



## SHAPING OUR FUTURE: KEEPING WASHINGTON'S COMPETITIVE EDGE

### Our Aerospace Advantage

With Washington's economy reeling from the lingering effects of the Great Recession, our state's top priority is creating jobs. One of our premier economic assets is the strength of our aerospace sector. Today, nearly 650 Washington companies deliver products that build, and help keep safely aloft, Boeing's world-class aircraft and those of global manufacturers. These companies form the longest aerospace supply chain not just in the nation, but across the globe.



### Our Workforce Assets

Our aerospace industry succeeds in large part due to the quality of Washington's workforce. Yet to continue this proud and storied tradition, and to build new successes, Washington must reinvest in its education system to ensure we have enough mechanics, machinists, engineers and others to fill these jobs, and that they are well-qualified.

Following Governor Gregoire's Workforce Investment Act investments in 2009 and 2011, an unprecedented level of coordination among community and technical colleges is addressing the needs of aerospace workforce training. Industry engagement, too, has helped tailor training to jobs. This collaboration culminated in the recent \$20 million grant from the U.S. Department of Labor for Air Washington to train 2,600 aerospace workers for jobs in the state. Washington is poised to capture aerospace jobs as fast as the industry is creating them. So far this year, Boeing alone has hired 7,000 people in the Puget Sound region. We will capitalize on our training strengths and our overall competitiveness to lead the aerospace industry.

### Our Transportation Investments

The 2003 and 2005 transportation revenue packages supported \$15.6 billion in transportation infrastructure to reduce congestion and more efficiently and safely move people and goods. To date, the Department of Transportation has completed 300 of the packages' 421 projects, more than 90 percent on-time and within budget.

Washington's leadership in transportation and our impressive track record have prepared us to translate federal Recovery Act funds into jobs. Washington state has received more than \$1.3 billion for projects that put people to work and help maintain our transportation system.

With funds from the revenue packages already invested, we now need to identify a long-term solution to support our transportation infrastructure, the backbone of our economy. Governor Gregoire formed the Connecting Washington Task Force this year and charged it with developing a financially sustainable, 10-year funding strategy for our transportation system to present to the Washington State Legislature next year.

## ACTION STEPS

Governor Gregoire proposes the following series of action steps that will boost capacity and quality in our education system to ensure Washington workers are ready to meet the needs of the aerospace sector and other industries that rely on a workforce trained in science, technology, engineering and math (STEM). In this way, we will keep Washington's competitive edge by preparing our students and our economy for the challenges of the future.

### PART 1: LAUNCH YEAR

Washington's high school seniors are interested in — and capable of — coursework that advances their career goals. The Governor's Launch Year initiative, begun last year, puts into place opportunities so students graduate from high school with up to one year's worth of college credit and training in their chosen field. The advanced work they complete is acknowledged through the granting of higher education credit for the competencies they acquire.

#### Entry-level technical job training

Applying the Launch Year concept to the aerospace industry, a coordinated set of technical certifications through the Aerospace Program of Study is under design. Curricula build on previously learned technical and applied skills. High schools, community and technical colleges, and industry partnerships will create the coursework, with content reflecting national and international standards to ensure the highest quality. Entry-level courses in high school will link seamlessly to courses at community and technical colleges.

One step is to replicate a new, industry-designed aerospace manufacturing program for high school students. The Washington Aerospace Training and Research Center has created entry-level skills programs to open the door to skilled job opportunities. This two-part training program includes both online and hands-on components. Students who complete the program are ready for a first job in aerospace. Getting this program into more high schools will mean more students are ready to enter the workforce.

Students interested in taking a technical course may attend a high school too small to offer the program or offers different courses. However, there may be enough students within the region to support a technical training program. Skills centers now provide such opportunities for students in a number of fields. In a second step, we will locate specialized, technical certificate manufacturing courses, and teacher professional development sessions, in two skills centers to serve students and teachers in regions without these services. It will also be possible for these skills centers courses to include, on a space-available basis, community and technical college students who need the same course for achieving the same technical certificate.

**Students:** Will move seamlessly from high schools to community and technical college programs, increasing their technical knowledge and skills while progressing from one certificate to the next. In this way, students will acquire entry-level aerospace manufacturing skills to get good-paying jobs right out of high school and have developed an entry-level skills base for pursuit of technical manufacturing skills certification for career advancement.

**Investment:** \$450,000 for start-up grants: 12 high schools and two skills centers will receive aerospace assembler program and manufacturing support.

**Legislation:** Will establish a policy for common, shared course numbering and course credit transferability for aerospace manufacturing courses offered in the high schools and community and technical colleges.

**Action:** The State Board for Community and Technical Colleges and the Office of Superintendent of Public Instruction are responsible for course numbering as well as credit transfer policies and implementation. The Office of Superintendent of Public Instruction will administer grants for the high school aerospace assembler program and skills centers aerospace manufacturing program. The Center of Excellence on Aerospace will be consulted.

### **Expand Project Lead the Way course offerings and college credit**

Washington needs more students to graduate from high school with greater STEM proficiencies. This means that students not only know math and science content but also how that knowledge combines with technology tools and engineering approaches to fuel innovation and generate creative solutions for industry. Students with STEM skills developed in high school have a lifetime foundation for career choices and a head start in programs that prepare them for jobs and additional education and training in STEM fields.

To give more students opportunities to gain STEM proficiencies, we will provide more specialized courses from Project Lead the Way (PLTW), a national program modeled on a multi-disciplinary, hands-on, problem-solving approach. This effort will extend current high school PLTW courses beyond the foundational level through the addition of more advanced, career-focused courses.

We will also set a consistent, dual-credit (high school and postsecondary) policy for Washington students who successfully complete PLTW courses and pass

national end-of-course assessments. Project Lead the Way curricula align with the national ABET standards in applied science, computing, engineering and technology. College credit and/or advanced standing opportunities are available to PLTW students across the country and will be available for Washington students, too.

**Students:** Will gain a deeper understanding of the basic STEM subject areas and learn from firsthand experiences what it means to have a career in a STEM field. They will have more opportunities to take such courses as aerospace engineering, biotechnical engineering, civil engineering and architecture, digital electronics and medical interventions. Students will also know which courses fulfill high school graduation requirements in math and science and which courses qualify for postsecondary credit through demonstrated competencies.

**Investment:** \$250,000 in start-up support to add an advanced PLTW course in 10 high schools.

**Legislation:** Will require the award of post-secondary credit when students demonstrate the competencies.

**Actions:** The Office of Superintendent of Public Instruction will set criteria for selection of schools for PLTW grants and collect student participation data. The Education Research and Data Center will track outcome information, including employment and university enrollment.

The State Board for Community and Technical Colleges and the four-year higher education institutions will determine college and university course credit equivalencies for students to receive dual high school and college credit.



## Enhance teacher skills in math and science

We will require Washington teachers to have solid math and science knowledge. Current basic skills requirements for teacher certification will be replaced with higher levels of math proficiency.

State law now requires that individuals seeking admission to teacher preparation programs or applying for a state residency teaching certificate pass basic skills assessments in reading, writing and math. The Professional Educator Standards Board (PESB) is responsible for selecting the assessments and setting the qualification scores. The PESB will set a more rigorous basic skills math requirement and identify a means of assessing basic science knowledge and skill. In both subject areas, the PESB may consider using successful completion of rigorous courses instead of requiring the individual to take a subject matter assessment.

**Students:** Will from their earliest years be taught by teachers who possess a solid understanding of math and science.

**Legislation:** Will task the PESB with establishing more rigorous standards for teacher math and science knowledge.

**Action:** The PESB will be responsible for developing standards. Fall 2013 for math and fall 2014 for science completion dates are set.

## PART 2: HIGHER EDUCATION

### *Degree Production*

#### **Boost excellence in engineering programs**

We will improve quality in postsecondary engineering programs offered at the two public research institutions.

Engineering practice requires the ability to apply, create and problem solve. Best practices identified in high-quality, four-year engineering programs include activities that immerse and support students in learning both content and its application. University

engineering programs that provide the following opportunities attract, retain and graduate engineers capable of meeting and exceeding industry expectations: admit more incoming freshmen to engineering schools instead of waiting until the junior year, assign incoming freshmen to an engineering professor as a mentor, emphasize real-world applications in tandem with courses in theory, and involve students in engineering projects to build problem-solving and customer relationship skills.

**Students:** Will graduate from engineering programs equipped with the highest-quality academic, technical and application skills.

**Action:** The presidents and deans of engineering of Washington's research universities commit to advancing the excellence of their engineering programs. The research universities are responsible for implementing best practices in engineering education and reporting on program graduate employment.

#### **Increase undergraduate engineer degree production**

We will expand capacity at the University of Washington and Washington State University to graduate 775 more engineering students.

More than 550 students qualified for entry into the Schools of Engineering at the UW and WSU have made application but have not been admitted due to lack of capacity. In today's state economy, dependent upon the aerospace, manufacturing, technology and medical sectors, we cannot afford to deny access to talented, qualified students to high-quality engineering degrees.

**Students:** Will be admitted to the engineering schools from current waiting lists of eligible applicants.

**Investment:** \$7.6 million to support the high-cost portion of additional engineering student enrollments at the UW and WSU.

**Action:** The UW and WSU will graduate more students with engineering degrees. The Workforce Education and Training Coordinating Board, with the support of the Educational Research and Data Center, will report on the job placement of engineering graduates. The new higher education “dashboard” will provide information about program participation and degree completion rates, including the success of students from traditionally underrepresented populations.

### **Research and Development**

#### **Create a Center for Aerospace Technology Innovation at UW and WSU to advance research on new technologies for products in aviation, aerospace and defense.**

We will commit to supporting research and development at the university level that advances innovation in products and technologies, such as work done on composite materials at the UW for Calloway, Boeing and Lamborghini.

The Center will support university research relevant to aerospace industry innovation, including creation of products and processes that grow the sector and lead to new jobs in our state. When aerospace companies commit to innovate in Washington, we will work with them to advance that innovation and safeguard intellectual property. The Center will also help aerospace companies engage faculty on a project basis for smaller, specific research needs.

**Students:** Will help conduct university-level research that promotes innovation and creates jobs.

**Investment:** \$1.5 million in start-up funds to form the Center and help the universities and industry to recruit additional support. Companies will provide additional support on a project basis where appropriate.

**Action:** The Center will work in coordination with an advisory board composed of representatives of the two research institutions, the aerospace industry and the Governor’s Aerospace Office. The Center will work to match public expenditures with private investments to leverage applied research funding.

## **PART 3: COORDINATION AND LEADERSHIP**

### **Training Coordination**

We will enhance training coordination to be responsive to industry. The Center of Excellence, with input from an industry-led advisory board, will coordinate aerospace manufacturing training in Washington.



The Center for Excellence provides industry a central source for information about aerospace training and a forum for direct

contact with those creating and delivering technical training programs for the industry. By coordinating training with industry, we can deliver relevant career development more efficiently. The State Board for Community and Technical Colleges established the Center of Excellence and provides funding for core services. Funding for additional coordination activities has been secured through a federal grant for Air Washington.

**Action:** The Workforce Training and Education Coordinating Board, in consultation with the State Board for Community and Technical Colleges, will evaluate the performance of the training system.

### **Governor’s Aerospace Office**

We will provide focus, direction, oversight and coordination at the highest level to ensure aerospace competitiveness in Washington.

The Aerospace Office will advise the Governor and coordinate activities across the state to support the aerospace sector. Its goal is to expand our aerospace

industry and ensure that investments are yielding positive results. With direction from the Governor's Office, we will better manage and leverage our aerospace assets.

The responsibilities of the Office will be tied to outcomes identified by the Governor. The Office will gather industry intelligence to advise the Governor in advancing Washington's competitiveness nationally and globally. Its charge will center on the areas of workforce and education; economic development; research and development; and fostering collaboration between industry and government.

**Investment:** One full-time equivalent employee and additional in-kind resources provided by the Department of Commerce and other agencies engaged in aerospace promotion.

**Action:** Accountable to the Governor, the Office will establish metrics and evaluate outcomes of statewide efforts to support aerospace and maintain Washington's global leadership in aerospace.

## **PART 4: INCENTIVES**

### **Extend B&O tax credit**

Current law provides a B&O tax credit equal to 1.5 percent of aerospace product development costs. Qualified costs include research, design and engineering activities performed in Washington in relation to the development of an aerospace product — or of a product line, model or model derivative of an aerospace product — including prototype development, testing and certification.

The credit was enacted Dec. 1, 2003, and is set to expire July 1, 2024. The Governor proposes to extend the expiration date to July 1, 2034.