CTE program changes and opportunities for students. These include web sites, email listservs, blogs, Twitter, and Facebook. In addition, the district will use school board meetings and community service groups (Rotary, Kiwanis, City Club) as a venue for presentations on the CTE program accomplishments.

4. Change regulations to provide a framework for future action.

The district has a goal to "enhance student learning and development through the arts, professional and technical opportunities, extra-curricular activities and other enrichment experiences." In addressing this goal, the district is committed to building demand and interest in STEM and CTE programs district wide. This commitment can be seen with the development of a K-5 STEM-focused curriculum at one of the district's elementary schools, the construction of STEM classrooms at both middle schools, and the district's current 0.5 FTE STEM/Science TOSA. Looking to the future, the district will continue funding of the School-to-Business Specialist, 1.0 FTE STEM TOSA, CTE program partnerships, and the new engineering CTE courses at the high school. In addition, STEM classes will be available for all middle school students instead of just as elective programs.

To build awareness and understanding of the CTE program needs, the district will regularly update and include school principals, the superintendent, and school board members in communication, events, and CTE PLC meetings. Potential areas for policy

and practice revision include expanding accelerated credit options for the CTE program with higher education institutions, as well as to incorporate course credit for internships and exploring different course delivery options to take advantage of online engineering courses through PCC taken at the high school. In addition, CTE course pre-requisites could be established so that the Introduction to Engineering Design or Principles of Engineering courses would be required before taking specific CTE elective courses.

5. Collect data that will prove the effectiveness of system changes.

The district will collect the following data to prove the effectiveness of system changes and to identify potential areas needing improvement:

- ➢ Number of middle school students enrolling in the after school camps;
- ➢ Number of forecasted CTE courses forecasted by grade level;
- ➢ Number of students enrolling in the new Introduction to Engineering or Principles of Engineering courses;
- ➢ Number of student internships;
- ➢ Number of site visits, classroom speakers, or other instances that bring partners and students together within the CTE program;
- ➢ Student evaluation of the new CTE courses at the end of the semester;
- ➢ Number of teacher professional development hours added to the district;
- ➢ Gather anecdotal evaluation from students, business and industry partners, and teachers regarding new courses and work experience activities related to the CTE program and addressing local business needs.

6. Find additional sources of funding for systems change projects.

The district will actively seek additional grant opportunities in STEM and CTE areas to sustain the high school program and to build the middle school after school programming component into a PLTW Gateway to Technology course so that the CTE program can continue to expand. In addition, general funds will be committed to sustain CTE related positions such as the additional engineering teacher and the School-to-Business Specialist. The use of Title IIA funds will be considered to retain the STEM TOSA position to ensure instructional quality and professional development. The district will also seek joint funding with the Chamber of Commerce and local business partners to sustain the School-to-Business Specialist position, strengthening ties to the community and continuing local support from partners. Local or regional companies who support employee involvement in schools through grants, donations, or in-kind support will be identified and brought in to support the CTE program. The district will broaden partnerships and strengthen the CTE program by identifying and engaging future partners, including the medical, agricultural, wine, and tourism economic sectors of our community. Current STEM summer learning opportunities for Migrant students through the Migrant Summer School enrichment program will be continued and connected more closely with the CTE programs offered at the high school. When current bonds expire and as the district bond capacity grows in 2017, the district will consider addressing the development of high school CTE/STEM facilities and equipment. The local community has a history of approving school bonds, last approving a $27.1 million bond in 2011 that included construction of the new middle school STEM classrooms and purchasing instructional and student lab equipment.

7. Effective communication, parent education, peer-to-peer marketing, and other communication to build and sustain new and developing initiatives.

The district will implement the communication plan as described in Appendix A. The communication plan is designed to inform and market the new CTE program offerings to middle school students and their parents, high school students, staff, and local businesses, industry, and manufacturing facilities. As part of the middle school communication, the STEM TOSA will regularly work with middle school classrooms, demonstrating STEM-based projects related to the high school CTE program, building interest and participation in both the summer camps and the high school CTE program. High school CTE students will provide peer-to-peer marketing through annual CTE showcase demonstrations and presentations at the middle schools. Additionally, high school CTE students will serve as camp counselors for the middle school PLTW summer camps, providing another opportunity for peer-to-peer marketing of the CTE program. The district's communication plan will recruit students and local businesses and industry for internship, mentorship, site visits, resource speakers, and job shadow experiences. Lastly, the communication plan will provide ongoing information about CTE program-related activities, opportunities, events and achievements, highlighting students and partners in the CTE program.

F. Activities and Timeline

Date	Activity
May 2014	High school students re-forecast electives for 2014-15 school year to populate PLTW IED course.

May – August 2014	Course planning and curriculum development for PLTW Pathway to Engineering at high school level (IED course)
June 2014	Hire STEM TOSA, School-to-Business Specialist, and engineering teacher
July 2014	PLTW Introduction to Engineering (IED) training at Oregon Institute of Technology in Klamath Falls for high school staff and STEM TOSA
August 2014 – June 2015	STEM TOSA provides classroom teacher support, model instruction, STEM-focused project development, etc.
August 2014 – June 2015	PLTW-inspired Middle School after school projects and associated curriculum developed in collaboration with business partners
August 2014 – June 2015	School-to-Business Specialist promotes CTE programs, identifies new partners, expands opportunities with existing partners, etc.
August 2014 – June 2015	CTE/STEM PLC created and regular meetings held
August – December 2014	Recruitment/marketing 1-day workshops through PLTW for counselors & administrators to support and expand PLTW program at both middle and high school levels
August 2014 - April 2015	Current 6 middle school after school camps (first lottery held in mid-September)
Summer 2014	1st Cohort trained in Oregon Champions of STEM program
Fall 2014	Implementation of Intro to Engineering Design course

December 2014, April 2015	High School CTE student showcase demonstrations and presentations to middle school students
March 2015	8th grade students forecast for CTE programs
Mid-June 2015	Additional PLTW training (Oregon Institute of Technology, Klamath Falls) for high school staff and STEM TOSA
March – May 2015	Current 6 Middle School Summer Camp (lottery held in late May)
Late June 2015 (after school year)	Middle school after school camps expand to 2-week summer camps

G. Evaluation

Evaluation of the "CTE 21" project will include both quantitative and qualitative data collected from high school CTE students, middle school after school and summer camp participants, partners, teachers, and community members. The evaluation will highlight successes as well as opportunities for improvement in order to grow the CTE program. Program rigor and alignment with standards, relevance to business/industry needs, and college and career readiness will be evaluated through surveys, reports from partners, established assessments, and student achievement of Oregon Diploma requirements.

PARTNERSHIPS

The district is committed to developing and sustaining partnerships to build a solid foundation for the existing CTE program, to expand the program to the middle school grades, and to implement the PLTW Pathway to Engineering program at the high school level. These partnerships provide real-world experience, career and college opportuni-

ties, and training for high paying/high demand jobs within the local community. The new School-to-Business Specialist position is key to developing and continuing these partnerships.

1. The overall role partners played in the development of this proposal.

CTE program partners have been drawn from long-term relationships as well as new connections, representing higher education, local and state government agencies, manufacturing, global industries, and the trades. Business and industry representatives have continuously shared the need for a skilled workforce that could be addressed through an expanded CTE program. An example of this is the expansion of the district's welding program in collaboration with PCC, resulting in an increase of students feeding into this program. In addition, City of Newberg economic development staff has collaborated with the Chamber of Commerce, PCC, and Newberg schools about growing workforce needs in the area, especially in manufacturing. Partners have followed and actively supported SB498.

2. The agreed upon role of partners in implementing the project.

Project partners have agreed to provide the following in implementing the project:

- College credit (dual credit)
- Professional resources/expertise for teachers
- Internship, mentorship, job shadow opportunities
- Site visits
- Career resource
- Project-based and hands-on learning opportunities
- Career fair participation

- ➢ In-class speaker/presentation
- ➢ Advisory committee
- ➢ Provide in-kind support/donations
- ➢ Specific job skill training

3. The possible ongoing role the partners will play beyond the grant.

The project partners will continue to support the CTE program beyond the grant through the following activities and commitments:

- ➢ Participate in a CTE advisory committee;
- ➢ Help to set CTE program goals;
- ➢ Evaluate and refine partnership, internships, job shadows, and other activities;
- ➢ Participate in recognition of CTE program accomplishments;
- ➢ Provide support for future grants;
- ➢ Develop additional opportunities for students to have hands on, relevant industry experiences;
- ➢ Sustain and grow the School-to-Business activities to expand internships, mentorships, site visits, speakers, and business/industry resources in multiple content areas.

4. The correlation of partners to high wage and high demand jobs.

There is a high concentration of manufacturing in the Newberg area and project partners were selected from this field to help the local community grow its own workforce. These partners include A-dec, Inc.; PPM Technologies; ARE Manufacturing; Climax Portable Machine Tools; Oregon Department of Transportation; and Portland Community College. High wage occupations in Region 3 include engineers, engineer-

ing technicians, sheet metal workers, fabricators, fitters, production workers, machine assemblers, and machinists. In the same region, engineers, production workers, assemblers, welders, and machine operators are in high demand. High wage/high demand occupations in Region 3 include engineers, production workers, plastic or metal fabricators, machinists, plumbers, and pipefitters. Anecdotal information from PPM Technologies indicates that up to 50% of its current workforce will be retiring in the next 10 to 20 years, creating an urgent need for trained workers to fill the vacancies. In addition, project partners A-dec, Climax, and ARE Manufacturing continue to remind Newberg schools that they need welders and machinists, high wage/high demand jobs. In response, project partner PCC has articulated a welding career path with Newberg High School and offers education courses and programs related to high wage/high demand welding and manufacturing jobs.

B. Middle School Component

The "CTE 21" project engages middle school students in six six-week STEM-focused and project-based after school camps using the basics of the PLTW curriculum for the first two weeks to teach the fundamentals of engineering design and to introduce the CTE program areas available at the high school: Agriculture, Culinary, Marketing/ Business, Computer/Robotics, and the new area of Engineering. The last four weeks of the camp include project-based design work and opportunities to visit local businesses related to the CTE program. Students will have the opportunity to work directly with local business partners on their project and will market their product at the end of the camp session. The PLTW curriculum will be a common component to the camps and high school CTE program, addressing state and national standards, including the new

Oregon Science Standards (Next Generation Science Standards). High school CTE students will serve as camp counselors, providing the middle school students with peer-led instruction and experience in CTE. Implementing the PLTW coursework at the middle school level builds a foundation of CTE experience prior to high school, exposing middle school students to the realm of CTE, career, and higher education possibilities while reinforcing STEM-focused learning.

C. Out of School Time Programming

The "CTE 21" project includes out-of-school time programming with the middle school after school camps. During the 2014-15 school year, the camp is scheduled to be held after school from 3:15 - 5:00pm. After the 2014-15 school year, the program will continue as a summer camps. Section B (Middle School Component) describes the full program.

In addition, local businesses and partners have committed to providing opportunities for all CTE students including site visits, career fairs, college visits, job shadows, mentorships, and internships. Many of these opportunities will occur outside of the regular school day.