

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

Project Name: NexGen (Next Generation) Manufacturing
Amount Requested: \$315,388

Project Director: Kyle Laier		
District, School or ESD: Oregon City School District, Clackamas Academy of Industrial Sciences		
Address: 995 South End Road		
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Grant Fiscal Agent Contact: Wes Rogers		
District, Charter School or ESD: Oregon City School District		
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Superintendent: Larry Didway		
District or ESD: Oregon City School District		
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City: Oregon City	State: OR	Zip: 97045
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	Participating High School or Middle School Name (add additional rows as needed)	Lead Contact Name	Grade Levels	Student Enrollment
1.	Clackamas Academy of Industrial Sciences	Kyle Laier, Principal	8-12	190
2.	Oregon City High School	Tom Lovell, Principal	9-12	2400
3.	Oregon City Service Learning Academy	Tim Graham, Principal	9-12	180
4.	Alliance Charter Academy	Lara Fabrycki, Principal	K-12	370
5.	Ogden Middle School	Libby Milller, Principal	6-8	900
6.	Gardiner Middle School	Kelly Schmidt, Principal	6-8	800

Please check all that apply:

This project directly involves Career and Technical Student Organizations
Please note page of proposal that describes this relationship. Page: 28

This project has a clear connection to STEM
Please note page of proposal that describes this relationship. Page: 13 & 14

Purpose and Scope of Project Overview

Clackamas Academy of Industrial Science is committed to revitalizing the Oregon City School District's industrial-based Career and Technical Education (CTE) programs discontinued in 2005.

The Oregon City School District (OCSD) commits to refurbishing shop facilities at the former Oregon City High School campus to provide an advanced manufacturing area and a robotics lab. With the opportunity provided by the CTE Revitalization Grant, business partners and the district's commitment, CAIS will buy industrial technology for machine shop courses and senior year manufacturing projects, ultimately leading to the design, production, and manufacture of products for sale to sustain the program.

The equipment we have targeted for the Advanced Manufacturing Shop would allow Clackamas Academy of Industrial Science, Clackamas Community College (CCC), and our industry partners to significantly increase the number of students prepared for careers as engineers and machinists. It would create a seamless career pathway that integrates academics, community college skills training, industry training and internships leading to certifications for local high-wage, high demand jobs.

The overall goals are to increase the number of CTE graduates prepared to immediately enter the manufacturing sector, collaborate with Clackamas Community College to align Clackamas Academy of Industrial Science courses, provide dual credit, ensure a large number of students receive their Computer Numerical Control (CNC) technician certification, act as an innovative education model for other schools in our state and gain additional industry support by providing a prepared workforce.

Supporting the Overall Revitalization Effort – Innovation in CTE Delivery

The culture and mission of CAIS is to provide students contextual, experiential and career relevant learning. The current CAIS CTE delivery model provides students in grades 8-12 relevant academic and skill-based classes designed with industry partners on the CAIS Board of Directors. We have collaborated with several industry partners to make this grant and create a manufacturing technologies pathway with machining, engineering, marketing, and business concepts as its major components.

The CTE Revitalization funds will add needed technology to refurbish the former OCHS Campus for CAIS. High school students can engage in a Career Pathway Certification program jointly designed and delivered by faculty from Clackamas Community College (CCC). Each student's path will lead directly to a Computer Numerical Control (CNC) Technician Certification. Project Lead The Way (PLTW) Computer Integrated Manufacturing course will be added to complement this pathway. Students will be ready for work and can pursue an Associate's Degree in Manufacturing Technology, or a Bachelor's Degree in Manufacturing Engineering at Oregon Institute of Technology. National Career Readiness Certificates will also be earned at matriculation.

In revitalized shops, students will use purchased or donated equipment to manufacture and sell products to partners and school stakeholders. Students will operate a student-run job shop. This is an additional grant-designed internship opportunity beyond those currently offered by industry partners. Students will meet CCC SMART internship requirements, pass rigorous industry screenings regarding product design, manufacturing, lean process application, marketing, and sales.

Integration of the required and bonus elements of the proposal: To meet the goals of this grant CAIS, CCC and Metro area manufacturers have designed a pathway to graduation with a high school diploma, CNC Technician Certificate, and National Career Readiness Certificate. This grant was written in partnership with local business and higher education who have committed time and resources to complete and sustain the activities described. We have set a timeline to implement the grant activities that include course development/alignment to outcomes and diploma requirements, shop revitalization and equipment installation, and deadline for full implementation.

Meanwhile, we will begin the process of re-opening a CTE Approved Program of Study, engage in outreach: ELL Parent Advisory Committee members (using multi-language resources and outreach materials), local Parent Support Groups for students with disabilities, Clackamas County Housing, WIA and Young Parent Program coordinators. In addition, we will inform middle school students and parents about the middle school component of the grant's program of study.

We will register for conferences (COSA, OSBA, & OACTE) to share the model and its progress. We will share grant information at the FIRST Robotics District Competition we are hosting and increase participation in out of school activities through FIRST Robotics Competition, FIRST Tech Challenge teams and mentoring OCSD First Lego League teams. We will contact SkillsUSA to start a chapter at CAIS for out of school leadership development. An Interact Club, sponsored by Oregon City Rotary, will provide additional out of school community and civic based leadership activities.

Expansion and Growth of CTE: The CTE Revitalization grant will nearly double the capacity for the region to train CNC technicians and operators through re-opening a machine shop to be used by area high school students during the day, and CCC classes at night. In addition, **ANY high school student from the metro area** interested in CNC can access the CAIS shop. This model significantly **expands CTE training** in the region, **increases industry involvement** in school-based day-to-day learning, **meets industry's need** for increased capacity to train CNC operators and **creates a self-sustaining CTE program.**

During grant development industry partners selected CNC Technician Certification as most relevant to entry level work in manufacturing. Local job listings require CNC Certification or experience for entry level manufacturing positions. In addition, only the CNC Technician Certification is part of an Applied Sciences degree program and the Manufacturing Engineering Bachelor of Science degree.

Most CTE programs in the region offer manufacturing technology classes designed from module-based curriculum and lab kits. The CAIS expansion in CTE will offer a multi-year proficiency-based manufacturing curriculum working with relevant machines used at both school and the worksite. Industry partners have committed to expand their role from CTE advisors to hands-on involvement with curriculum development and staff training. In addition, they have committed to mentoring students in the creation of a student operated manufacturing business to sustain the program.

This CTE Revitalization can be expanded to other regions. Washington County industry representatives and PCC have expressed interest in replicating the model achieved with this grant.

Experiential Learning Opportunities: Industry partners designed this grant with a singular purpose: the creation of a complete industry experience unmatched by any in Oregon which can serve as a model everywhere in Oregon. The new program will culminate in students' pairing of technical and academic metaskills. Students will run their own manufacturing business and work with customers to design parts of all sizes using a variety of materials. Our partners' program design immerses students in the manufacturing industry. Rather than providing kit-based simulations, this experience provides a high-end manufacturing program that closes the skills gap and teaches students how the manufacturing industry works.

Industry partners have committed to providing students experiential learning environments at school and on worksites. In addition, they have committed to support all necessary machines and tools so students can engage in experiential learning. The revitalized shop will have commonly used equipment such as lathes and mills. The combination of industry program design and equipment support provides an unparalleled manufacturing environment unique to CTE programs in the state. The grant provides additional equipment and tools to ensure students will be ready to run their business successfully.

By their senior year, instead of canned work projects students spend time in commerce, working for paying customers, and are held accountable for deadlines and product quality. Each project will be relevant to the local sector where students will make parts that business need right away.

A. Project Outcomes and Progress Markers: The selected outcomes and markers for this project are designed to sustain, improve and increase partnerships between secondary/post-secondary schools and industry. The grant enables our region to open this CTE pathway to students in the region. Industry partners and CCC staff collaborated with CAIS to co-create a rigorous and experiential learning program that provides CTE dual credit courses relevant to manufacturing and engineering and meets their needs for employees in high-wage high-demand manufacturing industry jobs.

Goal	Progress Marker	Outcome
June 2016, CAIS will increase the number of involved industry partners from 20+ to 40+	September 2014, NexGen Manufacturing marketed to 30 additional companies	June 2018 NexGen creates 40K- 200K Partners: 1k - 5k per student parts order Program Sustained
September 2015, Industry partners, CAIS & CCC faculty implement and begin assessing Program of Study outcomes.	June 2014, Four planning sessions completed (Industry, CAIS and CCC faculty)	June 2016, 100% of CAIS seniors in NexGen pass Program of Study technical assessments.
May 2014, identified industry partners work with students to create NexGen business plan and shop layout	November 2014, CAIS students present business plan to CAIS Board of Directors	September 2015, NexGen implements business plan and opens parts manufacturing business.

Goal	Progress Marker	Outcome
September 2014, PLTW Computer Integrated Manufacturing (CIM) offered to students who have completed IED and POE	August 2014, Engineering Instructor will have completed PLTW CIM training September, CAIS will have four teachers trained to teach five high school and two middle school PLTW courses	By 2018, 75% of CAIS graduates complete minimum of 3 PLTW courses, better preparing them for post-secondary certification or degrees STEM Component Achieved
September 2014 CAIS faculty, CCC and industry partners will start meeting to design the 8 th & 9 th grade Basic Tools curriculum	By January 2015, school leadership will present new Tool curriculum to CAIS Board of Directors	September 2015, CAIS offers Basic Tools course to all 8 th & 9 th grade students in OCSD Middle School Component Achieved
September 2014 form committee to complete application for a CTE Program of Study	December 2014 Submit completed application	September 2015 implement CTE Program of Study CTE Program goal Achieved
August 2014 Staff for 1:100 counseling Provide AVID strategy during staff inservice Assign lead teacher for avid Internship/ School Navigator Alumni Industry partner sets schedule for Girls Engaged in Manufacturing (GEM)	September 2014 Counselor, Lead Teacher, and Coordinator collaborate and use AVID strategies to provide wrap-around student services School information and marketing materials developed for families. Meetings set with parent groups to share materials.	June 2015 Student enrollment by underserved groups increased by 100% Parent involvement increased by 100% Female enrollment increased by 100% Student leadership and out of school activities include members from all underserved groups

Goal	Progress Marker	Outcome
June 2016, 50% of CAIS graduates earned CNC Technician Certificate from Clackamas Community College upon graduation	August 2014, CAIS Counselors will identify and construct personalized plans for juniors, sophomores and freshmen who want to graduate with the CNC certificate	75% of CAIS graduates with CNC certificate enter workforce AND attend college part time. 25% of CAIS graduates attend college full time
June 2016, 80% of CAIS graduates earn a silver or gold ranking on the National Career Readiness Certificate	September 2014 Counselors and CAIS staff review NCRC and infuse preparation into courses	June 2014 seniors required to take NCRC prior to graduation
September 2014, CAIS Advisor applies to open a Skills USA Manufacturing Chapter Student recruitment begins	November 2014 CAIS Skills USA Chapter holds first meeting – community event Attend Oregon Leaders Joint CTSO meeting.	February – June Students attend SkillsUSA events and competitions Student Leadership Goal Achieved
August 2014, CAIS Alumni Coordinator sets up data base to track outcomes	November 2014 Alumni Coordinator sets data points aligned to grant goals, district Achievement Compact, and school outcomes	June 2015 Counselors & Coordinators help students transition to work and college.

B. Career and Technical Education Program of Study Design: The Oregon City School District and Clackamas County Manufacturers partnered to design a new focus on Manufacturing CTE. A once vibrant machine shop at the former Oregon City High School campus will reopen and expand the county's offerings that focus on a currently missing component within the high-wage high demand manufacturing sector: CNC Technician Certification.

Overview: The experiential instructional model for the CNC Technician Certification program designed by the partners in this grant allow for **multiple pathways**

into manufacturing or engineering careers, or manufacturing support services like marketing, accounting, logistics and transportation. As students develop fluency and proficiency in academic subjects they will also acquire technical skills such as programming, designing parts in CADD, and using calipers and micrometers with precision as they learn to run CNCs, lathes, and screw machines.

Academically, students will complete Oregon High School Diploma requirements, many of the classes during junior and senior years will be dual credit college and industry certification courses. In addition, they will learn workplace skills that align to Oregon Essential Skills of reading, writing, listening, speaking, applying math, and thinking critically as they listen to customers, design solutions to their problems, build prototypes, construct marketing plans and plan logistics to produce and deliver the parts. Students will have to communicate effectively in order to gain the confidence of their mentor and obtain the go ahead to manufacture their solutions.

At the end of all academic, technical skills and experiential learning students can earn the National Career Readiness Certificate and CNC Technician Certification. Their work in high school **translates immediately to an Associate of Science Degree (Community College) and a Bachelor of Science Degree in Manufacturing (OIT)**. Having participated in all aspects of manufacturing, they are ready to enter industry as high quality entry level employees.

Currently, there are openings for qualified CNC technicians in Clackamas County and the Greater Portland Metropolitan Area. The beginning pay is \$19- \$25 an hour. An entry level CNC technician can start at an annual wage of \$36,000 - \$50,000. Clackamas County Business and Development reports that the average wage for

workers in this industry is \$58,052 and is well above the county average wage for all jobs of \$36,895 (Clackamas County Economic Landscape). Many manufacturers run two or three shifts a day to meet production demands. Most require CNC Certification from a technical school and experience working with CNC machines. CAIS students will have both. With this grant, CAIS and its manufacturing partners create a pipeline to fill high-wage high-demand jobs, which our partners cannot currently fill.

Program of Study Overview, Standards and Outcomes: The culminating school/work activity created by this grant is a student-run parts manufacturing business run in coordination with industry mentors. For students to be successful as seniors and as manufacturing business operators each year of school has to lead toward this outcome. There are academic, technical, and work place skills that must be acquired. Industry partners, Clackamas Community College, and CAIS staff designed a framework for this outcome that can be achieved through the grant. First, **the rigorous and career relevant academic foundations** will be provided in several strands: the subject specific strand, the application of academics in technical coursework, and the use of multi-modal communication both in class and outside of class working with industry partners. This enables students to meet **Oregon Essential Skills** as they prepare for post-secondary education and their careers. This grant provides additional time in the schedule for students to learn from industry mentors and the **addition of a CTSO SkillsUSA Manufacturing chapter** so students can get involved in formal civic and industry-based leadership opportunities. Each academic and technical class is designed to emulate the jobsite where personal management and teamwork are essential. Through the relevance of workplace application, students are highly

motivated to be part of a team that improves work place processes and flow of materials leading to increased profits and job satisfaction.

Pathways through CTE, College Credits, Industry Certifications: With this grant, graduating students will complete or be close to completing the CNC Technicians Certification at CCC. Throughout their time in high school, students will take PLTW courses at CAIS. The grant provides for the addition of the capstone PLTW course so students can take the PLTW test to earn additional college credits. This grant will provide financial support for CCC instructors to teach at CAIS and revise CAIS shop courses so CAIS provides entry level CNC Certification coursework. CAIS will apply to be an Oregon CTE Approved Manufacturing Program and join the Clackamas Technical Education Consortium (CTEC). Students will work through a program of study that includes **Introductory Courses** (foundational skills, safety, business, career exploration, Intro to Engineering Design), **Intermediate Courses** (Principles of Engineering, Machine Tools, CNC/Lathe/Screw Intro, Industrial Safety, Marketing), and **Advanced CTE coursework** (Advanced CNC/Lathe/Screw Set-up, Computer Integrated Manufacturing, Advanced Machine Tools, Business Models). During students' senior year, they run their own business while they study CNC Operation, Dimensional Inspection, Computer Aided Manufacturing, and Welding.

Students will complete three or more CTE course credits, as well as dual credit CNC Technician courses. Upon successfully running their parts manufacturing business students will take their test to earn a National Career Readiness Certificate. They will have earned a relevant and meaningful high school diploma, a college transcript that leads to an Associate of Science Degree aligned to a Bachelor of Science

Degree at OIT, and be ready to enter the manufacturing workforce in a high-wage high demand job.

C. Underserved Students: When CAIS opened in 2010, students from a variety of backgrounds came to the school. Several district demographics match CAIS demographics. The district percentage of students in Special Education is 15%, and 14% of CAIS students are in Special Education. The district percentage of economically disadvantaged students is 34% and CAIS is 16%. Outreach to, and support for underserved populations begins in middle school. Support must continue throughout high school to ensure successful post-secondary transitions. In addition to current recruitment activities that include invitations to middle school students and families to attend field trips to worksites, college campuses and activities like FIRST Robotics District competitions, enrollment information is translated into two languages and is shared with middle school counselors. Two evidence-based practices that support underserved students are AVID supports and low counselor to student ratios that increases time between students and counselors. CAIS will add AVID supports, teacher training in AVID methods and keep the counselor to student ratio for underserved students to less than 1:100. The traditional high school ratio is approximately 1:400. Reduced ratios provide counselors time to provide wrap-around service for these students and their families, which supports increased graduation rates and post-secondary completion rates.

Outreach plans will include targeted support for ELL /Migrant Ed families through the district's Parent Advisory Council, English Language Development Program staff and ELL teachers and instructional assistants, and bilingual staff. The National Center

for Education Statistics (2006) found that supporting families and teaching them how to build aspirations in their children directly influences their decision to go to college.

SPED parents will be recruited through local Parent Support Committees, one which formed by CAIS parents for children with Autism Spectrum Disorder. CAIS will market directly to economically disadvantaged families because students and their families will financially benefit from reduced college costs via increased access to dual credit college courses and a pathway to high-wage high demand jobs.

In addition to the reduced counselor to student ratio, the inclusion of an Internship Coordinator (IC) will serve as a family navigator between high school, college, and work. The IC will educate families about the opportunities their children have at CAIS and partner with the school counselor to work with district and community college advisors so students and their families can navigate high school course tracking, gain academic or social supports, enroll for dual credit courses, develop their Education Plan and Profile, and support students and families as they prepare for life after high school.

Lastly, encouraging girls to pursue STEM and manufacturing careers is a national challenge and one that CAIS will address with support of the grant. One of our female industry partners is the president of her company and will lead an initiative called GEMS – Girls Engaged in Manufacturing. In and out of school leadership activities that include “family build” nights, girls-only shop experiences, and hands-on design build activities for girls in grades 7 -12 are examples of activities that are shown to increase engagement and retention of females into STEM and manufacturing related pathways.

D. Diploma Connections: Our project is linked to the Oregon Diploma in the area of **Essential Skills, STEM, Career and College Readiness and Career Related Learning Skills**. As CAIS is a career and technical education four-year, full-time high school, students are already completely immersed in classroom-based academics and career and technical education. All students at CAIS have **personalized plans and profile** elements that meet their career aspirations. Infusing the CAIS blended education model with a parts manufacturing business, courses taught on-site by industry mentors and CCC staff provides a singular opportunity in Oregon's CTE history to develop **a completely integrated industry-school partnership at both the high school and community college level**.

Students receive academic credit for their internships including CTE credit, math, science, and other subject areas depending on the community placement and course requirements. Additionally, each CTE area will provide students with multiple work sample opportunities aligned with state graduation requirements. Each academic and technical class is also designed to emulate the jobsite where personal management and teamwork are essential. Through the addition of a Lean Manufacturing course, industry mentors show students the importance of personal management and teamwork skills.

Students encounter instruction in mathematics and logic through programming throughout their time at CAIS, however, the grant will enhance the use of mathematical knowledge and processes to CNC and manufacturing applications.

In addition, our industry partners will provide **career related experiences** for our students, which includes Manufacturing and Engineering Internships, soft skill instruction, leadership training, customer service, personal accountability, team building,

and problem solving, so students can develop their **Extended Application**. The culminating experience (operating a parts manufacturing business) provided by this grant provides students significant application of **critical and analytical thinking**. CAIS students complete a project that personalizes their academic experience, meeting the **Extended Application requirement** of the Oregon Diploma.

With this grant, CAIS students will expand their **reading Essential Skills** to include documents provided by mentors for information, or instruction, with which students are expected to answer questions and solve problems. Students expand **writing Essential Skills** by learning to write technical journals in Project Lead The Way courses, essays and reports in core classes and produce technical documents. Students will also be exposed to relevant college texts that require precise and accurate comprehension.

This grant will provide additional time in the schedule to participate in the SkillsUSA Manufacturing Student Leadership Organization and get involved in formal **civic and industry based** leadership opportunities.

E. Sustainability and Communication: The CAIS grant proposal requests funds to support quality and industry-relevant equipment that fills a missing link in an already successful school. Additional costs for grant activities will be sustained through State School Fund and industry partner donations. This grant was written with the intention of expanding a program AND **creating a revenue source to support its long-term survival**. The CAIS board is made up of several successful manufacturing sector CEOs, Presidents, CFOs and Directors of Manufacturing. Participation on our Board of Directors allows **industry leaders a unique level of involvement in public**

education. Their involvement will ensure the model is successful and will produce revenue needed to continue and grow this manufacturing pathway. With industry guidance, **NexGen will provide additional funding to support this systems change.**

The revitalized shop will change the relationship between CAIS and its district middle and high schools. For the first time, Oregon City High School, Oregon City Service Learning Academy, Alliance Charter School, Ogden and Gardiner Middle Schools will benefit from being able to send students to CAIS for Basic Tools and Machine Shop courses. This will help expand the reach of CTE beyond students enrolled at CAIS.

The manufacturing career pathway created by this grant will **enable CAIS, its industry partners and CCC to work across conventional boundaries** to ensure students graduate with the certificates and skills needed in tomorrow's manufacturing work force. With the grant, CCC instructors will go from working with CAIS students at CCC to working with them at both CAIS and CCC. Instructors from both schools will now get the opportunity to work side-by-side towards a shared vision for our graduates. Industry participation in the running of NexGen Manufacturing will connect them directly with machine shop instructors from CCC. This pathway will ensure stakeholders from industry, public education and higher education have a consistent working relationship.

CAIS has intentions of not only providing a great education for our students to support manufacturers in the Metro area, but to also act as a model for the future of high school education in the United States. We believe strongly that high schools are a job pipeline. Working with industry is paramount to keeping our curriculum and courses relevant.

CAIS will provide other school districts with a model that better prepares students for careers in manufacturing and engineering. Instead of focusing on standardized test scores, CAIS will provide a model that tracks meaningful certifications earned, post-secondary completion and student success in manufacturing careers. We will **track the positive impact our students have on the state economy**. To support these goals, CAIS has plans to hire an alumni **coordinator who tracks current students and graduates' attainment of certifications, degrees, and employment in the manufacturing sector**. The coordinator will also act as an employment connection between our industry partners and CAIS graduates. We strongly believe the best assessment of our school is our students' success in the workplace. **Data relevant to the preparation of a manufacturing workforce will be posted and celebrated regularly on our website, in reports to local manufacturers, and at educator conferences.**

Communication with new and existing industry partners will be met through attendance at networking events put on by Clackamas County WICCO, the Columbia-Willamette Workforce and through electronic communication. School leadership will develop and circulate a quarterly newsletter to industry partners, chambers, associations and companies not yet working with CAIS. The quarterly will report changes and progress relevant to Metro area employers to encourage them to remain or become involved with CAIS.

Due to our desire to be a model school, we have already invested in a **marketing teacher with relevant experience at Tektronix** and a **local filmmaker most recently with Wieden & Kennedy** to help promote our school and Metro area manufacturing.

Students will gain tools in marketing courses to **ensure peer-to-peer marketing** for potential students. Advanced marketing courses will focus on promoting NexGen Manufacturing to local manufacturers. This past year, our filmmaker trained and worked with CAIS students to produce films highlighting our program, a commercial airing on local television and a film highlighting the robotics team. We have plans to produce two films in 2014-15. The **first film will focus on the creation of NexGen Manufacturing.** The second film will **teach multiple audiences about the diverse manufacturing sector, career opportunities, local CTE programs, including CAIS that prepare students for careers in this sector.**

F. Activities and Timeline: The table below details the major activities, person responsible and expected outcomes associated with the grant. The table gives the connection to expected outcomes. Progress toward these activities will be recorded and reported to the CAIS Board of Directors bi-annually and to ODE as required.

Activity	Responsible Party	Connection to Outcome of Implementation	Timeline
CAIS faculty, CCC instructors and industry partners identify Oregon Skill Sets for NexGen Manufacturing Course	Principal CCC Staff CAIS Staff	Students begin taking NexGen Manufacturing course towards earning a CNC Technician Certificate and gain relevant industry experience	1/14 – 9/15
Form Board Subcommittee to create NexGen business plan & design shop	Principal CAIS Board	With support from industry partners, students will design and later operate a student-run manufacturing job shop that creates revenue to support the CTE program	6/14 – 1/15

CAIS faculty, CCC instructors and industry partners develop Basic Tools course	Principal CAIS Staff CCC Staff	8 th & 9 th grade students will start to take Basic Tools course showing proficiencies on selected Oregon Skill Sets	6/14 – 1/15
Send engineering teacher to PLTW CIM training and begin offering in 2014-15	Principal CAIS Staff Counselors	The addition of CIM will complete a pathway of six PLTW middle school and high school courses	7/14 – 9/14
Hire Alumni Coordinator	Principal Industry Panel	Track current students and graduates certificate completion and employment	8/14
Submit application for CTE Program of Study	Principal CAIS Staff	Region expands and enhances CTE manufacturing programs. CAIS CTE open to all regional students.	9/14 – 9/15
Identify coordinator and start a Skills USA Chapter	Principal	Students will develop leadership skills to use in coursework, during internship and as an employee	10/14 – 12/14
CAIS will proctor the National Career Readiness Certificate Assessment	Counselors WICCO Staff	Students will display needed soft skills, applied mathematics, locating information and reading for information	4/15
Students begin taking NexGen courses and earning CNC Tech Certificates upon graduation	CAIS Staff CCC Staff Counselors	Students will graduate from CAIS with high marks on the National Career Readiness Certificate and 75% of graduates will earn a CNC Technicians Certificate	6/15 – 6/18

G. Evaluation: A major component of the CAIS mission statement is “providing a career-ready, highly skilled, diverse and adaptable workforce.” The opportunities provided by the grant will enable CAIS to better meet our industry-designed mission. In collaboration with industry partners, we have selected data that demonstrates progress towards providing a highly skilled workforce. The following data will be collected by the Internship and Alumni Coordinators and reported to the CAIS Board of Directors bi-annually and to ODE as required.

Target	Indicator	Progress Marker	Completion Measure
75% earn CNC Certificate in 2016	% CNC Program of Study	% Completing CNC Courses	% Earned CNC Certification by end of high school or year after
80% of graduates earn a Gold or Silver NCRC ranking	# Workplace Competencies	# SMART Internships	% Earn Silver or Gold Career Readiness Cert
90% of graduates will earn 9 or more credits	Complete CCC courses	# of courses complete	>9+ college credits before graduation
80% Earn 2 or 4 year degree	A.S. Degree	# Attending CCC	% Attaining Associates Degree/Apprenticeship
	B.S. Degree	# Attending four year school(OIT)	% Attaining Bachelor Degree
>95% Graduates Employed	Employed	% Completed NexGen Project	% Working in Manufacturing/Industry Construction

Student leadership from NexGen Manufacturing will present a financial report, marketing plan and any updates to the business plan to the CAIS Board of Directors at the end of each trimester.

Partnerships: In April of 2008, industry leaders from Clackamas County came to OCSD with a proposal to start a manufacturing technologies high school. A charter was

drafted and in the fall of 2010, CAIS opened to students in grades 9 and 10. Industry leaders have remained highly involved in the growth of the school, identified needed soft skills to be taught, developed curriculum and more recently participated in the development of this grant proposal. CAIS board members felt strongly that this highly experiential pathway will prepare students for high-demand, high wage jobs needed in Clackamas County and the Metro area.

Several of our partners have committed specific actions to initially support the pathway. Leaders from Benchmade Knife Company, Pioneer Pump, Miles Fiberglass and Composites, ESCO Corporation, Enoch Manufacturing, Metric Machining, Warn Industries and faculty from Clackamas Community College have identified specific activities for grant implementation. Each of these leaders and additional members on the CAIS board from the Oregon Builders Congress and Boeing Portland will be involved in development of the manufacturing pathway. All future designing and development of this pathway will seek board approval prior to implementation.

Benchmade Knife Company has committed yearly funds to support the maintenance and growth of the advanced manufacturing shop. They have committed time for students in PLTW's Engineering Design and Development to collaborate with their mechanical engineers to develop a new knife design. They have also committed use of their equipment to support NexGen during the manufacturing of a knife at different points in the process. Benchmade has and will continue to provide approximately five internships per year. They will also continue to provide yearly tours showing their lean process and provide CAIS with a board member. Currently, CFO Kristine Gittins serves on the board of directors.

Pioneer Pump has committed to provide prints to manufacture non-mission critical parts to be used on their pumps. They have also committed to providing two internships a year and will continue to have a representative on the board. Currently, CEO Jerry Turner serves on the board of directors.

Metric Machining of Ontario, California has committed a donation of an engine lathe and Brown & Sharpe Spindle machine to specifically train students for small parts manufacturing. They have also committed non-patented prints for NexGen that will enable students to machine final products to be sold. CAIS is working closely with Metric CEO David Parker to create a small parts manufacturing component to support the needs of Enoch, Small Parts Manufacturing (NE Portland) and other Precision Machined Products Association (PMPA) manufacturers. David also serves on the, PMPA Board, which CAIS is a member.

Enoch Manufacturing has committed time for their employees to train students and staff on small parts equipment donated by Metric. They have also committed to providing two internships per year to CAIS students. Currently, Penny Nielson, Director of Manufacturing, serves on our board of directors.

Dale Gehring of **ESCO Corporation** and Chairman of the **Association of Manufacturing Excellence** has committed to providing annual trainings on lean manufacturing for a language arts class focused on the concept. He has also committed to continuing his service on our board and providing tours of ESCO's facility as he has done in previous years.

a dec is the biggest supplier of dental equipment in the United States and recently partnered with CAIS. They are well known for their lean process and have

committed to follow-up the **ESCO** orientation with a detailed tour of their facility in McMinnville, Oregon. Students will be able to see what they've learned in language arts and from the orientation in action.

Miles Fiberglass and Composites (MFC) has promised to continue providing internships and guidance on the board of directors. Lori Luchak, President of MFC, has been a board member since the school's inception and has committed to serving through the implementation of this grant. Lori will be instrumental in recruiting females to STEM and Manufacturing careers.

Warn Industries Hubs Value Stream Production Leader, Tim Schroeder, has committed to continue serving on the board of directors, providing tours and making decisions concerning implementation of the grant.

The Business Education Compact (BEC) has committed to providing internships and internship support while CAIS continues developing internship opportunities connected to the pathway. The BEC provided CAIS students with internships at Intel this past summer.

Remaining CAIS Board Members have committed to review and make decisions related to the implementation of the grant. They have also committed to working with students in NexGen to develop a business plan and additional industry partnerships during the 2014-15 school year.

Clackamas Community College has committed to collaborating with CAIS faculty to align dual credit courses and courses within the CNC Technician's Certification. They have also committed to putting CCC instructors on-site at CAIS to

provide dual credit courses. The CTE department has committed to providing support in the design and layout of the revitalized shop at CAIS.

CAIS has set goals to have a minimum of 10 companies committed to sending prints and jobs to NexGen by the fall of 2015. Currently, Benchmade, Pioneer Pump and Metric have committed work for NexGen for the 2015-16 school year. The CAIS Board of Directors and other business partners are excited about creating an experiential learning opportunity that closely mirrors the high-wage, high demand jobs in the Metro area.

OPTIONAL BONUS SECTION

Career Technical Student Organization: CAIS SkillsUSA Timeline

September 2014, CAIS Advisor applies to open a SkillsUSA Manufacturing Chapter	November 2014 CAIS SkillsUSA Chapter holds first meeting – community event	February – June 2015 Students attend SkillsUSA events and competitions
Student recruitment begins	Attend Oregon Leaders Joint CTSO meeting.	Student Leadership Goal Achieved

Currently, CAIS does not belong to a Career Technical Student Organization, and this grant provides the opportunity to integrate a SkillsUSA Manufacturing chapter. The CAIS board is excited about the prospect of mentoring students as they immerse themselves in formal civic and industry-based leadership opportunities and compete at SkillsUSA events.

Middle School Component: In the Spring of 2013, CAIS added 8th grade students after receiving a grant to expand its Project Lead the Way (PLTW) curriculum to middle school students. The grant paid for PTLW training for two Gateway to Technology (GTT) courses: Design and Modeling, and Automation and Robotics. All 8th grade CAIS students complete both engineering courses. Students taking these courses will be better prepared for the rigor of CAIS's PLTW's high school Pathway to Engineering courses required for graduation and develop metaskills necessary to be successful in school and in the workplace. With this grant, CAIS will pursue the addition of a 7th grade program in 2015-16 and extend the GTT offerings. CAIS is also home to two middle-level FIRST Robotics teams (FLL and FTC). Evidence supports that early, frequent exposure to STEM activities both in and out of school increases underserved students interest in college and STEM careers.

The revitalized shop realized through the grant will support the creation of an industry initiated basic tools course designed to introduce middle-level students to hand tools commonly used in manufacturing. The course will be offered initially in the spring of 2015 to 8th and 9th grade students. The CAIS board is committed to the development and alignment of the program that incorporate elements of the Manufacturing and Engineering Clusters of the Oregon Skill Sets. The course will be offered in the morning, allowing middle school students from all OCSD schools to participate. Transportation will be provided to students wanting to enroll in the Basic Tools course.

Out of School Time Programming: The creation of NexGen Manufacturing will create opportunities for students to extend their experiential learning into the evening. We plan to schedule the course at the end of the traditional school day to give students the **ability to work into the evening** towards **deadlines for industry requested jobs** and **work on their own unique ideas** in an **open lab** format. NexGen students will also participate in manufacturing activities at industry sites on weekends, such as Benchmade, to complete parts when specialized equipment is needed. CAIS also has plans to use revenue from NexGen to support machining course offerings by the Summer of 2018.

Focus on Regional, Statewide, or System Changes: The CAIS proposal for implementing the CTE Revitalization Grant encompasses three significant regional, statewide and educational system changes. One, with support from this grant a new sustainable model of partnership between high-schools, community colleges, and industry is created. Two, institutional barriers between schools are removed so any interested student can access CNC high school training at CAIS. The third change is in creation of a sustainable CTE model, where the CAIS program generates revenue it invests in its program in partnership with local industry. In total, the proposed grant activities are game-changers in the delivery and management of CTE instruction and all four are replicable statewide.

In addition, the CAIS/CCC/Industry proposal diversifies regional training by adding a high-wage, high-demand CNC Technician Certificate education emphasis. This certificate was selected by industry partners and co-grant writers as desirable and missing in high school manufacturing program outcomes. In this manner, industry's need for workers determined the school's emphasis. Industry representatives matched technical and academic skills with alignment to post-secondary training. CAIS translated industry outcomes to Oregon Diploma requirements, and a true partnership emerged.

The resulting program is open to all interested students, regardless of resident district due to our district charter status. CAIS will work with other districts to provide access. Sustainability will occur with full industry partnership and flexibility within schools. The CAIS/CCC/Industry model can provide leadership in this area and support other regions interested in replicating the model.