

Coordinating Workforce and Economic Development around Strategic Industry Clusters

A Progress Report on Substitute House Bill 1323

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Innovation is in our nature.



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EXECUTIVE SUMMARY

This report identifies the progress made at the state and local level in coordinating workforce and economic development, with a special focus on industry clusters. Substitute House Bill (SHB) 1323 defined and established industry clusters as a central organizing framework to coordinate planning and service delivery among workforce and economic entities. By working together and strategically targeting their resources, state and local agencies can more effectively use limited funds. In light of state and local budget challenges, fiscal efficiency within state agencies and organizations is more critical than ever.

Cluster strategy is a particular type of economic strategy that focuses on interconnected businesses and industries within regional areas. It offers an organizing principle around which workforce and economic development can be coordinated and enhanced. Local areas throughout the state have already embraced a cluster-based approach to workforce and economic development, and many are coordinating workforce and economic development plans and actions. This progress report summarizes the range of activities occurring in support of industry clusters.

While statute defines an industry cluster (RCW 43.330.090(5)), there has not been a singular process for identifying and targeting clusters.

Based on the state definition and on a collaborative process that used detailed industry data, the Workforce Training and Education Coordinating Board (Workforce Board) identified and ranked current clusters according to how strategic they are in providing family-wage jobs. The Washington Economic Development Commission (WEDC) has identified emerging innovation clusters—industry areas that have potential but have not necessarily reached the regional concentration associated with clusters (see Appendix B). These two types of clusters—current strategic clusters and emerging innovation clusters—complement one another.

At the regional level, local Workforce Development Councils (WDCs) and Associate Development Organizations (ADOs), using additional local economic data and on-the-ground information, have identified their own list of strategic clusters. Most of the regionally identified clusters overlap with strategic clusters identified by the state. Some also overlap with the WEDC-identified innovation clusters. In a few cases, the regional clusters are outside of those identified at the state level.

This progress report describes the major state workforce and economic development programs that have targeted strategic or innovation clusters. The Workforce Board's Industry Skill Panel grants, for example, bring together regional representatives from business, labor, and education to improve worker skills for strategic industry clusters. The Department of Commerce's (Commerce's) Innovation Partnership Zones (IPZs) provide resources for research and development in innovation clusters. The State Board for Community and Technical Colleges (SBCTC) oversees 10 cluster-based Centers of Excellence throughout the state, which are resources for the creation and sharing of model curricula, and best practices in college assistance to industry. Also, the WEDC and Higher Education Coordinating Board's Strategically Targeted Academic Research Team, or the STAR Researchers program, recruits academic superstars for university positions that will advance research with commercial applications in innovation clusters.

This report also describes other programs whose focus is broader than clusters, but whose services also frequently benefit strategic or innovation clusters. For example, the Department of Commerce's Community Economic Revitalization Board (CERB) can support industry clusters through public

infrastructure financing that supports businesses. Likewise, the Workforce Investment Act (WIA) program administered by the Employment Security Department and local WDCs often provides employment and training resources for strategic clusters. WIA-funded community and technical college training dollars have been used predominantly in strategic cluster industries: health care (37 percent); manufacturing/construction (22 percent); and information technology (11 percent).

Clusters also appear within mid-level and baccalaureate high employer demand programs of study. The Legislature has guided higher education dollars toward increased student enrollment in fields of study where the state has not been producing enough in-state graduates to fill employer job openings. In mid-level fields, two high demand programs of study are directly linked to strategic clusters: aerospace mechanics and technicians, and health care programs of study. At the baccalaureate-level, health sciences, computer and information sciences, and engineering are directly linked to strategic clusters.

Some programs with a broader focus have done a good job directing substantial resources to strategic clusters, while others, as this report notes, could do more to help implement the cluster strategy.

In addition to targeting resources to clusters, the intent of SHB 1323 is to improve the coordination between workforce and economic development. This report describes coordination at the local level, where the hard work is done. The WDCs and ADOs have led the state in coordinating efforts around serving the clusters in their areas. These entities have determined their local cluster niches, which in turn guides how they invest in job creation potential. Each region's collaborative efforts are featured starting on page 37.

In sum, as directed by section 11 of SHB 1323, this progress report includes a description of:

- (1) Direct services or funding provided to regional industry clusters by state agencies.
- (2) Centers of Excellence designated and funded.
- (3) Industry clusters and strategic industry clusters identified in state and local strategic plans.
- (4) How the analysis of labor market and economic data was used to identify clusters.
- (5) How Associate Development Organizations and Workforce Development Councils are jointly planning and delivering services to companies and the workforce at regional and local levels.
- (6) How workforce training priorities, the state's long-term economic development strategy, and entrepreneurial development efforts are being coordinated.
- (7) Quantitative and qualitative outcomes that have resulted from these actions.

II. IDENTIFYING INDUSTRY CLUSTERS

A key to Washington's economic vitality, both statewide and regionally, is the health of industry clusters. Industry clusters are different from industry sectors. Industry sectors are groups of firms with similar business products, services, or processes and can be distributed evenly across the state. By contrast, industry clusters are geographically concentrated in particular regions and feature inter-related groups of firms and other entities that do business with each other. Clusters occur when there is an above average concentration of related businesses. Because a cluster takes in a large mixture of businesses, clusters often reach across several sectors. The Walla Walla wine cluster, for example, includes wineries, grape growers, banks, restaurants, hotels, and Walla Walla Community College's enology and viticulture programs.

The statutory definition of an industry cluster is a geographic concentration of interdependent competitive firms that do business with each other, including firms that sell inside and outside of the geographic region as well as support firms that supply new materials, components, and business services, and other institutions including government and education.

In its October 2008 “Skills for the Next Washington” report, the Workforce Board highlights why economic growth is most likely to occur within clusters. For one, a high geographic concentration of firms in a particular industry demonstrates that a specific location is advantageous to an industry’s growth. Firms settling there are more likely to find a specialized workforce, relevant research institutions, and complementary businesses. Innovation and spin-off companies are more likely to occur within clusters because barriers to entry have already been breached. Finally, the proximity of networking opportunities and information flow among cluster industries results in collaboration and regional economic development.

A. What are Washington’s current industry clusters?

Most in Washington’s economic development policy arena agree that industry cluster strategy is key to our economic vitality, and two congruent approaches have been used to identify these clusters. Whereas current strategic clusters are thriving groups of industry within a region that offer ample employment opportunities to Washingtonians, emerging innovation clusters represent early-stage economic activity driven by a distinct collection of knowledge, intellectual property, workforce talent, new products, and process development aimed at delivering radically new value propositions to customers worldwide. Current industry clusters are covered in this subsection, and emergent innovation clusters will be covered in subsection II.B.

SHB 1091, enacted in 2008, required the Workforce Board and the EDC to jointly convene a work group to specify the process and criteria for identifying industry clusters and strategic clusters. The work group identified 13 variables including location quotients (a measure of geographic concentration), employment levels, wage levels, growth rates, and other factors to serve as criteria for identifying clusters and strategic clusters.¹ The Workforce Board and the EDC then contracted with Paul Sommers of Seattle University and William Beyers and Andrew Wenzl of the University of Washington to apply the criteria to identify the clusters in each of the 12 Workforce Development Areas in the state and to collect data that would enable the strategic ranking of clusters.

The work group recommended that although there should be a consistent list of clusters in the state, there may be different rankings of strategic clusters by different organizations. The ranking of clusters depends upon the purpose and strategies underlying the ranking. For example, an economic development organization that focuses on trade would probably want to place extra weight on the variable measuring exports. The rank ordering of the clusters, however, is not very sensitive to the weighting of the 13 variables. Different weightings tend to move the rankings only slightly.

For the purpose of workforce development, the Workforce Board determined that of the 13 variables in the cluster study, the employment level and the percent of middle- and high-wage occupations are

¹ The 13 variables are: Location quotient, employment level, output, earnings/worker, percent of occupations in middle wage range, percent of occupations in high wage range, change in establishments 2001-2007, change in employment 2001-2007, change in wages 2001-2007, projected employment increase 2006-2016, R&D occupations as a percent of total employment, exports as a percent of output, and output/employment.

the best indicators of a cluster's potential to offer good and plentiful employment opportunities to the state's workforce. So the Workforce Board doubled the weighting of these variables in the Board's ranking of the clusters. The Workforce Board's cluster rankings by workforce development area appear beginning on page 8 and may be found at: <http://www.wtb.wa.gov/ClusterRankingsAllRegions.asp>

The Workforce Board also adopted principles for guiding the use of the rankings of strategic clusters.

Cluster Policy Guiding Principles

- Methodologies for identifying strategic clusters inform and guide investment decisions by basing them on evidence-based, quantitative data.
- Workforce and economic development partner agencies, such as Commerce, may work from different lists of strategic clusters because investment strategies vary.
- In the interest of consistency, the Workforce Board encourages partner agencies to use a shared set of cluster source data and indexing processes to identify strategic clusters.
- Clusters are but one of many strategies for workforce and economic development.
- Local areas may provide supplemental data and supporting evidence that the Workforce Board can use to improve lists of strategic clusters.
- *Potential* (or "emerging") clusters are not identified in the scope of the 2008-09 analysis of clusters and strategic clusters. They do, however, have a role in other workforce and economic development initiatives.
- The geographic locus of strategic clusters is regional, not statewide.
- Strategic cluster lists shall be updated periodically to keep pace with changing economic conditions.

Three of the principles deserve special attention here. As stated above, local areas may provide supplemental data to improve the list of clusters. Local workforce development councils and economic development councils often have more current and/or complete information that is not included in the state's data. This may include the ability to identify clusters that do not align neatly with the industry sector classifications available to state analysts. Local supplemental data may suggest different rankings of the clusters, or even whole clusters that are not revealed in the state's analysis, as is evident in the next section of this report.

Second, industry clusters are regional in geography, not statewide. There is no industry sector that has above average geographic concentration in every area of the state. These are not, therefore, statewide clusters. Having said that, however, there are industry clusters that are so strong that they greatly affect the state's economy; for example, aerospace, information technology, and agriculture.

Finally, the analysis by Sommers, Beyers, and Wenzl and the Workforce Board's rankings only include current clusters. They do not include new developments, often referred to as "emerging" or "potential" clusters that are not yet clusters in Washington, but may become clusters in the future. Workforce development programs tend to focus on clusters with substantial job opportunities now or in the near future. Economic development efforts, however, also include support for what we think will be the clusters of tomorrow.

i. Industry clusters: A state and local analysis

As covered above in section II.A., the Workforce Board used cluster analysis to define regional specialties, develop maps of industry clusters, and prioritize clusters for regional development purposes. In January of 2009, the Workforce Board formally identified and adopted strategic regional clusters for its 12 regional Workforce Development Areas. The table below compares the state’s strategic clusters by workforce development region to the clusters and sectors that local Workforce Development Councils focus on, as stated in their local strategic plans and in Local Operations Plans as part of the federal Workforce Investment Act.

The table shows there is overlap, but not complete alignment between the clusters identified by the state’s Workforce Board as strategic for workforce development, and the strategic clusters identified by local areas. Some of the differences are because local areas have included clusters that are not apparent in the North America Industry Classification System (NAICS) categories used by the state. Examples include advanced manufacturing and biotechnology which are not industry sectors identified by NAICS. Some other differences are due to local areas including sectors they hope will emerge as a local cluster in the future. An example in some areas is clean energy production. In other cases, the reason for the difference is not apparent. During the next six months, the Workforce Board will work with local areas to examine these differences and improve the alignment of the strategic clusters identified by the state and local areas.

Workforce Development Area	State Strategic Clusters (by workforce rank order)	Regional Cluster Emphasis*
Olympic WDA Clallam, Kitsap, and Jefferson Counties	-Navy Focused Cluster -Ship and Boat Building -Architectural and Engineering -Construction -Wood Products -Nursing and Residential Care Facilities	-Marine and Advanced Manufacturing -Health Care -Energy Efficiency -Clean Technology -Financial Services -Retail
Pacific Mountain WDA Grays Harbor, Mason, Lewis, Thurston, and Pacific Counties	-Forest Products -Animal Production (except cattle and poultry) -Coal Mining -Heavy and Civil Engineering -Construction -Sporting Goods Manufacturing -Health Care Services	-Agriculture/Aquaculture -Construction -Manufacturing -Energy -Defense -Health Care -Tourism
Northwest WDA Whatcom, Skagit Island, and San Juan Counties	-Petroleum Refining -Boat Building -Forest Products -Agriculture and Food Products -Fishing and Seafood Processing -Heating Equipment -Aluminum -Cement and Concrete -Manufacturing	-Marine, Wood Product, and other Advanced Manufacturing -Professional and Business Services -Construction (residential and industrial) -Freight Transfer -Education and Health Services (includes hospital/ long-term care)

Snohomish County WDA Snohomish County	-Aerospace -Abrasive Products Manufacturing -Sheet Metal Products -Military -Electrical Machinery -Specialty Trades Construction	-Aerospace and Manufacturing -Manufacturing -Biotechnology -Business and Technology Services -Education -Construction and Trades
Seattle-King County WDA King County	-Software/Computer Services (including programming) -Aerospace -Health Care -Water Transportation (of passengers and cargo) -Scientific Research and Development -Specialty Construction (such as utility, street/bridge)	-Information Technology -Health Care -Trade, Transportation, and Logistics (including Maritime) -Manufacturing -Clean and Green Technology -Construction
Tacoma-Pierce County WDA Pierce County	-Military -Computer Services -Aircraft Parts Manufacturing -Gypsum Products Manufacturing -Health Care Practitioners' Offices -Construction -Office Administrative Services -Plastic Bottle Manufacturing	-Military -Computer Services -Aerospace Manufacturing -Plastics Manufacturing -Concrete Pipe and Gypsum Products -Physicians Office -Construction -Office Administrative Services
Southwest Washington WDA Clark, Cowlitz, and Wahkiakum Counties	-Forest Products -Federal Electrical Utilities -Health Care Services -Industrial Machinery (sawmill and paper machinery manufacturing) -Construction -Semiconductors -Pump, Air, and Gas Equipment -Manufacturing	-Manufacturing (metals and paper) -Health Care Industry -Transportation
North Central WDA Chelan, Okanogan, Grant, Douglas, and Adams Counties	-Health Care Services -Agriculture and Food Products -Electrical Utilities -Cut Stone Production -Metal Manufacturing	-Health Care -Agriculture -Food Processing -Advanced Manufacturing -Industrial Technology
South Central WDA Yakima, Kittitas, Klickitat, and Skamania Counties	-Agriculture and Food Products -Motor Home Manufacturing -Ornamental Metalwork -Forest Products -Health Care Services -Warehousing	-Agriculture/Food Processing -Manufacturing -Construction -Health Care -Clean Technology/Renewable Energy

Eastern Washington Partnership WDA Ferry, Pend Oreille, Garfield, Stevens, Columbia, Lincoln, Whitman, Asotin, and Walla Walla Counties	-Mining -Forest Products -Heating and Equipment (except warm air furnaces) -Depository Credit Organizations -Agriculture and Food Products -Agriculture and Forestry Supply Services -Cattle Ranching	-Mining -Finance -Health Care -Agriculture -Utilities -Retail -Legal Services -Manufacturing -Construction
Benton-Franklin WDA Benton and Franklin Counties	-Computer Related Services -Waste Remediation and Management -Health Care Services -Architecture and Engineering -Scientific Research and Development -Other Basic Inorganic Chemical Manufacturing -Agriculture and Food Products	-Administrative and Data Processing -Technology Manufacturing -Warehousing and Distribution -Research and Development Operations (energy and bio-processes) -Food and Agriculture -Wholesale and Retail Trade
Spokane Area WDA Spokane County	-High Tech Manufacturing -Health Care Services -Construction -Professional and Technical Services	-Manufacturing -Health Care -Health Sciences -Construction -Business and Professional Services

*Note: Regional Clusters include all clusters selected by local WDC and aren't listed in particular order.

A. Washington Economic Development Commission focuses on the clusters of tomorrow

i. Washington's 14 Innovation Clusters

Washington's economy faces brutal challenges due to the great recession, profound structural adjustment and new global competitive realities. The state's private sector needs to focus aggressively on the technologies and markets that will grow in the future to increase net job creation, raise living standards, finance necessary public services, and of course, boost profits. The Washington Economic Development Commission (WEDC) has launched an ambitious new approach for economic development. The WEDC has called for a "Decade of Innovation" aimed at building a grassroots innovation capacity and linking all the capabilities of the state to generate new knowledge, start and grow businesses, boost net job creation and incomes, and modernize our infrastructure. The WEDC believes that leadership in government, business, labor and academia can aspire to and achieve a major goal: Make Washington the most attractive, creative and fertile investment environment for innovation in the world by 2020. (The Washington Innovation Economy, February 2009.)

Regional innovation clusters are the key driver of business, jobs and economic development. However, innovation clusters cannot be commanded from the top. They are an organic phenomenon that is condition-based. Washington needs to put in place an environment that encourages and nurtures growth of innovation clusters (ecosystems) from the bottom up.

Washington has innovation clusters emerging across all regions and major business sectors. Emergent innovation clusters are defined as early-stage economic activity driven by a distinct collection of knowledge, intellectual property, workforce talent, new products, and process development aimed at delivering radically new value propositions to customers worldwide. The WEDC identifies a list of 14 such clusters (not an exhaustive list but a representative portfolio). These clusters, among others, could be the intellectual foundation of the next generation of great companies and industries. The clusters are at various stages of evolution from those having long range potential, to those already emerging and those that are showing sustainable private investment interest, revenue prospects and employment growth. The STARS, Entrepreneur-in-Residence and Innovation Partnership Zone programs are three new state commitments facilitating growth of innovation clusters at all these stages.

Because most of these clusters are in early stages they are not easily defined and quantified in a statistical sense. They do not fall neatly into standard industrial classification codes (NAICS). Furthermore, many emergent innovation clusters do not have low location quotients and are not viewed as particularly interesting or competitive from a traditional economic development perspective. However, given the nature of modern communication networks, knowledge flows and spillovers, the EDC finds that innovation clusters are increasingly distributed and virtual, similar to a hub and nodes in a distributed network system. The innovation process evolves over these networks of similar and complementary nodes that are geographically and organizationally separated. There are significant intersections among identified clusters. For example, nanophotonics can be viewed as residing at the junction of advanced manufacturing, cloud computing and health IT. The electric vehicle cluster resides at the intersection of the smart grid, clean tech and advanced materials.

Looking ahead, policy development would benefit from a deeper understanding and more detailed analysis—quantitative and qualitative—of the nature of emergent innovation clusters or ecosystems. Specifically, the EDC is undertaking over the next few months information gathering and policy analysis on:

1. Dynamically mapping the geography, nodes, networks and critical intersections of emergent innovation clusters in Washington.
2. Probing the leadership, strategy, market and institutional success factors of how innovation clusters are initiated and evolve.
3. Determining the demand for human capital and major attributes of skill attributes required for emergent innovation clusters.
4. Identifying the policy implications for enabling, scaling and meeting the needs of emergent innovation clusters.

The following emergent innovation clusters are featured in Appendix B of this report:

Cloud Computing Cluster
Advanced Materials Cluster
Environmental Technology Cluster
Freight Mobility Cluster
Smart Grid Cluster
Health IT Cluster
Electric Vehicle Cluster
Nanophotonics Cluster

Global Development Cluster
Advanced Manufacturing Cluster
Value Add Food Processing Cluster
Defense Technology Cluster
Biomedical Device Cluster
Clean Tech Cluster

III. State agency services and funding for regional industry clusters

A. Workforce Training and Education Coordinating Board

i. Industry Skill Panel Grants

Industry Skill Panels are regional partnerships consisting of business, labor and education, all working together to help build the skills of workers needed by the targeted industry cluster. Skill Panels make it possible for businesses in the same sector to set aside their competitive differences and take a central role in addressing many of their common workforce development needs, addressing worker skill gaps, identifying training needs, and setting and monitoring performance outcomes. This active engagement in continuously improving training attuned to regional key industries has resulted in better trained workers and more competitive companies.

Washington's employers, workforce and economy have benefited from Skill Panels since 2000. Recently, the Workforce Board launched a second generation of Skill Panels through the *High Skills, High Wages Strategic Fund*. In 2008-2009, the Workforce Board invested \$396,941 in 16 Skill Panels throughout Washington. Three of these Skill Panels are featured below in strategic partner and results summaries, and accomplishments of all the Skill Panels are included in Appendix A, beginning on page 52.

The return on investment on these public-private initiatives can be tremendous. A 2008 independent evaluation of four Industry Skill Panels in Washington found that just these four initiatives decreased worker skill gaps and vacancy rates in the industries targeted, while leveraging over \$18 million in additional investments—more than 30 times the amount of public funds invested.

Colville Tribal Enterprise Corporation – Recreation & Tourism

The Colville Tribal Enterprise Corporation, one of the business arms of the Colville Tribe, took the lead in sponsoring a Skill Panel to look into the significance of the tourism/recreation market in the north-central region of the state. The area harbored a small tourism sector, but is an obscure and rural area of the state. Jobs are scarce, and family-level wages are even scarcer. The Colville Tribe has long suffered double-digit unemployment rates, at times reaching as high as 56 percent. In the past, the region's workers have relied on timber and construction for their livelihood, but those industries are virtually non-existent in the current economy. Agriculture also has been a staple, but in its traditional form offers few opportunities for long-term and economically viable careers. The region sought alternatives.

The Skill Panel convened area employers, education and training providers, community-based organizations, and governments to identify the major barriers to growth for the regional recreation and tourism industry. Convened by the Colville Tribe, partners included Wenatchee Valley College, the Economic Alliance of Okanogan, Chamber of Commerce, and the local WorkSource Center. The partnerships included tribal and non-tribal entities, an alliance which had not been previously fostered in the region.

The Skill Panel coordinated local efforts to develop successful, long-term careers in the recreation and tourism industry. It brought together sub-sectors of the region's rural tourism industry, including food and beverage vendors, hotels, small resorts, and guide services to explore common needs, and collaborate. The Skill Panel mapped out multiple workforce preparatory courses related to the

industry and identified areas of duplication, gaps, and needed workforce coordination. Skill Panel members are optimistic about re-inventing the region's rural economy to provide growth for business and sustainable employment for residents.

Greater Spokane Inc – Business and Professional Services

The Greater Spokane Incorporated (GSI) Business and Professional Skill Panel focused on boosting soft skills for employees in business and professional services. The Skill Panel was made up of industry, labor, and academic members. Because business and professional service careers require significant customer service and team-working skills, proficiency in these and other soft skills is necessary. Skill Panel members are seeing an increased number of new workforce participants who lack these skills, and are looking into whether there is merit to training high school students in a work-readiness curriculum. The Skill Panel members were extremely interested in this and have committed to review it and, if found beneficial, put together a plan to train high school teachers in the curriculum for implementation into the K-12 system.

GSI used their successful Career Awareness Campaign to promote the Business and Professional Services career and training opportunities available across the region. This campaign disseminates materials, including booklets, brochures, and websites to 7-12th grade students, and those who help those students make their post-high school decisions. GSI gave presentations in all 38 junior high and high schools in the region, reaching over 17,500 students and more than 3,200 parents.

GSI's Teach the Teachers workshops provided 7-12th grade educators paid clock-hours to learn about the careers available to students in the identified industries and how their curriculum directly correlates to the skills needed for these jobs.

Southwest Washington Workforce Development Council – Regional Advanced Manufacturing

The Southwest Washington Workforce Development Council (SWWDC) aligned with the Portland Metro WIRED grant to look at industry needs and opportunities throughout the Vancouver/Portland regional labor shed—the geographic area in which people commute into a community for employment. This overview of manufacturing activities at the labor shed level enabled a significant study of the cross-border economic and labor process affecting Washington's southwest region.

The project sought to better connect job seekers and industry by engaging the community colleges in capacity mapping efforts. The results provided detailed information on the region's workforce system and its ability to respond efficiently.

The project developed a career pathway "road map" that included a matrix of current manufacturing-related programs available both in southwest Washington and the greater Portland regions. The road map will enable the region to continue to align education and training investments, further the collaboration throughout the two-state manufacturing cluster, and refine the market based support for students, employees, and employers.

Additionally, the project was effective in reshaping the framework platform being designed for the WIRED region to develop and sustain advanced manufacturing. The process has eliminated duplication and refocused an effort on both the core and advanced needs for manufacturers. Industry participants are fully supportive and encouraged in these efforts.

ii. High Skills, High Wages Strategic Fund Grants

The *High Skills, High Wages Strategic Fund* advances the ability of workforce and economic development partners to meet industry cluster needs and increase employment opportunities for low-income populations. The Workforce Board was authorized to spend \$950,000 in federal Workforce Investment Act dollars toward these projects, which in turn has leveraged an additional \$544,107 in new and leveraged funding. The following *High Skills, High Wages Strategic Fund* grants have been awarded since February 1, 2009:

Implementation Grants:

Manufacturing Skills Initiative, Eastern Washington, \$194,800

Workforce development activities will be boosted in a nine-county region in Eastern Washington and include on-the-job training for entry-level workers, financial support for formal vocational training, work experience, and career and technical training for K-12 students. The nine counties include: Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla and Whitman.

Washington Intracoastal Marine and Manufacturing Industry Alliance, Northwest Washington, \$200,000

This project aims to increase the size and quality of the workforce in marine and advanced manufacturing industries in the 12-county area of Clallam, Grays Harbor, Island, Jefferson, Kitsap, Lewis, Mason, Pacific, San Juan, Skagit, Thurston and Whatcom counties. The grant has leveraged a partnership of boat builders, regional Workforce Development Councils and educators, providing training for over 300 current employees and leading to 14 new hires. The project also focuses on English-as-a-Second Language workers, low-skilled adults and at-risk youth.

Maritime Transportation Cluster, Seattle-King County, \$150,000

An industry-led team assesses employers' middle-skill jobs and the training needed to fill them. Other parts of the project include creating a maritime transportation career pathways map, designing outreach strategies to connect with disadvantaged and other youth, and setting up a maritime careers program in K-12 schools.

Central Washington Renewable Energy Planning Initiative, South Central Washington, \$150,000

This project establishes a regional partnership of business and industry representatives, education providers, local elected officials and workforce and economic development professionals to identify industry niches for renewable and alternative energy. The project identifies opportunities for renewable industry development and the region's training needs.

Planning Grant:

Interactive Media, Seattle-King County, \$75,000

Grant partners will convene an industry-led panel to focus on interactive media skill needs, such as video game development, animation, and video, in Seattle, Redmond, Bellevue and Kirkland. The project will survey employers to determine their workforce needs, identify educational strategies to meet those needs and assess career ladders to determine how to attract more workers to this emerging field.

iii. Mid-Level High Employer Demand Programs of Study

The Legislature has targeted higher education dollars for increased student enrollments to high employer demand programs of study where the state has not been producing enough in-state graduates to fill job openings. In some cases, these areas of shortages are also strategic industry clusters.

High employer demand programs of study are defined in statute as “an apprenticeship or an undergraduate or graduate certificate or degree program in which the number of students per year prepared for employment from in-state programs is substantially fewer than the number of projected job openings per year in that field, either statewide or in a substate region.” The Workforce Board annually identifies programs that are high demand at the mid-level, programs for jobs that require some postsecondary training but not a bachelor’s degree. The Higher Education Coordinating Board identifies high employer demand programs of study at the bachelor and graduate levels.

At the mid-level, there are at least two high demand programs of study that are directly linked to strategic industry clusters: aerospace mechanics and technicians, and health care occupations. The state has not been training enough aerospace workers or health care workers to meet employer demand, and both are strategic clusters for the state’s economy. Until the recent recession slashed demand, a third mid-level program of study—construction and building trades—had also been a high demand program and a strategic industry cluster. Other mid-level high demand programs—installation, maintenance, and repair; manufacturing production; and accounting and bookkeeping—supply workers for a variety of strategic clusters, but are not directly linked to any one cluster, as is the case with aerospace and health care.

At the mid-level, health care is the strategic cluster that has benefited the most from the Legislature targeting appropriations for student enrollments to high demand programs of study. Between 2000 and 2009, the number of graduates in allied health programs increased by over 100 percent at the state’s community and technical colleges. While funds for high demand enrollments have not gone to programs to training aerospace workers, other investments have. The Legislature has appropriated funds to establish an apprenticeship program for aerospace workers and the Governor has directed federal Workforce Investment Act dollars to increase training for the cluster.

Annual supply of high-demand, mid-level occupational fields compared to projected demand.

Major Occupational Group	Supply 2007	Average Annual Demand 2012-2017	Percentage Gap	Projected Annual Undersupply
Accounting & Bookkeeping	710	2,069	66%	1,359
Aircraft Mechanics & Technicians	75	360	79%	285
Installation, Maintenance, Repair	819	2,040	60%	1,221
Manufacturing, Production	870	1,250	30%	380
Science Technology	80	575	86%	495
Legal Occupations	360	410	12%	50
Selected Health Occupations (in shortage)	3,509	4,740	28%	1,231
Early Childhood Education *	600	715	16%	115
Construction*	2,220	3,510	37%	1,290

*Substantial uncertainty regarding unmet demand forecast.

The Gap

If Washington produces the same number of trained individuals in 2012 as it did 2007, the gap between supply and expected demand is the number in the gap column on the right. For all mid-level occupations, the Workforce Board projects the skill gap to be 8 percent in 2013. Because of the recession, mid-level skills, as with other skill levels, will be in oversupply until about 2012.

Supply

The supply data is based on counts of participants leaving training programs in Washington in which they received “mid-level” training, such as Apprenticeship programs, public community and technical college programs and private career school programs.

Demand

The demand data is derived from the federal Bureau of Labor Statistics forecasts of projected “net openings” for mid-level jobs in Washington combined with overall employment forecasts. Net openings consists of newly created jobs plus vacancies created when workers retire or otherwise leave the occupation.

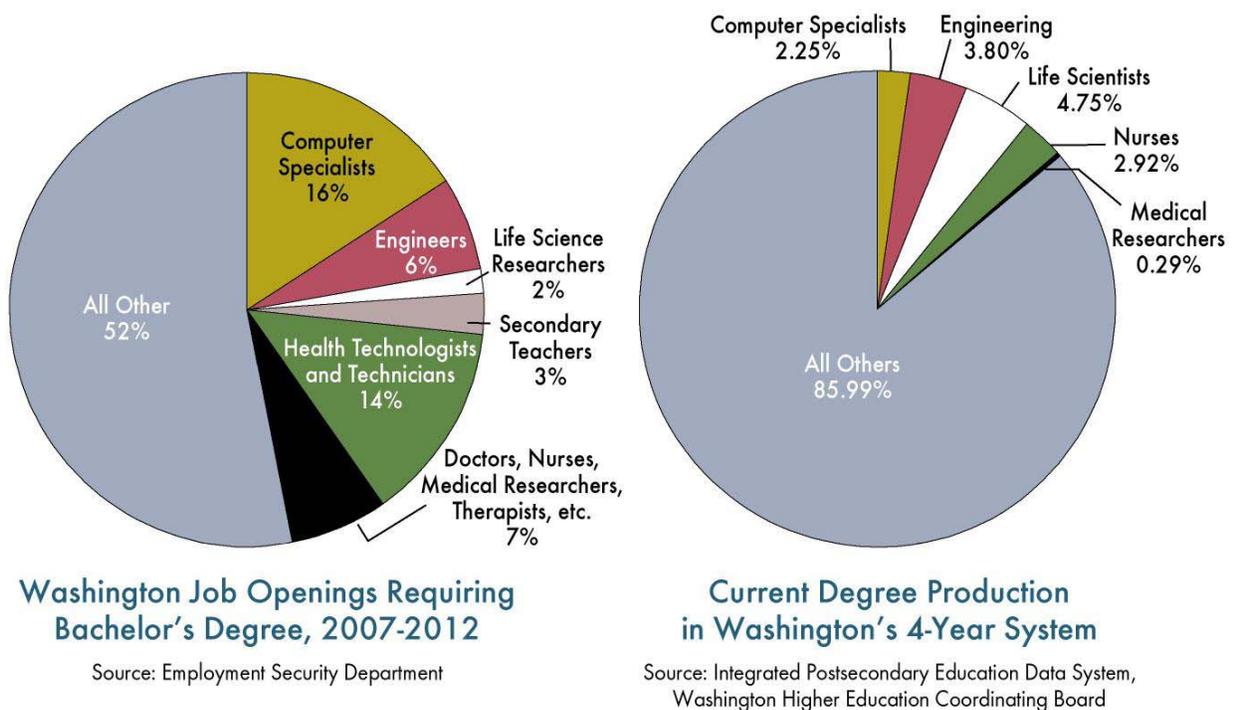
B. Higher Education

i. Baccalaureate-Level High Demand Programs

At the baccalaureate-level, three high demand programs of study are directly linked to strategic industry clusters: health sciences, computer and information sciences, and engineering. Other high demand programs of study in math and sciences help to supply workers for strategic clusters, but are not directly linked to a particular cluster in such a one-to-one manner.

Similar to the mid-level, the baccalaureate level has seen a significant increase in the number of graduates in the health sciences (nearly a 70 percent increase between 2003 and 2009). On the other hand, during the same years there has been an 18 percent decline in the number of graduates in computer and information sciences. In engineering, according to a report by the Higher Education Coordinating Board (HECB), degree production has been fairly stagnant since 2003 (1.3 percent annual growth) and the University of Washington has had no growth in 15 years. In 2007, Washington produced 982 aerospace-related engineering degrees to fill 2,312 aerospace-related engineering positions. Even during the recession, demand for engineers (2,014 jobs in 2010) greatly exceeds total baccalaureate degree production (983).

Thus there has been a mixed picture in the state higher education system's investment in high demand programs in strategic clusters. During the past decade there has been a strong increase in resources devoted to educating health care workers, but little or no progress has been seen in other programs, especially at the baccalaureate level, that supply workers for the information technology and aerospace clusters.



Source: Prosperity Partnership

ii. Strategically Targeted Academic Research Teams/Innovation Research Teams

The Innovation Research Teams (IRT) program, authorized in 2007 by state statute, provides funding to support the recruitment of entrepreneurial researchers to Washington, individuals with the knowledge, skills and ability to generate research products, and innovations with direct commercial applications. The program is meant to foster both product innovation and longer term statewide economic development. The IRT (also known as the Strategically Targeted Academic Research Team, or the STAR Researchers program), follows a model in place in many other states. The strategic

direction of the STARS program is managed by the state's Economic Development Commission with the advice of the Innovation Partnership Advisory Committee. The actual recruitment is administered by the Higher Education Coordinating Board. Two STAR researchers were hired in 2008: a University of Washington STAR researcher focused in the nanophotonics sector, and a Washington State University STAR focused in CLEAN TECH. The program is on track to complete the legislatively mandated plan to recruit a total of 10 lead entrepreneurial researchers over the 10-year period from 2007-2017. In 2010, the UW and WSU, under advice from the EDC Innovation Advisory Committee, initiated recruitment for two additional STAR specialists in SMART GRID technology. The UW has completed their recruitment with a researcher who began fall 2010; WSU intends to offer their STAR position by 2010 year end.

The Innovation Advisory Committee guides both the STARS and Innovation Partnership Zone (IPZ; see section III.C.i.) programs with private sector input, ensuring the money invested is focused on areas of high commercial potential and generating economic development benefits for the Washington economy. The committee, required by legislation, is currently comprised of 27 representatives from public, philanthropic, investment and private sectors. The Innovation Advisory Committee provides the STARS and IPZ programs with guidance on emerging technology recruitment-focus, plan approval, designation criteria and outcome metrics.

The IRT program also is designed to enhance entrepreneurial assistance programs targeted at research universities, key research dependent industries and small businesses. The Entrepreneur in Residence (EIR) program funded by IRT is now underway at the University of Washington and Washington State University.

An EIR is a leading locally based entrepreneurial executive housed directly at the university to collaborate with university researchers, contributing the expertise necessary for transforming research and intellectual property into viable business strategies, plans and start-ups. The EIRs are also an expert resource for the university's other initiatives which foster entrepreneurship and industry relations.

As of September 2010, the University of Washington maintained ten EIRs in residence focused on areas ranging from medical devices, biofuels, molecular diagnostics and therapeutics to smart grid. A total of 13 recent and prospective technology spin-out companies were reported in process in October, 2010 by the UW Center for Commercialization. A common definition of spin-out is when a division of a company or organization becomes an independent business. The "spin-out" company takes assets, intellectual property, technology or existing products from the parent organization--in this case, a state university.

Washington State University, with seven EIRs, is focused on revitalizing inhibitor technology, deployment of food safety opportunities, and nuclear radiation for commercialization of medical and industrial radioisotope production capacity. WSU reported four commercial "spin-outs" at the October WEDC Innovation Advisory Committee meeting.

STARS Accomplishments 2009

Metric	UW FY2009	WSU FY 2009
Recruiting		
# of STAR (IRT) researchers recruited	1	1
# of STAR (IRT) researchers hired	1	1
Size of STAR (IRT) teams	8	13
Activity		
# of scholarly publications	7	3
# of inter-institutional collaborations	12	25
# of Entrepreneurs-in-Residence (EIRs)	6	1
Impact		
Research funding awarded to STARS from federal sources and foundations	\$4,960,000	\$739,000
Research funding awarded from industry	\$338,000	\$0
Equipment		\$12,000,000
Tech startups based on IRT technology	1	
First-round investment in tech startups	n/a	0
Total investment in tech startups (est.*)	\$50,000	0
Licenses of IRT technology to third parties	0	0
Review		
Satisfaction survey	n/a	n/a
Jobs created	10	14

Entrepreneurs in Residence	
University of Washington	Washington State University
Bob Wilcox, BioMedical Engineering	Jeff Canin, WSU Nuclear Radiation Center and BSEL, CleanTech
Dave Croniser, Medical Devices	Bryan Zetlen, Nuclear Radiation Center and BSEL
Tom Schulte, Point-of-Care Diagnostics	Chris Leyerle, Nuclear Radiation Center and BSEL
Niel Fanger, Moleducal Diagnostic/Therapeutics	Lewis Rumpler, Revitalizing the c-MET Inhibitor technology
Ken Myer, Physiology, Biophysics Rehabilitation Medicine	Peter Quinn, Rural Sustainable Businesses
Terry Grant, Algae Biofuels	Kevin Peterson, Food Safety/Microwave Sterilization
David Kaplan, Smart GRID	Karen Fleckner, Collaborative Resourcing
Richard Mander, Computer Scientist	
Tom Clement, Bio Medical Devices	
Alex St. John, Leading Edge Media Technology	

C. Department of Commerce

This section reviews Commerce’s recent efforts in supporting the development and growth of strategic clusters in Washington. It is important to note that while many of Commerce’s efforts have ultimately *supported* clusters, the agency’s programs in the Business Services Division are primarily organized around *sectors*. Because of this distinction, this division does not consider broader institutional, firm-based, and inter-industry linkages that traditionally constitute a cluster. The Business Services Division has focused its efforts on four key industries—aerospace, life sciences and global health, clean energy, and information and communication technologies—with additional support for value-added agriculture, industrial machinery, and wood products.

Below is a report on how each of Commerce’s programs has aligned with the state’s broader cluster development efforts.

i. Innovation Partnership Zones

An Innovation Partnership Zone (IPZ) is a unique economic development effort that partners research, workforce training, and private sector participation in close geographic proximity, or zone. In many cases, colleges or universities are key partners, spearheading a research-based effort that leads to new technologies, marketable products, company formation, and job creation. There are currently 12 IPZs authorized in the state.

The zones are administered by an Economic Development Council, port, Workforce Development Council, city or county.

When the IPZ program was created in 2007, \$5 million of capital grant funding was made available through a competitive grant process and awarded to 13 IPZs. Then in 2009, \$1.5 million of capital funding was awarded through another competitive grant process to four IPZs. Currently, \$250,000 in

cluster grants are available through the operating budget and will be distributed through a competitive grant process. These funds have to be spent by fiscal year-end – June 20, 2011. Because of its inherent geographic/eco-system focus, the IPZ program aligns with the state’s cluster strategy.

IPZs are part of the state’s efforts to stimulate growth of industry clusters within specific geographic areas, much like a research park environment. The IPZ legislation requires Commerce’s director to make biannual designations by October 1 on odd numbered years. To qualify for designation, applicants must partner research, workforce training and globally competitive companies in close geographic proximity for a cooperative, research-based effort that will lead to new commercially viable products and jobs.

At present, of the 12 designated IPZs, five have received capital funds. Eleven are in a cluster identified either by the state or locally as a strategic cluster for the area. The table below is the current portfolio of IPZs. View detailed descriptions of IPZs at www.ChooseWashington.com/business/partners. An IPZ report is currently being reviewed by OFM and will be published in early 2011 and will include information on IPZ metrics and data.

IPZ Location	Designated Innovation Partnership Zone
Bellingham	Waterfront Innovation Zone – WAKE ENERGY/ ADVANCED MATERIALS
Bothell	Bothell Biomedical Device IPZ
Ellensburg	Central WA Resource Energy Collaborative-ENERGY
Everett	Aerospace Convergence Zone
Grays Harbor	Sustainable Industries Zone
Pullman	Pullman IPZ–CLEAN TECH/ENERGY
Richland	Tri-Cities Research District-CLEAN TECH (BIOFUEL/SOLAR)
Seattle	South Lake Union Global Health IPZ-GLOBAL HEALTH
Sequim	North Olympic Peninsula IPZ-MARINE BIOTECH
Spokane	Spokane University District IPZ-HEALTH IT
Vancouver	Discovery Corridor Innovation Zone-Steinmueller Innovation Park- SEMI-CONDUCTOR/MICRO DEVICE MATERIALS & MFG.
Walla Walla	Walla Walla Valley IPZ-AGRICULTURE (ENOLOGY, VITICULTURE AND WATER GOVERNANCE)

ii. Community Economic Revitalization Board (CERB)

CERB supports industry clusters by providing financing by way of grants and low-interest loans for public infrastructure that supports cluster-related businesses. CERB is dependent on Commerce's Business Services Division staff to identify projects for consideration. In addition, five projects in the 2007-2009 Biennium and four projects in the 2009-2011 Biennium were awarded as prospective development projects that may support key industries and regional clusters. The recruitment of businesses for these sites will depend on local efforts and Commerce Business Services staff. A major reason for the difference in number of firms awarded in the two biennia is that CERB received \$20 million in 2007-2009 and only \$6.25 million in 2009-2011. Examples of CERB awards aligned with clusters include: 1) \$500,000 award in September 2010 to Snohomish County to rehabilitate a building at Paine Field to expand the Washington Aerospace Training & Research Center; an estimated 13,000 aerospace workers will be trained in the first five years. The CERB award builds upon the previous state investment in the facility through the IPZ grant program; 2) \$1.7 million loan and \$300,000 grant approved in July 2008 to Spokane International Airport for infrastructure and building improvements. This investment supported the recruitment of Cascade Aerospace (USA), Inc., an aviation maintenance and repair company, to Spokane. CERB funds were matched by \$950,000 in local public funds; and 3) In January 2010, CERB conditionally approved a \$1.5 million loan and \$500,000 grant to the Port of Moses Lake for the construction of a new electrical substation to support the successful recruitment of a joint venture between SGL Carbon Fibers and BMW Automotive, helping to further advance the development of an advanced materials cluster in Washington. The investment is expected to lead to the creation of 104 full-time jobs with wages exceeding the county median.

iii. Public Works Trust Fund

The Public Works Trust Fund is focused on the repair and replacement of critical public works and facilities and responds to criteria other than cluster development, such as health, safety, and communities—economic development has not been a top priority for fund allocations, and the program is not aligned with a cluster-specific strategy. Moreover, distributions have been very limited in the current fiscal environment.

iv. Associate Development Organizations (ADOs)

The Associate Development Organization (ADO) is the lead agency in each county for economic development. It is designated by the board of county commissioners or the county council. ADOs most often are named Economic Development Councils or associations, but others carry different titles, such as the Economic Alliance (Okanogan County) or Enterprise Seattle (King County). In some counties, port districts have been designated as the ADO.

No direct money is allocated to ADOs for cluster development. ADOs are often times involved in the CERB and IPZ-related projects, which in turn can overlap with a cluster development strategy. Some ADOs have also independently pursued cluster development strategies in their respective counties. This is frequently the case when an ADO is based in an existing cluster, such as Snohomish County's efforts to support the aerospace and medical device clusters and King County's efforts around information and communication technology (ICT). The December 2010 ADO Legislative Report provides a more detailed explanation of how some ADOs align their development strategies around key clusters (when a cluster in their area exists).

v. Aerospace Council

Since 2009, the Aerospace Council has convened quarterly meetings focused on workforce development, economic development, research, and other important and timely issues for Washington's aerospace cluster. In January 2010, the council prepared a report to the Governor and Legislature with a set of recommendations on how to support and grow the cluster. An updated report is currently being prepared and is due to be submitted in early 2011. Members of the council include representatives from industry, government, labor, and education institutions.

vi. Clean Energy Leadership Council (CELC)

CELC is a group of 23 representatives from the private, public, and nonprofit sectors active in the clean energy industry in the state. The primary objectives of the council include the development of clean energy companies and jobs, while the remaining objectives indirectly support this outcome: 1) reduce the state's green house gas emissions; 2) increase in-state content of non-fossil fuel energy; and provide low-cost, reliable power. In October 2010, the council and Navigant Consulting, after careful analysis, prepared a report on how to achieve these objectives.

vii. Global Health

The Global Health Technologies Competitiveness Program was created in the 2010 special session, effective July 13, 2010. The Legislature provided \$1 million to stimulate the state's economy and create jobs in the global health field to improve the health of Washington residents, and the world. A 501(c) (6) nonprofit organization has been formed and the program is administered by Washington Global Health Alliance. A request for proposals was issued on November 10, 2010 with responses due November 30. The first round grantees were to be notified by December 14.

Washington has also been active in supporting export assistance for medical technology companies, overlapping with a broader global health cluster strategy. University of Washington Center for Commercialization was granted \$291,264 through a CERB Washington Export Assistance Program grant to provide technical assistance for new-to-export, medical technology start-up companies, including those in global health. The Center for Commercialization, Washington Biotechnology & Biomedical Association, and the Washington Global Health Alliance will collaborate to produce a web site on exporting medical technology products, including materials specific to the export of medical technologies for global health. The Bothell Biomedical Device IPZ received \$500,000 for a facility for incubating, networking, and providing meeting space for businesses in the biomedical device industry, which includes global health applications.

D. State Board for Community and Technical Colleges

i. Centers of Excellence

In 2009, Washington became the first and only state in the nation to codify Centers of Excellence into state statute (through SHB 1323). Washington is recognized nationally for creating these centers to serve as drivers for industries that help the state's economic clusters grow.

The state's community and technical college system partners with business, industry, and labor to build a competitive Washington workforce, with 10 Centers that:

- Serve as a resource for creation and sharing of model curricula, degree/certificate programs, and industry specific occupational skill standards.

- Translate industry research into “Best Practices” training and education programs to ensure a highly skilled workforce that meets industry’s hiring requirements.
- Provide clear education and career pathways for students and job seekers to create a competitive workforce pipeline for entry into high skills, high wage jobs.
- Develop and mature partnerships with industry, organized labor, community-based organizations, workforce, and economic development organizations, community and technical colleges, middle and high schools, and four-year colleges and universities.

Bellevue College

Center of Excellence for Information and Computing Technology

The Center of Excellence for Information and Computing Technology (ICT) is a statewide resource for the community and technical college system and K-12 educators, and builds crucial relationships with information and computing technology industry professions that leverage:

- Best practices for ICT education, professional development opportunities, and events to create opportunities for faculty and students to collaborate with industry.
- Up-to-date research, including ICT trends that affect hiring, educational needs, and business growth across industry sectors in Washington.
- Products, services, consulting, resources, community forums, and research to ensure faculty receive access to information regarding new and emerging technologies as well as changes in workforce demand.
- K-20 faculty professional development opportunities and student-centric events that focus on informing students about careers in information and computing technology.
- Industry research to keep educators informed on emerging technologies that translates into updated programs, curricula, and best practices.
- Pathways through better educational system coordination to assist in building seamless educational and work-related systems.
- Industry-relevant professional development training to build a competitive workforce.

Activities and achievements in 2009-2010 included:

- **Events**
 - Careers in IT: The Real Story
 - Futures Summit at Microsoft
 - Green IT speaker series
 - Working Connections IT Faculty Development Institute
- **Resources**
 - Camtasia and Web 2.0 videos
 - Center website
 - I-BEST curriculum
 - ICT program directory
- **Research**
 - Healthcare Informatics

- ICT veterans apprenticeship and employability skills course project
- **Services**
 - ICT consulting and program review

Centralia College

Pacific Northwest Center of Excellence for Clean Energy

The Northwest Center of Excellence for Clean Energy serves as a point-of-contact and resource hub for energy industry trends, best practices, innovative curriculum, and professional development opportunities. The Clean Energy Center has become recognized as a national model among energy industry leaders providing strategic coordination for the energy industry's skilled workforce. The Clean Energy Center is led by a broad based partnership comprised of industry, labor, workforce, and economic development leaders that guide the center to:

- Develop a mature industry and labor partnership to better understand the ever changing workforce issues facing electric utilities and independent power producers.
- Translate energy industry research into "Best Practices" training and education to ensure programs meet industry's workforce needs.
- Provide clear education and career pathways for students and job seekers for entry into high skills, high wage energy jobs.
- Create a competitive workforce pipeline to meet increasing energy demands and support the economic future of Washington.

Activities and achievements in 2009-2010 included:

- **Research projects**
 - *Renewable Energy Industry Trends and Workforce Development in Washington State*
 - *Energy Efficiency Industry Trends and Workforce Development in Washington State – Phase I*
- **Occupational skill standards**
 - Wind turbine technician
 - Combustion turbine
 - Plant electrician
- **Community and technical college collaboration**
 - *Energy Career Resource Guide*
 - Energy efficiency auditor faculty training
 - General physics online training
 - Energy technology program delivery
- **Summit 2010: Best Practices in Sustainability** – Two-day event held at the Regional Education and Training Center at Satsop.
- **High school outreach**
 - *We Bring the Power* video
 - High school innovation projects

Everett Community College

Center of Excellence for Aerospace and Advanced Materials Manufacturing

The Center offers students, business leaders, and instructors working in the fields of aerospace and advanced materials manufacturing a focal point for customized training and services. This center offers the state's community and technical colleges a single and reliable source for industry information and education, and strives to place a highly skilled workforce within the aerospace and advanced manufacturing industry.

The Aerospace and Advanced Materials Manufacturing Center is committed to working with industry leaders to develop customized programs critical to our industries that need just-in-time training for current and future workers.

Activities and achievements in 2009-2010 included:

- **Achievements and projects**
 - Mother-Daughter TEA (Technology Engineering Aptitude)
 - Manufacturing Education Training Exchange
 - Get AMPT Manufacturing Week
 - Take Flight E-Communicator Newsletter
 - National Educators Workshop
 - Future of Flight, Flights in Innovation – Train-the-trainer workshops for middle school teachers to promote careers in aviation
 - Granite Falls High School "All-girls Race team" – designed and built an eco car for the Shell Oil Eco-Marathon
- **Research**
 - Program of Study for Materials Science
 - Advanced Materials Manufacturing, Sustainability and Workforce Development pilot project
 - Align criteria for aerospace program offerings throughout the community and technical college system in Washington
 - Ensure the responsiveness of the training system to industry needs, including one-stop coordination of training for employers in the state
 - Align aerospace curriculum
 - Develop methods to reduce future curriculum costs
 - Coordination of community and technical college system's aerospace curriculum and training in response to Boeing's ramp-up for a skilled workforce
- **Resources**
 - Inform the community and technical college of updates and modifications to aerospace curriculum
 - I-BEST curriculum
 - Center website
 - Center advisory board

Green River Community College

Center of Excellence for Careers in Education

As an industry sector, education can be incredibly broad. This center's ability to influence meaningful change stems from its position within the community and technical college system. These 34 dynamic institutions play an important role in the development of future educators statewide, including I-BEST; early childhood and paraeducation programs; and transfer students who move into teacher preparation programs at area universities. The system also is home to its own large workforce of educators. The Careers in Education Center's activities typically fall under one of three guiding commitments:

- Promote and support the system's role in the development of future educators.
- Develop and deliver professional development opportunities that are timely and relevant for the benefit of current educators.
- Respond to challenges identified by our advisory board and industry partners.

Activities and achievements in 2009-10 included:

- **Achievements and projects**
 - Train the Trainer Workshop (collaboration with the Allied Health Center of Excellence)
 - Leadership Training for Workforce Deans
 - Boot Camps (for new professional-technical faculty)
 - Hosted the annual Washington Association of Middle Level Educators conference
 - Partner for the annual Teaching Equity Conference
 - Parent/Student Math Advisory Night
- **Resources**
 - *Careers in Education* Resource Manual
 - Repository for I-BEST curriculum (provided on the Center's website)
 - Careers in Education video project
 - *I'm Going to College* program (designed for elementary school children, sponsored by Northwest Education Loan Association)
 - Paraeducator Pipeline (collaboration with the Professional Educator Standards Board)
 - Mapping career pathways for professional-technical program instructors
 - Restructured Center website
 - Maintain and updated www.TeachWashington.org website

Highline Community College

Center of Excellence for International Trade, Transportation, and Logistics

This center continues its steady growth through the pursuit and completion of major initiatives, developing a multitude of professional collaborations, and successfully initiating three new projects. The most successful new initiatives in 2009-2010 include:

- Customer Care, Math For Trade, and Technology online workforce readiness modules
- Maritime Workforce Advisory Council 2010 Operating Plan
- Sustainable Business online course
- "Where Do You Fit in The Supply Chain?" marketing DVD

- Washington State Community and Technical Colleges Program Handbook
- Trade, Distribution, and Logistics Exploratory Course for middle to high school students

Through the development of partnerships with industry organizations, the International Trade, Transportation, and Logistics Center staff were invited to serve on the Board of Directors for the Council of Supply Chain Management Professionals, the Education Committee of the Transportation Club of Tacoma, and to present at the Washington Association of Career and Technical Educators conferences on numerous occasions.

Building on previous successes, the following new projects have been initiated:

- Federal appropriations grant to support job creation in the international trade, transportation, and logistics sector by improving the image of international trade and creating awareness of career and training opportunities that lead to family-wage jobs.
- Potential awarding of a CERB Export Assistance Grant, which will bring together seven partner organizations in the state. They will use a structured approach designed to get companies exporting within six months of completing this program, pursuant to the Governor's Export Initiative.
- Development of a four-course trade and logistics online curriculum to be offered to the entire community and technical college system.
- Hosting annual events in the form of workshops, summits, and conferences to provide connections for industry and education in the trade, transportation, and logistics industries.

Pierce College

Center of Excellence for Homeland Security

Roughly 85 percent of first responders are being trained in community and technical colleges. This Center was established in September 2004 to infuse homeland security initiatives throughout the community and technical college system and to better prepare the system for response and recovery from a critical incident.

The Homeland Security Center is dedicated to delivering dynamic homeland security/emergency management training, exercises, and workshops statewide in collaboration with all of the state's community and technical colleges, their community partners, local, state, and tribal government, and business and industry partners. Target clients include all 34 community and technical colleges in Washington, the other Centers of Excellence and the industries they represent, and each of the 10 Department of Homeland Security designated responder agencies (law enforcement, emergency communication, public health, public works, fire, emergency medical, emergency management, hazardous materials, public health, and public agencies).

Successes include:

- Annual summits and workshops on vulnerability and risk assessments and campus safety for all 34 community and technical colleges in the system. Distributed video lesson plans to all colleges for training at the local level, and established the "Campus Security, Safety, and Emergency Management Professionals Committee" under the State Board for Community and Technical Colleges capital budget division.
- On-campus training events at 11 colleges in homeland security venues over the last year.

- Numerous interagency agreements with high schools and public safety organizations such as the “Urban Area Security Initiative in Seattle,” and the Emergency Management Division of Pierce County. Distributed through the Office of the Superintendent of Public Instruction, a K-12 homeland security/emergency management booklet.
- Valuable tools published for the system, including a catalog of all community and technical college homeland security programs and “Homeland Security Trends Analysis 2010-11 – Consideration for Education, Government, Business and Industry.”

Renton Technical College

Construction Center of Excellence

This Center is designated as a statewide leader in construction workforce education and training. It strives to fulfill its role to create educational efficiencies; build a diverse, competitive workforce for the construction industry; maintain an institutional reputation for innovation and responsiveness; develop innovative curriculum and means of delivering education and training; provide information and resources related to community and technical college education and training for the construction industry; and serve as a partner with workforce development councils, associate development organizations, and other workforce and economic development organizations.

There are a number of innovative ways the Center achieves this:

- Showcase innovative education offerings at the colleges.
- Promote career pathways within construction, particularly for young people and individuals from under-represented groups.
- Advocate for construction education and career guidance initiatives and policy development.
- Develop products, services, and courses specific to construction education.
- Host annual conferences for industry, labor, and education, as well as events for students.

Activities and achievements in 2009-2010 included:

- **Events**
 - Pacific Northwest Apprenticeship Education Conference
 - Pathways to Apprenticeship
 - 5th Annual Best Practices in Energy and Construction Summit
 - Green Building Lecture Series
 - Bi-Annual Contractor Training Day
 - K-12 Innovation Competition Showcase
- **Resources**
 - Green Building: Jobs of the Future DVD
 - Green Building Science Curriculum Development
 - Green/Sustainable Curriculum Module for K-12
 - Construction Resource Handbook
 - Construction Center of Excellence Website Expansion
 - I-BEST Curriculum

Skagit Valley College

Northwest Center of Excellence for Marine Manufacturing and Technology

This Center is a statewide economic and workforce development resource, focused on the marine manufacturing and technology industries critical to Washington's economy. It serves as a point-of-contact and resource hub for industry trends, best practices, innovative curriculum, and professional development opportunities. The Marine Manufacturing and Technology Center is dedicated to:

- Building a world-renowned marine industry through training and curriculum that can be shared throughout the community and technical college system.
- The development of a highly skilled workforce.
- Continually improving processes and practices through outreach and collaboration.

The demand for certified and credentialed training continues to grow as employers seek to retain quality workers and enhance skill sets. Enrollments in marine technology and related programs are growing at such a pace that wait lists are being created. The demand for incumbent training continues to grow.

Activities and achievements in 2009-2010 included:

- **Events**
 - *Get AMPT!* – A manufacturing camp for high school students (in collaboration with Washington Business Week and the Centers of Excellence for Aerospace and Advanced Materials Manufacturing, Marine Manufacturing and Technology, and Process and Control Technology)
 - Facilitated certified training opportunities for incumbent employee training at the marine technology facility and onsite for SAFE Boats International in Port Orchard. The training gives technicians a portable credential, recognized in North America and in many cases internationally.
 - Hosting a monthly radio show called *ProBoat West*, in collaboration with *Professional Boat Builder* magazine. The focus of the show is West Coast industry and education. Recent shows highlighted the Snake River export project in Eastern Washington and the AquaCat technology.
 - Mother Daughter TEA (technology, engineering, and aptitude) – A one-day event that provides middle school girls with a unique opportunity to complete hands-on activities and interact with an engineering professional to learn about valuable, high-wage opportunities in engineering and technical fields.
 - Pacific Northwest Apprenticeship Education Conference.
 - Pathways to Apprenticeship.
- **Resources**
 - A program guide promoting the statewide educational and training opportunities for the marine trades
 - Development of modularized online curriculum: electronics, composites, and electrical
 - I AM Washington youth outreach DVD

Walla Walla Community College

Agriculture Center of Excellence

This Center has engaged in innovative initiatives to establish agricultural education and career pathways. One of the most important roles of the Agriculture Center is to facilitate linkages between the community and technical college system, industry, and educational partners. These connections develop clear pathways for high school students and dislocated workers to follow into community and technical college training programs and onto either higher education or industry. Creating clear pathways for students in the field of agriculture is critical to Washington's economic recovery considering that the food and agricultural industry annually employs an estimated 160,000 people and contributes 12 percent to the state's economy.

A substantial amount of the Agriculture Center's time was focused on the creation and sharing of model curricula. The center worked with faculty from Seattle Central Community College to assist in the establishment of a new Sustainable Agriculture Education Program, created an innovative method for dissemination of industry specific skill standards incorporating the Washington Association of Agricultural Educators, actively promoted educational pathways in agriculture through recruitment and marketing, as well as facilitated articulation agreements with the K-12 system and four-year colleges.

Activities and achievements in 2009-2010 included:

- **Achievements, projects, and events**
 - Established an agriculture and agriculture-related faculty network titled Washington Association of Collegiate Agriculture and Natural Resource Educators
 - Coordinated a degree program integration between several community and technical colleges
 - Partnered with multiple Centers to provide information sharing through conferences and training opportunities for faculty and industry related organizations
 - Center of Excellence for Energy Technology – Grant application submitted to Department of Energy to implement a Northwest Smart Grid Technology Training Program for energy efficiencies.
 - Center of Excellence for Energy Technology – Co-hosted a booth with the Center of Excellence for Energy Technology at the "Harvesting Clean Energy Conference."
 - Center of Excellence for Careers in Education and the Center of Excellence for International Trade, Transportation, and Logistics – Provided a joint presentation at the Washington Association of Occupational Educators/Tech Prep "Transitions Conference."
 - Supported Seattle Central Community College in the development of a new Sustainable Agriculture Education Program.
 - Presented five curriculum development workshops during the Washington Association of Agricultural Educators Annual Conference.
 - Played a key role in the establishment of Washington Team Ag Ed, an organization comprised of agriculture educators within high schools, community and technical colleges, and Washington State University, as well as representatives from FFA, Postsecondary Agricultural Students, and Office of the Superintendent of Public Instruction, and industry.
 - Maintains a dynamic website.

- **Resources**

- Agriculture Worker Outreach Model
- Host electronic copies of the skill standards on the Center's website for retrieval and reproduction
- Developed a publication to better define sustainable agriculture and education programs – *Sustainable Agriculture Education and Concepts*
- Conducted the 2010 Sustainable Agriculture Survey
- Developed common curricula and user friendly strategies for dissemination of skill standards to educational partners. The Center developed the *Soil Science Lab Manual* in 2008 (and revised it in 2010), and the *Plant Science Lab Manual* in 2010. The use of a common lab manual allowed community and technical colleges to share curricula that currently articulate to Washington State University. The lab manuals are also used by high school teachers.

Yakima Valley Community College

Allied Health Center of Excellence

This Center strives to provide the community and technical colleges as well as the wider audience of the health care industry and the communities it serves with high quality work in the following areas.

- Provide reliable information about the health industry's needs and workforce demands for health care occupations to the state's community and technical colleges.
- Share information on best practices and emerging trends in health care with the deans and directors of the colleges' health sciences and allied health programs.
- Present information on its work in a transparent way so that internal and external stakeholders can be assured of the value of the return on investment given by the center and its value to the system as a whole.

Activities and achievements in 2009-2010 included:

- **Events**

- Statewide Health Sciences Work Summit
- Snapshot of Health Care
- Destination Healthcare
- Promising Practices and Emerging Trends in Allied Health

- **Resources**

- Washington Health Opportunities for Today and Tomorrow - Health Care Career Site
- Center of Excellence for Allied Health website
- Videos on allied health careers and best practices
- Curriculum for K-12 health sciences and allied health teachers
- Health sciences and allied health career pathways

E. Employment Security Department

i. E2SSB 5809 and Workforce Investment Act Training

The main program administered by the Employment Security Department geared toward cluster development is the federal Workforce Investment Act (WIA). Passed in 2009, E2SSB 5809 provided incentive funds to reward WIA investments in training, particularly in the aerospace, health care, energy, and forestry sectors. The bill and a General Fund-State appropriation of \$7 million provided incentive funds for Workforce Development Councils (WDCs) to invest WIA dollars for training, especially contracted training at community and technical colleges. The WIA funds included both the regular federal WIA appropriation for local areas and American Recovery and Reinvestment Act dollars channeled through WIA. The WDCs have until March 1, 2011 to obligate and until June 30, 2011 to spend the state funds.

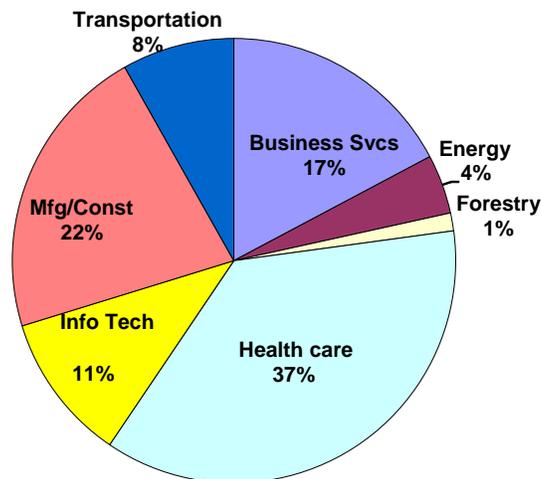
Through September 2010, this legislation provided training opportunities for 3,955 people. Of that total:

- 2,119 students were enrolled in contracted group training, which added new capacity to the community and technical college system.
- 228 people were placed in on-the-job training that would lead to permanent employment.
- 640 existing workers received training through their employer to improve their skills.
- 968 received support for tuition or books through Individual Training Account (ITA) vouchers.

Only 53 percent of the funds had been spent through September 2010, so the participant count will increase before the end of the fiscal year.

The graph below, which includes new contracted training, individual training accounts, incumbent worker training, and on-the-job training participants, describes the industries where new community and technical college capacity or other new training opportunities were built by the end of September. The largest number of trainings, 37 percent, has been in health care. This is followed by 22 percent in manufacturing/construction. In addition, 11 percent of the training has been in information technology. These areas overlap with the strategic clusters in many areas of the state.

Number of contracted classes, incumbent-worker training and on-the-job training, by industry (as of September 30, 2010)



Source: Employment Security WorkSource Standards & Integration Division 5809, Program Manager Records, September 30, 2010

The next table provides more detail by showing the specific types of classes within cluster industries created through contract,² arranged by wage category. The State Board for Community and Technical Colleges categorizes workforce education programs into higher-wage, middle-wage and lower-wage fields of study based on the actual wages of students nine months after graduation.

Of the participants included in the table below, half (50 percent) were enrolled in higher-wage programs. More than a third (36 percent) of all students studied a health-related field. The four top fields of study are: managerial and managerial support (a middle-wage field), nursing assistant (lower-wage field), administrative support (a lower-wage field), and associate degrees in nursing and transportation operators (both higher-wage fields). Again, health care accounts for the largest amount of training within one of the state's major economic clusters.

² The fields of study are based on Classification of Instructional Programs (CIP) codes, which are the conventionally used taxonomic scheme used by educational systems to describe field of study.

Topics of newly contracted classes, with numbers of participants³

Field of study, contracted classes	Number of students	Field of study	Number of Students
-----Higher Wage Programs-----		-----Middle Wage Programs-----	
Associate Degree Nurse	71	Managerial and Managerial Support	111
Transportation Operators	57	Medical Assisting	55
Other Health Tech	55	Accounting	38
Information Technology	52	Auto Diesel	37
Welding	48	Other Services	27
Industrial Technology (except electric)	36	Marketing and Sales	21
Practical Nurse	33	Dental Assisting	14
Construction Trades	29	Pharmacy Assisting	9
Engineering Technology	24	Other Technical	8
Paramedic EMT, Operating Tech	23	Other Health Services	7
Drafting	19	Commercial & Graphics Art	1
Machinist	19	Total middle wage programs	328
Physical Therapy	17		
Protective Services	12		
Precision, Production, Crafts	11		
Airframe/Power Plant	9	-----Lower Wage Programs-----	
Electronics Technology	9	Nursing Assistant	96
Legal/Real Estate Services	4	Administrative Support	85
Medical X-ray	3	Culinary Arts	16
Computer Maintenance Tech	2	Social Services	8
Electrical Equipment Repair	1	Cosmetology	3
Med Lab Tech/Histologic	1	Early Childhood Ed	2
Total higher wage programs	535	Total lower wage programs	210

Source: State Board for Community & Technical Colleges Data Warehouse, September 30, 2010

³ Many participants in new, contracted training who are known to have attended some other community or technical college class do not appear in the table; only those enrolled in a workforce development program are included. The excluded community and technical college students may have been taking prerequisites for a workforce program, pursuing a transfer track, or simply taking a contracted course without having been coded into a workforce program (students who started their training in recent months may not be entered into the State Board for Community & Technical Colleges' information management system yet).

IV. Regional Economic and Workforce Development Coordination

At the state level, SHB 1323 requires the Department of Commerce, the Workforce Board, the State Board for Community & Technical Colleges, the Employment Security Department and the Washington Economic Development Commission to ensure coordination among workforce education and training priorities, the state's long-term economic development strategy, assistance to industry clusters, and entrepreneurial development. The bill requires a similar coordinated focus at the local level: Washington's community and technical colleges, their Centers of Excellence, regional Workforce Development Councils (WDCs), and Associate Development Organizations (ADOs), including Economic Development Councils, ports and other economic development groups. Coordination includes:

- Developing and maintaining a unified local strategic plan.
- Assessing local employment opportunities.
- Identifying the educational, training, employment and support services needed by the current and future workforce, with a focus on industry clusters.

The greater intent of SHB 1323 is to promote coordination of workforce and economic development. Within Washington's 12 workforce and economic development regions, this coordination is featured in the below regional highlights.

The Workforce Board asked the 12 WDCs the following questions about local coordination and their focus on clusters:

- What has been done at your WDC to meet the guidelines of the bill?
- How are your efforts supporting your recognized regional industry cluster(s)? (For reference: <http://wtb.wa.gov/ClusterRankingsAllRegions.asp>) Please provide information on the results of your efforts to coordinate services for industry clusters, and a few examples of these efforts.
- Regarding the regional cluster rankings at the link above, did we miss any clusters in your region? Are any of the ranked clusters incorrect?
- Are there specific components of your Strategic Plans that highlight clusters and that we can reference in support of the bill's objectives?
- Have you participated in any coordinated projects with your ADO(s), community and technical college(s), and/or ESD Area Directors? If so, please provide links or one-pagers with program information.
- Do you have any ongoing entrepreneurial assistance and development programs to highlight to the Legislature? If so, please provide links or one-pagers with program information.
- What are your future plans and goals that support SHB 1323's intent?

Each WDC's response is provided or summarized below.

A. Olympic WDC (Kitsap, Clallam, and Jefferson counties)

The Olympic Workforce Development Council (OWDC) works closely with the directors of the three area economic development agencies (EDAs) -- Kitsap EDA, the Clallam County EDA, and Team Jefferson, which also serves on the Council. The OWDC staff helped form several workgroups with the

EDAs and the community colleges around the green economy (such as weatherization) and advanced manufacturing (such as composites).

The OWDC also works closely with the community colleges in their area. The OWDC is an active member of both the Olympic College and Peninsula College Worker Retraining Committees. They partnered with the Seattle-King County WDC on a SEED grant which will help train 110 unemployed workers in the weatherization/green construction field. This partnership includes members of the colleges and the industry. Classes are in Sustainable Building Advisor, Weatherization Tech, Green Construction and Weatherization Auditor.

The OWDC has had an industry cluster approach towards healthcare since before 2004. A coordinated industry cluster effort has been ongoing for the last four years with the Northwest Washington WDC and the Pacific Mountain WDC under the Marine and Advanced Manufacturing efforts. They have trained over 200 incumbent workers who have increased their wages, retained employment, or advanced in the business because of this training. All these efforts have been the result of a team lead by the OWDC and members from the industry, the Economic Development Alliances and the community colleges. The partnership has put on three Marine Economic Summits in the three WDA areas, including one in Bremerton, that were well attended. These efforts have also included the Department of Commerce.

The OWDC serves on local committees at the community colleges and economic development agencies for the following industry clusters: Marine and Advanced Manufacturing, Energy Efficiency, Clean Technology and the Aero Composite industries.

The area's manufacturing industry sector states that they are unable to find young people who are interested in the manufacturing sector. Efforts are being made to step up marketing of this sector to in-school youth. One specific highlight was a very successful two-week Summer Youth Robotics class held by Olympic Colleges in partnership with the OWDC, local school districts, the Navy, and the Undersea Museum at Keyport. It included the Sea Perch Underwater Robotics Program and Lego Robotics Mindstorm NXT. It was used to raise awareness of the advanced manufacturing robotics field and the career opportunities available. The class had 15 students from 8th and 9th grades.

In addition, the OWDC is represented on the Marine Center of Excellence Advisory Board at Skagit Valley College. While on the committee, they helped plan three Marine Industry Summits for an 11-county area. In addition, three curriculum courses have been developed around aluminum welding, marine electronics and marine carpentry. The Marine Industry cluster produced "Cross-Walks" for the military personnel leaving active duty and helps translates their skills into ones with more applicability in the civilian work sector. The OWDC also refers interested WorkSource customers to the entrepreneurial assistance programs at Peninsula College and Olympic College.

B. Pacific Mountain WDC (Thurston, Lewis, Grays Harbor, Mason, and Pacific counties)

The Northwest Manufacturing Alliance, a partnership between economic development, education, and workforce, is active in improving the competitive environment for manufacturing operations within the Pacific Mountain region. Activities include:

- Providing a resource for the region's manufacturers to ensure they have a voice at local and regional government decision points;
- Increasing awareness of the importance of manufacturing as an industry in the region and its fiscal impacts on employment, revenue and other community issues;

- Supporting the long-term maintenance and growth of infrastructure critical for the expanding health of the manufacturing base;
- Working with local educational institutions to encourage a strong, quality labor pool from which to draw workers;
- Acting as a clearinghouse for critical job-related issues that impact manufacturers.

Local Economic Development Councils have joined with other regional workforce and innovation resources to host this year's 2010 Regional Economic Forecast & Innovation Expo in December 2010. This year the Expo will showcase some of the newest technology products and services to help businesses stay competitive in the market.

The Intracoastal Marine and Advanced Manufacturing Alliance under the HSHW Strategic fund with the Northwest WDC and Olympic WDC provided the opportunity to address industry specific on-site training needs. Videos aligned with a company's objectives produced a sustainable base of knowledge and expertise for their employees. Local success has created global and stateside training models for several companies as they take up the production on their own, confirming that working closely with industry helps generate new ideas and broadens exiting relationships.

The WIRED grant laid the foundation for the \$5 million Energy Grant and changed the Center of Excellence for Energy at Centralia College to the Pacific NW Center of Excellence for Clean Energy. The grant provides for the improvement of the workforce training pipeline in the demand and supply side of the utility sector.

The Pacific Mountain WDC, in partnership with the Tacoma/Pierce WDC, the City of Lakewood, Office of Economic Development, Tacoma-Pierce County Economic Development Board, the Thurston County Economic Development Council, Chambers of Commerce from the cities of Lakewood, Lacey and Olympia, Employment Security Department, WorkSource offices in both Pierce and Thurston counties, and the business community joined forces to submit a proposal for National Emergency Grant funds that target military spouses, family members and civilian Department of Defense employees dislocated as a result of the Fort Lewis/McChord joint base merger. The Pacific Mountain WDC will engage partner organizations in the \$4.5 million grant to create an organizational structure and training capacity in Pierce and Thurston counties to form a Joint Base Reemployment Center.

In partnership with the region's Economic Development Councils, community colleges, four-year college extension offices, rural economic development organizations, and existing workforce system partners, the Pacific Mountain WDC sponsors a series of forums to discuss and align policy goals among the primary economic and workforce development stakeholders. Next steps center on identification of what strategic clusters either exist or should be targeted to meet the policy goals of the various partners and have the strongest economic development potential. The approach to cluster development will be twofold: Examine ways to grow existing clusters and look at opportunities that exist to recruit new business and industry into the region.

C. Northwest WDC (Island, San Juan, Skagit and Whatcom counties)

The Northwest WDC has collaborated and aligned with partners for these training initiatives:

- A. Washington Intracoastal Marine and Manufacturing Industry Alliance
- B. Pipeline into Advanced Manufacturing Careers
- C. Transitions to RN Online

- D. Moving Forward: Creating Career Pathways for Northwest Hospital Workers
- E. Pre-Employment Training for Heath Tecna Production Workers

Heath Tecna demonstrates a great case of the Northwest WDC's regional collaboration efforts. In response to increased contracts and production demands, HeathTecna, an aerospace composite manufacturer in Bellingham, approached workforce preparation partners for assistance in recruitment, training and hiring. The Northwest Economic Council-Whatcom and the Northwest Workforce Council (project management, assessment, enrollment, and project support), in partnership with Bellingham Technical College (training), the Employment Security Department (recruitment), Heath Tecna (project design & training), Impact Washington, Kelly Services (recruitment & screening), and Manpower (recruitment & screening), implemented the project.

The **Washington Intracoastal Marine and Manufacturing Industry Alliance** is designed to meet the Intracoastal Region's current and future talent development needs. **The Intracoastal Region** incorporates 12 Intracoastal counties: Whatcom, Island, San Juan, Skagit, Clallam, Jefferson, Kitsap, Grays Harbor, Mason, Thurston, Lewis, and Pacific. The initiative focuses on high growth industries and economic sectors that make up or support the marine trades and other advanced manufacturing, including composites and wood products.

The **Transitions to RN Online** project is designed to increase the training capacity of Whatcom Community College's Registered Nursing (RN) and Nursing Assistant (NA) programs through expanded access to rural and underrepresented adults, incumbent workers, and retired Registered Nurses.

Bellingham Technical College's **Pipeline into Advanced Manufacturing Careers** project is a four-pronged strategy to provide training to increase numbers of manufacturing workers across multiple levels and industries. Key strategies include: 1) Innovative recruitment efforts emphasizing outreach to underrepresented populations; 2) Solid retention and support plans; 3) Effective and innovative uses of instructional technology for delivery in rural areas; and 4) Support of associated educational training programs.

Finally, the **Creating Career Pathways for Northwest Hospital Workers** is an initiative to expand access, participation and quality of training programs and support services for workers from five hospitals in Northwest Washington.

Because of the diversity and prevalence of small employers, the approach has been to focus on key industry sectors as determined by wages and employment rather than on a specific cluster. The region's fastest-growing industries include professional and business services, construction, marine, wood product, and other advanced manufacturing, freight transfer, education and health services, tourism and recreation, the service industry, and wholesale and retail.

Pending Collaborative Training Initiatives:

- A. An application to the Department of Labor's Community Based Job Training Initiative for *Building a Sustainable Energy Education: A Holistic Training Approach to Renewable Energy Generation, Distribution and Consumption*.
- B. An application to the Department of Labor's Community Based Job Training Initiative for *Healthcare Education-to-Career Opportunities*, which was approved and is now being implemented.

- C. An application to the Department of Labor’s Community Based Job Training Initiative for *Cyber Security for SCADA and Industrial Control Systems*.
- D. An application to the National Institute of Food and Agriculture’s Rural Technology Competitive Grants Program for the *Development and Implementation of a Curriculum to Train Operators for Rural Area Anaerobic Digesters*.

D. WDC of Snohomish County

In 2003, Snohomish County government, the Workforce Development Council of Snohomish County, the Snohomish County Economic Development Council, and all K-20 public education providers joined forces to launch the Snohomish County Blueprint Partnership. The initial purpose of the partnership was threefold:

- (1) Lay groundwork for the development of a strategic work plan around the key industry clusters targeted for economic development.
- (2) Make the case that Snohomish County is a “region” for the development of these clusters.
- (3) Provide a framework for action steps including further discussions with other stakeholders and potential partners.

The partnership’s steering committee meets twice a year to review and refine the targeted clusters based on research, review accomplishments, and direct its subcommittees on the completion of tasks. Workforce Development Council Snohomish County is the convener of the partnership and conducts ongoing research on industry needs and labor market projections for each targeted cluster in coordination with the research being conducted by the state’s Employment Security Department’s regional Labor Market Economist, Snohomish County Economic Development Council research staff, and Puget Sound Regional Council research staff.

Collectively, these partners seek out and obtain resources to support shared goals and objectives for the targeted clusters to the benefit of job seekers and businesses alike. A few recent collaborative projects and products involving Blueprint partners and other key Snohomish County stakeholders have included:

- CERB Grant for Paine Field Redevelopment
- Employment Resource Center for Aerospace
- Washington Aerospace Training and Research Center
- Washington Aerospace Suppliers Directory
- Materials Science Technical Resource Center
- Materials Process Development Center
- High Growth Job Training Initiative Grant for Advanced Manufacturing
- Community Based Job Training Grants for Advanced Manufacturing
- State Energy Sector Partnership Grant for Clean Tech (under Workforce Board)
- Energy Training Partnership Grant for Clean Tech (under Seattle-King County WDC)
- Community Based Job Training Grant for Health Care
- Allied Health Care Training for TANF and Other Low-Income Individuals
- Fund for the Improvement of Post-Secondary Education High Growth Job Training Grant for targeted industry clusters
- Governor’s Aerospace Conference
- Annual Construction Carnival
- Annual Focus of Farming Conference
- SuperHost Training for Tourism and Recreation

Shared efforts among Blueprint partners support the county’s targeted industry clusters in a number of ways. First, the Snohomish County Economic Development Council takes a lead role in attracting cluster businesses. The EDC engages the Snohomish County Blueprint partners and other community

partners, such as transportation and health care providers, to offer interested businesses a package that may include workforce development, economic development, and quality of life services. The partners also support the convening of industry focus groups to identify issues of common concern within the targeted industry clusters.

In addition to attracting businesses in targeted clusters, the partners jointly develop career and technical education programs to meet the needs of those businesses. These programs include K-12 career and technical education programs as well as a wide array of education and training programs at the postsecondary level.

Additionally, the WorkSource Snohomish County Business Services Team, which includes staff from Workforce Development Council Snohomish County, the state's Employment Security Department, and WorkSource Snohomish County partners, is organized around targeted industry clusters and focuses on helping businesses find and hire the workforce they need from an array of programs and services.

The Snohomish County Blueprint Partnership is also committed to supporting innovation in targeted industry clusters. This includes support for the research, technology transfer, and commercialization cycle through two Innovation Partnership Zones: the Aerospace Convergence Zone at Paine Field in Everett and the Bothell Medical Device Innovation Partnership Zone. Both of these zones support industry clusters targeted by the Blueprint partners.

Several programs also provide entrepreneurial assistance, including the Washington State Procurement Technical Assistance Center (PTAC) operated by the Snohomish County Economic Development Council. Last year, the PTAC assisted 1,400 Washington firms in obtaining more than \$200 million in government contracts.

The Small Business Development Center operated by Edmonds Community College and co-located with the Snohomish County Economic Development Council and Workforce Development Council Snohomish County helps entrepreneurs expand their businesses.

Additionally, Everett Community College offers an effective entrepreneurial training program that helps students launch and run a business.

E. WDC of Seattle-King County

The WDC of Seattle-King County had an active partnership with its local economic development agencies prior to the adoption of SHB 1323 and they continue to work closely together. The CEO of enterpriseSeattle is a WDC board member, and the CEO of the WDC is on the executive committee and serves as the secretary of enterpriseSeattle.

The WDC of Seattle-King County and enterpriseSeattle (along with the Department of Commerce) are currently working on a model of partnership between economic and workforce development that will be shared throughout the state. Funded by a federal appropriation, this 18-month project is focused on fostering "demand-driven" workforce development approaches.

In a partnership that will inform this project, the WDC and enterpriseSeattle are also collaborating to explore the fashion and apparel industry. Together with Washington State University, the WDC helped fund an economic baseline study of the industry's companies, jobs, revenue and workforce issues, as well as the challenges and opportunities for increasing the cluster. In addition, the WDC and enterpriseSeattle are examining Financial Services as a sector in which they may partner next.

Previously, they partnered in the then-little-understood field of Interactive Media to draw out this emerging sector, beginning with a baseline study and continuing through the current WDC-led sector panel focusing on the industry's workforce needs.

The WDC of Seattle-King County is a national leader in workforce initiatives focused on industry clusters and sectors. A biennial analysis of local industry sectors results in selection of sector priorities. This process includes a review of the priorities of enterpriseSeattle, the Puget Sound Regional Council, and the City of Seattle Office of Economic Development. In implementing training and strategic planning, the WDC works closely with 11 community and technical colleges. As an example, their sector analysis work and close collaboration with employers allows the WDC to target investments to train in high-demand industries and occupations.

The WDC's sector initiatives include sector panels -- industry-driven groups including employers, educators, unions and more who come together to focus on workforce issues in one particular industry. Current sector panels include Maritime, Manufacturing, Interactive Media and the Green Workforce Council, which builds on the work of our Green Building Skills Panel. The sector panels allow us to target the needs of employers when making investments of public funds.

The WDC has aggressively sought and competed for federal dollars for sector-based training and systems initiatives. In 2009, the WDC brought more than \$10 million to Seattle-King County through three competitive Recovery Act grants for green skills training—especially in green building, manufacturing and energy efficiency. In 2010, it won a five-year, \$11 million grant to train people for entry, mid- and high-level jobs in health care.

To increase access to jobseekers, career planners and young people, the WDC developed career maps in seven sector areas and distributed them in a booklet, Map Your Career, throughout the county.

Since 2005, the WDC has maintained a formal partnership with the U.S. Small Business Administration to provide entrepreneurial training and employer development through WorkSource one-stop career centers. Two unique services were created by the partnership between WorkSource Seattle-King County and the Small Business Administration to educate businesses, and potential business owners in King County.

The first is a free, two-hour "Small Business Orientation" provided at WorkSource to educate customers on community, state and federal resources available to those who are interested in starting a small business. The second service, created with the WorkSource Business Solutions Team, is a quarterly Business Breakfast Seminar Series that offers information and resources to employers. Guest speakers share their expertise on topics of interest to the employers in the Seattle-King County area.

F. Tacoma-Pierce County Workforce Development Council

The Tacoma-Pierce County WDC has implemented a strategic plan to include components of SHB 1323. Its coordinated projects include:

1. Co-locating Business Services at the local Economic Development Board.
2. Participating and advising in key Associate Development Organization meetings, symposiums, and forums.

3. Hosting a WorkSource Leadership Committee whose purpose is to strategically work to support workforce development system integration and maximize connections among job seekers, workers, businesses and employers.
4. Partnering with community and technical colleges on Job Skills Program (JSP) and other grant funded employer, incumbent worker and potential worker training opportunities
5. Coordinating business services with the state's Employment Security Department.
6. Creating Sectoral Initiatives that include partners from industry, labor, middle and high schools, community and technical colleges, public and private universities, government-based health systems, and WorkSource.

Pierce County boasts the following rapidly growing clusters and industries:

1. Military
2. Aerospace Manufacturing
3. Plastics Manufacturing
4. Concrete Pipe and Gypsum Products
5. Fishing and Seafood Products
6. Confections
7. Other Computer Services
8. Other State and Local Government Enterprises
9. Warehousing
10. Construction
11. Physicians Offices
12. Other Ambulatory Healthcare
13. Office Administrative Services

The Tacoma-Pierce County WDC also boasts the following development programs:

1. Health Care and Construction Industry Career Days for High School students; funded primarily with leveraged dollars.
2. Incumbent and potential worker training programs partially funded with employer dollars.
3. Career Coaching programs partially funded with employer dollars.
4. Fee for Services available for employers that need customized/wrap around services.

In the future, the WDC continues to support the intent of SHB 1323 in the following ways:

1. Continue creating employment and training programs that partner employers and community and technical colleges; increase employer funding of these programs.
2. Align the delivery of services with industry sectors identified in the strategic plan and local economic development strategies.
3. Partner with industries to provide facilities, faculty, and equipment in high wage, high demand fields.
4. Continue to convene workforce and economic development leaders around the concept of creating and sustaining an organizational structure that supports the full integration of services.
5. Understand and respond to the needs of business customers and implement a coordinated, comprehensive strategy among workforce and economic development partners.

Pierce County is fortunate to have many partners who provide entrepreneurial training and technical assistance. One example is the Metropolitan Development Council (MDC), a nonprofit Community Action Partnership. Among an array of services, MDC offers business training and financial assistance

for low income individuals who want to start a microenterprise. MDC has co-located staff at the WorkSource Career Development Center.

In addition to this resource, Tacoma-Pierce County WDC has the Small Business Incubator, an established nonprofit dedicated to economic development in the greater Tacoma and Pierce County areas. The Incubator works closely with business and employment directed organizations to foster the startup and expansion of small business enterprises.

Another resource is the Business Center located at Clover Park Technical College. This center is comprised of lending institutions, Small Business Administration, WorkForce Central Business Connection, Centro Latino Small Business Enterprise, and other organizations that offer technical assistance—from developing a business plan to funds acquisition, to business management. Pierce County Community and Technical Colleges also provide training modules that address entrepreneurial skills.

MDC, the Small Business Incubator, Business Center, and the area's community and technical colleges participate in all partner quarterly meetings where information about services and resources are shared. This is in addition to one-on-one meetings and conversations between partnered staff.

G. Southwest Washington WDC (Clark, Cowlitz, and Wahkiakum counties)

The Southwest Washington WDC has close and effective relationships with local economic development councils and community colleges. Southwest WDC and the EDCs share staff members, board members, and work together to perform intertwined strategic planning and industry targeting. They work closely together to ensure the state Labor Market Economic Analysis is augmented by local intelligence and that Opportunity Funds are spent in a coordinated regional manner.

The Southwest Washington WDC shares a staff member with Columbia River Economic Development Council and a staff member with the Cowlitz Economic Development Council. Working closely with local community colleges and other partners, including Impact Washington, these shared staff members play a key role in coordinating joint projects such as Lean Manufacturing and other training for incumbent workers. With experience and knowledge in both the Workforce Development and Economic Development realm, they help the southwest Washington area to be flexible, adaptable to change, and able to create responsive training programs to meet industry needs.

Some examples of joint WDC and EDC projects include Pub Talk, the Industry Engagement Team, and the Business Services Group. Pub Talk, or entrepreneurs' network, provides a venue and connection for entrepreneurs, investors, and professional service providers to network for purposes of promoting entrepreneurship, innovation and economic vitality in southwest Washington. The goal is to build event awareness and foster a loyal following while attracting new talent and financial backing. Pub Talk was successfully established in Clark County in 2009, and is launching in Cowlitz County next. The Industry Engagement Team brings together a variety of agencies including community colleges, K-12 education, one-stop WorkSource staff, and more, to coordinate and leverage business outreach efforts. The Business Services Group is smaller and more targeted, and helps local entities provide services to businesses, such as county and city government, learn more about economic and workforce development trends, and business needs.

The Southwest Washington WDC also shares target clusters with its economic development partners. The WDC chooses companies of focus based on key clusters, including manufacturing and health care.

The companies are selected in part based on clusters. However, action plans are driven by the needs of each company. For example, Pub Talk focuses on manufacturing, but within the cluster, the WDC works with several companies that may each have a different plan. This work will continue with a joint “call to action” that will redouble efforts to create jobs in the region, which has the highest unemployment rate in the state.

H. North Central Washington WDC (Okanogan, Grant, Adams, Chelan, and Douglas counties)

Two of the North Central Washington Workforce Area’s five Associate Development Organization executives serve on the WDC. This interconnection facilitates coordination. These two executives are especially helpful in developing the WDC’s Strategic Plan. The other three ADOs received the Area’s Local Unified Strategic Plan.

The WDC and Grant Economic Development Council responded to the state Workforce Board’s *High Skills, High Wages Strategic Fund* and collaborated to submit a grant application to support pre-employment training for manufacturers and food processors in the Columbia Basin. Initially, the companies supported the grant application, but ultimately decided a public-private partnership imposed excessive restrictions and declined to accept grant funds. However, one-stop career center partners provide assessment and training services on a fee basis for the employer consortium.

The North Central Washington WDC and WorkSource Okanogan assisted the Okanogan Economic Alliance in staging a business outreach breakfast where companies with successful training partnerships attempted to persuade other firms to increase and improve their human resource connections with the public workforce system.

The WDC prioritized expanding Industrial Technology training at Big Bend Community College with American Recovery and Reinvestment Act class group funds. A cohort of laid off workers studied electricity, fabrication, boilers and refrigeration. The WDC also arranged for hands-on experience with Columbia Colstor to enhance the student’s advanced refrigeration course learning.

The WDC also contracted with Wenatchee Valley College to deliver an Associate Degree Nursing program at the college’s Omak campus, as well as class group contracts Nurse Assistant and Caregiver. The WDC is also working with the Washington State Hospital Association to implement an ARRA national grant to provide Medical Assistant training for entry-level hospital employees.

The WDC supported the efforts of the Grant EDC and Department of Commerce to persuade SLG-BMW to expand carbon fiber manufacturing in Grant County. Recently the WDC convened a joint planning meeting with SGL, Big Bend Community College, Employment Security and SkillSource to discuss workforce services including the Governor’s Workforce Investment Act 10 Percent grant to train new hires.

The WDC is collaborating with area Chambers of Commerce to organize and deliver customer service workshops for 100 Retail Trade employees.

The North Central Economic Development District requested the WDC apply for a CDBG grant to provide entrepreneurial training. The WDC’s fiscal agent SkillSource submitted an application to the City of Wenatchee. Although not approved, the organizations gained experience working together.

In addition, SkillSource organized a school-based enterprise at WorkSource Central Basin to operate the on-site Café.

I. South Central WDC (Kittitas, Klickitat, Skamania, Yakima counties)

The South Central WDC is accomplishing the mission of SHB 1323 in the following ways:

1. Completed new strategic plans linking WDC and ADO efforts based on a regional cluster plan, Blueprint Yakima Valley.
2. Operates Industry Skill Panels to identify specific workforce training needs and opportunities. Works closely with local ADO to identify and meet the needs of expanding companies.
3. The South Central WDC shares cross membership on its boards/committees with local ADOs and the Community College Center of Excellence. This same partnership supports a regional cluster plan by following a “grow your own” workforce development strategy targeting key industries, including agriculture/food processing, manufacturing, construction, health care and renewable energy.
4. Worked on an alternative energy planning grant that helped identify demand occupations and training options within the Central Washington region.
5. Enhanced entrepreneurial training efforts, with the local ADO running a business plan contest, offering seminars in partnership with the local Senior Core of Retired Executives (SCORE) chapter, a business advisement organization that helps local emerging companies commercialize new products, and build longer term relationships with colleges and universities focused on helping entrepreneurs and emerging businesses.

Currently, the South Central WDC also is working with a local community college and Healthcare Skills Panel on two initiatives:

1. An Allied Health Clinical Placement Coordinator project to address a shortage of clinical placement across several Allied Health Occupations.
2. A Mentorship Project which matches healthcare professionals such as nurses and technicians with college nursing students, offering students support and new insights on medical occupations.

Throughout all of these partnerships, Incumbent Worker Training continues to be a key Industry Cluster Initiative where 885 employees from key sectors have benefitted from training such as LEAN, Specialty Nurse Training, Storm Water Management, Post Cardiac Care, and others. The partnership also plans to develop and support training for Wind Farms and First Responders in Climb Rescue and Tower Safety in the near future.

J. Eastern Washington Partnership (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Whitman, and Walla Walla counties)

The Eastern Washington Partnership WDC has very good working relationships with the community colleges and Associate Development Organizations in the region. There are numerous examples of coordinated activities that have occurred during the past year. WDC staff and board members have been involved in joint planning processes, development of new training programs that support regional industry clusters, and support of ADO efforts to provide information, training and technical assistance in their respective areas.

The WDC has supported incumbent worker training for workers in the timber and agricultural industries. It has also made a significant investment in the emerging wind power generation industry

during the last year. The WDC targeted ARRA dislocated worker and adult funds, the Governor's ARRA discretionary funds and also some 5809 funds to help Walla Walla Community College launch its Wind Turbine Technology program. Thousands of new wind turbines have already been constructed or are permitted to be constructed. The industry estimate is that there will be a need for one turbine technician for every eight turbines. This program has had the involvement of the WDC, the Port of Walla Walla, the Employment Security Area Director, and WorkSource service providers.

Another significant project that involved the WDC, the ADOs, and Employment Security is the Strategic Fund initiative. The WDC contracted with the Southeast Washington Economic Development Association to work with employers in several different areas. One particularly successful endeavor was to help several employers from Asotin County pay for the cost of attending training on the various steps required to enter the export market. The result is that a group of European companies have travelled to the Lewis-Clark Valley because they are interested in purchasing boats manufactured in the Valley.

The WDC Director and some WDC board members have consistently participated in the development of the Tri-County Economic Development District's (TEDD) Comprehensive Economic Development Strategy, which is updated annually. The TEDD Executive Director is on the WDC, and she and some of TEDD's board members also participate in the development of the WDC's strategic and operations plan. Input is sought from the other ADOs in the workforce development area during the planning process. Representatives from Walla Walla Community College and the Community Colleges of Spokane, and Employment Security's Area Director are all very active in the WDC's planning process and in parts of the plan implementation.

The WorkSource staff and the Lincoln County ADO have been working closely together in helping a waste- to-energy facility as it is preparing to become fully operational. This facility will be an important addition to Lincoln County's economy and its workforce.

The WDC and the WorkSource staff are helping to market the Micro Enterprise Program and Revolving Loan Fund offered by TEDD. Both of these are significant in helping increase employment in the region.

The WDC has good connections with the various partners throughout the region and will continue to work on coordinating in numerous ways with all of them.

K. Benton-Franklin WDC

The Benton-Franklin WDC has directed federal Workforce Investment Act funds to education and training activities in agriculture, manufacturing, energy production, and healthcare. These are industries that the Tri-Cities Washington Development Council (TRIDEC) lists as its focus and programs for which Columbia Basin College provides training programs.

The following are examples of how the area targets resources to assist clusters and coordinates workforce and economic development efforts.

- Approximately \$270,000 in ARRA Dislocated Worker funds, \$182,000 in ARRA Adult, and \$272,900 in HB 5809 funds have been used to train local job seekers in the regional demand occupations in the past 18 months. Columbia Basin College responded to the WDC's RFP with 17 programs of cohort training to train workers to enter employment in these demand areas.

- Some \$90,381 was invested in incumbent worker training in the past six months.
- The President of TRIDEC is an active board member of the WDC.

Most of the industry clusters identified in the Benton-Franklin region are related to work on the Hanford Nuclear Reservation. The jobs require a highly skilled workforce and the WDC participates by:

- Ensuring WIA eligible participants can enroll and access tuition assistance in the appropriate training offered by both Columbia Basin College and Washington State University that leads to employment in these clusters.
- Continuing to provide staff support for recruitment and screening of workers with Hanford area employers that utilize WorkSource Columbia Basin to assist with their hiring needs.
- Continuing to provide staff support for recruitment and screening of workers with key non-Hanford area employers that utilize WorkSource Columbia Basin to assist with their hiring needs.
- By providing a WDC funded staff person to work with employers in the Tri-Cities Research District to ensure relevant data is gathered on workforce skills needs. This cluster is related to renewable energy and manufacturing clusters.
- The Mid-Columbia Energy Initiative has been endorsed by Governor Gregoire to help reduce operating costs for the Department of Energy site and support the energy park that will be designated on the Hanford reservation. WDC staff are active participants on the committee.
- Membership in the Hanford Site Future Workforce Sub-Committee to obtain funds from the Department of Energy that will assist Hanford employers transition their workforce to clean energy technologies. The proposal was submitted mid-October.

Other local collaborative efforts between WDCs, ADOs, community and technical colleges, and ESD Area Directors include:

- Membership in the TRIDEC case management team for business recruitment.
- Member of the sales team for site visits by companies considering the region for a new business location. The most recent success is the relocation of Cascade Natural Gas corporate offices to Richland.
- Membership on the Board of Directors for Tri-Cities Research District, which oversees the state designated Innovation Partnership Zone in the region.
- Provide a WDC-funded staff person to work with employers in the Tri-Cities Research District to ensure the gathering of relevant data on workforce skills needs.

Ongoing entrepreneurial assistance and development programs include:

- Columbia Basin College has developed a Bachelor of Applied Science in Applied Technology Management and Entrepreneurship as part of the Community and Technical Colleges Baccalaureate Pilot Project. The Benton-Franklin WDC supported the application and provides WIA funds for interested program participants to enroll in the program.
- WDC staff is part of the coordination team to develop a Tri-Cities Entrepreneur Web portal that includes TRIDEC and Columbia Basin College.
- Resources available at WorkSource Columbia Basin to those interested in entrepreneurship include:
 - A self directed library of small business texts and resource publications.
 - Pertinent links and resources are provided on the regional website: www.TriCitiesWorks.com.
 - Business plan writing software, job description writers, business-related templates, and other small business software hosted at various locations.

- Providers of entrepreneurial and small business training are identified on www.TriCitiesWorks.com.
- Referral to SCORE for initial coaching on business plans, pricing plans, marketing plans, and financing.
- Referral to Small Business Development Center Business Resource Center, and Columbia Basin College program course offerings.
- Local and regional labor market information sourced and/or provided to prospective entrepreneurs and small business operators.
- Referrals to appropriate organizations/agencies for business licensing, tax consulting and talent resources.

L. Spokane Area WDC

Greater Spokane Incorporated (GSI) is the Associate Development Organization (ADO) and regional Chamber of Commerce located in Spokane that serves the business interests of the region with a wide variety of services aimed at retention and expansion and also performs recruitment activities that market the region and result in business relocation. The Spokane Area WDC is responsible for oversight of the workforce development system in Spokane County.

The Spokane Area WDC and GSI have established a strong collaborative relationship and a track record of successful results from a large number of shared activities and initiatives that have benefitted the Spokane region and contributed to its economic development. Both organizations recognize the synergy between workforce and economic development and seek to achieve greater efficiency by working together to leverage resources in support of common goals. Strategic planning efforts involve staff and principals from both organizations who contribute to the alignment of their respective plans. GSI and the Spokane Area WDC each utilize a comprehensive industry cluster approach to guide their resource deployment and outreach strategies and there are robust linkages between efforts to serve businesses in these clusters.

In the health sciences, manufacturing, aerospace, and clean technology sectors both GSI and the Spokane Area WDC work closely together to identify the needs of industry and provide solutions that facilitate their growth and expansion. Industry Skill Panels support each of these key sectors and leverage resources from both GSI and the Spokane Area WDC to involve businesses and partners from across the spectrum of economic and workforce development, as well as postsecondary and secondary education, to ensure that industry has a forum to communicate their needs and that resources are brought to bear in a timely and effective manner. In addition, key stakeholders have formed a Strategic Workforce Action Team that meets to discuss workforce issues facing the community, share information from various agencies, and to plan for responding to grant solicitations that assist in bringing resources to the region.

Each cluster has seen a number of initiatives that have borne fruit over the past few years and contributed to business growth. The Manufacturers' Roundtable has spearheaded efforts to develop additional training capacity in manufacturing at the community college and increase utilization of the Community Empowerment Zone. The Inland Northwest Aerospace Consortium has helped connect regional aerospace businesses to one another and a study of the workforce needs has guided development of new training programs for this sector. The Healthcare Committee has guided the deployment of over a quarter million dollars to fund cohort training at Spokane Community College in in-demand allied health occupations.

As workers have been impacted by the national recession many are seeking to start their own small business and become self-employed. The Spokane Area WDC responded by using American Recovery and Reinvestment Act funds to support a cohort of students who are earning a certificate in Integrated Business and Entrepreneurship studies. This training will prepare them with the skills necessary to craft a business plan, launch their own enterprises, and become economically self sufficient.

Appendix A

Industry Skill Panel Description and Results Summary

Advanced Manufacturing: Spokane

Lead: Greater Spokane Incorporated

- Strategic Partners:
 - Spokane Area Workforce Development Council
 - Community Colleges of Spokane
 - Institute for Extended Learning
 - Spokane Public Schools
 - Spokane Area Labor Council
 - 18 Industry leaders in Aerospace and high technology manufacturing

Results:

- Collaborative partner in the development of the I-BEST program at the Community Colleges of Spokane, which is starting its second quarter of training with 15 students.
- Held three successful town hall meetings with 300 participants from industry, human resources, and workforce development offices.
- Created career awareness brochures, binders, and presentations for junior high and high school audiences. Presentations went to nine school districts impacting 23,000 students.
- Materials defined job titles and duties, the necessary education and skills for those jobs, and where to get the training and or education in the region.
- Distributed 25,000 brochures, and 1,500 career binders throughout the regional school districts.
- Distributed 10,000 brochures through the regional WorkSource Centers.
- Published a first-year skill panel report identifying challenges faced by manufacturers and proposed solutions.
- Expanded the presented industries and employment opportunities to include: aerospace, manufacturing, and health care and construction.

Food Processing Industry: Yakima, South Central Washington

Lead: Northwest Food Processors Association

- Strategic Partners:
 - South Central Workforce Development Council
 - New Vision Yakima
 - Yakima Valley Community College
 - Bellingham Technical College
 - Walla Walla Community College
 - Shoreline Community College Center for Manufacturing Excellence
 - Perry Technical Institute
 - Teamsters Local 760
 - 29 Regional Food Processing Companies

Results:

- Trained 1,018 incumbent workers and developed 31 customized courses.
- Conducted 46 training sessions.
- \$651,290 industry match.

- Researched strategies to close skill gaps for food processor operators, mechanics, future leaders, and web-based training needs.
- Operator and entry-level mechanic critical work functions update and projected skill gaps.
- New system of training bridges between operators and mechanics.
- Gap analysis of industry training needs survey and training provider survey.
- Best practices research for future leaders.
- Developed action plan/design for web-based clearinghouse of workforce support systems.
- Conducted training needs survey of 10 food processing plants representing 3,203 production/ operations workers and 300 maintenance workers.
- Educated 75 people on tactical pathways to attract and retain technical & leadership employees, including women, Hispanic, and other minorities.
- Planned for the continued development of future Industry Leaders, particularly women and Hispanics, to fill the void in industry leadership as baby boomers begin to retire.

Life Sciences Industry: Greater Seattle Region

Lead: Seattle King County Workforce Development Council

- Strategic Partners:
 - Bellevue Community College
 - Life Sciences Industry Education Council
 - Northwest Association for Biomedical Research
 - Washington Biotechnology & Biomedical Association
 - Seattle Children’s Hospital Research Institute
 - Fred Hutchinson Cancer Research Center
 - Washington Global Health Alliance

Results:

- Three reports: 1) Review of Washington state life sciences programs, launch of online directory portal of science programs in Washington, and recommendations from science outreach leaders on how to engage communities; 2) Human Resource Focus Groups Report on how recruitment could be improved; and, 3) High School Student focus group report on about teen attitudes about health care work.
- Life Sciences Programs brochure to illustrate innovative science programs statewide.
- Life Sciences Livelihoods Summit attended by 55 high school teachers, counselors, job case managers and WorkSource staff from King and Snohomish Counties. Added benefit of a new partnership with Fred Hutchinson Cancer Research Center
- Creation of a Life Science website.

Manufacturing Industry: Eastern Washington

Lead: Eastern Washington Partnership WDC

- Strategic Partners:
 - Spokane Community College Institute for Extended Learning
 - Walla Walla Community College
 - Spokane Skills Center
 - Palouse Economic Development Council
 - Tri-County Economic Development District
 - Clarkston Chamber of Commerce
 - North Idaho Manufacturers Alliance

Results:

- Devised a marketing plan and trained proctors to pilot the new National Work Readiness Credential.
- Created an inventory of equipment assets in the region (includes equipment at employer sites and educational facilities).
- Presented to all of the region's K-12 superintendents and 85 of its teachers about the opportunities for careers in local industries.
- Drafted a set of cluster-based skills requirements outlining training required to meet skill needs.
- Arranged multiple tours of local manufacturing facilities for over 70 high school teachers, providing first hand examples of the skills required and the new manufacturing workplace.
- Two panel members secured incumbent worker grants.
- A local service provider was inspired to present a unique job fair for area high schools.
- Presented two job fairs hosted by regional manufacturers presenting job opportunities, pay, benefits, basic skill requirements. Over 60 students attended each session.
- In the final production process for a DVD showcasing employment opportunities in manufacturing.
- Developed public service announcement materials for the radio and negotiated available airtime through local station sponsorship.

Marine Manufacturing and Technology: Northwest, Olympic and Pacific Mountain Workforce Development Areas

Lead: Northwest Workforce Development Council

- Strategic Partners:
 - Skagit Valley College – Northwest Center of Excellence in Marine Manufacturing and Technology
 - Grays Harbor College
 - Olympic Workforce Development Council
 - Pacific Mountain Workforce Development Council
 - WorkSource Grays Harbor
 - Economic Development Association of Skagit County
 - Grays Harbor Economic Development Council
 - Aberdeen School District
 - Harbor High School
 - Over 30 marine manufacturers throughout the three workforce development areas

Results:

- Completed Marine Carpentry and Marine Electrician DACUMs, New C&TC permanent classes created in Marine Carpentry – Six Yacht Finish Carpentry – increased capacity of 20 seats.
- Marine Electrician DACUM – One class established at Grays Harbor College for Marine Electrical; classes added Skagit Valley College leading to ABYC National Certification – 40 trained in past year.
- Developed marine aluminum welding classes at Olympic College, Skagit Valley College and Bellingham Technical College with added capacity of 92 seats. Sixty students trained in aluminum welding in first year.
- Aluminum welding curriculum to training six incumbent workers in-house at boat builder.
- Developed aluminum welding skill training for 637 new and incumbent workers.

- Developed on-site DVD-based training model to train large crews on production processes.
- Developed aluminum welding skill standards to identify skill gaps, create curriculum, and implement in-house training for incumbent workers at All American Marine, Inc.

Sharing Information:

- Conducted 2005 Marine Manufacturing and Technology Industry Summit and the 2006 Marine Manufacturing and Technology Skill Panel Regional Workforce Conference.
- Presented to the Governor’s Joint Economic & Workforce Development Conference Panel, describing how Industry Skill Panel activities link to the Center of Excellence and how they support business and the region’s economic development.
- Curriculum posting on the NW Marine Manufacturing & Technology Center of Excellence web page.

Increasing the Pipeline:

- Created curriculum for Summer Marine Career Camps (“Float Your Boat” and Marine Manufacturing Summer Career Camps). First year with 21 youth participants. Summer 2007 – five classes – 65 students
- Conducted 2005 Marine Manufacturing & Technology Maritime Breakfasts at the Olympic College campus for 31 High School Counselors and 2006 Marine Industry breakfast meeting with high school and junior high school counselors in the Kitsap and North Mason area.
- Created a Military Skills Crosswalk, matching Pacific Marine industry skill requirements to military occupations.

Wood Product Manufacturing: Whatcom and Skagit Counties

Lead: Northwest Workforce Development Council

- Strategic Partners:
 - Bellingham Technical College
 - Skagit Valley College
 - Economic Development Association of Skagit County
 - Bellingham/Whatcom Economic Development Association
 - Wood product manufacturers in Whatcom and Skagit Counties
 - Association of Western Pulp and Paper Workers
 - Lumber and Sawmill Workers Local 2667

Results:

Skill Development Needs:

- Surveyed industry members to determine common and priority occupational skill needs. This was used to identify incumbent worker training needs and will enable training providers to develop curriculum to address emerging skill shortages.
- Fourteen workers from Cedarprime received incumbent worker training using in-plant on-the-job instruction and an on-line application provided through Bellingham Technical College.
- Used Local Demand Side Training, Job Skills and Customized Training programs for occupational and workplace skill training.
- Expanded incumbent worker training using the Cedarprime hybrid model (in-plant on-the-job instruction and an online application provided by Bellingham Technical College) to other industry employers.

Increasing the Pipeline:

- Created curriculum and course content for Summer Manufacturing Career Camps.

- Industrial Maintenance Technician certificate program started (2007) at Bellingham Technical College. Twenty seat capacity.
- Implementation of hybrid training model using in-plant on-the-job instruction and an on-line application provided through Bellingham Technical College for incumbent wood product workers. Thirty trained with workers receiving industry/business-accepted occupational standards and pay raises.
- Industrial Maintenance Technician certificate program started (2007) at Bellingham Technical College. Twenty seat capacity.
- Implementation of hybrid training model using in-plant on-the-job instruction and an online application provided through Bellingham Technical College for incumbent wood product workers. Thirty trained with workers receiving industry/business-accepted occupational standards and pay raises.
- Creation of Production Specialist certificate program in progress at Skagit Valley College – 20 seats. Summer 2007 – three camps – 45 students.
- With considerable overlap in interest and skill sets, an additional 30 youth were exposed to career opportunities in manufacturing through a marine manufacturing and two construction camps in Skagit and Whatcom counties.
- Northwest WDC, Bellingham Technical College and industry partners conducted a Summer Career Camp in Wood Product Manufacturing serving 10 youth who went on to receive industry internships.

Construction Industry: Greater Spokane Region

Lead: Spokane Area Workforce Development Council

- Strategic Partners:
 - Spokane Community College Institute for Extended Learning
 - Spokane Apprenticeship Training Center
 - Spokane Public Schools
 - Educational Service District 101
 - Inland Northwest Electrical Training Trust
 - Spokane Chapter – National Women in Construction
 - Spokane Area Labor Council
 - Associated General Contractors
 - Associated Builders and Contractors

Results:

- Built the Green Machine *Grades to Trades* Mobile Display Unit to allow students to see the technology used in Green Construction industry.
- Researched and developed a brochure featuring career information and community contacts (final product will be completed and distributed in Phase III).
- Conducted *Pizza, Pop and Power Tools* event for over 125 middle school girls.
- Partnered with Washington State Department of Transportation on *Construction Career Day* – 550 students from Eastern Washington participated.
- Assisted in establishing classes on Green Building techniques for architectural & engineering firms and students.
- Introduced Green Building concepts to existing apprenticeship curricula.
- Increased community awareness of skills shortages in construction.
- Recruited businesses via apprenticeship programs (joint apprenticeship & training committees).

- Assisted with articulation agreements between schools and Skill Center, and identified student academic and skill set needs for future employment in the Trades.
- Promoted Navigation 101 & other initiatives from OSPI and the Legislature.

Medical Devices: Greater Seattle Region

Lead: Edmonds Community College

- Strategic Partners:
 - Workforce Development Council Snohomish County
 - Everett Community College
 - Snohomish County Economic Development Council
 - Washington Manufacturing Services
 - Washington Biotechnology & Biomedical Association (WBBA)
 - Calypso Medical Technologies
 - Cardiac Dimensions
 - Diagnostic Ultrasound
 - Liposonix, Inc.
 - Medtronic- Physio Control
 - Microvision, Inc.
 - Pathway Medical Technologies
 - Philips Medical Systems of North America
 - Spiration, Inc
 - Siemens Medical Systems, Ultrasound Group
 - Therus Corporation
 - TriPath Imaging
 - Quinton Cardiology Systems
 - Spacelabs Care Solutions

Results:

- Information regarding industry needs was transmitted to economic and trade associations, educational institutions and government officials.
- Surveyed and published the results outlining the various job titles and descriptions, salary levels and educational requirements for various positions in the biotechnology sectors in Washington, California and the greater Pittsburgh area and, compiled the results of a similar survey with medical device companies in the Puget Sound region.

Building its ties with the economic and association partnerships:

- Updates from the Snohomish County EDC and the WBBA were included in all meetings; assistance from panel members for industry surveys and support for legislative issues and actions was solicited and received when needed; Industry Skill Panel members were able to identify specific economic issues that currently affect their industry and will affect overall growth over the next several years.
- Members were informed of seminars and meetings that would address issues directly related to their industry and encouraged to participate to ensure their voices were heard. Panel members attended a Washington Biotechnology & Biomedical Association-sponsored panel comprised of CEOs from medical device companies that specifically addressed growth and development issues in Washington and the Governor's "Life Sciences Summit 2006."

Curriculum development for courses directly related to industry needs:

- Serve as a regional advisory board to the Medical Device Industry Education Consortium, this panel was instrumental in the receipt of a National Science Foundation (NSF) grant to

- The panel finalized two - “Regulatory Affairs” - courses. This was an area identified in the MDIEC surveys as being - “very important” - in the overall training needs of the industry. The courses are offered in an -“online” - format allowing employees to take the courses anywhere, anytime.

Homeland Security: Statewide

Lead: Pierce College

- Strategic Partners:
 - Tacoma-Pierce County Workforce Development Council
 - State Board for Community & Technical Colleges
 - Disaster Reduction and Emergency Planning, Institute for Global and Community Resilience, Western Washington University
 - Dean of Workforce Education, Pierce College District 11
 - Center of Excellence, Pierce College District 11
 - School Safety/Legislative Liaison, Association of Washington School Principals
 - Director, Homeland Security Institute, SBCTC
 - City of Redmond
 - Washington Department of Health
 - Terrorism and Disaster Response Unit, Department of Health
 - 7-Eleven, Inc., North Pacific Division (US)
 - Washington Emergency Management, Washington Military Department
 - Planning & Logistics Project Manager, King County Office of Emergency Management
 - Department of Agriculture
 - Training Coordinator, Pierce County Department of Emergency Management
 - Regional Training Manager, FEMA, Region X
 - Branch Manager Logistics, Securitas Security Services Inc.

Results:

- The panel has harnessed the expertise of leaders in business, labor, education, and economic development into a partnership to identify workforce development strategies in this industry.
- The panel formed and convened a Homeland Security Steering Committee for the Skill Panel to more effectively establish Skills Panel priorities.
- Identified current and emerging education and training programs in Homeland Security and related disciplines (national and state).
- Conducted regional industry or industry cluster labor market analysis and published/distributed the results.
- Developed the plan to identify Homeland Security skills sets related to basic HS requirements across disciplines.
- Identified skills and training gaps.
- Develop the plan to identify Homeland Security Skills Sets related to basic requirements across disciplines.
- Worked with the Center of Excellence to define the Homeland Security industry needs that meet HSI requirements.

Transportation: Southwest Washington

Lead: Southwest Washington WDC

- Strategic Partners:
 - Workforce Development and Continuing Education, Clark College
 - Portland State University
 - Columbia River Economic Development Council
 - Firefighter and Central Labor Council
 - ILWU Port of Portland
 - Washington Trucking Association
 - Pacific NW Association of Rail Shippers
 - Lynden International
 - JW Fratt Consulting
 - WorkSource Vancouver
 - Portland & Western Railroad
 - Frito Lay
 - Interstate Wood Products
 - Boise Building Solutions
 - Shaver Transportation Co.

Results:

- Developed programs for the improvement of the workforce and enhancement of labor supply for high demand occupations in transportation.
- Identified workforce development needs in the transportation sectors of trucking, marine cargo and ports, air transportation, railroads, warehousing, supply chain and logistics.
- Conducted a substantial research effort resulting in the publication of "Freight Mobility Workforce Issues, Trends, and Recommendations for the Transportation Industry in the Northwest."
- Researched the truck driver shortage and created a report "Trucking Industry Tool Kit for the Driver Shortage." This document is now in use as a standard part of new employee training for regional trucking companies, including Puget Sound Truck Lines.
- Additional reports were produced looking at the logistics and warehousing sectors and based on research and interviews with major Vancouver metropolitan area employers including Dollar Tree, Southwest Washington Medical Center, Intel, Columbia Machine, Esco Corporation and others.
- Guided the ACTT research effort in the identification of training needs across transportation sectors.
- Expended the work in the trucking sector by supporting a consortium of trucking firms in the economically distressed Kelso/Longview area where truck driving jobs are available and driver candidates are in short supply.
- Assisting the railroads with a growing demand for entry-level railroad workers in rail operations where demand for workers is expected to continue to exceed supply.
- Research the rapid emergence of Radio Frequency Identification (RFID) technology across the transportation industry due to its effect on all modes of transportation, warehousing, supply chain and logistics management. Workers skilled in both the physical operations and technology applications aspect of RFID in transportation are increasingly in short supply.

Energy Production Technology: Statewide

Lead: Centralia College

- Strategic Partners:
 - Pacific Mountain Workforce Development Council
 - Lewis County EDC
 - IBEW #125
 - TransAlta-Centralia Operations
 - Puget Sound Energy
 - Tractebel- Chehalis Operations
 - Tacoma Power
 - Portland General Electric
 - PGE Corporate University
 - Chelan PUD
 - The PUD Association

Results:

- 106 people have been trained at (Centralia College, Wenatchee Valley College and Grays Harbor College).
- Direct skills and course development service to: Portland General Electric, Lewis County PUD, Puget Sound Energy, Bonneville Power Administration, Chehalis Power, Inc., International Brotherhood of Electrical Workers, Local 77, International Brotherhood of Electrical Workers, Local 125, TransAlta, Tacoma Power, Mid Columbia Public Development Authority, Grant PUD, Chelan PUD, Douglas PUD, Okanogan PUD, Northwest Public Power Administration, Bureau of Reclamation, Grand Coulee Dam, Centralia City Light, and Seattle City Light.
- Bonneville Power Administration adopted Skill Standard model and is currently developing and funding seven skill standards for transmission business line trades/crafts occupations. These skill standards will be posted on the Washington State Skills Standards web site energy section.

Additional Investment:

- Photography for Skill Standards Book provided by PSE.
- Basic Electricity Curriculum donated by Portland General Electric, Bonneville Power, and Seattle City Light.
- Financial Contribution for Labor Market Study (\$5,000 Tacoma Power, \$3,000 IBEW Local #77 and Lewis, Thurston, Mason Labor council).

APPENDIX B

Emergent Innovation Clusters

Cloud Computing Cluster
Advanced Materials Cluster
Environmental Technology Cluster
Freight Mobility Cluster
Smart Grid Cluster
Health IT Cluster
Electric Vehicle Cluster
Nanophotonics Cluster
Global Development Cluster
Advanced Manufacturing Cluster
Value Add Food Processing Cluster
Defense Technology Cluster
Biomedical Device Cluster
Clean Tech Cluster

Cloud Computing Cluster

Cloud computing is a general purpose technology that give users access to hosted Internet services. Cloud computing is broken up into multiple segments including: infrastructure as a service, platforms as a service and applications as a service. Some distinct characteristics differentiate it from traditional hosting. It is sold on demand, typically by the minute or the hour; it is elastic -- a user can have as much or as little of a service as they want at any given time; the service is fully managed by the provider; and the service is broadly accessible over the Internet through standard peripheral devices (e.g. mobile phones, notebook computers, PDAs). The use of a social networking and sharing services such as Facebook, Flickr, Pandora, FourSquare, YouTube, Google Docs, Jing perform the functions that were traditionally done with software installed on an individual computer.

Economic Development Potential. Higher bandwidth and speeds over the Internet and more attractive economics are expanding the market for cloud computing services in such areas as healthcare, online education, supply chain management, customer relationship management, project management, online retailing, energy efficiency, collaboration tools and many more areas. These services are provided by data centers in Washington and all over the world.

Interesting WA fact: Amazon Web Services is the largest public cloud provider. **Quincy** is a rapidly growing site for data centers (such as. Microsoft, Yahoo, Ask.com, Intuit, Sabey and Dell) primarily because of inexpensive electricity and high bandwidth access. After years of operating in third-party facilities, **Microsoft** is investing \$550 million in building a 470,000 square foot data center supported by hydroelectric power from nearby dams on the Columbia River.

Advanced Materials Cluster

Materials are the basic building block of all physical products and typically are classified into five groups: metals, polymers, ceramics, glasses and composites. Advanced materials refer to all new

materials and modifications to existing materials to obtain superior performance in one or more characteristics that are critical for the application under consideration such as conductivity, toughness, hardness, durability and elasticity. These materials have very different atomic and structural properties leading to a vast array of different business applications and purposes. A rapidly growing field is in composite materials with applications in such areas as aerospace, automotive structures, sports equipment, and wind turbines

Economic Development Potential. There are numerous ways that an advanced materials cluster can contribute to economic growth and job creation. The most relevant are businesses in materials production, equipment suppliers to material producers and processes, integration of high value applications, and new manufacturing processes. Within this broad scope, hundreds of advanced materials sub-sectors can be identified with significant economic development potential including: aerospace materials, energy conversion materials, electronic materials, medical materials, nanotechnology materials, reprocessing of waste materials, light-weight product components and construction materials.

Interesting WA Fact: Seattle-based SGL Automotive Carbon Fibers LLC and BMW Group are building a \$100 million state-of-the-art carbon fiber manufacturing plant in **Moses Lake**. The new facility will commercialize viable manufacturing of ultra light weight carbon fiber reinforced plastics for BMW Group's upcoming Megacity Electric Vehicle to be manufactured in Germany. The decision to build in Moses Lake was based primarily on the availability of inexpensive renewable clean hydropower. Favorable infrastructure conditions, existing utilities, a skilled labor force and ease of working with the local government were also contributing factors in selecting the location. **Seattle-based Modumetal** is working to revolutionize metal performance through a new class of nano-laminated materials that is stronger, lighter and more energy absorbent than steel—yet is cheaper to make. CEO Christina Lomasney was named one of the top 25 innovators by Seattle Business Magazine. Alliance of Angels named Modumetal 2010 company of the year.

Environmental Technology Cluster

Environmental Technology (ET) can be defined as goods, systems, processes and services that offer clear environmental advantages in relation to existing or alternative solutions. They encompass technologies and processes to manage pollution, less resource-intensive products and services and ways to manage resources more efficiently. Thus defined, they pervade all economic activities and sectors, where they often cut costs and improve competitiveness by reducing energy and resource consumption, and so creating fewer emissions and less waste.

Economic Development Potential: Environmental technology is evolving in response to concerns about the risks and costs of pollution, climate change, sustainability and environmental legislation and regulations. There is currently no North American Industry Classification System (NAICS) for this industry sector. The ET cluster encompasses products and services that generate revenue associated with environmental protection, assessment, compliance with environmental regulations, pollution control and prevention, waste management, renewable energy, remediation of contaminated property, design and operation of environmental infrastructure, and the provision and delivery of environmental resources. Key subsectors for products and services of the ET industry include: air, water, and soil pollution control; solid and toxic waste management; recycling; renewable energy; pollution prevention and resource recovery; site remediation; environmental monitoring; storm water control; and water treatment for industrial and municipal water use.

Interesting WA Fact: The **Center for Urban Waters in Tacoma** is a community of environmental scientists, analysts, engineers and policy makers developing sustainable solutions to restore and protect the urban waterways. The center, which began operations in 2010, is a partnership of the City of Tacoma's Environmental Sciences group, the **University of Washington-Tacoma's** environmental sciences research program, and the **Puget Sound Partnership**, which coordinates the recovery and restoration of the Puget Sound. The unique intellectual environment within the LEED-Platinum-designed center brings together organizations with complementary missions and individuals with diverse skills to develop innovative solutions for environmental restoration, as well as protection and to sustainable urban development. The Center is poised to establish global leadership in evaluating and certifying alternative storm water control technologies.

Integrated Freight Mobility Cluster

All goods producing industries in Washington depend on a smoothly functioning, secure and cost effective freight mobility, distribution and logistics system. Innovation in this area focuses on improving the integration of intermodal freight flow, energy efficiency and management of goods between a point of origin and a point of consumption. Distribution sector includes air, rail, water, and truck transportation, warehousing and storage. Logistics deals with the problem of getting the right people, materials, supplies to the right place at the right time. As virtually every product made and sold in Washington moves through trade, logistics, and distribution channels, the innovative capacity of this cluster has an impact on business costs, productivity and competitiveness. Growth of this cluster has been primarily driven by increased imports from overseas, particularly China and other Asian countries. WA is the leader among all the states in per capita exports. State policymakers are now giving emphasis to U.S. exports and strengthening the logistics and distribution system.

Economic Development Potential. The expansion of global trade puts this cluster at the forefront of innovation and economic growth. Two factors are important to this cluster's growth in Washington. The first is investments in critical road and rail infrastructure so that freight mobility through the air, port, trucking and rail system can be competitive particularly against Canadian ports (Prince Rupert) and the Panama Canal expansion. Adequate funding for these investments is a challenge given the state's severe budget constraints. The second factor will be advances in logistics coordination and supply chain management. Various high value add industries are involved including IT devices, software, GPS tracking and tracing, intermodal material handling, tagging, optimizing inventory, logistics databases, and automated warehousing to drive just-in-time supply and delivery to customers. The growing emphasis on sustainability and concerns over energy security and climate change will increase the connection of this cluster to alternative energy modes of transport. The emerging global security environment represents a new set of threats and presents innovation challenges to move goods securely: both military and civilian.

Interesting WA Fact: The Port of Quincy in partnership with **Rail Logistics, Washington-based Columbia Colstor, LaGROU Distribution** (Chicago Cold Storage) began a new expedited refrigerated intermodal "**Cold Train**" container rail and distribution between Quincy and Chicago in April 2010. It connects growers and producers in the Pacific Northwest and the Midwest by providing a speedier intermodal pipeline between two of the largest cold storage and distribution operators. Volumes have increased 40 percent since April. **RAILEX** is another innovative distribution platform designed to enhance logistics, distribution, consumer demands and inventory control. **Wallula** is the site of the RailEx platform featuring non-stop refrigerated rail and distribution to Rotterdam, New York. The

scheduled weekly five-day service, 55-car refrigerated unit trains have the capacity to transport the equivalent of 1,120 trucks of refrigerated merchandise each and every week, both ways.

Smart Grid Cluster

Smart Grid is a collection of technical advances for modernizing the transmission and distribution aspects of the electrical grid. It encompasses a range of visions of what the electric system should look like end-to-end and producer to user. Regarding distribution, Smart Grid is focused on adding sensing, measurement and meter devices with two-way digital communications for managing appliances at consumer's homes to save energy reduce costs and increase reliability and transparency. In terms of transmission, a Smart Grid keeps track of all electricity flowing in the network, supports the capabilities for variable pricing and integrates new sources of power such as solar and wind. Such newer alternative energy sources require adequate transmission lines if they are to be useful beyond the immediate area where they are produced.

Economic Development Potential. Shifting the broadcast delivery model for electrons to a more distributed user driven model opens up huge opportunities for innovation and the prospect of greener and more efficient use of energy. Already, smart grid companies represent one of the biggest and fastest growing sectors in the cleantech market and consistently receive substantial financing from venture capital. Smart grid companies are already apparent to consumers in the form of smart meters. A government estimate found last year that the technology could help homeowners reduce their power usage by 20 percent. The Obama Administration has named the first National Coordinator for Smart Grid Interoperability. Smart Grid is working on coordinating the production and storage of power from large numbers of small power producers such as owners of rooftop solar panels. It has the potential to stimulate all kinds of electrical generation and storage systems using simplified interconnection processes and universal interoperability standards to support a "plug-and-play" level of convenience, including Plug-in Electric Vehicles.

Interesting WA Fact. Pacific Northwest National Laboratory in Richland was awarded \$178 million grant by the federal Department of Energy for the **Smart Grid Demonstration Project** and the largest of 16 regional smart grid demonstration awards. A goal of the project partners, **Itron** and **Avista**, is to use advanced metering technology and enhanced utility communication, to automate parts of the energy distribution system, in order to allow customers to monitor their energy consumption, increase power grid reliability, incorporate renewable energy sources and provide shorter restoration times for local outages. Itron, based in **Liberty Lake**, is the world's leading provider of intelligent metering, data collection and utility software solutions.

Health IT Cluster

Health information technology (HIT) is a promising technology platform for a higher-quality, safer and more cost-effective healthcare system. Specifically HIT refers to the "application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data, and knowledge for communication and decision making" (Brailer & Thompson, 2004). Health informatics refers to the intersection of information science, computer science, and health care. It deals with the resources, devices, and methods required for optimizing the acquisition, storage, retrieval, and use of information in health and biomedicine.

Economic Development Potential. Development and broad deployment of HIT in Washington is positioning the state as an innovator in improving health care quality; preventing medical errors; reducing costs; increasing administrative efficiencies; decreasing paperwork; and expanding access to affordable care. Widespread adoption of interoperable electronic health records promise access to a patient's records at any health care site and will improve patient diagnostics and care. Electronic Health Records (EHR) technology can reduce medical errors, such as those related to prescription drugs, to preventive care, and to tests and procedures. EHR software can check for drug-drug/drug-food interactions and allergy checks, ensure appropriate drug dosages and provide patients information on common side various drugs and therapies. Other public health benefits associated with EHR include: early detection of infectious disease outbreaks and evaluation of health care system costs, quality and outcomes.

Interesting WA Fact: The **Spokane University District** is a rapidly evolving innovation hotspot for health sciences, technology and medical education. The District is comprised of Gonzaga University, Washington State University and Eastern Washington University. The **eHealth Collaborative Enterprise** (eHCE) is a work group within the Washington State Health Care Authority responsible for coordinating statewide activities relating to the federal HITECH Act and state health information infrastructure activities. Over 28 partner organizations are involved. **Qualis Health of Seattle** has received federal funding to act as the *Washington & Idaho Regional Extension Center (WIREC)* offering technical assistance to healthcare organizations related to use of EHRs. Funds for this project are authorized via the American Recovery and Reinvestment Act of 2009. Starting as early as next year, the Centers for Medicare & Medicaid Services will make incentive payments to eligible healthcare providers who demonstrate "meaningful use" of electronic health record systems.

Electric Vehicle Cluster

Electric vehicles (EVs) are propelled by electric motors powered by a rechargeable electric battery rather than by an internal combustion engine. EVs are an attractive means of reducing dependence on fossil fuels: minimizing environmental impact (zero emissions): and ensuring operational reliability since EV power trains are mechanically simpler. Advances in battery technology are rapidly improving the range of EVs. The growth rate of the EV market depends on the pace of building out the infrastructure for charging batteries and the electricity networks that manage energy sources, distribution, use, billing and storage.

Economic Development Potential. The Pacific Northwest is likely to take up electric vehicles more rapidly than other regions. Washington is well positioned to lead a transition from automobiles powered by liquid fuels to one powered by electrons. Washington is home to large EV demonstration projects, has implemented pro-EV policies and has emerged as a lead market for EV manufacturers such as Ford, Nissan and Tesla. The relatively inexpensive and carbon free power grid mean the cost per gallon equivalent of gasoline is lower than in most other regions of the country. The West Coast in general, and the Seattle region in particular, have a high environmental awareness and understanding of the value to transition from oil to electricity in transportation. The potential market for EVs is enormous. Even 1 percent of the US car market is \$3 to \$4 billion in annual sales. According to some estimates, by 2015 a total of 1.2 million out of the world's 60-70 million cars are expected to be electric. By 2020 30 percent of the cars sold could be electric. This will create business opportunities up and down the entire EV value chain of R&D, design, batteries, components, light weight materials, power/control electronics, system integration, software, manufacturing, distribution, customer support and services and after-market. Manufacturers who are participating and developing the

Pacific Northwest EV market are utilizing the extensive brain capital of the region. EV infrastructure requires an effective regulatory regime to provide access, via an interconnected electric smart grid, to shared charging stations, personal charge points, and possibly electric battery swapping stations.

Interesting WA Fact: Washington will be implementing the **nation's first "electric highway,"** an initial network of public access electric vehicle fast charge locations along Interstate 5. The electric highway will support plug-in electric vehicles such as the **Nissan Leaf, Ford Focus, and Chevy Volt** soon rolling off assembly lines. The infrastructure will enable EV drivers to have less anxiety when traveling along the 276 miles of I-5 between Washington's borders with Oregon and Canada. As many as 300,000 EVs are anticipated on Washington roads in the next 10 years. Washington will receive the benefit of \$20 million in charging station infrastructure under a grant to **ECOTality North America** and additional millions to Coulomb Technologies to install a total of nearly 3,000 thousand charging stations in the Puget Sound area. Under a grant to **Puget Sound Clean Cities**, nearly \$20 million in additional grants will be invested in petroleum reduction measures. Further, Washington drivers who purchase EVs will receive up to \$7,500 in federal income tax credits.

Nanophotonics Cluster

The road to a faster Internet, data center, and computer is paved with nanophotonics--creating optical interconnects and micro chips that use less power and transmit data more quickly than today's electronic devices. Nanophotonics is a technology field that uses light photons rather than electrons to transmit and process information. The field of silicon photonics is gaining significant attention because it makes possible optical devices that can be made cheaply using standard semiconductor fabrication techniques.

Economic Development Potential. The technical breakthroughs being made in Washington are rapid and the future outlook for this technology is enticing. Silicon integrated optical chips that can generate, modulate, process and detect light signals offer the prospect of cost-effectively meeting the ever-increasing demands on data speed and bandwidth. Electrical interconnects do not scale to keep up with digital information processing devices. Academic groups, start-up companies and large semiconductor manufacturers are all competing to demonstrate, publish and commercialize the best silicon photonic devices. This cluster, if it evolves successfully in Washington, has the potential to revolutionize the information processing industry. High speed optical interconnections make possible whole new information system designs and advance applications in such areas as cloud computing, long-distance telecommunications, high throughput data in scientific computing, ultra high resolution imaging, military uses such as sensing, situational awareness, and countermeasures and ultra low power devices. The power consumption of large datacenters could also be significantly reduced. A key goal is to develop the technology for on-chip integration of nanophotonics circuits. There are, however, huge challenges related to component performance and reliability, integration and manufacturing. Much of optical interconnects research is conducted in universities and technology centers. These organizations typically do not have access to state-of-the-art integrated circuit fabrication equipment and only a limited number of companies have the resources to address the challenge of mass manufacturability (such as Intel and IBM).

Interesting WA Fact: Thanks to the state-funded **STARs program**, the **University of Washington** recruited an entrepreneurial scientist in nanophotonics, Dr. Michael Hochberg. He currently directs the UW's Nanophotonics Laboratory and is building a powerful technological capability through acquisition of advanced equipment, recruiting outstanding students and pulling together a cluster of

federal agency and industrial partners to develop and ultimately commercialize nanophotonics based chips. The **UW Center for Commercialization Entrepreneur-in-Residence program** also partners with the Nanophotonics Lab in identifying projects with high commercial potential. Last year, Dr. Hochberg was named a recipient of the Presidential Early Career Awards for Scientists and Engineers, the highest honor bestowed by the United States government on young professionals in the early stages of their independent research careers.

Global Development Cluster

Global development is a rapidly expanding nonprofit cluster in Washington. This cluster addresses multiple global development issues across the spectrum of health, poverty, the environment and education. Nearly 200 Washington-based nonprofits are working in 144 developing countries across five continents. Higher education institutions in Washington are playing a larger role in global development education, research, and cross-cultural learning. Leading Washington businesses, including Starbucks, Boeing, Microsoft and Weyerhaeuser, are recognized pioneers in the global corporate citizenship movement. Global health is a major sub-sector with a new focus on commercializing technologies and products for improving health delivery locally and worldwide.

Economic Development Potential: Washington is home to some of the most powerful nonprofits making a difference across the globe, including: PATH, Rural Development Institute, Seattle Biomedical Research Institute, and Global Partnerships. In 2007, foundations and nonprofits reported 3,181 full time employees that work on global development activities with about \$168 million in total salaries paid. The Bill & Melinda Gates Foundation provided \$1.5 billion in grants to global health and development efforts worldwide in 2007. An additional 38 Washington foundations reported providing roughly \$12 million in grants to global development efforts.

Interesting WA Fact: The Washington Global Health Alliance is comprised of leading global health organizations in the state and acts as a key hub and priority setting mechanism of the innovation ecosystem. Seattle now rivals Geneva as an innovation hotspot for Global Health technologies, projects and initiatives. **South Lake Union** has been designated by the state as the **Global Health Innovation Partnership Zone** for research, development and commercialization of global health technologies. The Washington Legislature also created a funding program to ensure that Washington remains competitive in global health innovation and the development, manufacture, and delivery of global health products. The program's initial funding is \$1 million and the Governor has appointed a commission to leverage the funding and administer grants for commercializing and manufacturing global health technologies. The commission includes representatives from the **Washington Global Health Alliance** (chair), **University of Washington, Washington State University, PATH, WBBA, WRF Capital, Sonosite, Battelle and Pathway Medical.**

Advanced Manufacturing Cluster

Advanced manufacturing is defined as innovative applications of technology, organizational processes and marketing methods to the manufacturing enterprise that lead to decreased costs, increased productivity or enhanced value to end-users. Such applications could apply to product design, manufacturing, supply chain management, quality control, packaging, process control and online marketing and customer support. This definition applies to both existing products and new products in all industries, whether produced by serial, batch or continuous processes. An advanced manufacturing system could make extensive use of computer, high precision, and information

technologies integrated with a high performance workforce capable of efficiently producing small and large volumes and responding on-demand to heterogeneous customer requirements (adapted from NACFAM). U.S. Department of Labor defines advanced manufacturing as “implementing process improvements, increasing quality controls, and installing advanced robotics and other intelligent production systems.”

Economic Development Potential. A new era of manufacturing is emerging with three important trends. First, advanced manufacturing is integral to maintaining a high rate of innovation and competing successfully with lower labor cost countries. In this sense, advanced manufacturing is a key underpinning of the entire state’s manufacturing sector including aerospace, defense, materials processing, forest products, ship building, and medical devices industries. Second, the drive to realize properties beyond those available in current products is pushing the frontiers of physics, chemistry, materials science, and biology and begun a convergence of these disciplines. Manufacturers will have new tools to manipulate materials and design products especially at the molecular (nano) level. The third trend is the movement for sustainable manufacturing that use processes that are non-polluting, minimize energy usage and natural resources, and are economically competitive. Sustainability goes beyond the manufacturing phase of the product. It extends to the product’s expected lifetime use and the complex system of components, energy, and transportation required to make the product, bring it to market and reuse or safely dispose of the product. These trends are creating enormous opportunities for this cluster to grow and engage providers of research and technical assistance, advanced materials, product design, sensor and control devices, visualization and simulation tools, rapid prototyping, sophisticated robotic and automation systems, supply chain and inventory management, and customer relationship services.

Interesting WA Fact: Grays Harbor is home to the ***Sustainable Industries Innovation Partnership Zone***. A sustainability R&D facility with space for shared lab, training and incubator is under construction to help entrepreneurs launch new businesses. Located in the zone is **Imperium**, the world’s largest bio refinery bringing renewable fuels to the market by producing the highest quality biodiesel available made from renewable canola feedstock. The zone is also is home to **PaperStone**, a manufacturing company that produces affordable, sustainable composite surfaces. PaperStone’s component parts are quite simple and friendly to the earth. Ordinary recycled paper is transformed into an extremely strong and durable solid surface material with incredible longevity and resistance to water, and the material can be recycled. The product is used throughout the world for a variety of applications including furniture, kitchen counter tops, cutting boards, and sustainable building structures. The products can assist building projects acquire points toward LEED certification.

Value-Add Food Processing Cluster

In many parts of Washington, food processing is the primary economic engine with products such as apples, dairy products, potatoes, wheat, fish and shellfish, and wine. One of Washington’s top competitive advantages is its high quality crops, inexpensive energy and ability to quickly ship products to the rapidly growing Asian marketplace and more recently to Midwest and Eastern US market. Value-add refers to products which are viewed less as commodities and more as specialized niche products. Food processors can add value to a product by changing its current attributes from one set of characteristics to other characteristics that are preferred in the marketplace. The application of biotechnology, the engineering of food from raw products to consumers, innovative packaging and new forms of distribution to and from the producer all provide opportunities for adding value.

Economic Development Potential: Consumers' demands keep changing over time from basic considerations such as food safety, shelf life, and reducing wastage, to demands for increasing nutritional value, taste, and convenience. The food processing industry needs to be responsive, and look to new product and process development as a vital component of its future growth and competitiveness. Failure to develop new and improved products relegates firms to competing solely on price which favors the players with access to the lowest cost inputs (land, labor, water). To be successful, the product development process must closely interact with the expectations of consumers, distributors and retailers, the technical capacity of the food processing industry, and food science research. The cluster growth depends on collaboration with supporting enterprises, research and development centers, government agencies and regulators, equipment suppliers, educational institutions, truck and rail transportation, producer associations, and bioscience companies.

Interesting WA Fact: Ocean Spray views the cranberry as a platform for innovation. An impressive example is the development of Craisins® (sweetened dried cranberries) and creation of an advanced processing line in their **Markham** plant. Using equipment from **Key Technology**, based in **Walla Walla**, Iso-Flo shakers are used to clean, wash, dewater, de-syrup, size and grade the cranberries. The market demand has been huge and Ocean Spray recently announced their largest partnership ever with **Walt Disney** that will bring Craisins® Dried Cranberries to various retail locations, including theme parks, cruise ships, meeting rooms and hotels. Key Technology also continues to be an innovator, as well as specializing in precision food processing control and flow equipment, machinery and systems for the vegetable, fruit, potato, snack, meat and nut industries. The **Walla Walla Valley Innovation Partnership Zone** is another example of supporting food processing innovation with a focus on enology/viticulture and water/environmental studies.

Defense Technology Cluster

The defense technology cluster is an important innovative force in the Washington economy, generating defense-related technologies that can be transitioned in many cases to civilian applications. The cluster cuts across multiple industries: aerospace, construction, petroleum refining, armored vehicles, medical and healthcare, marine technology, shipbuilding, technical instrument manufacturing, education services, homeland security, software, propulsion design, electronics manufacturing services, advanced fabrication and machining, environmental technologies, and alternative energy. When the full economic impacts of defense related spending are considered, the impact of Washington's defense-related economy is considerable. The total defense activity is estimated to have created nearly \$12.2 billion in total output in the state. This activity supported approximately 191,600 jobs and nearly \$10.5 billion of income in the state in 2009.

Economic Development Potential: Today's warfare challenges are different than in the past. The Quadrennial Defense Review (QDR) of February 2010 calls for "rebalancing the force" to support success in specific areas identified as "missions critical to protecting and advancing the nation's interests." It's clear the West Coast will increasingly be important as a strategic location. Also, many of the priorities and new mission identified in the QDR require unique solutions and the practical application of emerging technologies which fit Washington's innovation capabilities. These include:

- Intelligence, Surveillance, and Reconnaissance
- Special forces and special operations
- Network-centric operations
- Cyber security
- Composite materials

- Unmanned systems – both air and sea
- Energy efficiency and alternative energy.
- Healthcare for veterans and wounded warriors.

Interesting WA Fact: Insitu, Inc. of Bingen has pioneered the unmanned aircraft systems (UAS) industry in Washington since its inception in 1994 and specializes in the design, development, production, and operation of UAS for intelligence, surveillance, and reconnaissance objectives. Building on this unique capability, the **Northwest Aerial Robotics Cluster (NWARC)** launched April 2010 to set a collective industry course for future technology research and development funding for the Northwest. NWARC is composed of regional businesses (both large and small), state and local government and academia from the states of Washington, Alaska, Oregon and Idaho supporting the Department of Defense, Department of Homeland Security, National Oceanographic and Atmospheric Administration and the Small Business Administration. NWARC in collaboration with **The University of Washington Applied Physics Laboratory** and **University of Alaska Fairbanks** won a Naval Surface Warfare Center contract worth up to \$47 million, the first Navy basic-ordering-agreement (BOA) awarded that includes a regional innovation cluster.

Biomedical Devices

A biomedical device cluster is involved with the research, design, testing, evaluation and commercialization of products used for medical purposes in patients for diagnosis, therapy or surgery. The effect of the medical device is primarily physical, in contrast to pharmaceutical drugs which exert a biochemical effect. The biomedical device manufacturing industry lies at the nexus between health services, manufacturing, biology and technology. Medical devices go through a long, complex process of development and regulatory review before being made available for therapeutic or diagnostic use.

Economic Development Potential. The U.S. is the largest producer of biomedical devices in the world. In 2007 the estimated gross revenues for the Puget Sound region biomedical device cluster was \$2.5 billion. The estimated total statewide impact of the Puget Sound region's biomedical device cluster is \$4.9 billion for 2008. The biomedical device cluster has demonstrated strong growth. For those biomedical device companies that had employees in 2006, an estimated total of 2,500 jobs were added between 2000 and 2008. The rate of growth at these firms was on average 8.2 percent a year, higher than the statewide average annual employment growth rate of 1.2 percent. The biomedical device industry cluster benefits from a highly educated workforce, research facilities, economic activity in other technical fields, research and specialized care medical facilities, specialized operations in manufacturing, and, increasingly, software engineering. Concentrations of these resources are strong within the Puget Sound region and contribute to the robustness and success of the industry.

Interesting WA Fact: Governor Chris Gregoire formally recognized the significance of the medical device manufacturing and ultra sound research activities in the Bothell Technology Corridor by designating the **City of Bothell** as the **Biomedical Device Innovation Zone** for Washington. An IPZ partnership was formed to foster programs and promote a center of excellence and innovation for the biomedical device industry. The primary objective for the Biomedical Device Innovation Zone is to spotlight Washington's biomedical device industry and improve access to capital; improve the workforce pipeline; and to provide opportunities for collaboration among the primary and secondary industry with support from government agencies. The key partners for the IPZ are: **City of Bothell, Economic Development Council of Snohomish County, enterpriseSeattle, University of Washington Bothell, Washington Biotechnology & Biomedical Association and the Washington State Department of Commerce.**

Clean Tech Cluster

The clean tech industry has the potential to be a major driver for new investments and jobs in Washington. The definition of clean tech industry is somewhat nebulous, encompassing a broad range of products and services that can compete on prices while at the same time conserve energy and reduce impact on the environment. The Clean Tech Leadership Council in its recent report identifies four promising focus areas to grow the clean tech cluster: 1) energy efficiency and green buildings; 2) renewable energy resource integration; 3) Bioenergy; and, 4) Smart Grid applications.

Economic Development Potential: The clean energy sector of the economy is in its formative stages globally, and Washington is not yet a leader. The idea is to convene buyers and suppliers in focused segments of the clean energy market and align *marketside* forces through target performance standards, regulations, procurement, R&D expenditures, and investment focused on specific clean energy solution outcomes. The Clean Tech Leadership Council calls for three near-term market driven initiatives in three areas of economic opportunity to scale and serve out-of-state markets. These are:

- 1) **Combined Energy Efficiency, Green Buildings and Smart Grid Projects:** Provide proof of concept by accelerating adoption of advanced green and integrated energy efficient building design and implementation for new buildings and for retrofit, integrating smart grid applications at the utility distribution and retail customer level at a reasonable scale.
- 2) **Renewable Energy Resource Optimization and Smart Grid Deployment:** Enabling renewable energy generation, beginning with wind energy, to be integrated systematically into the grid in Washington and the Pacific Northwest so that intermittency (variability in daily and hourly energy generation) is both technically and financially balanced.
- 3) **Bioenergy Deployment Acceleration:** This initiative accelerates the deployment of biofuels that are in early commercial application for aviation and military uses as “early mover” applications. In parallel, this initiative would enhance opportunity for accelerated high-efficiency application of biomass power generation. The combination of these biomass feedstock applications would expand businesses and jobs in forest and agricultural feed stocks and accelerate integration of technologies for biomass feed stock growth, harvest, transport, and fuel conversion.

Interesting WA Fact: Washington State University is taking a lead in developing aviation biofuels with a first-of-a-kind project called “Sustainable Aviation Fuels Northwest.” In partnership with **Alaska Airlines, Boeing, Port of Seattle, Port of Portland, and Spokane International Airport**, the project is examining all phases of developing a sustainable biofuel industry, including biomass production and harvest, refining, transport infrastructure and actual use by airlines. It will include an analysis of potential biomass sources that are indigenous to the Pacific Northwest, including algae, agriculturally based oilseeds such as camelina, wood byproducts and others. To be feasible for widespread use, biofuels have to have the same energy content and performance as current jet fuel and work in existing engines. And production must be sustainable, scalable and affordable. **Seattle-based AltAir Fuels**, which received a \$2 million federal grant this year, plans construction next year on a jet biofuel plant in **Anacortes**, with production slated for 2012.