Northern Virginia Technology Council

January 11, 2013
What is Change the Equation?

- Improve participation and performance of America’s students in STEM
- Mobilize the business community to improve the quality of STEM learning in the US

Craig Barrett
Former CEO/Chair, Intel

Glenn Britt
CEO, Time Warner Cable

Ursula Burns
CEO, Xerox

William Green
Chairman, Accenture

Ellen Kullman
CEO, DuPont

Rex Tillerson
CEO, Exxon Mobil
What Are Vital Signs?

• Richest, most recent available data
• About 50 different indicators for every state
• New data, and new analysis of existing data
• *Not* a report card
• Arm stakeholders with critical data
• Work with American Institutes for Research
• Gates Foundation Support
The Big Themes for Virginia

• Demand for skills exceeds supply
• Changing standards may have seismic impact
• Schools, teachers and students will need support
STEM Is In Demand in Virginia

**Overall**, jobseekers outnumbered online job postings by **2.1 to one**

In **STEM**, job postings outnumbered unemployed people by **3.3 to one**

*Source: Change the Equation, 2012*
STEM Will Stay In Demand

+86,000 additional STEM jobs in Virginia between 2008 and 2018

Source: Carnevale, Smith & Melton, STEM, Georgetown Center for Education and the Workforce, 2011.
Can Virginia Meet the Demand?
Colleges Aren’t Keeping Pace

What was the growth in Virginia degrees and certificates between 2001 and 2009?

- Overall: +41% (+ 28,000)
- STEM: +20% (+ 2,088)
- STEM (Females): +11% (+ 417)
- STEM (African Am): +5% (+ 87)

Colleges Aren’t Keeping Pace

A bright spot for Hispanics?

• STEM (Hispanic)  +71%

...Or maybe not:

• Only 161 additional degrees and certificates
• Hispanics comprise 8% of the population but earn only 3% of STEM degrees/certificates.

Colleges Aren’t Keeping Pace

- NVTC calls for **100,000** additional degrees over 15 years, with an emphasis on STEM.
- If current trends persist, Virginia will have
  - **52,000** additional degrees/certificates overall
  - **3,200** additional degrees/certificates in STEM

Not Ready for College

Of first-time community college students in Virginia who just graduated from high school:

56% need remediation in math. That costs the state:

$27.8 Million

Source: Change the Equation, 2012.
Some Good News in Virginia

Gains in 4th and 8th grade math from 2003-2011

Average scale scores: 190 240 290 340

Proficient: 249

Proficient: 299

Some Good News in Virginia

• **Top quartile** of all states for 4\textsuperscript{th} and 8\textsuperscript{th} grade math and science

• Yet **Virginia’s rank drops** between 4\textsuperscript{th} and 8\textsuperscript{th} grades

• What about 12\textsuperscript{th} grade? **Who knows?** No national test results
Can Virginia Compete Globally?

Where does Virginia stack up against other states—and nations?

Estimated proficiency in 8th-grade math

The Demographic Tidal Wave

Massive achievement gaps

Percentage of students at or above proficient, 2009 & 2011

56%  59%
20%  18%

31%  27%
18%  18%

48%  59%

20%  18%
18%  15%

31%  32%
15%  24%

White  Black  Hispanic

The Demographic Tidal Wave

- **41%** of Virginia’s K-12 enrollment is non-white.
- **52%** of Northern Virginia’s 17-under population is non-white.
- **90%** of Northern Virginia’s population growth since 2000 was non-white.
- Too much talent to squander!

What About Northern Virginia?
Performance in Northern VA

As math standards go up, passing rates fall

Performance in Northern VA

Passing rates have **fallen most** for students of color

Decline in percentage passing SOL math tests, 2011-2012

Low standards mask achievement gaps

Can No. VA Compete Globally?

Where does Northern Virginia stack up against other nations?

Estimated percentile of an average Virginia Student in select foreign countries, by district:

- Alexandria: 22 16 16
- Arlington: 39 32 29
- Fairfax: 43 36 31

But Wait! We Need a Better Basis for Global Comparisons

- Global Report Card: “The methodology in this report is highly questionable”*
- With 51 different sets of standards, it’s hard to draw international comparisons
- How does your child measure up globally? Hard to say…

* Jack Buckley, National Center for Education Statistics
Low Expectations in Science

Until recently, “proficient” didn’t mean much

The score VA 8th graders needed to pass science, 2009

Source: Change the Equation, 2012
Low Expectations in Science

Think your child was proficient in science? **Join the club.**

- NAEP tells a different story: **40%** in grade 8
- Science tests are becoming more difficult

Sources: Virginia Department of Education, 2012
Why Rigor & Consistency?

• A high bar creates **urgency** and leads to **more actionable information**
• Consistency helps us **benchmark** against **world leaders**
• **International benchmarking** is critical
A Tale of Two (or more) Virginias
Uneven Opportunities

Urban and rural students have fewer opportunities

Science Scores
- 8th Grade Science Scores, NAEP
- Suburban: 165
- Urban: 153
- Rural: 159

Science Teachers
- Access to teachers with science major
- Suburban: 59
- Urban: 52
- Rural: 47

Science Resources
- Access to teachers with science resources
- Suburban: 84
- Urban: 64
- Rural: 65

Science Labs
- Access to science labs
- Suburban: 100
- Urban: 92
- Rural: 92

Uneven Opportunities

Students of color have fewer opportunities (for the most part)

Math Resources

<table>
<thead>
<tr>
<th>Access to teachers with math resources</th>
<th>% of 8th graders</th>
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<tbody>
<tr>
<td>White</td>
<td>91</td>
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<tr>
<td>Black</td>
<td>85</td>
</tr>
<tr>
<td>Hispanic</td>
<td>83</td>
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<tr>
<td>&gt; 50% Black/Hispanic Schools</td>
<td>75</td>
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</table>

Science Resources

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<thead>
<tr>
<th>Access to teachers with science resources</th>
<th>% of 8th graders</th>
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<tr>
<td>White</td>
<td>73</td>
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<tr>
<td>Black</td>
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<tr>
<td>Hispanic</td>
<td>67</td>
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<tr>
<td>&gt; 50% Black/Hispanic Schools</td>
<td>66</td>
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</table>

Lab stations

<table>
<thead>
<tr>
<th>Access to lab stations in science labs</th>
<th>% of 8th graders</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>62</td>
</tr>
<tr>
<td>Black</td>
<td>60</td>
</tr>
<tr>
<td>Hispanic</td>
<td>54</td>
</tr>
<tr>
<td>&gt; 50% Black/Hispanic Schools</td>
<td>42</td>
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Supplies/Equipment

<table>
<thead>
<tr>
<th>Access to lab supplies/equipment</th>
<th>% of 8th graders</th>
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</thead>
<tbody>
<tr>
<td>White</td>
<td>81</td>
</tr>
<tr>
<td>Black</td>
<td>84</td>
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<tr>
<td>Hispanic</td>
<td>74</td>
</tr>
<tr>
<td>&gt; 50% Black/Hispanic Schools</td>
<td>55</td>
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</table>

What Can Business Do?
What Can Business Do?

• Keep the focus on **standards**
• Make the public case for **a higher bar**
• Keep the focus on **equity**
• Urge **a smoother transition** between high school and college
• Stand ready to **support schools & teachers**—The bar is going up for everyone
Helpful (and Free) CTEq Resources
STEMworks
iON Future (ionfuture.org)
Thank You!

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