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Testimony
of
Mark Muro
Senior Fellow
Brookings Metro

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Commonwealth of innovation: A policy agenda for revitalizing Pennsylvania

Good morning all, and thank you Chairman Laughlin for convening this important session and inviting Robert Maxim and I from Brookings.

Robert and I are pleased to provide you and the committee with some high points from our recent report, “Commonwealth of innovation: A policy agenda for revitalizing Pennsylvania.”

A follow up to an earlier report we did in 2019—also funded by the Henry L. Hillman Foundation—our report was designed from the outset to “level-set” an urgent moment in the Commonwealth and set out an agenda for reenergizing the state’s innovation economy.

Frankly, the report is a check-in on a state with a ton of promise that is nevertheless adrift on innovation but now considering the way forward.

It’s extremely good news that the committee is taking a look at these issues.

Given that, our plan today is to:

- set out the state's drifting situation on innovation
- and suggest some policy-related problems and corresponding recommendations

I will provide an overview of the moment and talk about two particular themes—about the need for a new commitment to innovation, and to accelerate commercialization activity in the commonwealth's major hubs.

Then Rob is going to talk about fostering innovation and entrepreneurship outside the major metros, and in underrepresented communities.

Trends

So, let's dig into some of the trends we see. (And do note we're talking mostly about *statewide* trends, since we're concerned about Commonwealth-wide policy).

First, it's important to note that **Pennsylvania has a rich innovation history.**

You have strong R1 and R2 universities including top-25 research powerhouses in Pitt and CMU here and Penn in Philadelphia.

To be specific, the state's \$4.8 billion higher ed R&D enterprise ranked fourth largest in the nation in 2020, with top-10 R&D growth and strong patenting.

At the same time, those university activities have been spinning off cutting-edge ideas that have spawned (especially in Pittsburgh and Philadelphia) a number of very compelling advanced-industry clusters, such as cell, gene, and immunotherapy in Philadelphia, or robotics and autonomous systems as well as AI here.

For years, likewise, the state supported this kind of activity as an innovator at innovation policy, such as by creating the Ben Franklin Technology Partnership in 1983 and then the Life Sciences Greenhouse Initiative and the Keystone Innovation Zone tax credits.

What's more, supporting innovation has often been a bipartisan tradition. Gov. Thornburgh created the Ben Franklin Technology Partners and Gov. Casey continued it. Govs. Ridge and Rendell were each supportive of tech-based economic development.

Today's meeting continues that tradition. So that's great.

And yet, the fact is **the state has gone adrift on innovation activities and results,** with policy action limited and benchmarking static.

This is what we need to talk about.

For 20 years the state has been turning in middling performances on well-regarded indices of innovation outcomes from organizations like the Milken Institute and ITIF, the Information Technology and Innovation Foundation.

What's more, because innovation matters so much to economic performance the state's innovation drift is resulting in a broader economic drift that people feel.

For one thing, Pennsylvania is struggling with plodding, sub-average, productivity, and income growth.

Contributing to this (and directly related to innovation shortcomings) has been sub-average advanced industries growth. Advanced industries growth matters because those innovation-driven manufacturing, health, technology, science, and digital concerns anchor your high-wage export sector.

But at the state level, growth of these high-quality jobs has remained tepid compared to peers like Michigan or Indiana.

Policy

So what's the problem?

Here, I am going to provide a quick overview of our overall agenda and will talk about two of the four overarching challenges we see.

After that, Rob is going to talk about two more issues.

Basically, we highlight four priority themes for unlocking the state's innovation capacity and promoting greater participation in innovation—for people and places.

First off, we are really challenging the state to above all commit to innovation as it has not really in the last decade-plus. The state needs to *try harder!*

Beneath that, we call out three needed themes for serious work.

These entail:

- Accelerating commercialization in the major university hubs like Pittsburgh and Philadelphia.
- Fostering innovation in the rest of the state, namely in smaller metros like Erie, say
- And then: Insisting on inclusion.

Commit to innovation

Our first overarching vision is about the state rousing itself from drift and putting in place a basic, functional innovation agenda and activity aimed at fostering innovation- and entrepreneurship-based economic growth.

For a decade or more the state has lacked that.

- The last two governors were short on vision, passion, and voice on innovation and entrepreneurship issues.
- Likewise, the Commonwealth has lacked an explicit strategy or messaging framework on these issues even as competitor states were aggressive.
- And most importantly, Pennsylvania has reduced its investment in innovation programs by nearly two-thirds during the financial crisis and has failed to rebuild in subsequent years. The result: Pennsylvania ranks just fourth out of six among the peer states for which the Council for Community and Economic Research (C2ER) has data for its expenditures on “tech transfer” activities. C2ER’s data says Pennsylvania spends just one-fifth that of Ohio on this activity (\$3.20 per person versus \$17.80).

Given these issues, the Commonwealth needs to get serious because other states are. To start with it needs to:

- Embrace the cause of innovation, articulate it, and organize around it
- Center innovation in DCED’s broader mission
- Rebuild the innovation budget to suit the needs of the present.

Much more detail resides in our report, which we have submitted to the staff, but we’re happy to talk about these recommendations.

Accelerate commercialization in the major hubs

But that’s just the starting point. We call out in our report three other critical themes for practical action in the next couple years.

I’m going to talk about accelerating commercialization in the Commonwealth’s major tech hubs, and Rob’s going to discuss two ways the state needs to widen participation innovation, which should not be an elite activity.

The “vertical” I want to talk about is about **maximizing the potential of the state’s big-city, university driven tech and scale-up ecosystems** to unlock more commercial activity and employment.

This agenda reflects Pennsylvania’s core riddle: That its major metros are blessed with world-class universities with massive R&D enterprises that are generating tons of IP and plentiful startups, yet the new firms aren’t scaling up into tons of employment.

To be specific, most technology areas (aside from the life sciences) see the Commonwealth possessing above-average research concentrations in key tech domains but below-average employment concentrations in those areas.

What's the problem?

We think the problem is that the state is not investing enough in building up the presence of supportive local “ecosystems” in the commonwealth’s major tech hubs.

Research increasingly suggests that the growth of local commercial clusters often depends on the presence of supportive tech ecosystems built up out of local entrepreneur support networks, investor groups, and growth facilities. Through financing, accelerator support, and networking these ecosystems nurture start-ups and help them grow.

Yet despite the Commonwealth’s strong research base, such growth isn’t happening—likely because of thin support ecosystems.

And that likely owes in part to the state’s reduced investments levels, which have weakened efforts to bolster entrepreneurial ecosystems, support new-firm formation, and help companies scale.

State policy is important in ecosystem building, yet Pennsylvania drastically reduced its investments in innovation inputs and ecosystem building during the Great Recession. Despite welcome recent budget upticks, the Commonwealth still sees programs like the Ben Franklin system operating at reduced budget levels. And the Commonwealth has simply not pursued ecosystem building with the same energy as competitors like Massachusetts, Ohio, Maryland, and Michigan.

Given that, the state needs to **rebuild and enhance its basic set of programs** for supporting the growth of science-based startups.

Some of this means restoring funding for the Life Sciences Greenhouses as well as restoring funding to the Ben Franklin system, including while refocusing its activities on truly early-stage, pre-seed activity.

Meanwhile, other aspects of this mean embracing basic best practices as establishing a SBIR / STTR program state match to further support those startups or increasing the state’s R&D tax credit.

But beyond that, the state also needs to take bolder action.

In brief, **Pennsylvania needs to call out “bottom-up,” region-based ecosystem building** at scale by challenging its university-based innovation communities to compete to win major \$50 million or so Pennsylvania Innovation Hubs grants by advancing compelling plans to work together in unprecedented new ways to deliver major sector-based innovation initiatives.

We suggest awards of three \$500,000 Phase 1 development grants and two or three \$30-50 million implementation grants.

These sorts of investments—parallel to new programs at the federal level—could be the accelerant the state’s regions need.

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But that’s a key strategy for accelerating high-tech related growth in the big university hubs.

Pennsylvania is a large state, with many more types of places and communities. Any innovation strategy for the Commonwealth needs seek to spur innovation more widely—among more sorts of places and communities of people.

And so, I’d like to have my colleague Robert Maxim continue the discussion by looking at way to include smaller communities and underrepresented groups.

Rob, want to take it from here?