



GENEDGE

*innovate. compete. grow.*

# Manufacturing Development and Small Business Commissions

## December 2, 2013

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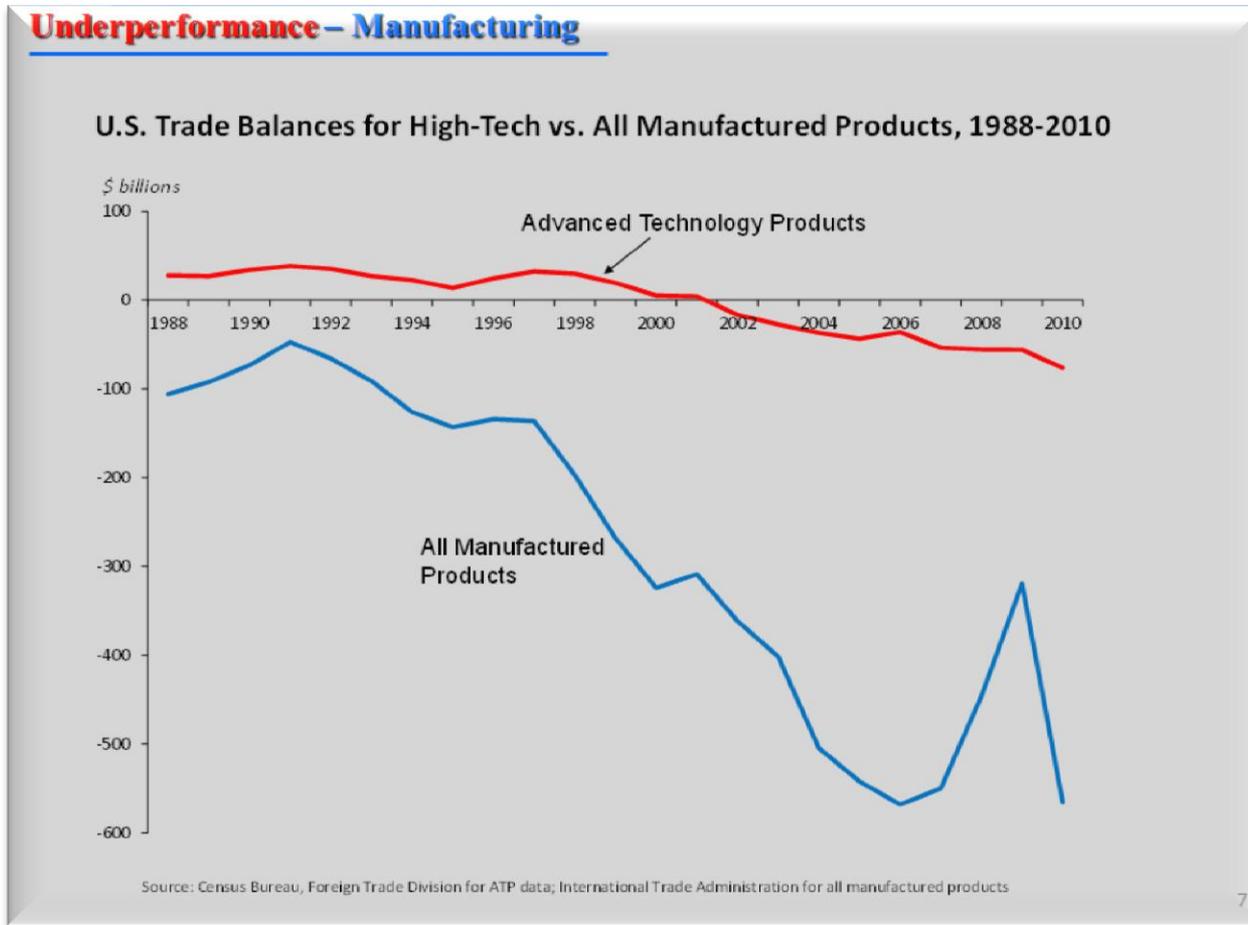
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# Why does Manufacturing Matter?

- Manufacturing dominates the U.S. **Innovation System**
  - 70% of industrial R&D, 80% of patents, employs 64% of scientists and engineers
- An important Source of **Employment**
  - Manufacturing supports an estimated 18.6 million jobs in the U.S.—about one in six private sector jobs
- An essential element in U.S. **National Security**: Having on-shore production capacity matters

Source: National Association of Manufacturers, 2009

# Declines in U.S. Trade Balance for Advanced Technology Products



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# MIT Views on the Flight of Manufacturing

- Decline of vertically integrated industries\*
  - The great new American companies of the past 30 years like Dell, Cisco, Apple, and Qualcomm have little or no manufacturing in-house.
- Focus on “Core Competence”\*
  - Higher stock market valuations of leaner, “asset-light” companies led firms to move and offshore and outsource manufacturing.
- Growth in Capabilities Overseas\*\*
  - Rapid Growth of Skills, R&D, and Government Support have Created Substantial Manufacturing Capabilities Overseas.

\* Suzanne Berger, *Making in America*, MIT, 2013

\*\* NRC, *Rising to the Challenge; U.S. Innovation Policy for the Global Economy*, 2012

# MIT Views – Collateral Damages

“The loss of companies that can make things will end up in the loss of research that can invent them.”

Suzanne Berger et al.,

Production in the Innovation Economy

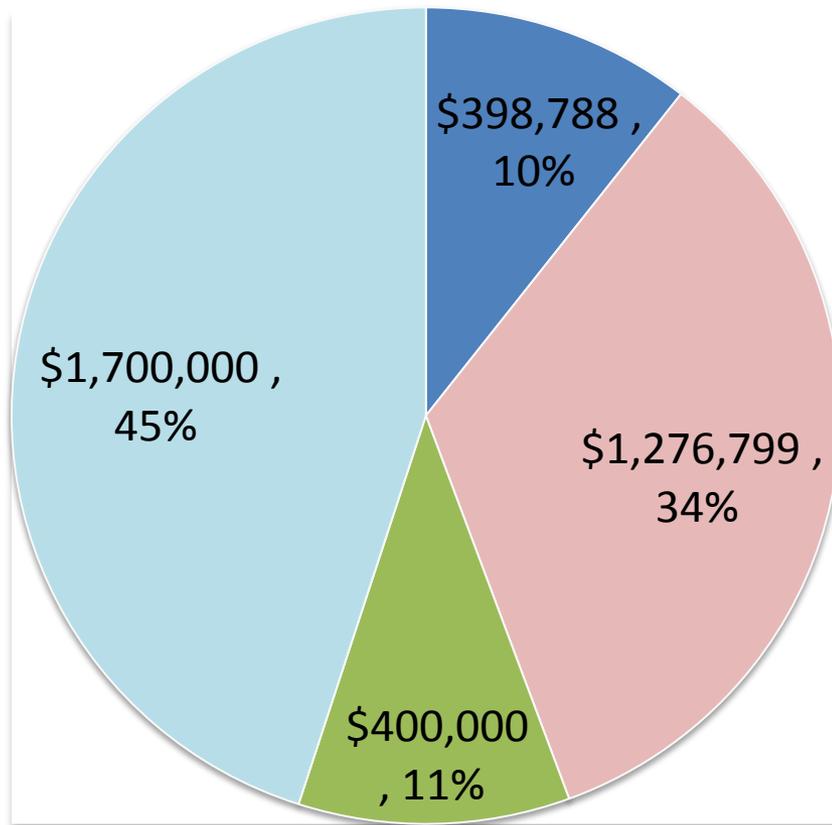
Preview of MIT’s major new report on Manufacturing  
Released, February 22, 2013, at the National Academies

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# What is GENEDGE ALLIANCE?

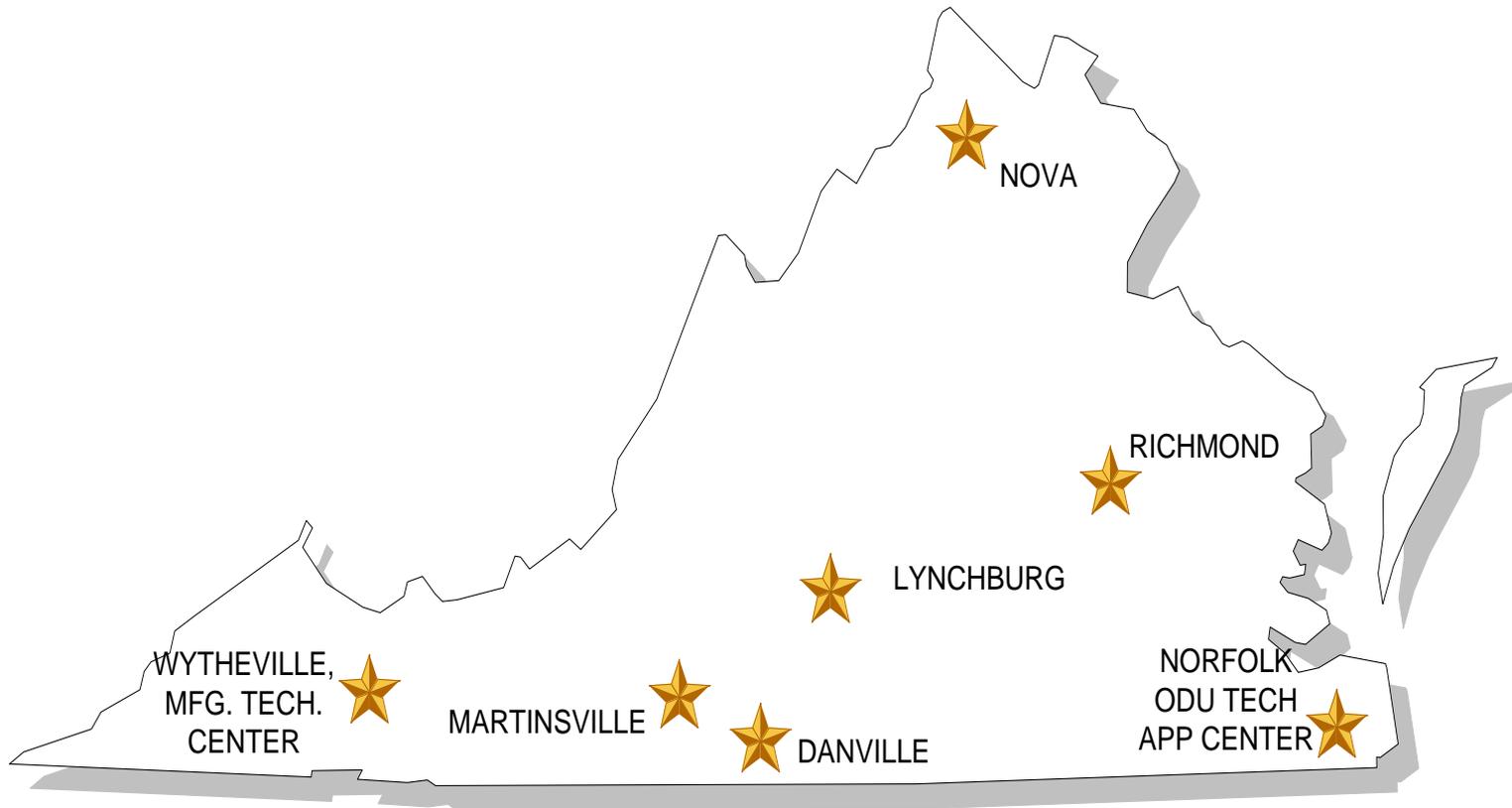
- GENEDGE ALLIANCE is the doing business as name for the A.L. Philpott Manufacturing Extension Partnership.
- A state entity with enabling legislation in the code of Virginia since 1992, HQ in Martinsville.
- GENEDGE provides high quality general consulting services to manufacturing technology and industrial enterprises across Virginia.
- Our fiduciary board is appointed by the Governor and consists of 24 representatives from Higher Education, Government, Manufacturers and citizens.
- We are one of 60 affiliates of the National Institute of Standards and Technology Manufacturing Extension Program.

# Budget



- Commonwealth of Virginia
- NIST cooperative agreement
- Other grants
- Fees and other income

# Locations



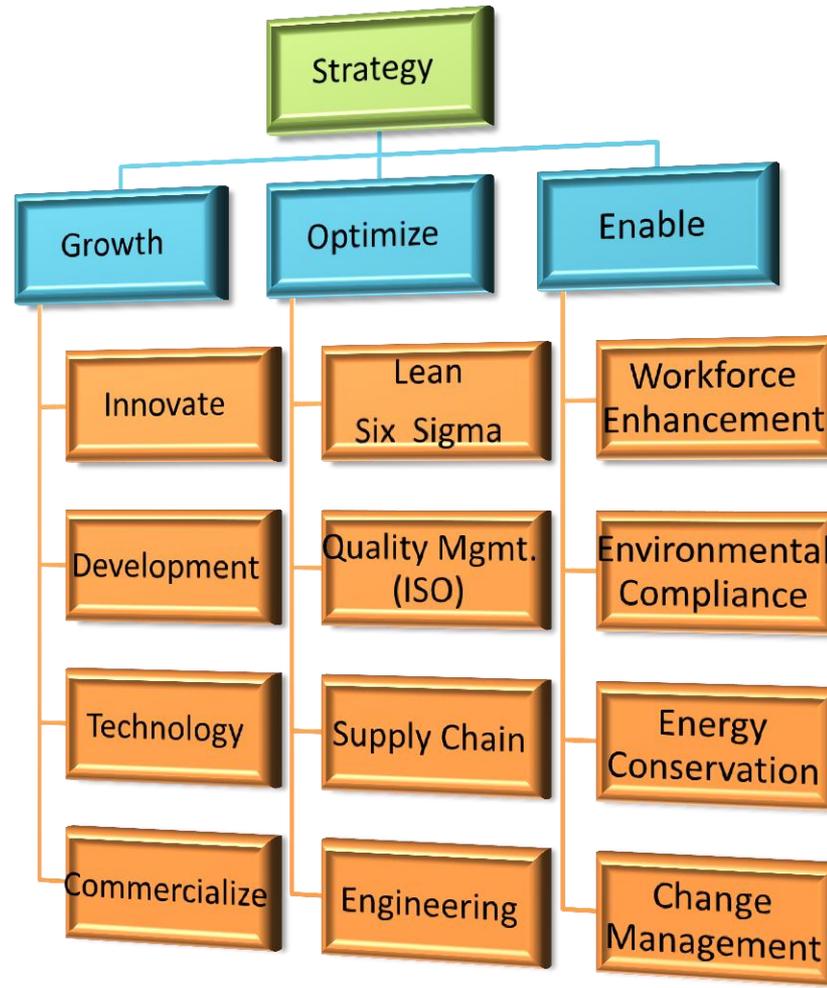
*29 Full Time Equivalents plus Vetted Third Parties Service our Clients*

# Core Market

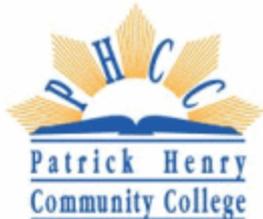
## Virginia Companies and Employment by NAICS

NAICS	Description	Virginia	
		Empl.	Est.
311	Food Manufacturing	29,458	451
312	Beverage and Tobacco Product Manufacturing	7,246	175
313	Textile Mills	4,134	50
314	Textile Product Mills	3,376	157
315	Apparel Manufacturing	1,442	73
316	Leather and Allied Product Manufacturing	277	17
321	Wood Product Manufacturing	12,656	449
322	Paper Manufacturing	7,773	124
323	Printing and Related Support Activities	10,617	629
324	Petroleum and Coal Products Manufacturing	583	25
325	Chemical Manufacturing	15,423	259
326	Plastics and Rubber Products Manufacturing	14,954	183
327	Nonmetallic Mineral Product Manufacturing	8,099	384
331	Primary Metal Manufacturing	4,186	58
332	Fabricated Metal Product Manufacturing	18,603	776
333	Machinery Manufacturing	16,827	345
334	Computer and Electronic Product Manufacturing	12,485	349
335	Electrical Equipment, Appliance and Component Manufacturing	8,086	163
336	Transportation Equipment Manufacturing	49,457	209
337	Furniture and Related Product Manufacturing	9,573	444
339	Miscellaneous Manufacturing	6,745	632
541711 &12	Physical/Engineering/Biological Research	24,287	760
	Totals	266,287	6712

# Services



# Partners



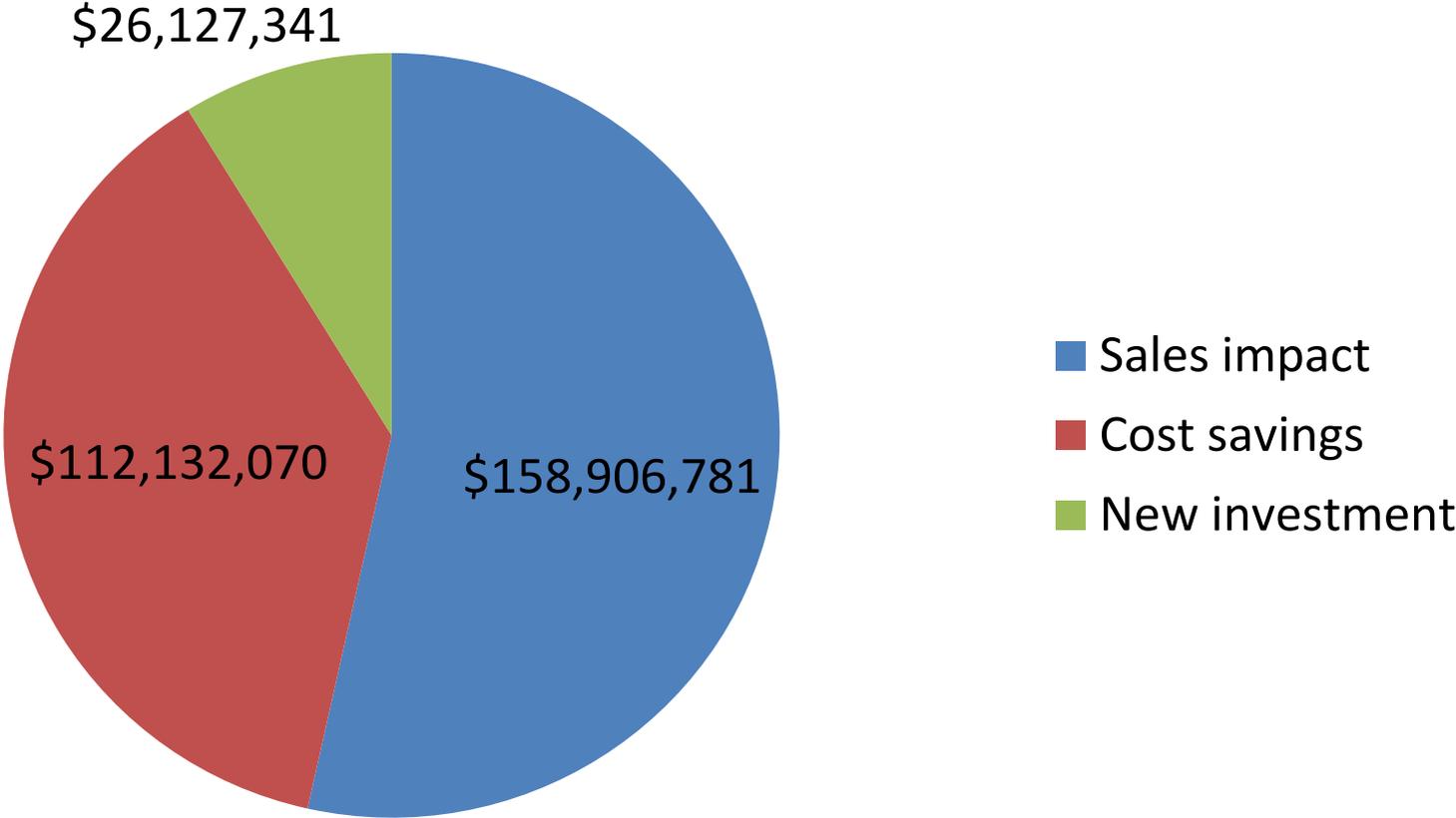
# Budget

- General Fund appropriation of \$508,000. Actual funding allotment received through VCCS \$398,788.
- U. S. Department of Commerce, NIST MEP cooperative agreement \$1,276,799.
- Other grants for various client projects and special activities that do not provide continuous funding. (TICRC, Danville Regional Foundation, Appalachian Regional Commission, NIST MEP tCAR).
- Fees charged to clients for services rendered.

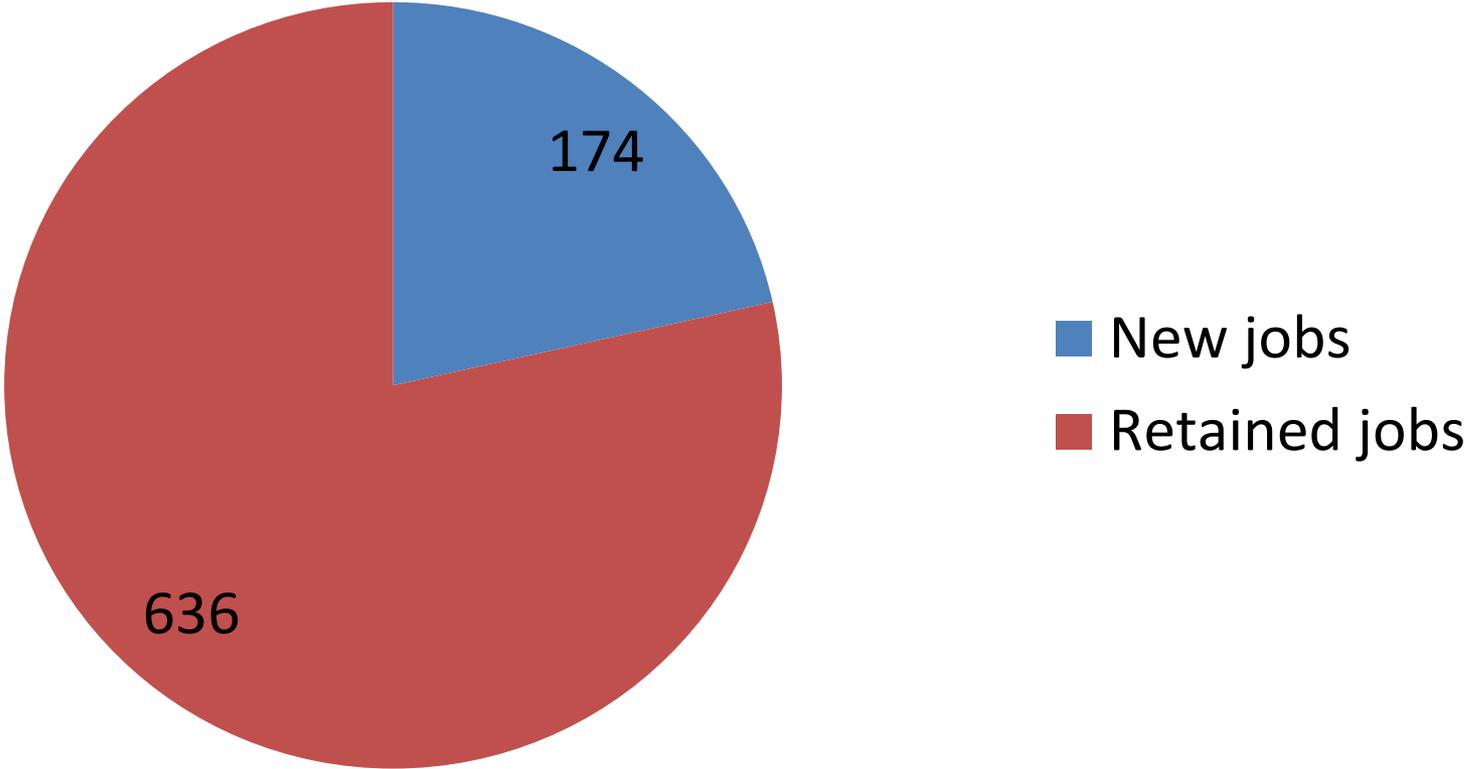
# Economic Impact Data Gathering

- NIST MEP designed the survey process.
- NIST MEP contracts with an independent survey organization to perform surveys of clients with completed projects.
- Survey results are used by NIST MEP to evaluate the performance of MEP centers.
- Aggregate survey results are reported to the U. S. Congress to validate the national MEP program.

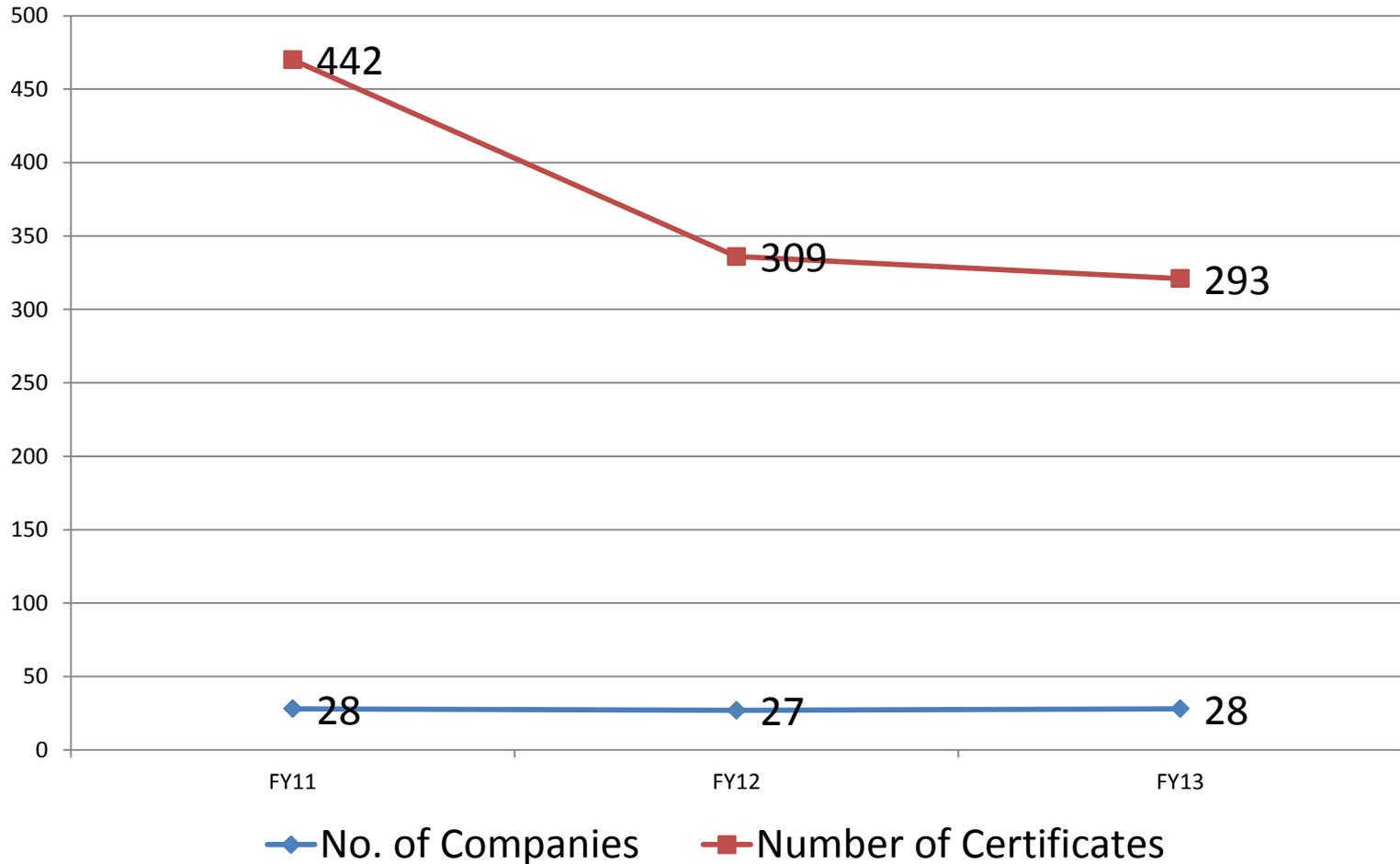
# Average Annual Economic Impact FY11-13



# Average Annual Jobs Impact FY11-13

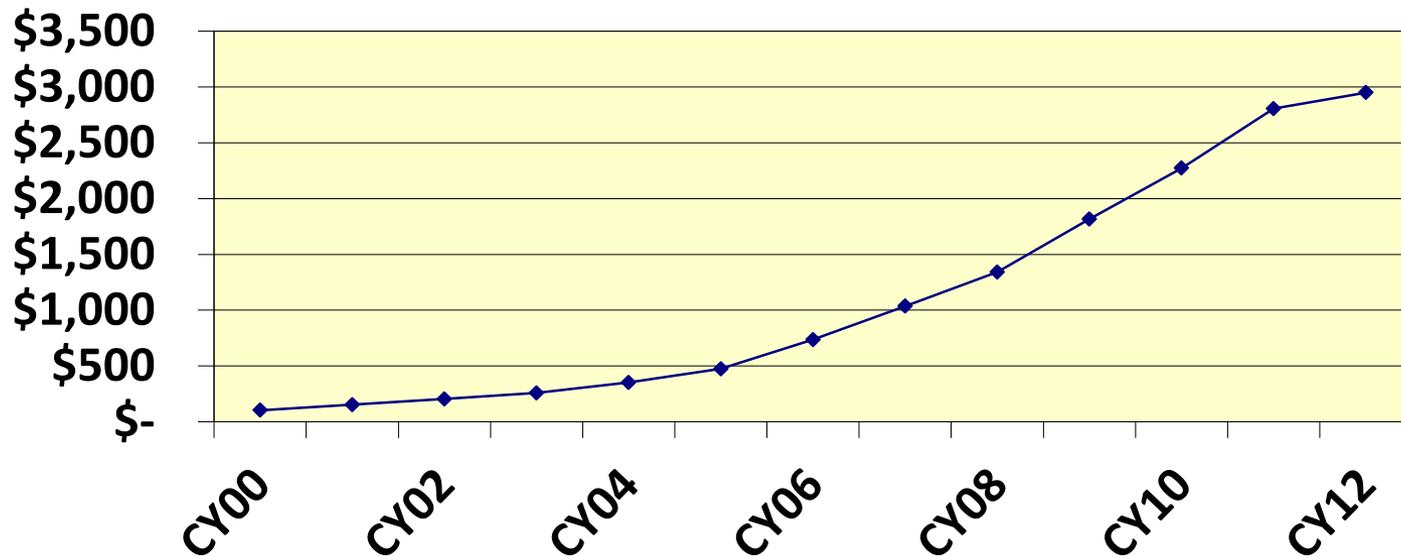


# Number of Certifications FY11-13



*CEUs Via Affiliations with Educational Institutions*

# Cumulative Economic Impact CY00-12 (\$ million)\*



\* Surveys independently conducted on behalf of NIST MEP



# Average Number of Clients Served FY11-13

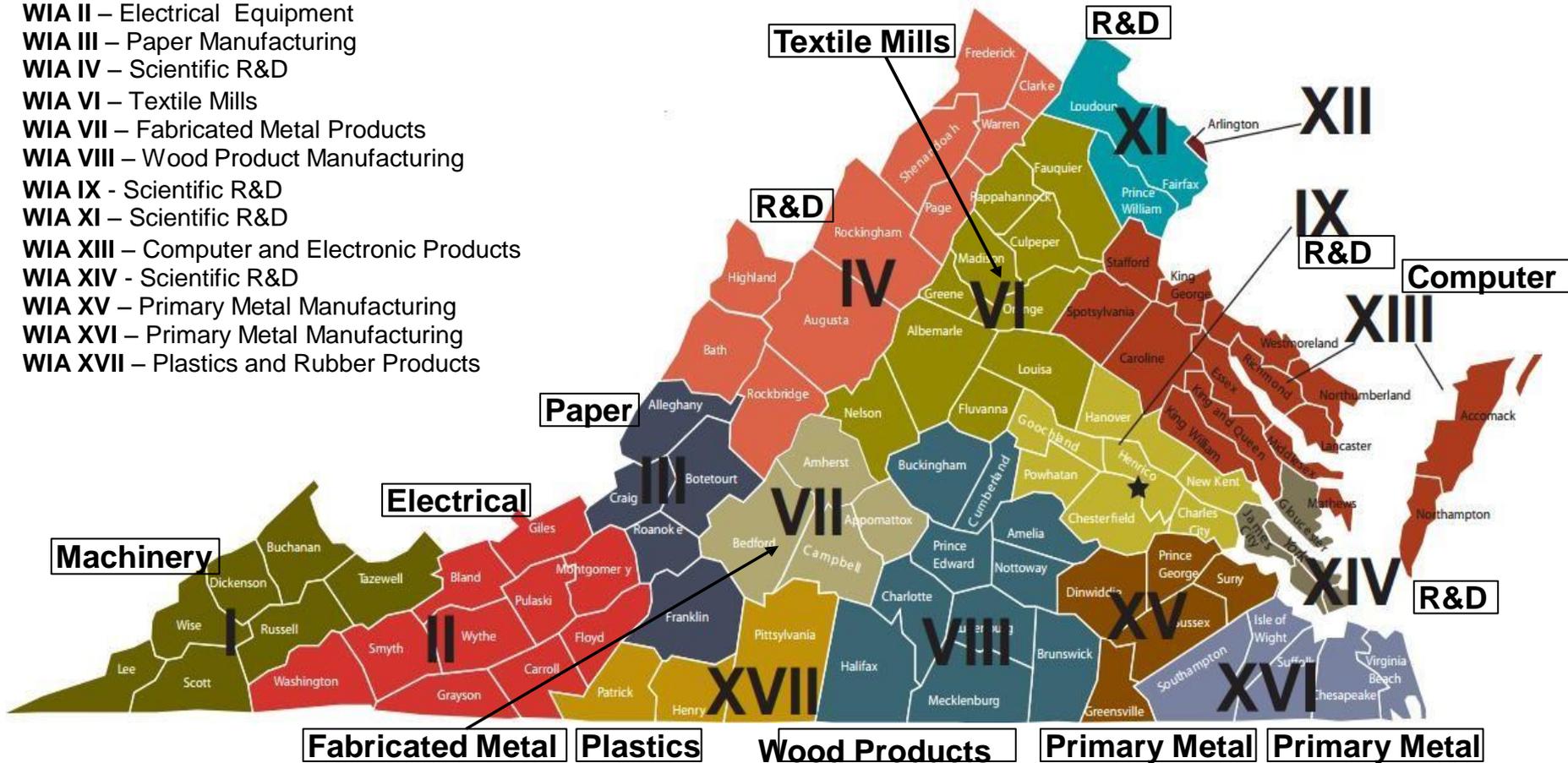
233

# Number of Clients Served FY13

126

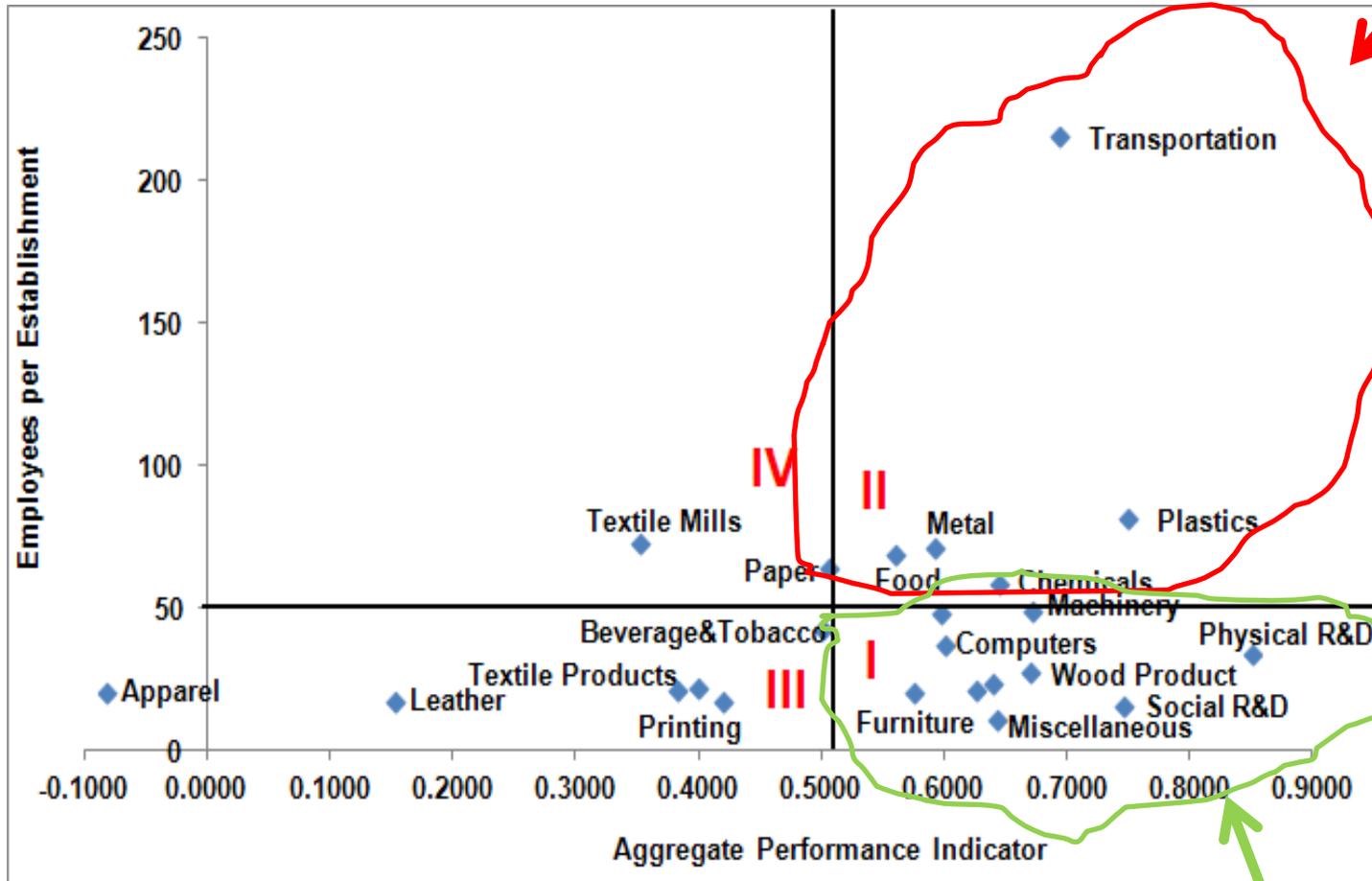
# Market Clusters

- WIA I** – Machinery Manufacturing
- WIA II** – Electrical Equipment
- WIA III** – Paper Manufacturing
- WIA IV** – Scientific R&D
- WIA VI** – Textile Mills
- WIA VII** – Fabricated Metal Products
- WIA VIII** – Wood Product Manufacturing
- WIA IX** - Scientific R&D
- WIA XI** – Scientific R&D
- WIA XIII** – Computer and Electronic Products
- WIA XIV** - Scientific R&D
- WIA XV** – Primary Metal Manufacturing
- WIA XVI** – Primary Metal Manufacturing
- WIA XVII** – Plastics and Rubber Products



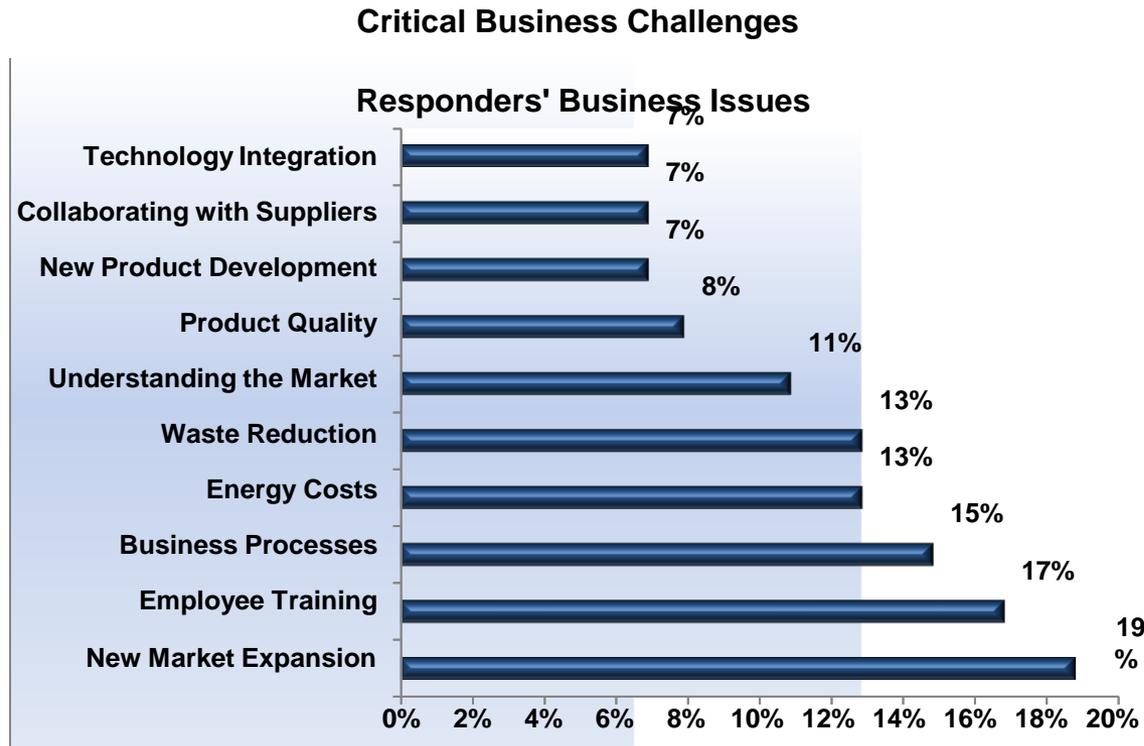
# Market Needs

Traditional Market



Underserved Market

# < 50 Emp. Company Challenges



*Other Issues Include Economy, Government Regulations, Access to Capital and Healthcare Costs*

# Barriers to Serving < 50 emp. Firms

- Familiarity
- Services tuned to Small Company Needs
- Prefer in-house Resources (Control)
- Lack of free Capital to Pay for Services

# Synopsis – Competitive Programs in Other Countries

Canada's Industrial Research Assistance Program

Germany's Fraunhofer Institutes

Taiwan's Industrial Technology Research Institute

Britain's Catapult Initiative

France's Carnot Institutes



	<b>MEP</b>	<b>Fraunhofer</b>	<b>ITRI</b>	<b>IRAP</b>	<b>Catapult</b>	<b>Carnot</b>
<b>Direct Supervisory Authority</b>	National Institute Of Standards and Technology	Ministry of Education & Research	Ministry of Economic Affairs	National Research Council of Canada	Technology Strategy Board	National Agency for Research
<b>Form of Entity</b>	Distributed Federal – State Partnership with various public & private institutions	Private not-for-profit association	Government-owned research institute	Government program	Various private and public organizations	Public research institutions
<b>Geographic Footprint</b>	Across US, in every state and Puerto Rico	Widely distributed across Germany	One main site in Hsinchu, one site in Tainan	Across Canada; heavily concentrated in Quebec and Ontario	Plans for distribution across the UK	Distributed across France
<b>No. of Institutes</b>	60	60	1	18	7	34
<b>Staff</b>	>1,800	20,000	5728	4,000	Evolving	19,000
<b>Patents</b>	NA	6131	17,569	NA	NA	880/year
<b>Annual “Core” Government Funding (\$M)</b>	About. \$175M (Federal plus state)	\$1,960M (Federal plus state)	\$300M	\$90M	\$65M	\$79M
<b>Population</b>	315 million	82 million	23 million	34 million	62 million	65 million



## Key Point

Leading nations are focused on  
manufacturing

# Foreign Program Best Practices

- They offer **customized and flexible field services** directly to firms
  - information, diagnostics, mentoring, technology support, prototyping, demonstration, networking, and referral and expert personnel
- **Substantial and sustained funding**
- **Long-term focus** on manufacturing
- **Well equipped facilities** and Highly trained staff
- **Training** of Graduate and Undergraduate students in a hands-on environment; co-located with universities

# Foreign Program Best Practices

- **Autonomy** in establishing strategies and deploying resources but with long-term accountability
- **Links to local clusters**, including partnerships with universities and long-term collaboration with private firms
- **Support for start-ups**: Space; equipment; legal, IP and technical assistance; management advice and business connections for funding and markets
- **Regular assessment**, learning, program adaptation, shifts in priorities over time



Thank You.

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