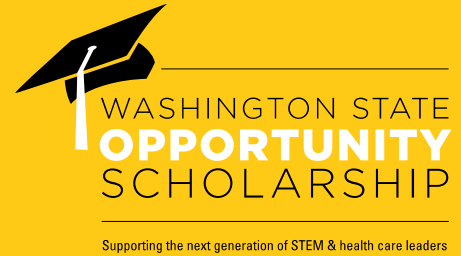


# BOARD MEETING

October 29, 2014



# Agenda



- Welcome, Approval of Minutes, and Ratification of Votes
- Introduction of New Board Members
- Executive Director Report
- Program Update
- Fundraising & Advocacy Update
- Finance Update
- Presentation by Boston Consulting Group on Investing in STEM Education

# INTRODUCTION OF NEW BOARD MEMBERS

Board Meeting | October 29, 2014

# New Board Members



Miller Adams,  
Managing Partner at  
Triad Capital Partners



Jane Park, CEO of Julep



Stan Deal  
Sr. VP of Commercial  
Aviation Services at  
The Boeing Company



Mike Wilson, Michael  
Wilson Consulting,  
former CEO of Providence  
Health Care

# EXECUTIVE DIRECTOR REPORT

Board Meeting | October 29, 2014

# Overall Goals

Provide scholarships and support for low and middle income Washington students pursuing high-demand STEM and healthcare majors

Improve the quality of life of Scholars and their families

Create a thriving Washington state economy

# Strengths

## Scholars

- Approx. 4200 recipients/800 graduates
- 2/3 of those seeking employment were employed by graduation in careers related to majors (national average is 47%)

## Supports

- Not merely a scholarship program, but offers Scholars the support and access needed to be successful
- Collective action and impact

## “Home Grown”

- WA high school graduates
- WA colleges and universities
- 90% of these careers are in WA

# Strengths

## Public-Private Partnership

- Dollar-for-dollar match is a great incentive
- Signals collaborative problem-solving

## Statewide Nature

- Every legislative district represented
- 68 colleges and universities across the State

## Legislative Support

- Original bill passed unanimously and, to date, \$30M invested by the State with \$20M included in the budget forecast



# Strengths

## Connections

- Leverages campus partners and existing student supports services
- Collaborates with other organizations and efforts in the STEM arena

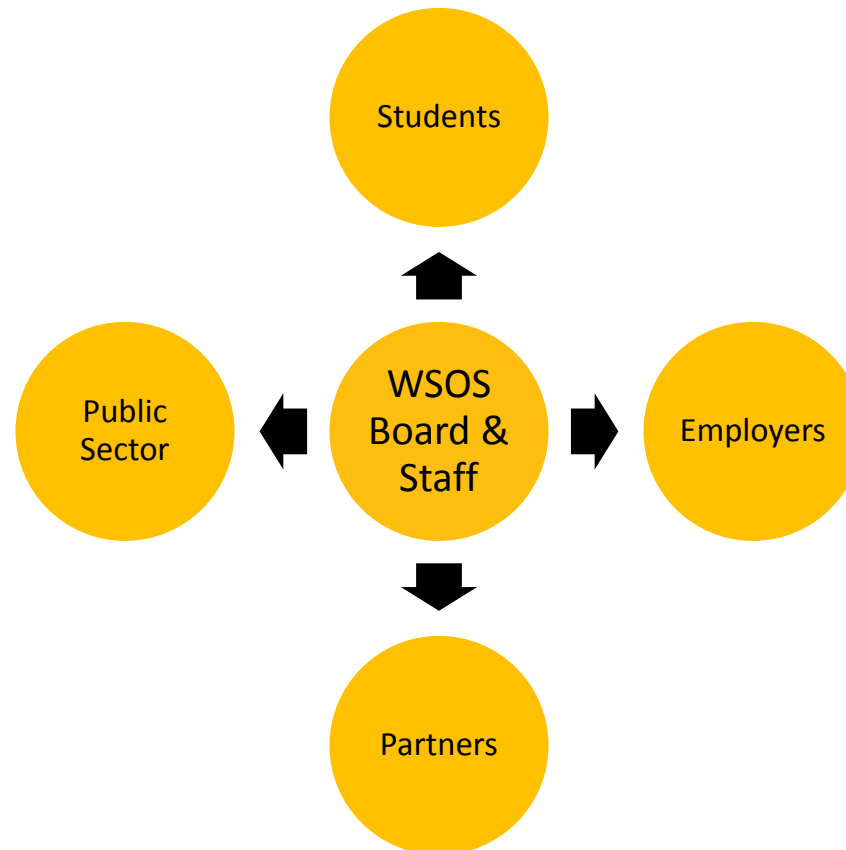
## Movement Building

- Key component of the Governor's STEM strategy
- Integral piece of the STEM continuum
- Eager high-demand employer base

## Unique Program

- Exciting program of first impression
- Benefits current Scholars but also provides opportunities for study and analysis

# Key Stakeholders



# 2014-15

## Priority Areas of Focus

### Improve Program Performance

- Assess and align existing program activities, administration, strategies, and staff
- Develop comprehensive work plans to effectively execute pipeline, persistence, and placement goals
- Expand Scholarship outreach and awareness
- Opportunity Expansion Program

### Strengthen the Board

- Fully recruit and onboard 11 Board members
- Assess governing structure including committees, governing principles, etc.
- Continue to fine-tune reporting systems

### Ramp up Resource Development

- Overall goal to raise \$100M in private funding by 2017
- Develop and implement multi-approach strategy for fundraising
- Finalize case statement, supporting materials and collateral materials
- Fully staff resource development and advocacy team

# PROGRAM UPDATE



October 29, 2014 Board Meeting

# What we'll cover



- Support Services
- Scholarship Services
- Research & Evaluation

# Student spotlight

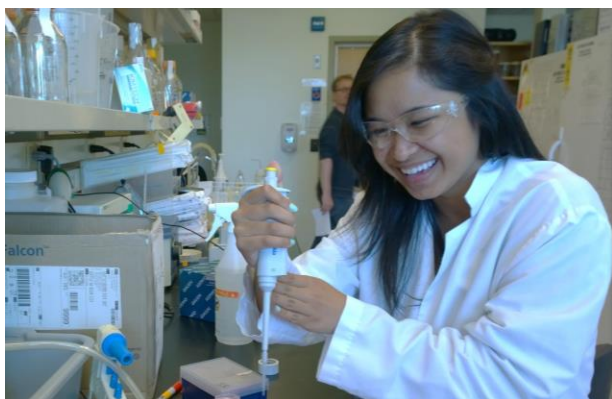


**Beth**, hometown of Westport, Central Washington University Computer Science senior. Interning this summer as a software engineer with Seattle-based *DocuSign*. “Writing lots and lots of code for an amazing company! Learning a lot about software engineering in a real world environment.” Recently received an employment offer from *DocuSign*.

**David’s** mail carrier father clipped the WSOS scholarship newspaper advertisement to help his Garfield High School son succeed as a UW Computer Science major. With intern experience at both Qualcomm and Microsoft, David won’t want for offers when he graduates next May!

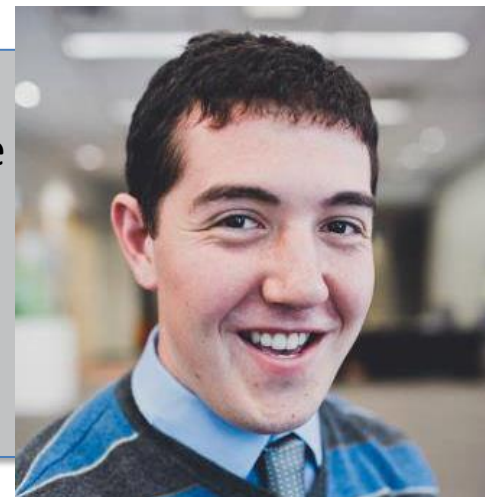


# Student spotlight



**Moa**, hometown of Quezon City in the Philippines and a graduate of Foster High School. As she pursues a microbiology degree at UW, Moa is interning in a malaria lab at Seattle BioMed and is the Activities Chairman of the UW Filipino American Student Association.

**Riley**, a graduate of Todd Beamer High School, is one of the 15 WSOS Scholars preparing to be a future Washington state STEM teacher. We can't wait to visit this WWU undergrad in action this year as an intern in Aviation High School mathematics classrooms!



# Support Services

## Pipeline: Partnerships and Outreach



- Forging strategic partnerships to attract great 2015 applicants (e.g., WA STEM, Career & Technical Education, First Robotics, WSTA, Seattle GirlGeek)
- Promoting the program at leading STEM & healthcare events (e.g., WSTA, NW Mathematics Conference, UW STEM Orientation)

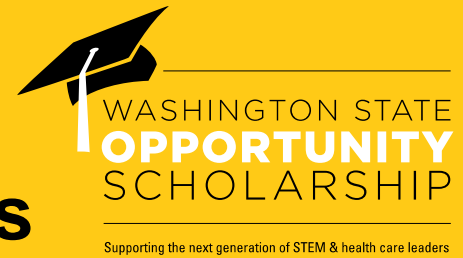


UW WSOS scholars , Yarely & Vanessa, present at the annual Washington Career & Technical Association Conference in Yakima – *these are our MABTON STEAM leaders!*



# Support Services

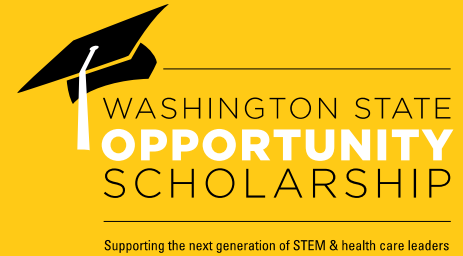
## Persistence: Fall Campus Welcomes



- Meeting hundreds of Scholars and connecting with campus leaders through fourteen 2014 campus Fall Welcomes.
- Goals of Campus Welcomes:
  - Enhance WSOS Scholar cohesion and identification with the WSOS program.
  - Introduce WSOS Scholars to WSOS program staff.
  - Introduce WSOS Scholars to university leaders and programs. Augment campus strategies to improve student outcomes.
- Join us! Upcoming dates are posted on the WSOS website!

# WSU Fall Welcome

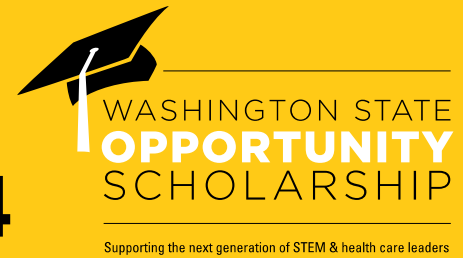
## Sept. 23, 2014



- 40 Scholars - various award levels and fields of study
- Programming included WSOS program history, award and renewal information, resources, and upcoming career and academic event
- **Attendees:** WSU Regent Scott Carson, Vice Provost Mary Wack, Assistant Vice Provost Mary Sánchez Lanier, Ph.D., and many others!
- WSU Regent Scott Carson challenged Scholars about life-long learning, positivity, goal-setting, and giving back to community
- Presentation by WSOS Scholar Bryce Henderson on his undergraduate research and opportunities through WSOS and other undergraduate programs



# UW Fall Welcome – Oct. 13, 2014



- **90 Scholars**
  - Mix of students (first through fifth year students)
  - Mix of majors: Computer Science, Engineering, Natural Sciences, Nursing, etc.
- Programming included WSOS program history, presentation on availability of research opportunities at UW, undergraduate resource fair, panel with Dr. Ed Lasowska (Computer Science Department) and WSOS Scholars/graduates
- **Attendees:** Brad Smith, WSOS Board Chair, Dr. Sheila Edwards Lange, Senator David Frockt, Marcie Maxwell, Senior Policy Advisor to Governor Inslee



# Other Fall Welcome Events



Supporting the next generation of STEM & health care leaders

- Hundreds of Scholars to date
- Practitioners/STEM Professionals
- Campus representatives on hand to link Scholars to opportunities on campus
- Food and community building!



# Support Services

## Placement: Connecting Scholars

- Connecting Scholars to existing opportunities for internship and career placement on campuses
- National Conference on Undergraduate Research (NCUR – February)
- Personal coaching
- Civic career fairs



# Scholarship Services

## 2014-15 WSOS Renewal Status

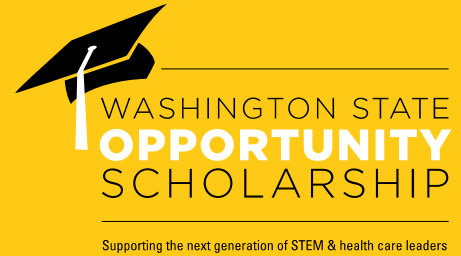


Supporting the next generation of STEM & health care leaders

Status of 2,513 Recipients Eligible for Renewal – October 6, 2014	Cohort One	Cohort Two	Total
Met eligibility requirements for renewal or graduated	76%	85%	79%
Did not complete renewal form or submit required documents	13%	5%	10%
Changed to an ineligible major	5%	6%	5%
Dropped Out	2%	1%	2%
Did not complete the FAFSA	1%	1%	1%
Moved to an ineligible college	.5%	.4%	.5%
Did not renew for a variety of reasons	3%	1%	2%
Total	100%	100%	100%

# Scholarship Services

## 2014-15 Projected Enrollment



2,269 WSOS recipients are projected to enroll in 2014-2015 as of October 6, 2014

- Cohort One      934
- Cohort Two      590
- Cohort Three    745

# Research & Evaluation

## Renewal/Needs Assessment Survey



- Collaboration between CSF's R & E and Scholarship Services Departments
- Merged needs assessment data collection with scholarship renewal process
- Limited response burden on Scholars while eliciting an extremely high response rate
- Provides need and outcome profiles for those renewing, graduating, and withdrawing



# Research & Evaluation

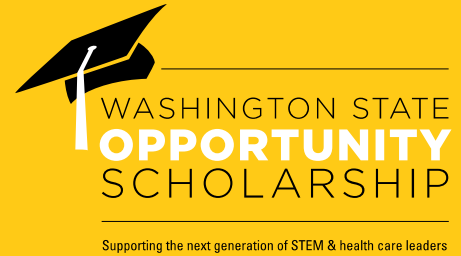
## Renewal/Needs Assessment Survey, cont.



- Of respondents who “renewed” their scholarship
  - 80% of renewals reported majoring in: Biology (24%), Computer and Information Sciences (10%), Engineering (24%) or Health professions (22%)
  - 96% report that the WSOS Scholarship has been an incentive to remain in a high demand field of study, however:
    - 41% reported not working while in school; 37% worked fewer than 20 hrs per week; 19% worked 20-40 hrs per week; 3% worked over 40 hrs per week
    - 68% rated their financial ability to cover school-related expenses for the coming year as “fair” or “poor”

# Research & Evaluation

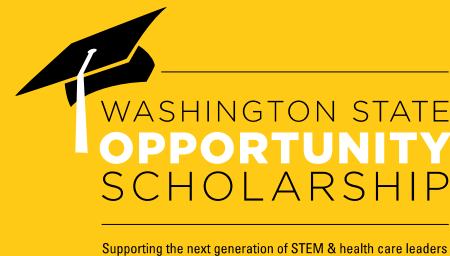
## Renewal/Needs Assessment Survey, cont.



- Of respondents who “graduated”
  - 32% have already secured work in their field of study (over 40% of computer and information sciences, engineering, and health profession majors)
  - 31% will be attending graduate/law/medical school (over 50% of biology and physical science majors)
  - 28% are actively seeking work in their field of study
- Of respondents who “withdrew”
  - No systemic trends present in data (e.g., gender, ethnicity, major, academic performance, hours working, etc)
  - Further, those withdrawing reported levels of awareness and engagement equal to those renewing

# Research & Evaluation

## Renewal/Needs Assessment Survey, cont.



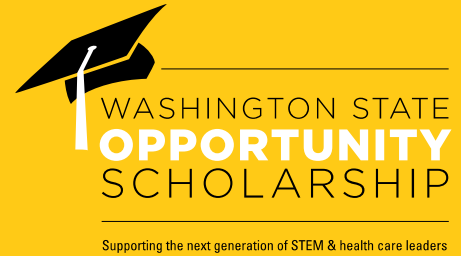
- Summary of WSOS Scholar Satisfaction and Awareness
  - Responses indicate very high levels of satisfaction with the following:
    - (a) WSOS application/renewal processes
    - (b) Information received from WSOS staff
  - Responses indicate growth potential in continuing to create awareness around fact the that the WSOS program is more than a scholarship

# FUNDRAISING & ADVOCACY UPDATE



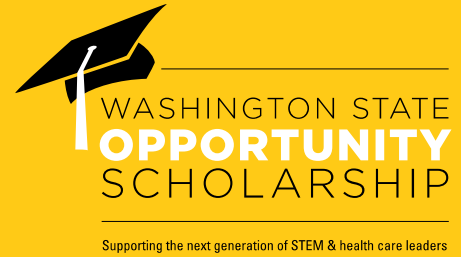
Board Meeting | October 29, 2014

# What we'll cover



- Microsoft Giving Campaign Update
- 2014-2017 Fund Development Strategy
- Advocacy

# Microsoft Giving Campaign



- Co-beneficiary of Online Auction
- Four VPAL presentations to date:
  - » LCA Pancake Breakfast (2 presentations) – approximately \$5,000 raised
  - » Operations Poker Tournament - \$5,000 raised
  - » Marketing Department Quiz Show - \$TBD
- All totals will be quadrupled! \$1 = \$4



# Proposed 2014-2017 Fund Development Strategy



Supporting the next generation of STEM & health care leaders

## STEM Trio - \$30M goal

- Target prospect: “Cornerstone” families through STEM Trio
- Lead: Brad Smith
- Staff Lead: Naria (also Patrick D’Amelio & Sam Whiting)
- Outstanding issues: Top priorities, alignment, revenue sharing agreement, going forward consulting needs.

## Corporate - \$10M goal

- Target prospect: STEM & healthcare-related corporations, current private donor vendors, etc.
- Lead: WSOS Board members, Champions
- Staff Lead: Dir Corp Relations
- Outstanding issues: develop comprehensive strategy, outreach to sponsors, recruitment of event committee, logistics (date, location, etc.)

## Individual Major Gifts Fundraising - \$5M goal

- Target prospect: High net worth donors (CEOs, etc.) with an interest in STEM, scholarships, economic development, etc.
- Lead: WSOS Board members, Champions
- Staff Lead: Naria
- Outstanding issues: development of prospect list, cultivation of prospects
- 10 Board members raising an average of \$500k

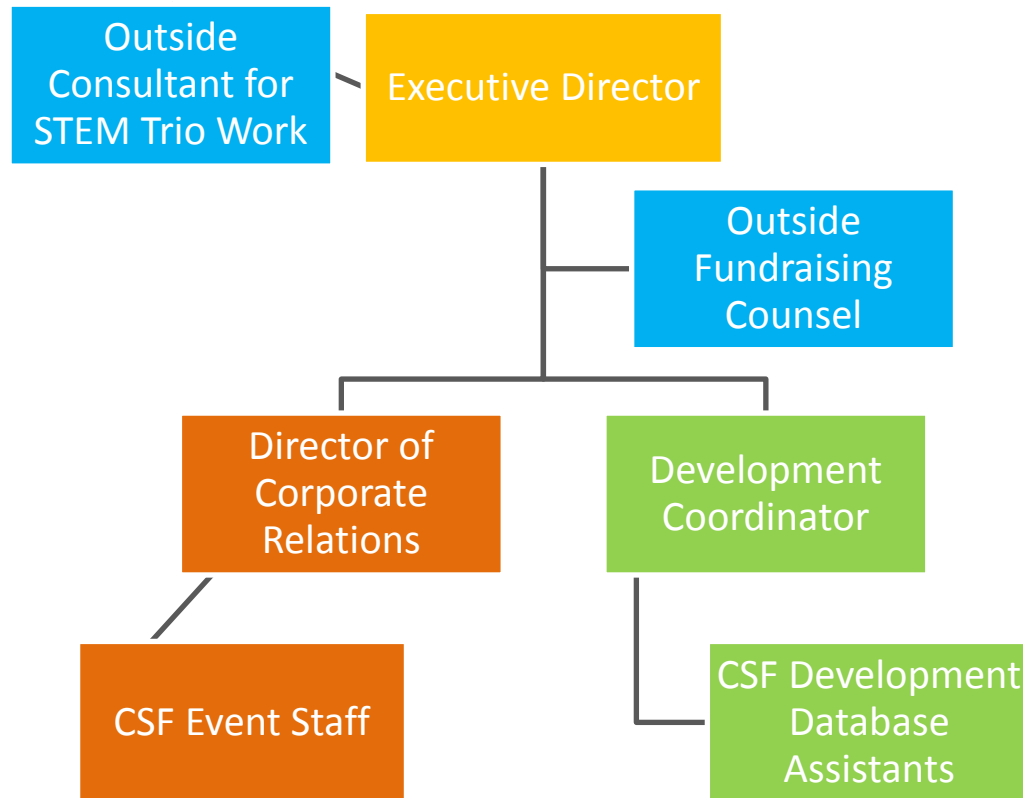
## Fund Drives (Employee Giving, etc.) - \$2M goal

- Target prospect: Existing employee giving campaigns, prospective employee giving corps, associations, etc.
- Lead: Various
- Staff Lead: Dir Corp Relations and Development Coordinator
- Outstanding issues: outreach to sponsors, outreach to associations

## Annual Giving - \$1M goal

- Target prospect: Individual donors, GiveBIG, transplants to WA with no alma mater, etc.
- Lead: Brad & others (sign letter, etc.)
- Staff Lead: Development Coordinator and Naria
- Outstanding issues: donor prospect list development, case statement developed

# Proposed 2014-2017 Fund Development Staffing





# Fall Legislative Outreach

- Outreach to key legislators – development of legislative strategy for fall 2014 and spring 2015
- Legislative packets compiled and distributed at outreach events
- Invitations to elected officials for Fall Campus Welcome events
- Preparation of 2014 Legislative Report



# Media

## YAKIMA HERALD REPUBLIC

*Mabton students pick up STEAM during summer program |  
Aug. 7, 2014*



**Jill McGovern** @jillmcgovern · Oct 6  
Enjoying breakfast with colleagues & raising money for #STEM #education. #msftgiving @OppScholarship @BradSmi #give

Reply Retweeted Favored



**U. of Washington** @UW · Oct 13  
Nice sunny-day shot of the @HUBatUW RT @OppScholarship: Beautiful day for an event at @UW!



RETWEETS  
6

FAVORITES  
32





# FINANCE

October 29, 2014

# Financial Highlights

- Interagency agreement signed between WSOS and WSIB
- \$24M transferred to WSIB
- \$25M received from WSAC

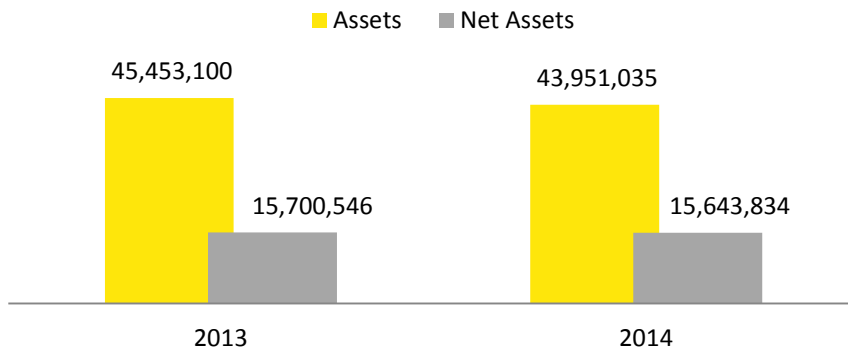
# FINANCIAL STATEMENTS

*(As of 8.31.14 and previously reviewed by finance and investment committee)*

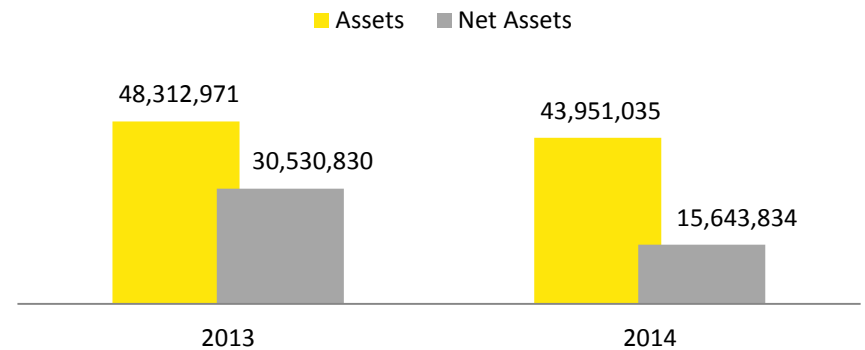
October 29, 2014

# WSOS Balance Sheet

**Comparison to FYE**  
*6.30.14 and 8.31.14*



**Comparison to FYE**  
*8.31.13 and 8.31.14*



# WSOS Balance Sheet



Supporting the next generation of STEM & health care leaders

	Comparison to FYE			Comparison to same period LFY		
	6/30/14	% Change	8/31/14	8/31/13	% Change	8/31/14
<b>Assets</b>						
Cash	1,357,640	-116%	(212,588)	1,799,771	-112%	(212,588)
Investments	28,163,081	0%	28,191,938	22,164,246	27%	28,191,938
Pledges Receivable	15,932,379	0%	15,971,685	24,348,954	-34%	15,971,685
<b>Total Assets</b>	<b>45,453,100</b>		<b>43,951,035</b>	<b>48,312,971</b>		<b>43,951,035</b>
<b>Liabilities and Net Assets</b>						
Accounts Payable	354,277	-7%	330,266	134,172	146%	330,266
Scholarship Commitments	29,398,277	-5%	27,976,935	17,647,969	59%	27,976,935
<b>Total Liabilities</b>	<b>29,752,554</b>	-5%	<b>28,307,201</b>	<b>17,782,141</b>	59%	<b>28,307,201</b>
<b>Total Net Assets</b>	<b>15,700,546</b>	0%	<b>15,643,834</b>	<b>30,530,830</b>	-49%	<b>15,643,834</b>
<b>Total Liabilities and Net Assets</b>	<b>45,453,100</b>	-3%	<b>43,951,035</b>	<b>48,312,971</b>	-9%	<b>43,951,035</b>

# WSOS Income Statement



Supporting the next generation of STEM & health care leaders

	Two months ending August 31, 2014			FYE June 30, 2015
	Actual	Budget	Variance Fav (Unfav)	Annual Budget
<b>Revenue</b>				
Private	\$ 104,865	\$ 1,666,667	\$ (1,561,802)	\$ 20,000,000
Public	-	-	-	-
Investment Income	10,695	132,324	(121,629)	288,816
<b>Total Revenue</b>	<b>115,560</b>	<b>1,798,991</b>	<b>(1,683,431)</b>	<b>20,288,816</b>
<b>Expense</b>				
Scholarship	1,421,342	1,937,923	516,581	11,977,889
Salaries and Benefits	20,918	120,669	99,751	724,013
Program Other Direct	15,025	46,617	31,592	279,499
Allocated Indirect Overhead	3,974	23,885	19,911	143,311
Professional Fees	118,339	137,870	16,531	809,219
<b>Total Expense</b>	<b>1,579,598</b>	<b>2,266,964</b>	<b>684,366</b>	<b>13,933,931</b>
<b>Net Income (Loss)</b>	<b>\$ (1,464,038)</b>	<b>\$ (467,973)</b>	<b>\$ (999,065)</b>	<b>\$ 6,354,885</b>



# WSOS Cash Flow



Supporting the next generation of STEM & health care leaders

## CASH FLOW

### Cash Inflows:

	Inception – August 2014		
	Scholarship	Endowment	Total
Boeing	7,500,000	7,500,000	15,000,000
Microsoft	20,000,000		20,000,000
Other Private	1,366,108	461,499	1,827,607
State	5,000,000	-	5,000,000
Investment Income	14,414	13,271	27,685
Total Cash Inflows	33,880,522	7,974,770	41,855,292

### Cash Outflows:

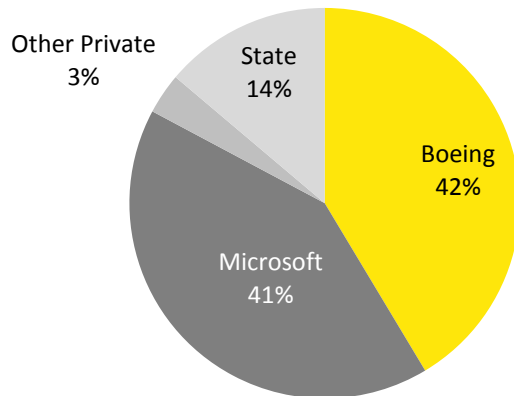
Scholarships	(10,053,490)	-	(10,053,490)
Program Administrator and Marketing	(3,822,452)	-	(3,822,452)
Total Cash Outflows	(13,875,942)	-	(13,875,942)

**Net Cash Flow Inception-To-Date &  
Balance of Cash & Investments May 31,  
2014**

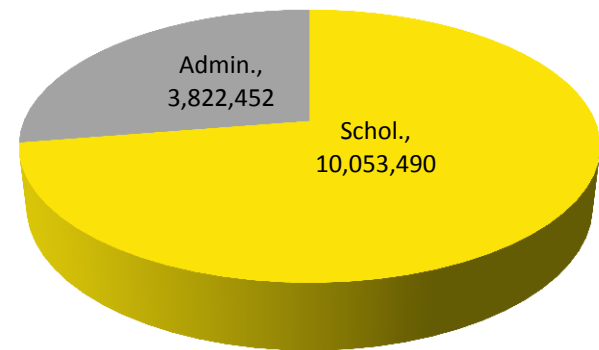
20,004,580	7,974,770	27,979,350
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# WSOS Cash Flow

**Inflows**  
*Inception through August 31, 2014*



**Outflows**  
*Inception through August 31, 2014*



# INCOME STATEMENT

*(As of 9.30.14 – not reviewed by finance and investment committee)*

October 29, 2014

# WSOS Income Statement (*interim*)



Supporting the next generation of STEM & health care leaders

	Three Months Ended September 30, 2013, FY 2013-2014	Three Months Ended September 30, 2014, FY 2014-2015			FYE June 30, 2015
	Actual	Actual	Budget	Variance Fav (Unfav)	Annual Budget
<b>Revenue</b>					
Private	\$ 715	\$ 104,899	\$ 2,500,000	\$ (2,395,101)	\$ 10,000,000
Public	-	25,000,000	25,000,000	-	25,000,000
Investment Income	(407)	13,641	198,486	(184,845)	793,944
<b>Total Revenue</b>	<b>308</b>	<b>25,118,540</b>	<b>27,698,486</b>	<b>(2,579,946)</b>	<b>35,793,944</b>
<b>Expense</b>					
Scholarship	3,260,924	3,283,183	2,909,384	(373,799)	11,637,525
Salaries and Benefits	-	47,049	181,003	133,954	724,013
Program Other Direct	-	45,323	69,875	24,552	279,499
Allocated Indirect Overhead	-	12,496	35,828	23,332	143,311
Professional Fees (CSF)	307,071	177,002	202,305	25,302	809,219
<b>Total Expense</b>	<b>3,567,995</b>	<b>3,565,054</b>	<b>3,398,394</b>	<b>(166,659)</b>	<b>13,593,567</b>
<b>Net Income (Loss)</b>	<b>\$ (3,567,686)</b>	<b>\$ 21,553,486</b>	<b>\$ 24,300,092</b>	<b>\$ (2,746,606)</b>	<b>\$ 22,200,377</b>



Supporting the next generation of STEM & health care leaders

# PRESENTATION OF INVESTING IN STEM EDUCATION RESEARCH

JOHN WENSTRUP,  
BOSTON CONSULTING GROUP

Board Meeting | October 29, 2014



# Investing in Washington's **STEM Education Pipeline**

WSOS Board Presentation

October 29, 2014

THE BOSTON CONSULTING GROUP

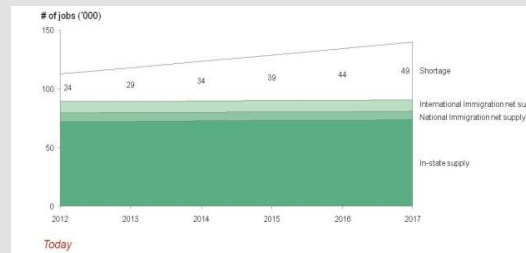
# BCG in Seattle: Committed to impact

## BCG Seattle office opened in 2012



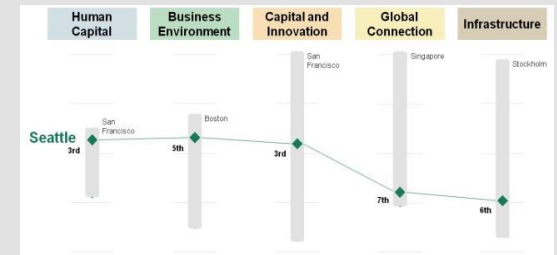
- 20 year track record working with local clients
- ~30 consultants and staff in Seattle
- Seattle was BCG's 77th office opened globally (now at 82 total)
- BCG is a \$3.5B global consultancy covering strategy, operations, and organizational topics

## Job Skills Gap Report



- "25K → 50K unfilled jobs"
- Work w/ WA Roundtable
- Published in 2013

## Seattle's Global Competitiveness



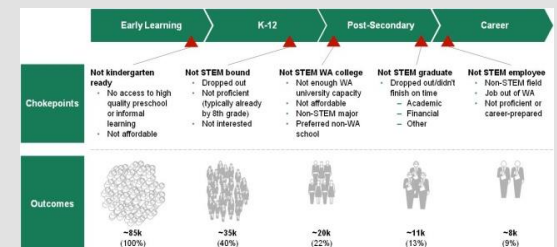
- "#5 of 8 vs. peer cities"
- Global Cities Initiative w/ JP Morgan, Brookings, Seattle Chamber

## Transportation Infrastructure



- "7-10x ROI on key projects"
- Work w/Washington Roundtable
- To be published in 2014

## Washington's STEM Pipeline



- "90% leakage in STEM pipeline"
- In partnership with STEM Trio
- To be published in 2014

# Human Capital is a key driver of global competitiveness

(from BCG study on Regional Competitiveness)



## Human Capital

The ability to build, attract and retain talent is responsible for driving innovative solutions, improving productivity and attracting top companies

- "Talent will be the most important determining factor of a city's ability to compete at global level", Enrique Rueda-Sabater, BCG Senior Advisor & former World Bank Director



## Business Environment

Seattle ranks below comparable global cities, such as San Francisco or Vancouver, with great demographics, livability and companies hindered by weaker education

- Highly dependent on educated imports for jobs
- In K-12, WA ranks 15th in reading and 7th in math among states in NAEP, yet variability across districts and declining public school spending (down to 28th) anticipates issues
- University of Washington is highly recognized (#12 in research citations), but it is the only one in "Top 200"



## Capital and Innovation Ecosystem

Within human capital, STEM has a significant impact on economic development

- It's not just about high tech, STEM is a capability that will be required to compete in every industry, from Spokane agriculture to Moses Lake manufacturing



## Infrastructure

Investing in STEM education can be our ultimate legacy, making Seattle/WA a world-class Human Capital hub for generations to come

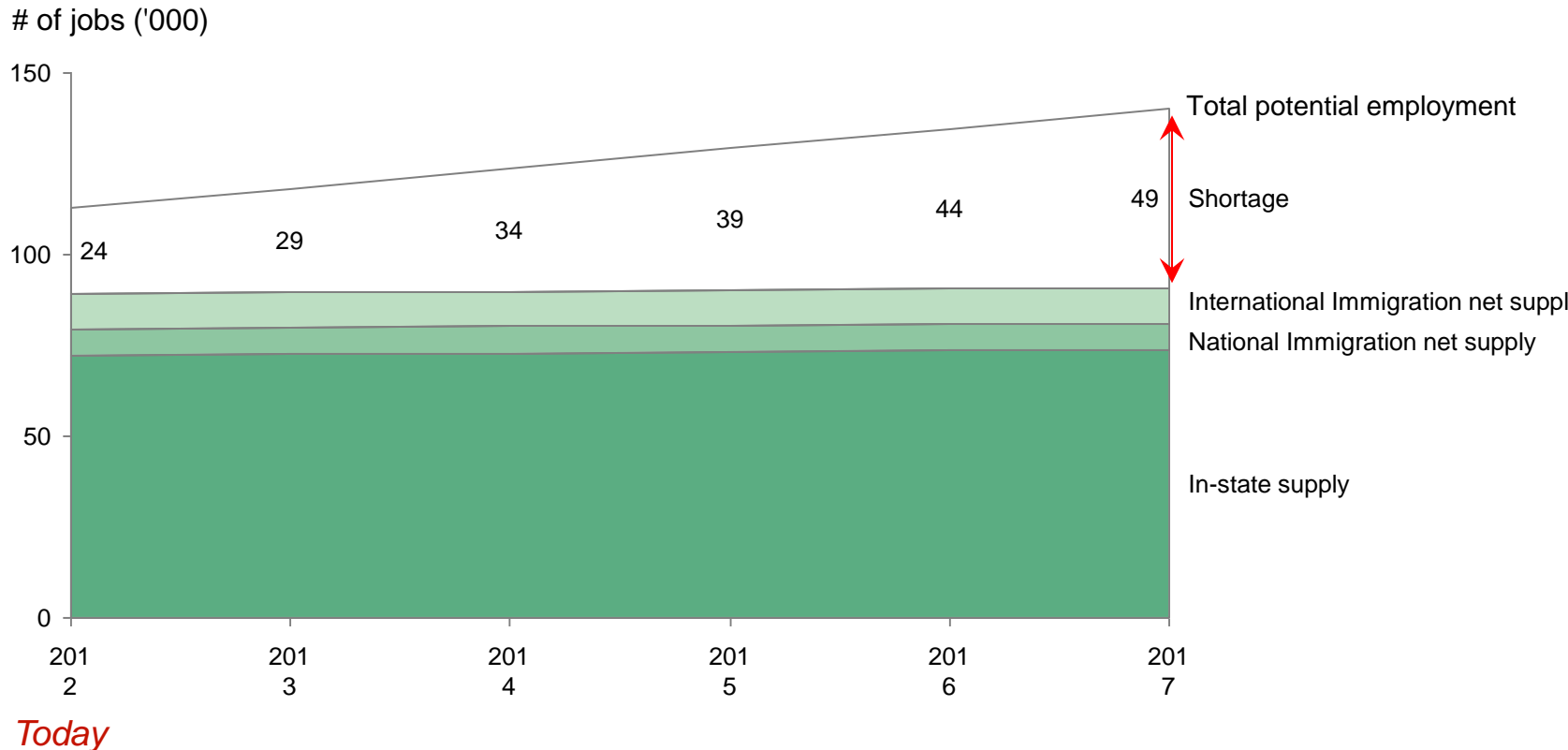


## Global Connectedness



# There are great jobs in Washington State but we lack the skilled workers to fill them *(from Skills Gap study)*

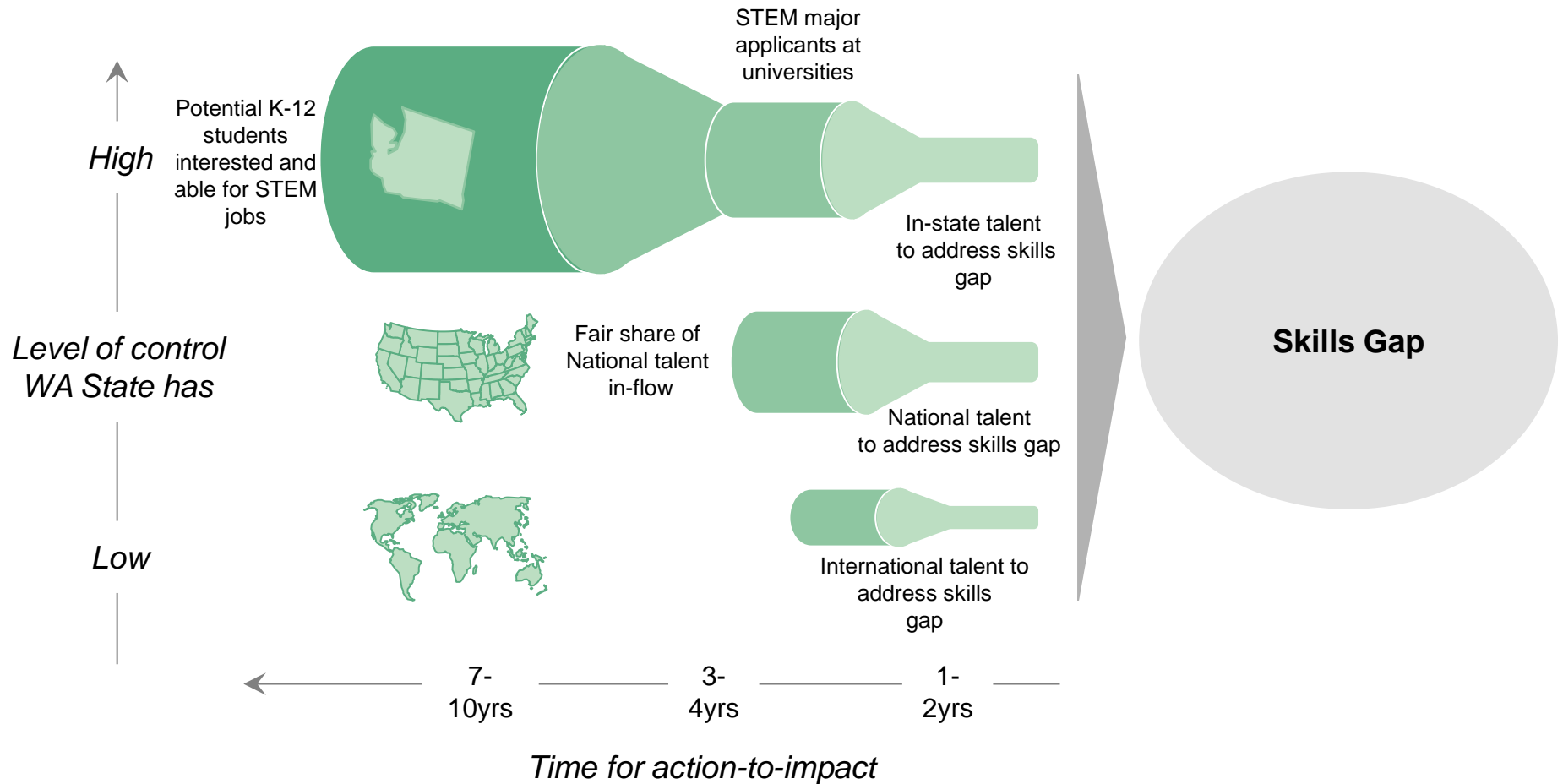
## Projection of total unmet skill shortages vs. annual supply of talent



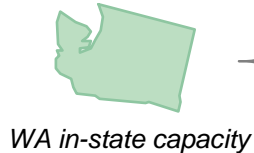
**Adding to the acute shortage 5,000 a year**

Note: Gap growth based on projected supply-demand imbalance for computer science, healthcare and engineering roles only  
Source: CPS survey 2012, BCG analysis

# To fill the skills gap, we must focus on building capacity in Washington State where we can better shape the future.



# No silver bullet exists, but five actions taken concurrently can address majority of the skills gap



1

**Increase STEM throughput and capacity at university**

- Increase public and private university capacity in CS, Engineering and Healthcare degrees through increased funding and innovative delivery

2

**Drive STEM interest & performance in K-12, increase university capacity further**

- Increase access to foundational and advanced STEM education
- Create mechanisms/ incentives to attract and develop high quality STEM teachers

3

**Align technical degree/certificates curriculum with employer demands, add nursing capacity**

- Reward community colleges for high-graduation rates, high-employability of graduates
- Encourage private co-op programs to increase relevance of curriculum

4

**Promote and enable inbound state migration**

- Promote WA State as a great place to live and work – and as an employment hub for STEM jobs
- Connect and attract out-of-state candidates to SMBs in WA

5

**Support expansion of international immigration opportunities**

- Ensure the issue of higher cap for H-1B Visa for high-skills, higher education jobs is high on the agenda of congressional delegations



# About our most recent study: Washington's STEM Pipeline

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## **Our most recent study builds on the Skills Gap, focusing on three key topics:**

- *Pipeline Analysis*: Where are key "chokepoints" in the STEM education pipeline in Washington – and how many students fall out of the pipeline at each point?
- *STEM Employee Impact*: How do STEM employees drive value for all stakeholders across Washington State (not just Government)?
- *STEM Pipeline Investment ROI*: What is a solid estimate of the Return on Investment (ROI) of investments in STEM education in Washington State?

**This analysis and work in this document was prepared by the Boston Consulting Group as part of a Pro-Bono effort for Thrive by Five, Washington STEM, and The Washington State Opportunity Scholarship**

## **This is a draft working document meant for internal (Trio and BCG) use only**

- All analyses should be treated as "in-progress"
- BCG plans to publish a white paper based on this research that is tentatively scheduled for release to the public in late 2014
- If you should wish to cite or reference anything in this report before it is formally published, please contact John Wenstrup ([wenstrup.john@bcg.com](mailto:wenstrup.john@bcg.com)) or Marc Casale ([casale.marc@bcg.com](mailto:casale.marc@bcg.com))

# Summary Headlines



**"90% Leakage"** - Opportunity to help the ~75,000 WA students per year who are not on-track to be employed in STEM jobs in Washington



**3.5x gap in Social Justice** - Opportunity to benefit low income Washingtonians, making them 3.5x more likely to make it through the STEM education pipeline



**\$1.6M LTV per job** - Each new STEM employee generates \$1.6M in incremental salary and \$0.55M in taxes & social spending savings over his lifetime, while generating two additional 'indirect' jobs



**\$650M to 2x throughput** - Investing ~\$650M per year could double WA's STEM education throughput (+8,000 STEM jobs/year)



**Impact on ~200K Washingtonians** - An increase of 8K STEM jobs/year would drive \$12B in salary increases and \$4.5B in public value (LTV), impact ~200,000 Washingtonians, reduce unemployment by 20%, and reduce poverty by 10%

# Momentum building up for STEM education improvements

**= Opportunity for Step-Order Change**

## New Policies & Standards



- WaKIDS and full-day kindergarten
- Common Core Standards and NGSS in K-12
- Incentives for Academic Acceleration and AP
- Performance management for early learning centers, teachers and principals, and overall of educational system

+

## McCleary Decision



- WA Supreme Court ruled that WA state must boost funding in education, guarantee opportunities
- Estimated costs to meet McCleary requirements are \$3-3.5B in 2015-17 budget cycle, and \$4-4.5B in 2017-19
- Risk of funding being pulled from other parts of the education pipeline, e.g. Pre-K or Post Secondary

+

## Business & Social Sector Support



Microsoft



WASHINGTON STATE OPPORTUNITY SCHOLARSHIP



- Business community trying to address skills gap
  - Microsoft
  - Boeing
  - Bezos Family Foundation
  - Gates Foundation
- Well-funded and structured non-profit orgs
  - Thrive by Five
  - WA STEM
  - WA Opportunity Scholarship
  - Trio, joining forces

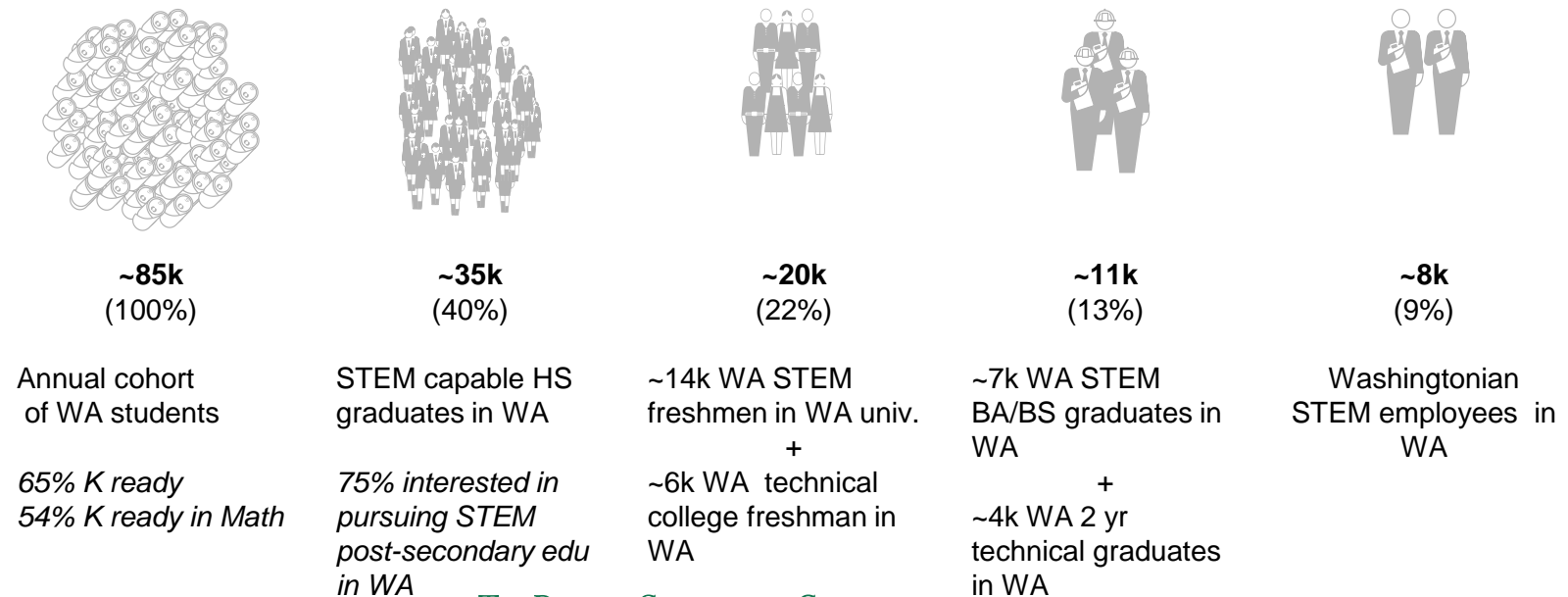


- Opportunity to advocate for significant investments and inform how the new funding should be used...
- ...leveraging organizations that are already on the ground implementing practical solutions, with the support of leading WA businesses

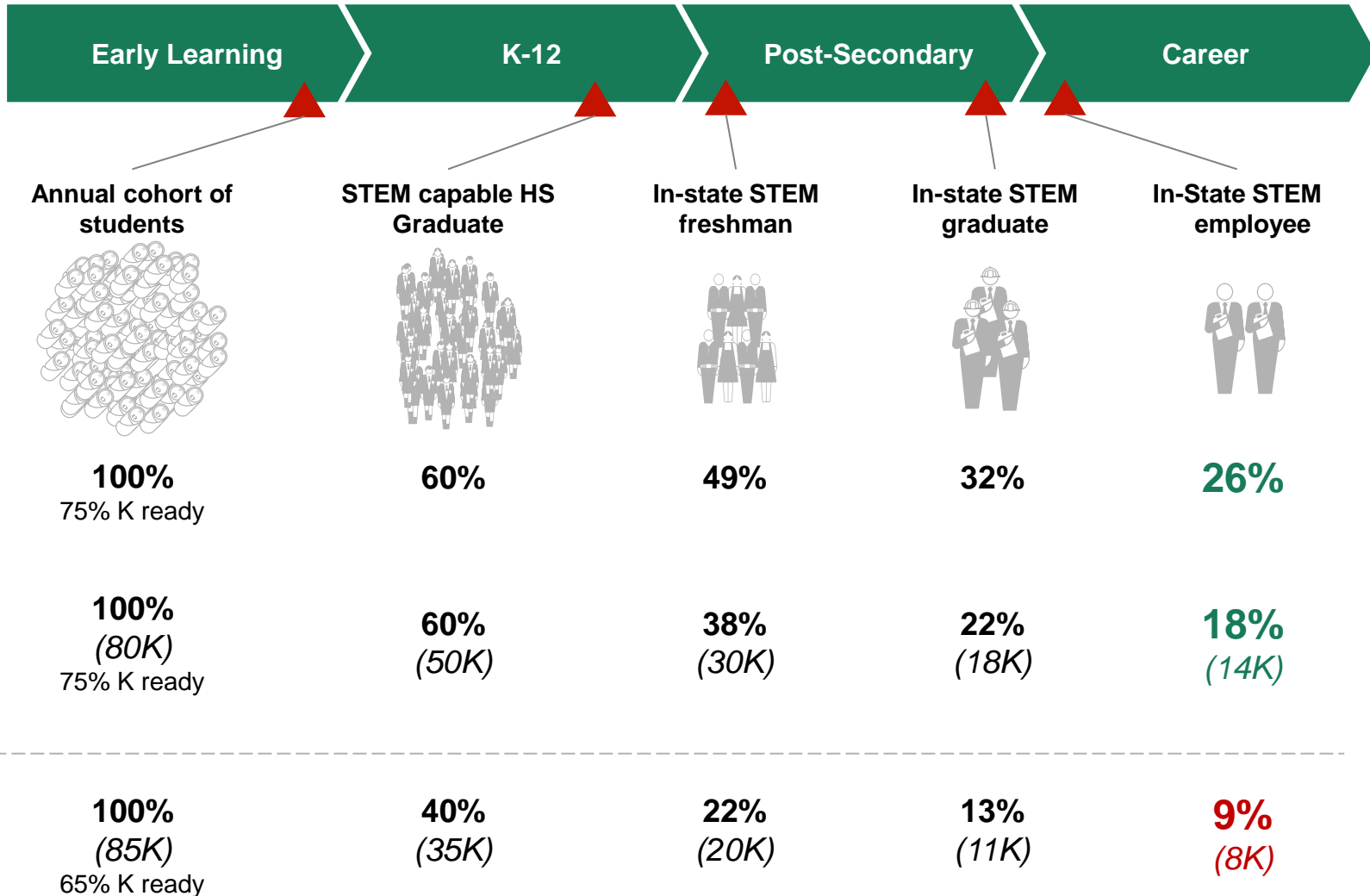
# Opportunity to help thousands of WA students by addressing chokepoints in STEM education pipeline



- | Chokepoints  | Early Learning   | K-12   | Post-Secondary  | Career   |
|--|--|--|---|--|
| <b>Not kindergarten ready</b>  | <b>Not STEM bound</b>  | <b>Not STEM WA college</b>   | <b>Not STEM graduate</b>  | <b>Not STEM employee</b>   |
| <ul style="list-style-type: none"> <li>No access to high quality preschool or informal learning</li> <li>Not affordable</li> </ul> | <ul style="list-style-type: none"> <li>Dropped out</li> <li>Not proficient (typically already by 8th grade)</li> <li>Not interested</li> </ul> | <ul style="list-style-type: none"> <li>Not enough WA university capacity</li> <li>Not affordable</li> <li>Non-STEM major</li> <li>Preferred non-WA school</li> </ul> | <ul style="list-style-type: none"> <li>Dropped out/didn't finish on time                             <ul style="list-style-type: none"> <li>Academic</li> <li>Financial</li> <li>Other</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>Non-STEM field</li> <li>Job out of WA</li> <li>Not proficient or career-prepared</li> </ul> |



# Washington State needs to double pipeline throughput to compete with "best-in-class" states



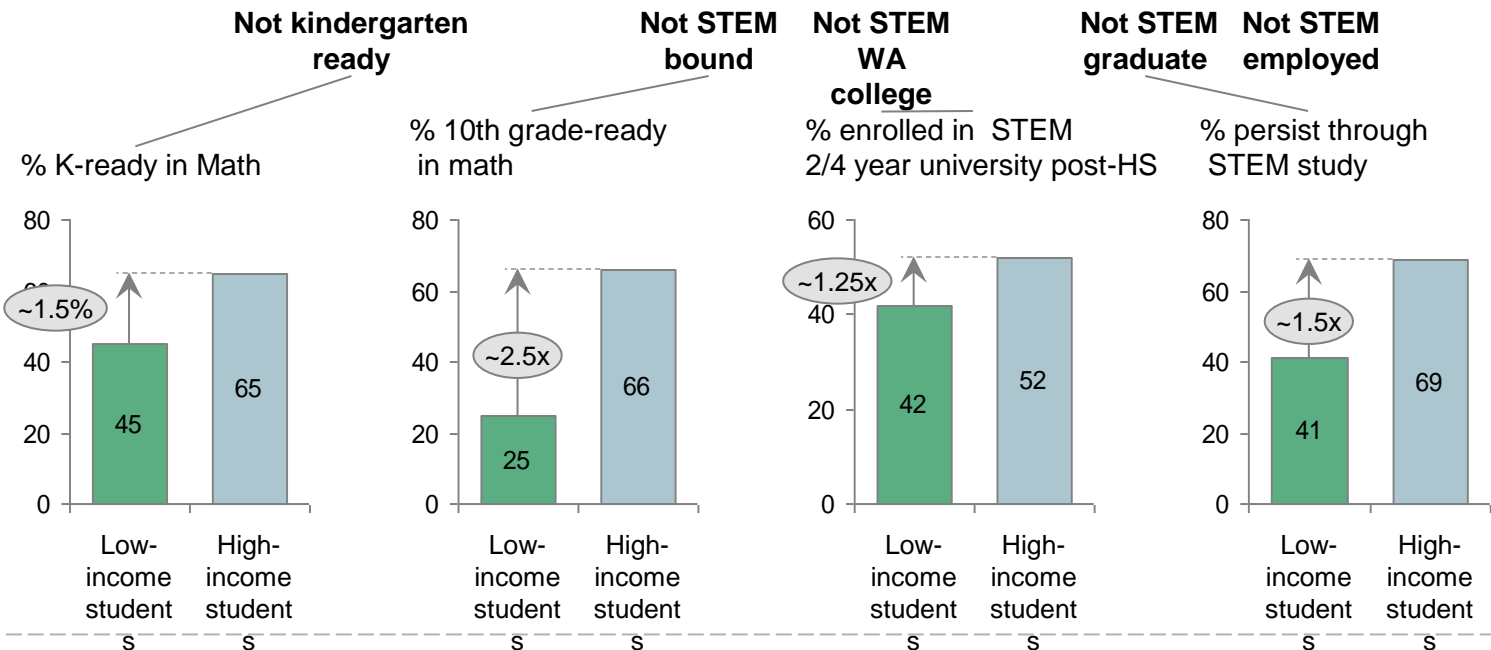


# Even greater opportunity to help low-income students struggle more through STEM pipeline



## Chokepoints

## Performance differences between low income and high income



## Current outcome

~35k (100%) Cohort of low-income students (55% not K-ready Math)	~9k (25%) STEM capable	~4k (12%) WA STEM freshmen in WA universities	~2k (6%) WA STEM BA/BS graduates in WA
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## Potential outcome

~35k (100%) Cohort of low-income students (35% not K-ready Math)	~23k (65%) STEM capable	~10k (29%) WA STEM freshmen in WA universities	~7k (20%) WA STEM BA/BS graduates in WA
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# Investment in STEM employees drives value for all Washington stakeholders



## Impact of Increased STEM Pipeline Production

1

### Individual and family betterment

- **Salary increases** - \$60K/employee, \$1.6M LTV
- **Social mobility** - STEM job almost guarantees middle class
- **Physical well-being** - Knock-on health improvements, local community opportunities

2

### WA economic development

- **Jobs created** - 1 STEM job → 2 indirect jobs
- **Companies attracted/retained** - Prevent ~30% of firms from exporting growth; attract startups
- **Savings in import costs** - recruiting, & relocation costs; opportunity for co-ops, training

3

### WA social health

- **Decrease unemployment rate by ~20%**, taking 35,000 Washingtonians out of unemployment
- **Decrease poverty rate by ~10%**, lifting 85,000 Washingtonians out of poverty
- Potentially **increase by ~30%** the share of women and Black & Hispanic STEM employees

4

### Government finances

- **Tax revenue** - \$20K/ per employee, \$540K LTV
- **Social spending savings** - \$1.5K / per employee, \$10K LTV

## Estimated ROI

~\$650 annual investment



2x annual STEM production



Yielding:

- Increased STEM proficiency for **300k students** per yr. (~25% of students)
- **8k STEM jobs**, 16k indirect per year
- **\$12.6B in salary** increases per year
- **\$4.5B in taxes & social savings** (LTV) per cohort (includes indirect)



**~7x return**

(to Government only)

---

## Appendix – Supporting analysis



# STEM employees drive value for all WA stakeholders

1

## Individual and family betterment

### Financial / physical well-being

- Salary increase
- Health improvements

### Opportunity

- Educational attainment
- Social mobility
- Opportunity in local communities

2

## WA economic development

### Incremental business

- More companies created, attracted and retained
- Jobs created

### Savings in employment costs

- Recruiting, relocation and sponsorships
- On the job training

3

## WA social health

### Social justice / equity

- Unemployment reduction
- Income gap / Poverty reduction
- Workforce diversity
- Community stability

4

## Government finances

### Tax revenue

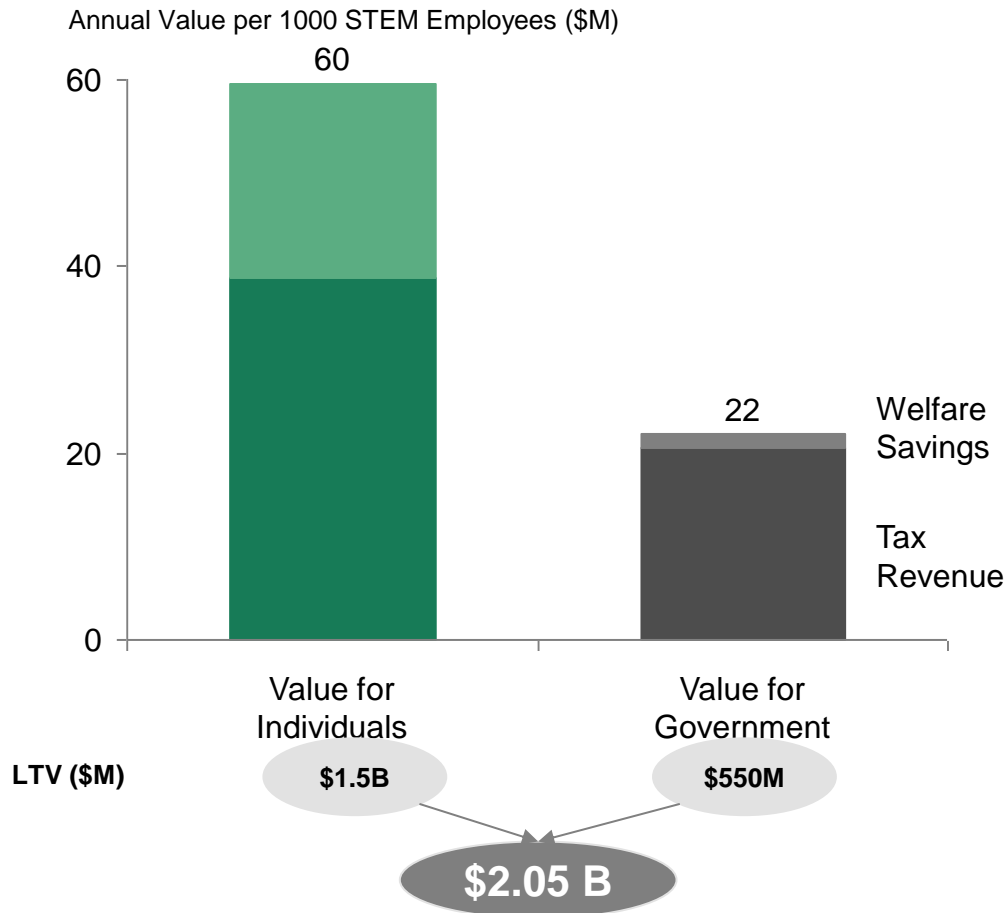
### Savings in social spending

- Unemployment
- Welfare / Medicaid / Food stamps

# Over \$80M per year and \$2B of LTV created per 1,000 new STEM employees



## Annual value created per 1000 new STEM employees



## Economic Development and Social Health

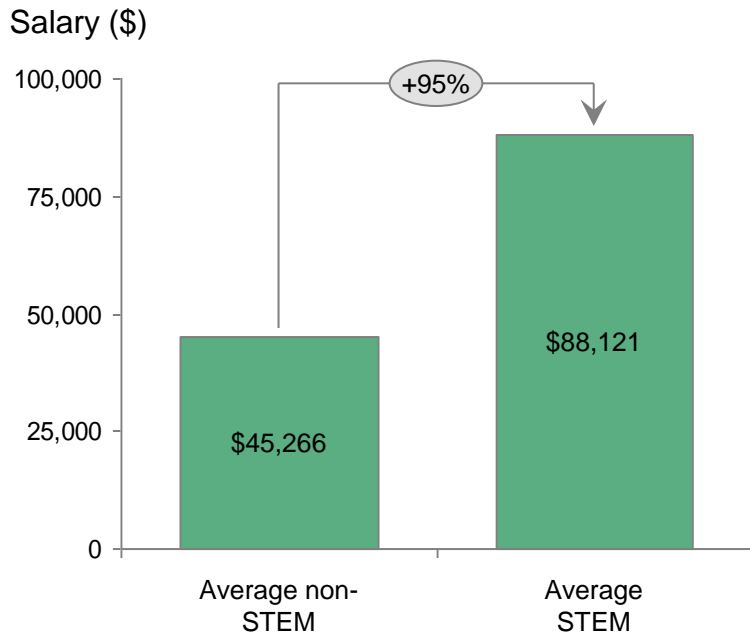
If WA were to double annual STEM grads, then we could:

- **Create 24K** new jobs per year
- **Increase by 30%** share of women and Black and Hispanic employees
- **Decrease by 20%** unemployment rate
- **Decrease by 10%** poverty rate
- Attract, build, and retain **great companies in state**

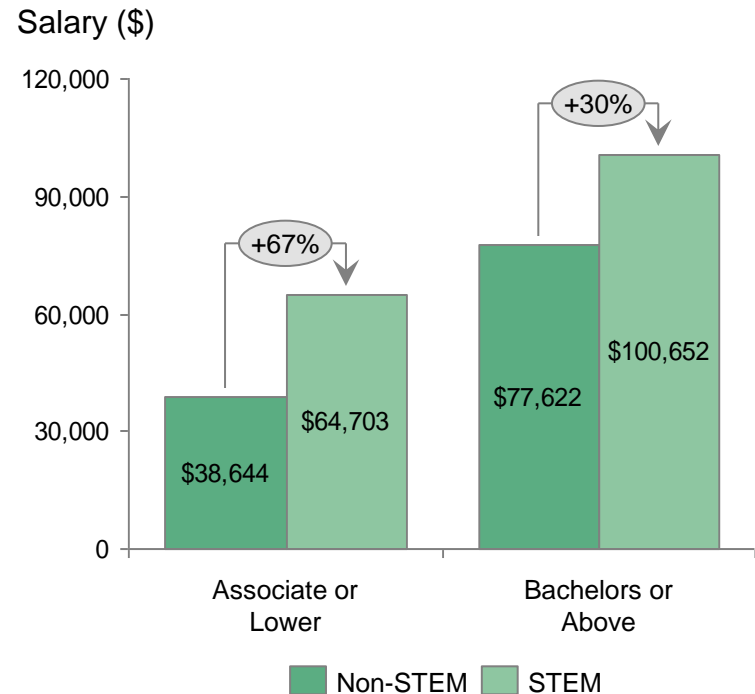


# 1 STEM graduates create better lives for themselves and their families

## STEM worker in WA State estimated to make over \$1M more in life-time salary



## Controlling for Ed-level, STEM job still powerful lever for social mobility in WA



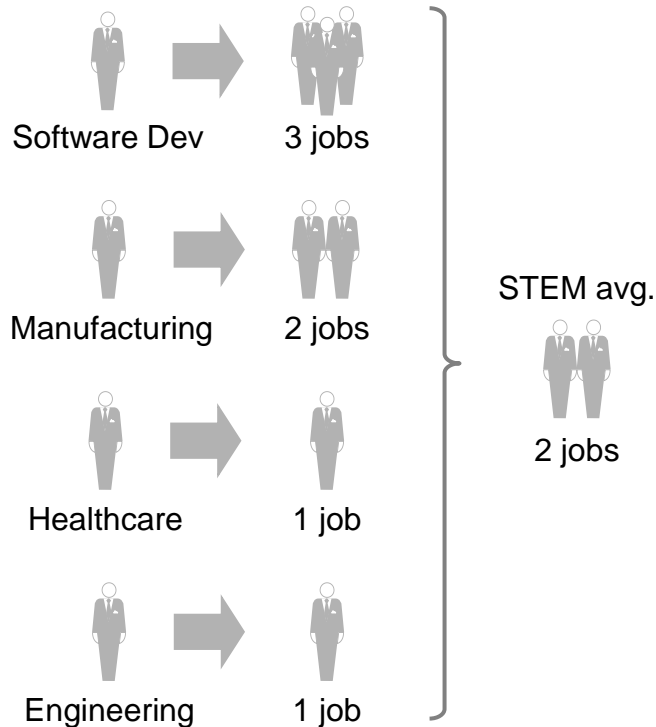
**Total salary differential impact of \$60k per STEM employee per year (\$1.6M LTV), considering mix of backgrounds and indirect job creation**

Note: STEM jobs include BLS classification of "STEM-Related" in order to include Medical professionals and STEM related business and management jobs  
Source: 2013 Bureau of Labor Statistics Data [http://www.bls.gov/oes/current/oes\\_wa.htm#15-0000](http://www.bls.gov/oes/current/oes_wa.htm#15-0000), Bureau of Labor Statistics Classifications: <http://www.bls.gov/opub/ooq/2014/spring/art01.pdf>



# 2 Increasing quality of STEM workforce in WA state will spur economic development in Washington

Every STEM job created creates an average of 2 additional indirect jobs



A talent-rich STEM workforce helps create, attract, and retain companies in WA

### ■ Avoiding job losses

~30% of WA companies surveyed have moved new positions out of Washington due to skills gap

" People [certified welders, electricians, forklift drivers etc.] are retiring and there are no people to take their place. Manufacturing is not completely gone, but it will be gone if we can't get people trained to fill the positions"

– WA Roundtable member

### + Attracting new jobs

Moses Lake, historically an agriculture-based economy, thriving by attracting STEM companies: silicon, carbon fiber, jets, biomass,...

Paul Thelen graduated from University of Washington in 1989 and in 2002 founded online gaming company Big Fish Games, which currently employs 500+ people, most of them in Seattle

Source: The Economic Impact of Technology-Based Industries in Washington State (2013) ([http://www.technology-alliance.com/documents/Economic%20Impact\\_Beyers\\_2014.pdf](http://www.technology-alliance.com/documents/Economic%20Impact_Beyers_2014.pdf)) and OFM Washington State Input/Output Model (<http://www.ofm.wa.gov/economy/io/2007/>); Roundtable Skills Gap Survey n = 10 respondents, Press Search



# STEM jobs will also improve Washington's social health

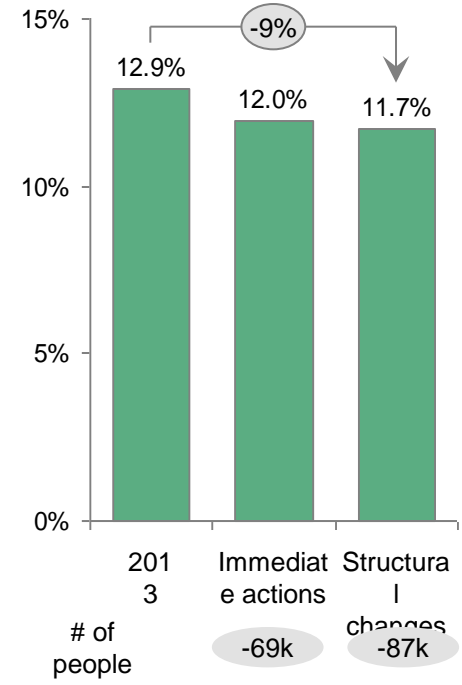
**Unemployment rate could be reduced by ~20%**

Unemployment rate (%)



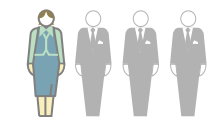
**And poverty rate by ~10%**

Poverty rate (%)



**More opportunities would be created for underrepresented communities**

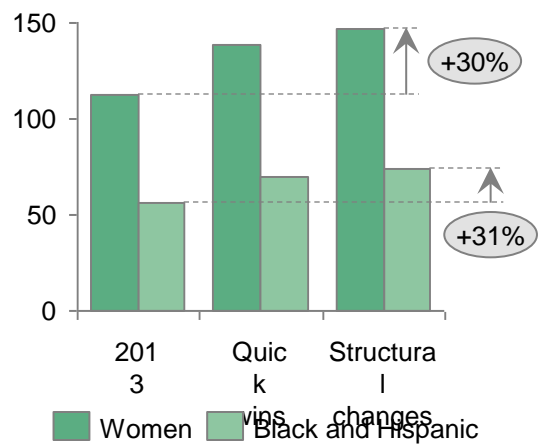
Today only 1 in 4 STEM employees are women ...



... and only 1 in 5 is black or Hispanic



WA STEM employees (K)



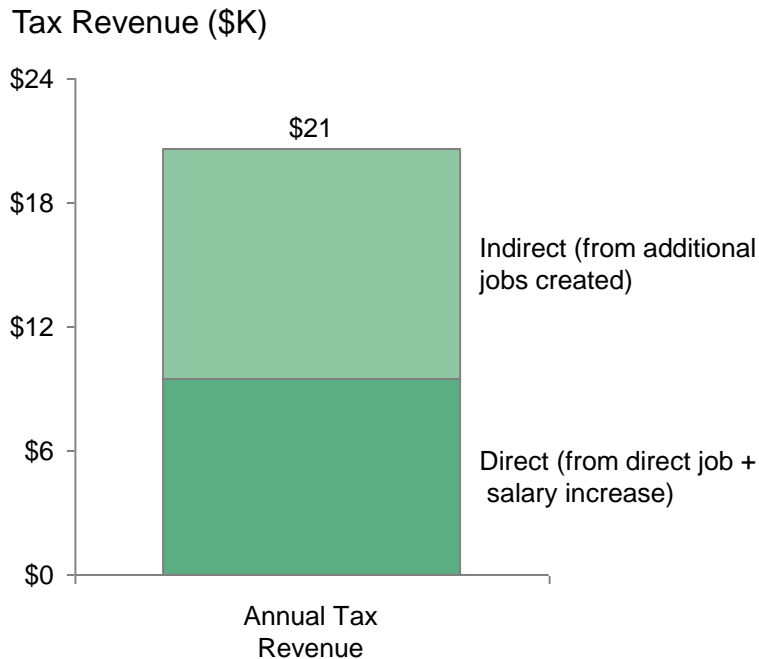
Source: Unemployment Data: BCG Analysis and Bureau of Labor Statistics (<http://www.bls.gov/cps/>); Poverty Data: BCG Analysis and US Census: <http://quickfacts.census.gov/qfd/states/53000.html>; Diversity Data: BCG Analysis, WA State Student report card: <http://reportcard.ospi.k12.wa.us/summary.aspx?year=2012-13>, Census: <http://www.census.gov/prod/2013pubs/acs-24.pdf>





# 4 STEM grads create tremendous value for Washington State in terms of direct impact and indirect jobs they create

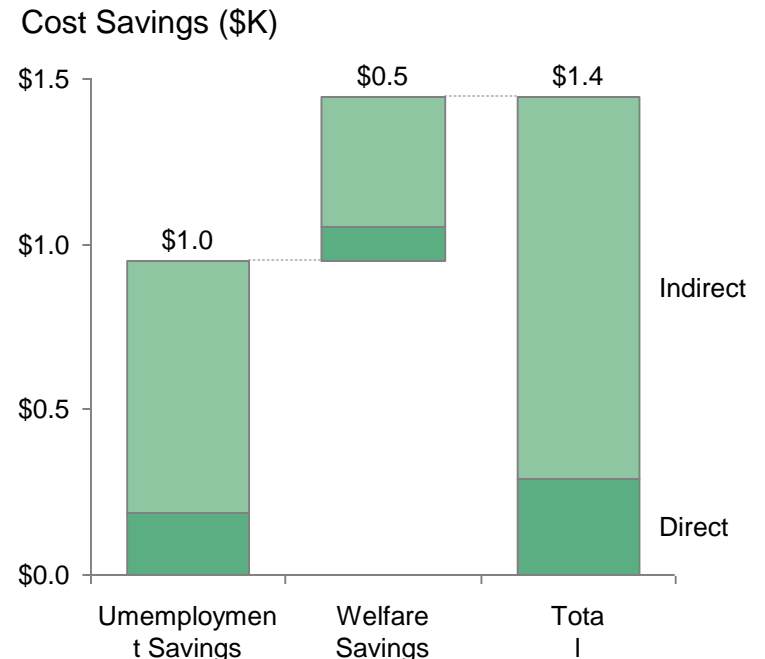
**STEM graduate generates annual tax revenue of \$21K and over \$500K of lifetime value ...**



LTV (\$)¹

**\$540K**

**... and saves WA State ~\$1.5K annually (\$10K LTV) from unemployment and welfare**



LTV (\$M)

**\$3K**

**\$7K**

**\$10K**

1. Assume 30-year career and discount rate of 5%. Source: Tax Revenue: Salary Data: 2013 Bureau of Labor Statistics Data [http://www.bls.gov/oes/current/oes\\_wa.htm#15-0000](http://www.bls.gov/oes/current/oes_wa.htm#15-0000), Bureau of Labor Statistics Classifications: <http://www.bls.gov/opub/oog/2014/spring/art01.pdf>; Effective Tax Rate: 10.8% ; triangulation from: Washington State Institute for Public Policy (<http://www.wsipp.wa.gov/TechnicalManual/WsippBenefitCostTechnicalManual.pdf>), Institute on Tax and Economic Policy (<http://www.itep.org/pdf/wa.pdf>), Tax Foundation (<http://taxfoundation.org/state-tax-climate/washington>). Cost Savings: State and Federal Government data and BCG Analysis.

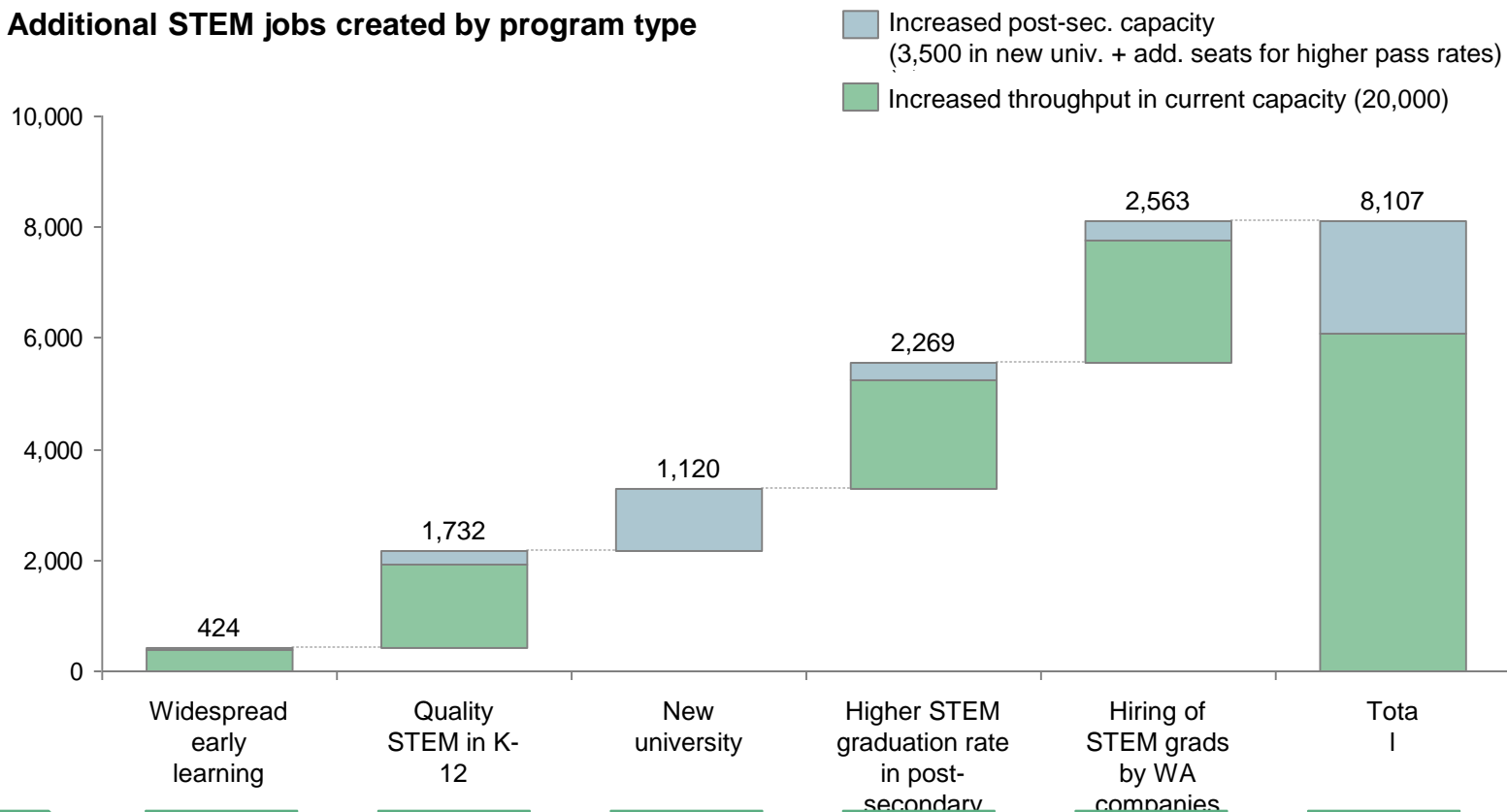
# "Creating" STEM employees would have enormous economic impact in Washington state

		Annual benefit	Lifetime value
1 Individual and family betterment	A Salary increase	• \$60k per STEM employee	• \$1.6M per STEM employee
	B Social mobility	• STEM jobs almost guarantee <b>middle-class salaries</b>	
2 WA economic development	A Jobs created	• Average STEM job creates <b>2 addition indirect jobs</b>	
	B Companies created, attracted, retained	• Prevent ~30% WA STEM companies from moving new facilities out of state or closing down; support new facilities and startups	
3 WA social health	A Unemployment rate	• <b>Decrease unemployment rate by ~20%</b> , taking 35,000 Washingtonians out of unemployment	
	B Income gap	• <b>Decrease poverty rate by ~10%</b> , lifting 85,000 Washingtonians out of poverty	
	C Diversity	• Potentially <b>increase by ~30%</b> the share of women and Black and Hispanic STEM employees	
4 Government finances	A Tax revenue	• \$20k per STEM employee	• \$540k per STEM employee
	B Social spending savings	• \$1.5k per STEM employee	• \$10K per STEM employee

Note: All analyses assume that STEM Graduate is a composite of 3 archetypes (70% converted from non-STEM jobs, 20% STEM employee retained to WA, 10% raised from unemployment). Indirect jobs are assumed to be 20% raised from unemployment.

# Backup: 8,000 additional STEM jobs per cohort to be achieved with structural changes (2x current throughput)

Additional STEM jobs created by program type



# of students in pipeline

Widespread early learning	Quality STEM in K-12	New university	Higher STEM graduation rate in post-secondary	Hiring of STEM grads by WA companies	Total
85,000	85,000	35,000	20,000	11,000	8,000

# of students in a program

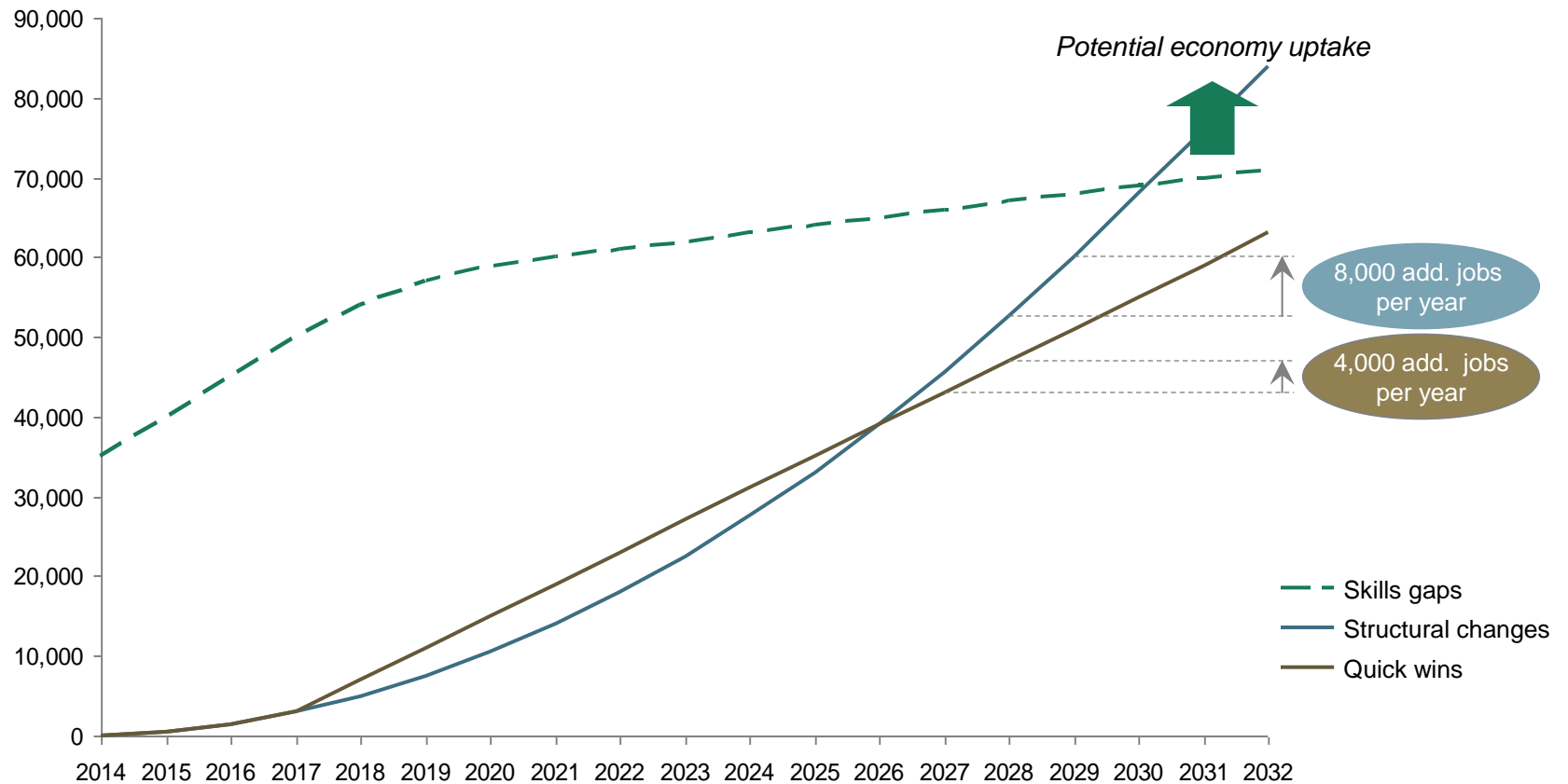
Widespread early learning	Quality STEM in K-12	New university	Higher STEM graduation rate in post-secondary	Hiring of STEM grads by WA companies	Total
30,000	20,000	3,500	8,000	5,000	

STEM job conversion

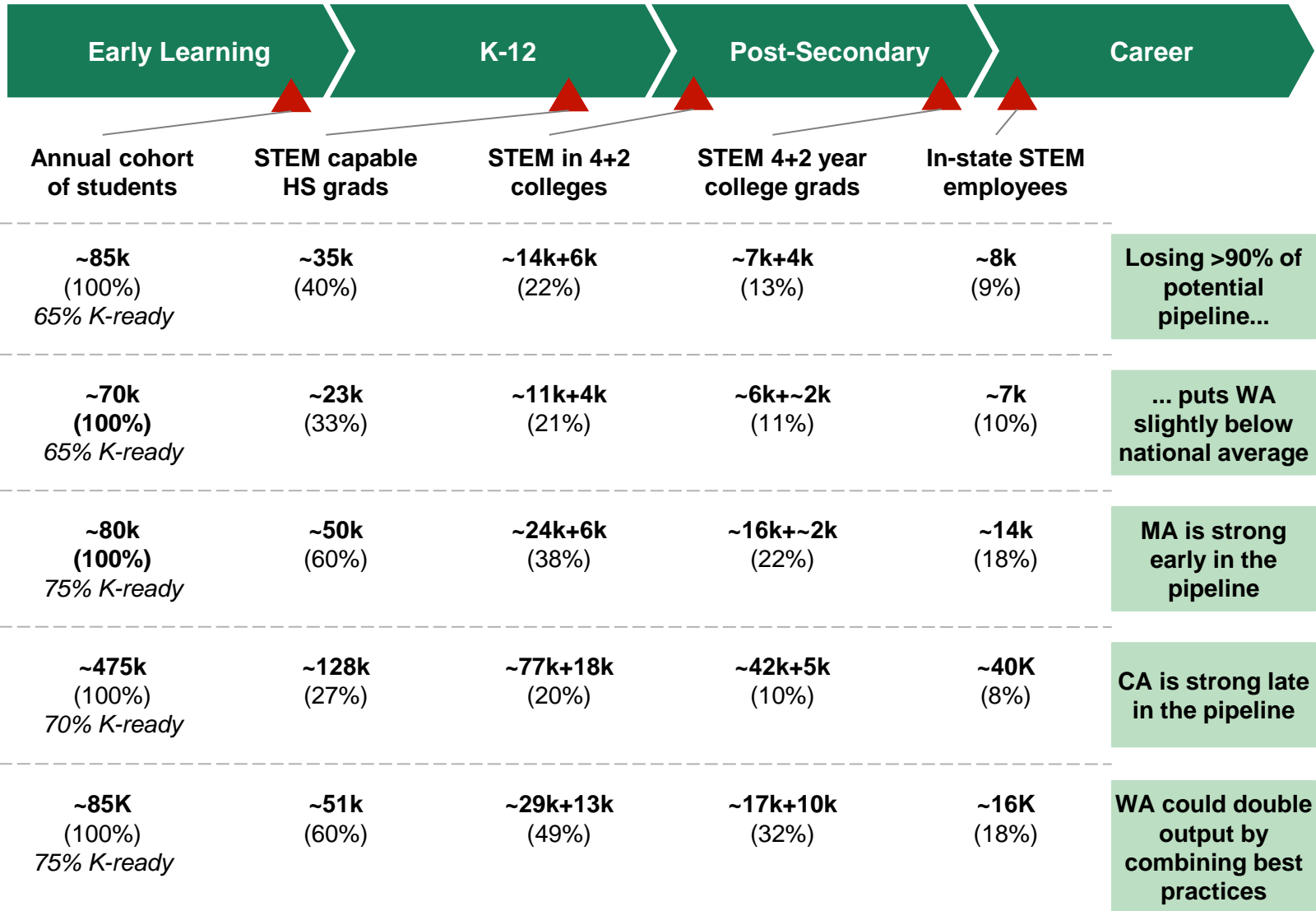
Widespread early learning	Quality STEM in K-12	New university	Higher STEM graduation rate in post-secondary	Hiring of STEM grads by WA companies	Total
1.4%	8.7%	32%	28%	51%	

# Backup: How significant education investments will close the skills gap

WA STEM skills gap vs. additional employees created by education investments



# Backup: Benchmarks for pipeline chokepoints





Thank you

[bcg.com](http://bcg.com) | [bcgperspectives.com](http://bcgperspectives.com)

# FUTURE BOARD MEETING DATES

Board Meeting | October 29, 2014

# Future Meeting Date



Thursday, December 18, 2014

1:00-3:00pm at Microsoft