

Washington STEM (LASER)

- Purpose:** Washington State LASER (Leadership Assistance for Science Education Reform) is a state science-education program led by Washington STEM in partnership with the Office of Superintendent of Public Instruction, Educational Service Districts and school districts. Since 1999, the public/private partnership has worked with more than 107,000 educators in more than 205 school districts to share and inspire powerful practices in science education—from student notebooks that combine science, literacy, math and art—to strategic planning that creates a shared vision from classroom to school board. The work of Washington State LASER is actualized through ten regional Alliances, geographically aligned with the Educational Service Districts that offer services and strategic planning support in the areas of professional learning, curriculum, instructional materials, assessment, school and community support, pathways, and operations. As Washington further engages in implementation of the Next Generation Science Standards, LASER plays a key role in ensuring state science leaders maintain a learning community and develop evolving leadership skills to support district and school science/STEM implementation. Washington State LASER has served as a key network of leaders in science education in Washington for nearly two decades, building collegiality and leadership capacity across the state to improve science/STEM learning for all K-12 students.
- Description of services provided:** Given the wide range of systems- and district-level needs across Washington, Washington State LASER offers a range of services to participating schools, districts, and educators.

Regional Alliances

- In several regions, the regional LASER Alliance serves as a co-operative hub for instructional materials across 15-30 districts—resulting in efficiencies in cost, labor, and professional learning across the districts.
- All Alliances contribute to developing regional science education leadership capacity by supporting the work of the AESD Science Fellows and additional teacher leaders.
- Alliances spent approximately \$12,000 in 2018-2019 on materials and supplies to support the professional development activities in their regions. Materials included books for professional learning communities, consumable supplies for PD events and instructional materials training kits.
- Alliances provide leadership assistance to schools and districts to assess existing science/STEM systems and develop equity-focused science/STEM strategic plans.

Collaboration and Professional Learning Support for Alliance Directors

- LASER provides a collaborative learning space for Alliance Directors, who in many cases are also Regional Science Coordinators. In 18-19, Alliance Directors have collectively doubled down efforts to conduct their work through an equity lens—as a result, districts and schools that participate in regional LASER activity can now expect to have increased support and guidance in designing learning environments and systems that better serve students underrepresented in STEM fields.

- Regular communication via email and monthly Alliance Director virtual workshops.
- Four convenings were held in 2018-2019 with the goal of increasing Alliance Director's capacity for leading equity-focused science education efforts in their regions, sharing resources and knowledge, and identifying district needs in science/STEM education

Statewide Professional Learning Opportunities

- August and November 2018: The LASER Alliance Directors convened to continue to identify and test out approaches to support districts in strategically planning for and implementing STEM education. Outcomes of the two meetings included a plan for a systematic landscape analysis of district strategic planning efforts and increased trust across the Alliances and Washington STEM.
- March 2019: LASER Alliance Directors convened to analyze the results of the LASER District Self-Assessment and plan future activity based on district needs. Alliance Directors contributed to a growing "Asset Toolbox" of tools and resources related to the six components of the Self-Assessment. This meeting was held in conjunction with OSPI's NEXUS meeting, which proved to be an asset as both efforts are focused on systemic change.
- May 2019: The LASER_SW Alliance hosted a one-day convening of 8 districts in various stages of science/STEM strategic planning to share lessons learned and collaborate. LASER Alliance Directors, several Alliance members, and OSPI representatives participated in the convening, and spent an additional day learning about the research behind strategic planning for equitable student outcomes, and refreshing the 2019-2020 LASER goals and activities.

3. **Criteria for receiving services and/or grants:** Each Alliance has set goals that are responsive to local needs, while still aligned with LASER's commitments to OSPI. In order to buffer against a "one size fits all" approach, each Alliance has different criteria for regional participation. In several regions, districts or schools buy into a regional instructional material cooperative. Beyond instructional materials cooperatives, all districts and schools are eligible to participate in regional LASER activity.

Beneficiaries in 2018-2019 School Year:

# of School Districts:	161
# Schools:	330
# of Students:	77,500+* (indirect)
# of educators:	1550+

*Note: Two factors make estimating the number of students benefitting from LASER activity difficult to count—districts were engaged to varying degrees, and educators served include elementary, middle, and high school students. As such it would not be prudent to claim number of students directly benefitting based on district engagement and we did not collect student number counts from benefitting teachers. Instead we estimate the number of students indirectly benefitting from LASER activity based on varying degrees of teacher engagement. We do not include students indirectly benefitting from district or school engagement, as the changes employed at the district or school level will likely take more than one year to impact student outcomes.

of OSPI staff associated with this funding (FTEs): 00
 # of contractors/other staff associated with this funding: 20 (Select Washington STEM staff and regional Alliance Directors)

FY18 Funding: State Appropriation: \$356,000
 Federal Appropriation: \$0
 Other fund sources: \$0
 TOTAL (FY19) \$356,000

4. Are federal or other funds contingent on state funding? If yes, explain.
 Yes. Current state funds are used to leverage other funding sources.

5. State funding history:

Fiscal Year	Amount	Actual Expenditures
FY19	\$356,000	\$365,000
FY18	\$356,000	\$355,965
FY17	\$356,000	\$356,000
FY16	\$356,000	\$356,000
FY15	\$356,000	\$356,000
FY14	\$356,000	\$356,000
FY13	\$356,000	\$356,000
FY12	\$356,000	\$355,922
FY11	\$197,000	\$197,000
FY10	\$1,473,000	\$1,183,715

6. Number of beneficiaries (e.g., schools, students, districts) history:

Fiscal Year	# of School Districts	# of Schools	# of Students
FY19	161	330	77,500+
FY 18	204	1800	977,841
FY17	204	1800	977,841
FY16	204	1800	977,841
FY15	204	1800*	977,841
FY14	204	1861	960,227
FY13	204	1886	954,287
FY12	204	1886	944,679
FY11	203	1,602	940,326
FY10	203	1,602	940,326

7. Programmatic changes since inception (if any):

Changes between 2002-2019

- The number of districts benefitting from LASER activity is lower in 2018-2019 than previous years, due to a deeper and more focused engagement with fewer districts. Beginning in 2018-2019, LASER is employing a more rigorous protocol for examining direct and indirect benefit to districts, schools, educators, and students.
- Number of Regional Alliances grew from 4 to 10. The North Sound and South Sound Alliances have formed a coalition with PSESD in the Puget Sound region.
- Services expanded from elementary to include middle school and continue to expand into high school.
- As programs and system components initially developed through LASER since 1999 have been institutionalized in our state (e.g. instructional materials cooperatives and the Regional Science Coordinator positions at each ESD) LASER evolves to meet contemporary science/STEM education reform needs. Activities have included developing leadership capacity in teachers and administrators across the state through annual Strategic Planning Institutes and STEM Education Leadership Institutes; partnerships with OSPI, Association of Washington School Principals, Washington State School Directors Association, and Washington Association of School Administrators; instructional materials showcases; and professional learning opportunities around *A Framework for K-12 Science Education*, the *Next Generation of Science Standards*, and centering equity in science/STEM education.
- In order to fully tap the capacity of the expertise LASER network, in early 2018 the LASER Executive Director position was eliminated. This change has resulted in distributed leadership and increased resources to the field. The Co-Directors provide leadership and consultation across Alliances, and liaise with the Advisory group. Regional Alliance Directors, with increased annual resources resulting from the change in leadership structure, share, implement, and refine best practices for improving student learning outcomes by acting at the systems and organizational levels. Washington STEM provides capacity-building support and technical assistance, including communications and advocacy, regionally and statewide.

8. Evaluations of program/major findings:

Based on formative evaluation of regional LASER Alliance activity, the Alliances continue to provide a mechanism for districts and schools to reduce costs and maximize efficiency in training teachers in NGSS-aligned instructional practices, designing and implementing strategic plans for science/STEM implementation, and providing instructional materials particularly at K-8. With the increased focus on equity, Alliance Directors reported being better positioned and equipped to lead regional work with an equity focus. As support for science/STEM learning continues to increase, LASER remains a space for key regional

leaders to identify and leverage points of synergy across efforts—e.g., curriculum adoption/adaptation, Climate Science education, assessment, strategic planning, and community engagement.

In Fall 2018, LASER conducted a landscape analysis to determine the existence and nature of science/STEM strategic planning across the state of Washington. Over 100 school districts provided information about their science/STEM strategic planning and implementation. We observed several key patterns, including: 1) NGSS-oriented tools supported their science/STEM planning in the past few years, 2) New science leaders are still learning about their districts' plans, and are new to planning in general, 3) Partial science/STEM plans are common (e.g. some grade bands, certain parts of the district system, few people involved). Districts also varied as to whether their plans are or are not used to guide their decisions.

Through Winter 2018-2019 LASER engaged approximately 70 districts in a research-based Science/STEM District self-assessment. Major district-identified needs centered on 1) increasing high-quality, sustained science/STEM instruction in elementary, 2) engaging administrators in professional development that addresses the necessary shifts in curriculum and teaching practices for NGSS, and 3) systematically assessing student experience, interest, and aspirations in science/STEM pathways.

9. **Major challenges faced by the program:**

Since the 2008-2009 school year the LASER program funding reduction has caused a reduction in or elimination of services which were previously provided. They include:

- Strategic Planning Institutes
- Instructional Materials Showcases
- Evaluation of overall effectiveness of LASER program and student achievement
- Awareness events that built understandings of science education reform and Washington State LASER process
- Facilitation of formation and operation of small school districts consortia

The main challenges faced by LASER are time, capacity, and funding to engage in sustained and impactful work. All of the Alliance Directors wear multiple hats, e.g. Regional Science Coordinators, STEM Directors, Science Materials Center Managers, and Science Specialists. As such, these leaders are willingly tasked with myriad programs, initiatives, and administrative tasks, sometimes making it hard to articulate LASER's unique contribution to the increasingly complex landscape of science/STEM education in our state. Another significant challenge has been understanding the impact of LASER activity, given the variation in structure, function, and reputation of the Alliances and different needs of districts and schools. Our transition work to date has already helped address this challenge by identifying common goals and indicators for success moving forward. Multi-level evaluation that would establish impact on student learning has not been a focus, as spending has gone toward programs.

10. **Future opportunities:** The future holds great promise for Washington State LASER. We have collectively established working goals for 19-20 with continued legislative funding:

- Washington State LASER will curate an online platform (herein referred to as the “LASER toolbox”) for tools and resources for science/STEM strategic planning and implementation, and will support a minimum of 20 schools/districts (two per Alliance region) in comprehensive, equity-driven, data-based science/STEM strategic planning and implementation.
- LASER will assist districts to identify and leverage efficiencies across initiatives in order to best serve students systematically underrepresented in science/STEM, aligned to the Washington School Improvement Framework and complementary strategic planning efforts.
- LASER will develop the cultural proficiency within its leadership network, and will also develop other regional, district, and school leaders’ cultural proficiency who are ready, willing, and able to participate—including but not limited to Regional Science Coordinators, professional development providers, educators, materials resource managers, and community partners.

11. **Statutory and/or Budget language:**

Budget Proviso: ESSB 6032, Sec. 513 (2) - \$356,000 of the general fund--state appropriation for fiscal year 2018 and \$356,000 of the general fund--state appropriation for fiscal year 2019 are provided solely for the Washington state leadership and assistance for science education reform (LASER) regional partnership activities, including instructional material purchases, teacher and principal professional development, and school and community engagement events.

12. **Other relevant information:** In August 2019 the fiscal agent for LASER (Washington STEM) was notified that two of the regional Alliances did not fully spend their regional allocations on June 30, 2019 as required by grant agreement. Funds totaling \$15,835 were returned to Washington STEM, for return to OSPI. To prevent this issue in the future, the Alliances are restructuring their leadership, and Washington STEM and LASER will employ more rigorous reporting functions for all Alliances.

In 17-18, following a 90-day planning process, it was decided that Washington State LASER would move from the Pacific Science Center to Washington STEM. Given the timing of that decision, the proviso funds remained with PSC, with Washington STEM as a sub-grantee. Beginning in 18-19, the proviso funds were directly awarded to Washington STEM from OSPI.

13. **List of schools/districts receiving assistance:** See OSPI [website](#).

14. **Program Contact Information:**

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