



Clinton vs. Trump: Comparing the Candidates' Positions on Technology and Innovation

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While Clinton has stated her positions on most, if not all, of the issues ITIF has identified as key priorities for promoting innovation, Trump has been much vaguer.

Technological innovation has long been and will continue to be critically important to both income growth and national competitiveness. So it is important that we examine the 2016 presidential candidates' policy agendas through that lens.

In each of the last two presidential elections, the Information Technology and Innovation Foundation (ITIF) released a report examining the two major candidates' positions on a host of technology and innovation policy issues. While the 2016 election has proven to be unusual in many ways, one manifestation is that third-party candidates appear to have more support than normal, particularly the Libertarian Party nominee, former New Mexico governor Gary Johnson. As of this writing, however, both Johnson and Green Party nominee Jill Stein are polling well below the minimum threshold required to participate in the official presidential debates, so ITIF is focusing its analysis on the two major-party candidates, Democratic former Secretary of State Hillary Clinton and Republican businessman Donald Trump.

In past elections, both parties' nominees generally articulated positions on nearly all of the policy areas ITIF identified as key priorities for promoting innovation. This is generally not the case in 2016. While Clinton has stated her positions on most, if not all, of the issues areas tracked by ITIF, Trump has been much vaguer, offering few detailed positions. Nevertheless, we believe it is important to clearly document what the two candidates have said (or not said) about these critical innovation issues, as their positions serve as the best-available guide to the next administration's policy priorities—and the lack of a stated position may indicate which issues would be low priorities.

This report is based on information gathered directly from the campaigns' websites and policy documents, and from media accounts of statements the candidates have made. The report begins with an overview of each candidate's general philosophy on technology,

innovation, and trade policy, and then compares the candidates' policy positions across nine specific issue areas:

Innovation and R&D	Broadband and Telecommunications
Education and Skills	Internet and Digital Economy
Taxes and Budget	Advanced Manufacturing
Trade	Life Sciences and Biotechnology
Regulation	

ITIF is a nonpartisan research and educational institution that focuses on innovation, productivity, and digital economy issues. It does not endorse any candidates for office. Rather, our goal in providing a factual, impartial comparison of the candidates' technology and innovation policies is to amplify the national dialogue around the need to bolster innovation-based economic growth.

GENERAL PHILOSOPHY TOWARD TECHNOLOGY AND INNOVATION POLICY

In many ways, the candidates have very different approaches to technology and innovation policy. Trump has focused more on reducing government barriers in the economy, including taxes and regulations, which would, among other things, affect innovation. But Trump has been largely silent on innovation as an issue overall. In contrast, Clinton has explicitly talked about innovation, but she has focused more on establishing and expanding public-private partnerships to drive innovation and ensure that its benefits are widely shared. As described below, the two are closer together on trade policy, where both would reject or at least question the prevailing Washington consensus on expanding trade, and focus much more on trade enforcement.

Clinton's approach to technology and innovation policy appears to be formulated to engage the government as an active partner alongside industry in setting a national technology and innovation agenda. However, a particular focus of the Clinton agenda is to support innovation policy that accomplishes social policy goals, such as revitalizing economically distressed communities and regions and supporting economic opportunities among disadvantaged minorities and other groups. Related to this, the candidate is particularly focused on boosting technology-related skills, including through high-skill immigration, something that would both accelerate innovation and expand economic opportunity. She would also support investment in public goods, including in federal research and technology areas such as broadband. And she would actively use technology to improve the operation of the federal government. However, when it comes to enabling U.S. companies to compete more effectively in global markets, through measures such as corporate tax reform, Clinton has been opposed.

Clinton also is supportive of some kinds of regulation in the innovation economy, including in areas such as the operation of broadband networks (e.g., to ensure "net neutrality"), privacy safeguards in the use of data, and more active antitrust enforcement. At the same time, however, the candidate has focused on deregulation or "smarter

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regulation” in a number of areas, as evidenced by her plan to appoint a chief innovation officer within the White House Office of Management and Budget, who would be responsible for reducing some federal regulatory barriers.

Trump has largely been silent when it comes to technology and innovation policy. And when he has spoken about the tech industry, his comments have sometimes been critical. But the most distinguishing feature of the Trump campaign agenda in this area has been its notable lack of articulated policy positions. As of early August, there were just six policy positions listed under the “Positions” tab of the official Trump campaign website.¹ A separate “Issues” area of the site consisted of only about 20 short videos (most less than a minute in length) in which Trump discusses his agenda, but the videos that could be related to innovation (e.g., “jobs,” “education,” and “the economy”) provided only broad brushstrokes and no specific mention of innovation.² The Trump campaign site did provide some detail about his position on China, which would have the federal government take a much stronger position on issues such as currency manipulation and intellectual property theft. In an August 8 speech at the Detroit Economic Club, Trump also offered details on his economic plan, which includes reducing the corporate tax rate to 15 percent, allowing unlimited first-year expensing on all equipment, taxing foreign source income that is repatriated at 10 percent, and significantly reducing federal regulation.

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Table 1: The Candidates’ General Philosophies Toward Technology and Innovation Policy

Clinton	Trump
<ul style="list-style-type: none"> Would engage government as an active partner with private industry in setting and implementing a technology and innovation agenda. Would focus innovation policy on achieving key social goals related to “place and person” economic opportunity. Supports some regulations in the tech economy but also stresses smarter regulation in other areas. Would support high-skill immigration and STEM education. Less emphasis on policies to enable innovative U.S. companies to be competitive in global markets. Would strengthen trade enforcement. 	<ul style="list-style-type: none"> General lack of focus or specificity regarding tech and innovation policy. To the extent there is a sector focus, it is on traditional manufacturing. Generally conservative position of significantly reducing business taxes and regulations, including a significant reduction of corporate taxes. Unclear position on high-skill immigration. Supports strong homeland security with likely effects on weakening encryption. Would strengthen trade enforcement by renegotiating existing trade deals.

Innovation and R&D

Among nations, a fierce race for global innovation leadership has emerged.³ Countries increasingly recognize the importance of coordinated national innovation and R&D strategies in driving growth and spurring the competitiveness of their enterprises, which explains why more than four dozen countries have now created national innovation strategies and/or launched national innovation foundations.⁴ But as ITIF found in a comparative analysis of 56 leading nations, U.S. policies are only the world’s 10th-best (on a per capita basis) at proactively contributing to global innovation.⁵ That’s in large part because the U.S. government underinvests in R&D relative both to historical norms and to peer nations (on a per capita basis) and also because the United States increasingly offers less attractive incentives for R&D activity; in fact, the U.S. R&D tax incentive is now only the world’s 27th most generous.⁶

The United States invests the most annually in scientific research in absolute terms, but it has slipped to just ninth among OECD nations in terms of research expenditures.

While, as a nation, the United States continues to invest the most annually in scientific research in absolute terms, the country has slipped to just ninth among OECD nations in terms of research expenditures per capita.⁷ Much of this is due to cuts in federal funding of R&D. In fact, federal funding for R&D as a share of GDP in 2016 will be the lowest it has been since the Russians launched Sputnik, almost 50 years ago.⁸ And faltering federal R&D funding also explains why the United States has fallen to just 24th out of 39 OECD nations in government funding of university R&D.⁹

In fact, to restore the federal R&D to GDP ratio to average levels in the 1980s, the federal government would need to invest \$65 billion more—per year.¹⁰ This matters because federal R&D funding is crucially important to U.S. innovation, as ITIF has documented in numerous reports.¹¹ But so are a host of other policies to support innovation, including patent reform, and tech transfer. Table 2 reviews the 2016 presidential candidates’ positions on innovation and R&D policy.

Table 2: The Candidates’ Positions on Innovation and R&D Policy

Issue	Clinton	Trump
Federal R&D Funding	<ul style="list-style-type: none"> Would “look to grow the research budgets of the National Science Foundation, the Department of Energy, and the Defense Advanced Research Projects Agency.”¹² Supports robust federal R&D funding in areas such as high-performance computing, green energy, and machine learning.¹³ 	<ul style="list-style-type: none"> No position. However, has signaled a desire to direct funding to current challenges (such as infrastructure) as opposed to future-oriented scientific research or missions (such as space-related research).¹⁴

Technology Transfer and Commercialization

- Would “set aside a small portion of federal research budgets for commercialization capacity building and accelerator grants.”¹⁵
- Would expand the National Science Foundation iCorps program.
- No position.

Supporting Start-ups and Small Businesses

- Would increase access to capital for small businesses, in part by doubling funding for the State Small Business Credit Initiative.¹⁶
- Would double the Treasury Department’s investment in the Community Development Financial Institutions (CDFI) Fund.¹⁷
- No position.

Supporting Entrepreneurs

- Would support incubators, accelerators, mentoring, and training for 50,000 entrepreneurs in underserved areas.¹⁸
- Would allow entrepreneurs to defer student loans for up to three years, with zero interest and zero principal (and extend this not only to founders but also to the first 10-20 employees of the firm).
- No position.

Regional Innovation

- Would catalyze innovation hubs across the country, in part by expanding the Regional Innovation Program.¹⁹
- No position.

Patent System Reform

- Would allow the Patent and Trademark Office to retain the fees it generates from patent applications in a separate fund.²⁰
- No position.

- Would enact patent reform legislation to curb forum shopping, require that specific allegations be made in demand letters, and increase transparency by making patent litigants disclose the real party at interest.

Education and Skills

If America is to succeed in the innovation-powered global economy, then it is vital to boost education in the so-called “STEM” subjects of science, technology, engineering, and math.²¹ Yet the United States needs to bring a much-needed dose of innovation to STEM education policy, including moving from the current “some STEM for all” to an “all STEM for some” approach. One key way to bolster STEM education is through the creation of more math and science high schools.²²

One of the long-standing strengths of the U.S. national innovation system has been its ability to use scientific and technological talent effectively, regardless of its source.²³ The global talent imperative requires that the United States implement policies that will both produce a domestic workforce equipped with globally demanded skills and be open to skilled foreign workers who wish to pursue their talents in the environment of economic opportunity the United States affords. This section focuses primarily on the candidates’ high-skill immigration, K-12 STEM education proposals, tertiary education ideas covering community colleges, innovative educational programs, and support of underserved populations.

Table 3: The Candidates’ Positions on Education and Skills Policy

Issue	Clinton	Trump
Immigration of High-Skill Foreign Workers	<ul style="list-style-type: none"> ▪ Would give green cards to foreign-born graduates of accredited U.S. STEM master’s and Ph.D. programs. ▪ Would create a “start-up” visa to allow entrepreneurs in “technology-oriented globally treaded sectors” to create companies and jobs in the United States. ▪ Though she has not specifically mentioned the H- 	<ul style="list-style-type: none"> ▪ While his view has changed multiple times, Trump’s current position is against H-1B visas, calling guest workers cheap substitutes for American labor.²⁵ He proposes requiring companies to hire from an unemployed pool, and suggests raising wage requirements for H-1B workers. ▪ Has stated that he is for high-skilled immigration,

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1B program during the campaign, Clinton has generally supported H-1B visas in the past and has proposed raising the cap on the number of visas awarded, supporting the I-Squared Act in Congress, which would raise the cap to 195,000 visas.²⁴

despite opposition for H-1B program.

- Proposal to keep Muslims from entering the country would bar some highly skilled workers.

Support for STEM Education

- Has called for the training of 50,000 computer science teachers to meet unmet demand among students, and pledges to make computer science education available to every student in the country.
- Would support cities and states in establishing STEM-intensive high schools.²⁶
- Has suggested tying student loan decisions to job prospects after graduation, which would promote STEM majors with high expected wages.²⁷
- Argues that there is no shortage of skilled STEM workers because some STEM graduates do not find jobs in their fields.²⁸

Supporting Innovation in Education

- Has proposed allowing students to use federal student aid to pursue alternative learning options, such as Massive Open Online Courses (MOOCs) and approved professional certifications.²⁹
- Has suggested providing incentives for universities to incorporate MOOCs and other alternative certifications into traditional degree programs.
- Proposed \$10 billion in federal funding for “nanodegrees, accelerated learning programs for computer coding, career and technical training, certificates for specializations, and online learning.”³⁰
- Calls for education to be locally driven.
- Is against the Common Core, and has stated that he will dismantle it.³¹

Accommodating Needs of Minority and Low-Income Students

- Pledged \$25 billion in federal funds for colleges serving minority students
- Would invest in education pathways serving disadvantage communities, using apprenticeship, linked learning, P-tech, and Career Academies models.
- Would provide grants to states to make tuition debt-free for public four-year colleges, relying on affordable family contribution and work-study programs, as well as reducing costs of books, room, and board.
- Seeks to have the federal government stop subsidizing student loans, relying on a mix of private market financing and increased share of the risk being held by colleges themselves.³²
- Stated that the Department of Education, which administers Pell grants for low-income students, could “largely be eliminated.”³³

Community Colleges

- Part of her \$350 billion plan for higher education would include making community college free, following proposals from President Obama.
- Representative of the Trump Campaign stated that Trump will not pursue making community college free.³⁴

The corporate tax code should explicitly promote the international competitiveness of American businesses and encourage innovation.

Taxes and Budget

Governments can spur innovation by creating a favorable climate for private sector investment that makes the U.S. corporate tax code more competitive with other nations and also leverages tax policy to incent private sector R&D and investment. As ITIF has argued, the U.S. corporate tax code should explicitly promote the international competitiveness of American businesses and encourage innovation by providing incentives for the drivers of productivity and innovation: investment in R&D; new capital equipment, especially information and communications technology; and workforce education and training.³⁵ Unfortunately, America now has the highest combined federal-state statutory corporate tax rate among OECD countries, at 39.2 percent.³⁶ It is the only OECD country in which the statutory corporate tax rate did not decline between 2000 and 2012.³⁷

Moreover, even as an increasing number of countries use R&D tax incentives as a key component of their innovation-led economic development strategies, the United States fell from providing the most generous R&D tax incentive among OECD countries in the late 1980s, to ranking 17th in 2004, and 27th in 2012.³⁸ Brazil, China, and India each offer more generous R&D tax credits than the United States. The United States should also

bring more innovation to its tax code by introducing more collaborative R&D tax credits and by taxing revenues from newly patented products at preferential rates.³⁹

Table 4: The Candidates' Positions on Tax Policy

Issue	Clinton	Trump
Corporate Tax Rates	<ul style="list-style-type: none"> ▪ Would keep rate at 35 percent.⁴⁰ ▪ Would impose an “exit tax” on companies moving abroad, requiring them to pay tax on all unrepatriated earnings, repay any credits, and prevent them from deducting the costs of leaving.⁴¹ ▪ Eliminate the deductibility of reinsurance premiums paid to foreign corporations.⁴² ▪ Create a new two-year tax credit for employers that share profits with their employees.⁴³ ▪ Create a \$1,500 tax credit for every new worker businesses train and hire.⁴⁴ ▪ Tax high frequency trading.⁴⁵ 	<ul style="list-style-type: none"> ▪ Would reduce rate to 15 percent.⁴⁶ ▪ End deferral of tax on foreign earnings.⁴⁷ ▪ Reduce or eliminates “corporate loopholes that cater to special interests.”⁴⁸ ▪ Phase in a “reasonable” cap on the deductibility of interest expense.⁴⁹ ▪ Immediate expensing for all new business investments.⁵⁰ ▪ Repeal corporate alternative minimum tax.⁵¹
Deemed Repatriation	<ul style="list-style-type: none"> ▪ No position. 	<ul style="list-style-type: none"> ▪ Taxes past foreign profits held in cash at 10 percent.⁵²
Tax Rate on Foreign Earnings	<ul style="list-style-type: none"> ▪ No position. 	<ul style="list-style-type: none"> ▪ Lower rate to 15 percent.⁵³ ▪ Eliminate deferral of tax.⁵⁴
Innovation Box	<ul style="list-style-type: none"> ▪ No position. 	<ul style="list-style-type: none"> ▪ No position.
R&D Tax Credit	<ul style="list-style-type: none"> ▪ Would provide “federal support and tax relief for research and innovation in America.”⁵⁵ ▪ “Claw back” research and innovation tax credits if 	<ul style="list-style-type: none"> ▪ No position.

companies use them to “ship jobs overseas.”

Accelerated Depreciation

- No position.
- No position.

Corporate Short-Termism

- Has spoken about the problem of “quarterly capitalism,” and would lengthen the holding period to qualify for capital gains treatment.⁵⁶
- No position.

Individual Rate

- Impose a 4 percent “Fair Share Surcharge” on taxpayers making more than \$5 million a year.⁵⁷
- Implement the “Buffet” rule subjecting those with adjusted gross incomes of more than \$1 million to a minimum effective tax rate. The rate gradually rises until those with AGIs of \$2 million pay a 30 percent rate.⁵⁸
- Restore the estate tax to its 2009 parameters.⁵⁹
- Limit size of tax-preferred savings accounts.⁶⁰
- End Bermuda reinsurance loophole.⁶¹
- Caps itemized deductions at 28 percent.⁶²
- Provides a tax credit of \$1,200 for caregiver expenses.⁶³
- Create three brackets with a top rate of 33 percent.⁶⁴
- Eliminate marriage penalty.⁶⁵
- Eliminate Alternative Minimum Tax.⁶⁶
- Pass-through entities pay 15 percent personal income tax on business income.⁶⁷
- Eliminate estate tax.⁶⁸
- Reduce or eliminate “most deductions and loopholes available to the very rich.”⁶⁹
- Steepen the curve for phasing out the personal exemption and the Pease limitation on itemized deductions.⁷⁰
- Phase out exemption on life-insurance interest for high-income earners.⁷¹
- Eliminate 3.8 percent net investment tax.⁷²
- Allow a full deduction for the average cost of child care.⁷³

Capital Gains Rate

- Tax capital gains as ordinary income if held less than two years.⁷⁴
- Assets held for 2-6 years would qualify for a lower
- Tax capital gains and dividends at a top rate of 20 percent.⁸⁰

The United States must play a leadership role in defending an open and rules-based trading system, while demanding rigorous enforcement of trade commitments.

rate. Assets held for 6 years would be taxed at 23.8 percent.⁷⁵

- Allows a zero percent capital gains rate on long-term investment in qualified small business stock held for more than five years.⁷⁶
- Allows a zero percent capital gains rate on long-term investment in depressed areas.⁷⁷
- Expands the New Markets Tax Credit.⁷⁸
- Subject capital gains and dividends to the same 4 percent surcharge on those making more than \$5 million a year.⁷⁹

Carried Interest

- End carried interest.⁸¹
 - End carried interest.⁸²
-

Trade

With much of the U.S. economy based on innovation, where firms have relatively high fixed costs and lower marginal costs, the right trade policy is essential to ensuring open and fair access to global markets, as this spurs U.S. productivity, innovation, and jobs.⁸³ But global trade is at a crossroads—multilateral trade negotiations have collapsed while a growing number of countries enact protectionist policies, often as part of “innovation mercantilist” strategies that seek to systematically disadvantage foreign goods and services, especially those in high-tech industries. As ITIF concludes in a number of reports, the United States must play a leadership role in defending an open and rules-based trading system, while demanding rigorous enforcement of trade commitments in order to show that open, market-driven commerce is the best way to achieve sustainable global prosperity.⁸⁴ One way the United States can lead is by pioneering innovative new, high-standard trade agreements such as the Trans-Pacific Partnership (TPP), Transatlantic Trade and Investment Partnership (T-TIP), and Trade in Services (TiSA) Agreements.⁸⁵ Another way is to give significantly more attention to trade enforcement.

Unfortunately, in large part because many, if not most, in the Washington trade establishment have ignored or dismissed the need for strong trade enforcement, the political economy of trade in the United States has increasingly soured, with both candidates taking positions against the recently concluded TPP agreement and even calling

into question past agreements such as the North America Free Trade Agreement (NAFTA). Yet both market opening and trade enforcement are vital for the health of both the U.S. and global economy, and the next president will need to show real leadership in crafting a more balanced trade agenda coupled with a robust national competitiveness strategy at home.

Table 5: The Candidates' Positions on Trade Policy

Issue	Clinton	Trump
General Approach	<ul style="list-style-type: none"> ▪ Fair, rules- and market-based trade can be beneficial for both U.S. and broader global economy. ▪ Would emphasize both enhanced levels of trade enforcement and also negotiation of new trade agreements with stronger standards, including on currency. ▪ Would place greater emphasis on negotiating labor and environmental provisions in U.S. trade agreements (e.g., asserts TPP inadequately addresses such issues). 	<ul style="list-style-type: none"> ▪ Fair, rules- and market-based trade can be beneficial for both U.S. and broader global economy. Has said “I’m not against trade. I just want to make better deals.”⁸⁶ Asserts goal is “accountability,” not “protectionism.” ▪ Would place more emphasis on trade enforcement as opposed to negotiating new trade agreements. ▪ Favors the negotiation of bilateral over multilateral trade agreements. Has threatened to pull the U.S. out of the World Trade Organization because he sees it as ineffective.⁸⁷
Trans-Pacific Partnership (TPP)	<ul style="list-style-type: none"> ▪ Opposes TPP “as currently negotiated,” citing concerns with currency manipulation, labor, environmental, and some intellectual property protection issues.⁸⁸ 	<ul style="list-style-type: none"> ▪ Would “withdraw” the United States from TPP.⁸⁹
Trans-Atlantic Trade and Investment Partnership (T-TIP)	<ul style="list-style-type: none"> ▪ Has not taken a position (text of the Agreement is still under negotiation), but as Secretary of State referred to the T-TIP as an “economic NATO.”⁹⁰ 	<ul style="list-style-type: none"> ▪ Has not taken a position (text of the Agreement is still under negotiation), but has consistently criticized free trade agreements.
Trade in Services Agreement (TiSA)	<ul style="list-style-type: none"> ▪ No position. 	<ul style="list-style-type: none"> ▪ No position.

Trade Promotion Authority (TPA)

- Supports presidential negotiating authority, but opposed Congressional approval of TPA in 2015.⁹¹
- Supports presidential negotiating authority, but opposed Congressional approval of TPA in 2015.⁹²

North American Free Trade Agreement (NAFTA)

- Supports renegotiating elements of NAFTA.⁹³
- Would renegotiate elements of NAFTA and withdraw the U.S. if negotiations are not satisfactory.⁹⁴

Trade Enforcement

- Would “strengthen American trade enforcement” by appointing a new trade prosecutor reporting directly to the president and also tripling the number of trade enforcement officers.⁹⁵
- Would “direct the Secretary of Commerce to identify every violation of trade agreements a foreign country is currently using.”⁹⁶
- Unilaterally apply tariffs against China if it “fails to stop illegal activities.”⁹⁷

Currency Manipulation

- Impose tariffs or duties on China “and other top Asian nations” that engage in currency manipulation.⁹⁸
- Immediately declare China a currency manipulator and begin to introduce countervailing duties.⁹⁹

China-Specific Trade Policy Issues

- Oppose China’s being recognized as a “market economy.”¹⁰⁰
- Increase number of trade cases the United States brings against China, both at the WTO and in the United States.¹⁰¹
- Initiate countervailing duties if China continues to dump products in U.S. markets.
- “Put an end to China’s illegal export subsidies and lax labor and environmental standards.”¹⁰²
- Will “adopt a zero tolerance policy on intellectual property theft.”¹⁰³

Export-Import Bank

- Supports the Ex-Im Bank for its role in supporting the global competitiveness of America’s traded sectors.¹⁰⁴
- Favors shutting down the Ex-Im Bank, calling it “feather bedding.”¹⁰⁵

Trade Adjustment Assistance (TAA)

- Supports Trade Adjustment Assistance, and would not support passage of a TPP or
- No position.

other trade deals without it.¹⁰⁶

Penalties for Manufacturers That Offshore

- Has called for imposing an “exit tax” on “companies that leave America to lower their tax burden.”¹⁰⁷
- Will make businesses benefitting from “Make It in America” incentives pledge not to shift jobs created by such measures offshore.
- Would punish companies that offshore production by taxing (or placing additional tariffs on) their imports back to the United States.¹⁰⁸

Digital Free Trade

- Will resist efforts by countries to implement data localization policies that restrict the free flow of information.¹⁰⁹
- Supports the U.S.-EU Privacy Shield to support the transfer of data between the United States and Europe.
- Would resist calls for forced technology transfer or the localization of data.¹¹⁰
- No position.

Supporting U.S. Exporters

- Advance export control reform to promote access to markets for U.S. technology companies.¹¹¹
- No position.

Buy America

- Insist on strong domestic sourcing requirements and “Buy American” laws throughout federal investments in manufacturing and infrastructure.¹¹²
- Supports “Buy America” in principle, noting “We’re better off paying a little bit more for U.S.-made products.”¹¹³

Tariff Policy

- Would impose tariffs or duties in cases of confronting unfair foreign mercantilist trade practices.
- Favors taxation of “foreign, not domestic, production” and has noted that the Constitution did not include an income tax because the U.S. government was largely financed through tariffs on foreign imports.¹¹⁴

- Has proposed a blanket 45 percent tax on Chinese imports and 35 percent tax on Mexican importers (“if they don’t behave.”)¹¹⁵

The United States needs smarter regulations for its traded and non-traded firms alike.

Regulation

Designed properly, regulations can sometimes spur innovation and productivity. Even when they can’t do this, regulations should be designed in ways that limit cost and burdens on innovation. As such, the United States needs smarter regulations for its traded and non-traded firms alike. In this regard, ITIF has offered several recommendations, including forming an Office of Innovation Policy Review within the Office of Management and Budget (akin to an Office of Information and Regulatory Affairs for innovation).¹¹⁶ Moreover, OIRA should introduce an “international competitiveness screen” into its review of federal regulations. ITIF also supports passage of the REINS bill, which would reform the regulatory process for all agencies.

Table 6: The Candidates’ Positions on Regulatory Policy

Issue	Clinton	Trump
REINS Act	<ul style="list-style-type: none"> ▪ No position. 	<ul style="list-style-type: none"> ▪ No position.
OMB Regulatory Reforms	<ul style="list-style-type: none"> ▪ No position. 	<ul style="list-style-type: none"> ▪ Would issue “a temporary moratorium on all new agency regulations.”¹¹⁷ ▪ Order agencies to catalogue and eliminate all existing regulations “which are not necessary, do not improve public safety, and which needlessly kill jobs.”¹¹⁸ ▪ Immediately cancel “all illegal and overreaching” executive orders.¹¹⁹
Regulatory Policy Toward the Manufacturing Sector	<ul style="list-style-type: none"> ▪ Appoint a Chief Innovation Advisor within the Office of Management and Budget’s Office of Information and Regulatory Affairs to reduce federal regulatory barriers to developing new products and services.¹²⁰ 	<ul style="list-style-type: none"> ▪ No sector-specific position.

- Challenge state and local governments to identify, review, and reform legal and regulatory obligations that protect legacy incumbents against new innovators.

Broadband and Telecommunications

We live in an information-rich world in which citizens increasingly depend on advanced digital networks to connect our smartphones and computers with vital databases and information processing systems in the cloud. As ITIF has written in the past, the opportunities for information technology to deliver improvements in the economy and quality of life are multiplied by fast, reliable, and pervasive digital networks.¹²¹ Innovation is particularly fast in the mobile world, but next-generation wireline networks form the essential foundation of all digital networking. Broadband and telecommunication policy debates focus on a variety of issues, including the means of managing spectrum rights, the nature of net neutrality regulations, the transformation of telecommunications subsidies, and programs to spur Internet adoption and use.

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Table 7: The Candidates' Positions on Telecommunications Policy

Issue	Clinton	Trump
Wireless Spectrum and 5G	<ul style="list-style-type: none"> ▪ Clinton would reallocate and repurpose spectrum for next-generation uses.¹²² ▪ Pledges to identify underutilized bands, including those held by the federal government that can be put to more valuable uses.¹²³ ▪ Offered to foster the evolution to 5G networks and the deployment of licensed, unlicensed, and sharing regimes, as well as support the development of a “civic Internet of Things.”¹²⁴ 	<ul style="list-style-type: none"> ▪ No position.
Title II and Net Neutrality	<ul style="list-style-type: none"> ▪ Clinton supports the FCC’s Open Internet Rules, which classified Internet providers as common carriers under Title II of the Communications Act.¹²⁵ 	<ul style="list-style-type: none"> ▪ Trump has expressed displeasure with the FCC’s Open Internet Order, tweeting that “Obama’s attack on the internet is another top down power grab. Net neutrality is the

- Has pledged to continue the fight she started as Secretary of State for an Open Internet abroad, and opposes government interference with broadband networks.¹²⁶

Fairness Doctrine. Will target conservative media.”¹²⁷

Communications Act Update

- In an interview, Clinton characterized Title II as the “only hook [the FCC’s] got” to write net neutrality rules and expressed preference for “another hook” for net neutrality and an update to the Communications Act.¹²⁸

- Trump does not appear to have commented on the need for an update to the Communications Act.

Broadband and Telecom Subsidies

- Supports delivering affordable broadband to all American households by 2020. Networks should provide “speeds sufficient to meet families’ needs.”¹²⁹
- This 100 percent goal will be achieved through continued investments in the Connect America Fund, Rural Utilities Service program, and Broadband Technology Opportunities Program.¹³⁰
- Supports recent reform of the Lifeline program to include broadband, and looks to expand the E-rate program to include additional anchor institutions beyond schools and libraries for subsidized access.¹³¹
- As part of her proposed \$275 billion infrastructure investment, Clinton has pledged a \$25 billion national infrastructure bank that would support broadband projects, among others.¹³²

- No position.

Broadband Adoption and Digital Literacy

- Clinton aims to “close the digital divide” through

- No position.

expanded network deployment.¹³³

- Pledged to connect Lifeline recipients with community-based digital literacy training and access to low-cost devices.¹³⁴

Broadband Competition and Public Private Partnerships

- As part of her proposed “Model Digital Communities” program, under her Infrastructure Bank, Clinton would award grants on a competitive basis to regions or municipalities for proposals that foster greater access to high-speed Internet.¹³⁵
- These grants would reward proposals that seek to streamline regulatory barriers to private investment, coordinate broadband deployment with other municipal projects, and fill gaps in underserved areas through public-private partnerships.¹³⁶
- No position.

Because many technologies, such as the Internet of Things, are not pure private goods and exhibit what economists call network externalities, policymakers should partner with the private sector in enabling the robust development and use of such technologies.

Internet and Digital Economy

The digital economy is a key driver of U.S. competitiveness and economic growth, and as such, the federal government should pursue policies that foster the adoption and use of information technology (IT). In general, policymakers should use a light touch to regulate legitimate use of digital technology, and take a hard line on regulating illegitimate digital activity, such as cybercrime and online piracy. In addition, as ITIF has written, because many technologies, such as the Internet of Things, are not pure private goods and exhibit what economists call network externalities, policymakers should partner with the private sector in enabling the robust development and use of such technologies.¹³⁷ The next administration will need to bring smart policies to the table to promote the adoption of important productivity-enhancing technologies such as telehealth, artificial intelligence, intelligent transportation systems, and e-government as well as grapple with complex policy questions on a wide variety of issues including cybersecurity, copyright, and digital trade.

Table 8: The Candidates' Positions on Digital Economy Policy

Issue	Clinton	Trump
Cybersecurity	<ul style="list-style-type: none"> ▪ Clinton has stated that she will expand investments in cybersecurity and encourage public-private partnerships to encourage cybersecurity innovation and information-sharing about threats. ▪ She has promised to build on the Obama Administration's Cybersecurity National Action Plan, such as by giving greater authority to a federal chief information security officer and upgrading federal IT systems.¹³⁸ 	<ul style="list-style-type: none"> ▪ Trump has argued that the United States has obsolete cybersecurity capabilities and that it is falling further behind other countries. To address this, he has said that "cyber has to be in our thought process."¹³⁹ ▪ Trump has also vowed to "enforce stronger protections against Chinese hackers ... and our responses to Chinese theft will be swift, robust, and unequivocal."
Encryption	<ul style="list-style-type: none"> ▪ Clinton supports the idea of establishing a national commission to study how to address the needs of law enforcement while protecting the privacy and security of Americans and advancing U.S. competitiveness.¹⁴⁰ ▪ She previously called for a "Manhattan-like project" where the government and tech community would work together to develop a way for law enforcement to gain access to encrypted communications.¹⁴¹ 	<ul style="list-style-type: none"> ▪ Trump said that he fully agreed with a court order calling for Apple to facilitate access to an encrypted iPhone used by the San Bernardino shooter.¹⁴² In addition, he called on consumers to boycott Apple until the company cooperates with the law enforcement requests.¹⁴³
Internet Governance	<ul style="list-style-type: none"> ▪ Clinton has vowed to promote multi-stakeholder Internet governance, and she supports the Department of Commerce's plans to transition its historic oversight of the domain name system to the global community.¹⁴⁴ ▪ Clinton has also committed to "[standing] with like- 	<ul style="list-style-type: none"> ▪ No position.

minded countries against efforts by countries like China or Russia to create a balkanized internet run by governments.”¹⁴⁵

Online Sales Tax

- According to a Reuters article, Clinton has stated that “she supported allowing cities and states to tax online purchases, but she would not mandate it.”¹⁴⁶
- Trump has suggested that he believes online retailers should collect and remit sales taxes.¹⁴⁷

E-Government

- Clinton supports modernizing IT in the federal government, including by: expanding the U.S. Digital Services programs and making it permanent, redesigning the 25 most popular federal government websites, and reforming the procurement process.¹⁴⁸
- Clinton has vowed to expand the Obama Administration’s use of data-driven government to increase transparency and accountability.¹⁴⁹
- She has stated that federal agencies will report performance online, measure progress against goals, and provide action plans to address any issues blocking progress as a way to increase citizens’ confidence in government.
- Has specifically called for modernizing the Copyright Office to bring it into the digital age and modernizing the Department of Labor’s systems “so that there is better information-sharing between employers, job seekers, and education providers about the credentials and
- Trump has not addressed this issue explicitly.
- He has outlined a plan to modernize the Department of Veterans Affairs “by accelerating and expanding investments in state of the art technology to deliver best-in-class care quickly and effectively.”¹⁵¹
- In addition, he has stated that “All veterans should be able to conveniently schedule appointments, communicate with their doctors, and view accurate wait times with the push of a button.”¹⁵²

competencies employers are seeking.”¹⁵⁰

Open Data

- Clinton has vowed to accelerate the Obama Administration’s open data initiative, fully implement the DATA Act to make government spending data more transparent, and allow businesses to submit structured data instead of paper or electronic documents to regulators to increase oversight and accountability.¹⁵³
- Has also stated that she will “promote open-licensing arrangements for copyrighted material and data supported by federal grant funding.”¹⁵⁴
- In addition, she has committed to developing “technological infrastructure to support digitization, search, and repositories of such content, to facilitate its discoverability and use.”¹⁵⁵
- No position.

Copyright

- Clinton supports modernizing the copyright system to increase access to orphan works.¹⁵⁶
- She also wants to encourage stakeholders to make licensing content more seamless and efficient in the United States and abroad.¹⁵⁷
- Clinton opposes legislative measures, such as the Stop Online Piracy Act (SOPA), intended to combat copyright infringement online.
- No position.

Online Speech

- Clinton has stated that “Internet freedom” is a core value of open societies, and she has pledged to promote this value both at home and
- Trump has repeatedly stated that he wants to work with the tech industry to find ways to prevent ISIS from recruiting online, stating, “I

abroad. She has stated that she “will oppose efforts to block or degrade internet access or to shutdown social media.”¹⁵⁸

- She has also argued that the government should work with the tech community on “depriving jihadists of virtual territory.”¹⁵⁹
- In response to potential criticism of such an approach, she stated, “And this is complicated. You’re going to hear all of the usual complaints, you know, freedom of speech, et cetera. But if we truly are in a war against terrorism and we are truly looking for ways to shut off their funding, shut off the flow of foreign fighters, then we’ve got to shut off their means of communicating.”¹⁶⁰

would certainly be open to closing areas where we are at war with somebody. I sure as hell don’t want to let people that want to kill us and kill our nation use our Internet.”¹⁶¹

- In response to concerns that this might not be constitutional, Trump stated, “Somebody will say, ‘Oh freedom of speech, freedom of speech.’ These are foolish people. We have a lot of foolish people.”¹⁶²

Commercial Data Privacy

- Clinton has stated that she will use “adaptive” regulatory enforcement to protect consumer privacy and encourage the private sector to adhere to strong privacy standards.¹⁶³

- No position.

Government Surveillance

- Clinton supported the USA Freedom Act, which established some limits on government bulk data collection, increased transparency over the FISA court, and extended certain Patriot Act surveillance authorities.¹⁶⁴
- In addition, Clinton has promised to try to modernize the MLAT process and “pursue agreements with likeminded countries to allow for law enforcement agencies to obtain data across borders

- Trump has stated that “I assume when I pick up my telephone, people are listening to my conversations anyway, if you want to know the truth. It’s pretty sad commentary, but I err on the side of security.”¹⁶⁶
- He has also stated that he wants to restore the Patriot Act.¹⁶⁷
- Finally, he has called for a “database on the people coming in from Syria” and

in a manner that respects privacy, security and human rights.”¹⁶⁵

surveillance of certain mosques.¹⁶⁸

Artificial Intelligence

▪ No position.

▪ No position.

Advanced Manufacturing

While U.S. manufacturing has recovered somewhat since the Great Recession, recovering some 850,000 manufacturing jobs, that barely makes up a fraction of the 5.6 million manufacturing jobs the United States lost from 2000 to 2009.¹⁶⁹ Since 2006, U.S. manufacturing productivity has grown at just 36 percent of the rate of the preceding decade, and, since 2008, 15 of 19 major U.S. manufacturing sectors have recorded declines in output. Moreover, in 2015, the United States recorded a record high trade deficit in manufacturing of \$630 billion.¹⁷⁰

However, these dire statistics do not mean that manufacturing is no longer vitally important to the U.S. economy. In fact, the U.S. manufacturing sector pays for and performs 70 percent of U.S. industrial research, accounts for 65 percent of U.S. exports, pays workers 17 percent more than other sectors on average, and generates the largest economic multiplier of any U.S. sector.¹⁷¹ As ITIF has argued, the United States needs to put in place much better tax, talent, technology, and trade policies (the “4 Ts”) to help U.S. manufacturing and other traded sectors thrive and remain globally competitive.¹⁷²

To its credit, the Obama administration made significant strides in many of these areas, including standing up a network of, so far, nine Institutes of Manufacturing Innovation (IMIs) focused on industrially relevant pre-competitive R&D across a range of advanced manufacturing product and process technologies.¹⁷³ In December 2014, Congress passed the *Revitalize American Manufacturing and Innovation Act* (RAMI), which on a bipartisan, bicameral basis endorsed and provided additional funding for the NNMI approach.¹⁷⁴ It will be important that the next administration continue to pursue effective policies to bolster the U.S. manufacturing ecosystem.

Both candidates have recognized the central importance manufacturing plays in underpinning U.S. economic vitality, although their policy proposals would look to revitalize U.S. manufacturing from different directions, as Table 9 illustrates. Trump would focus primarily on tax, trade, and regulatory policy levers to bolster U.S. manufacturing (reviewed mostly in other policy sections), while offering virtually no specifics on talent and technology support policies. Clinton offers a lengthier set of policy prescriptions to bolster U.S. manufacturing, including more specifics on technology and talent policy.

The United States needs to put in place much better tax, talent, technology, and trade policies (the “4 Ts”) to help U.S. manufacturing and other traded sectors thrive and remain globally competitive.

Table 9: The Candidates' Positions on Manufacturing Policy

Issue	Clinton	Trump
Support for the National Network for Manufacturing Innovation (NNMI)	<ul style="list-style-type: none"> Clinton has expressed support for doubling NNMI funding and expanding the network to up to 45 institutes, as recommended by the Obama administration.¹⁷⁵ 	<ul style="list-style-type: none"> No position.
Manufacturing Extension Partnership (MEP)	<ul style="list-style-type: none"> Doubling MEP funding (which would increase it to approximately \$280 million annually).¹⁷⁶ 	<ul style="list-style-type: none"> No position.
Regional Manufacturing Support	<ul style="list-style-type: none"> Supports a \$10 billion investment in “Make It in America” partnerships to bolster regional manufacturing economies and supply chains.¹⁷⁷ 	<ul style="list-style-type: none"> No position.
Tax-Related Manufacturing Incentives	<ul style="list-style-type: none"> Would create a Manufacturing Renaissance Tax Credit for investments in communities facing significant shutdowns or layoffs.¹⁷⁸ 	<ul style="list-style-type: none"> No position (see tax section for general tax proposals).¹⁷⁹
Workforce Training Incentives	<ul style="list-style-type: none"> Provide a \$1,500 tax credit for every new apprentice companies hire through apprenticeship programs.¹⁸⁰ 	<ul style="list-style-type: none"> No position.
Manufacturing Skills Credentialing & Retraining Programs	<ul style="list-style-type: none"> Supports expanding nationwide credentialing, with “industry input.”¹⁸¹ Would allow federal student aid to be used toward career and technical training programs.¹⁸² Would create a competitive grant program to support 	<ul style="list-style-type: none"> No position.

state and regional public-private partnerships developing methods to tailor job training opportunities to match labor demand in technology-driven industries.¹⁸³

Policies to Support Reshoring

- Coordinate government efforts within the United States and overseas to make it easier for companies to bring jobs back to the United States.¹⁸⁴
- No position.

The United States' ability both to invest significantly in life-sciences research and to ensure that its drug pricing and IP policies support robust private-sector innovation explain why America continues to lead the world in fostering an enabling environment for life-sciences innovation.

Life Sciences and Agricultural Biotechnology

Progress in life sciences and agricultural biotechnology in the 21st century is expected to dwarf the unprecedented advances in understanding in those fields over the preceding 100 years, bringing even more prodigious benefits. Informed observers expect dramatic transformations in the way we diagnose, treat, and prevent diseases; produce food, feed, and fiber for myriad uses; support our energy economy; and more. But these advances, derived from new understanding, depend on a number of essential prerequisites. These include strong intellectual property (IP) protections that stimulate and reward innovation; robust policies to encourage and enable research and development; a deep and wide foundation of fundamental research involving academic, government, and private-sector research enterprises; and cost-effective regulations to ensure safety for humans and the environment. Especially since the 1970s, the United States' ability both to invest significantly in life-sciences research and to ensure that its drug pricing and IP policies support robust private-sector innovation explain why America continues to lead the world in fostering an enabling environment for life-sciences innovation.¹⁸⁵

However, continued U.S. life-sciences leadership depends on a strong commitment to investing in life-sciences research and to implementing policies, such as streamlined Food and Drug Administration (FDA) drug approval pathways, that promote innovation.¹⁸⁶ Moreover, such leadership depends on a firm bipartisan commitment to the preceding tenets, although, unfortunately, that bipartisan comity is increasingly tenuous.¹⁸⁷

At the same time, the total U.S. (public plus private) share of global life-sciences research funding declined from 57 percent in 2004 to 44 percent in 2012. But the problem is not only that other nations are catching up, it's also that the United States is not doing enough to sustain its historically robust investments in life-sciences research.¹⁸⁸ Indeed, following a decade of remarkable public sponsorship of medical research, with growth exceeding 7 percent per year in the 1990s, funding for the U.S. National Institutes of Health (NIH) declined nearly 2 percent per year in real terms after the mid-2000s, with this decrease accruing to a 13 percent decrease in NIH purchasing power (after inflation adjustment)

since 2004.¹⁸⁹ Accordingly, going forward, U.S. policy should be to grow life-sciences funding at least at a rate that accounts for inflation and ideally at a level at least one-quarter of one percent (0.25 percent) of national GDP or higher.¹⁹⁰

In addition, with an anticipated global population of approximately 10 billion by 2050, humanity will need to nearly double the present annual production of food, feed, and fiber.¹⁹¹ This must be done on a sustainable basis and in the face of increased challenges associated with climate change.¹⁹² Biotechnology innovation will be one of the main ways this challenge can be solved.

Table 10: The Candidates' Positions on Life Sciences and Agricultural Biotechnology Policy

Issue	Clinton	Trump
National Institutes of Health (NIH) Funding	<ul style="list-style-type: none"> Clinton would increase funding for medical research, particularly for cancer research.¹⁹³ 	<ul style="list-style-type: none"> Trump believes that a considerable amount of NIH funding is wasteful, stating, "I hear so much about the NIH, and it's terrible."¹⁹⁴ However, he has not articulated a specific position on funding levels.¹⁹⁵
Regulatory Policy	<ul style="list-style-type: none"> Increase funding for the FDA's Office of Generic Drugs "to clear out their multi-year generic drug approval backlog."¹⁹⁶ Would "require pharmaceutical companies that benefit from federal support to invest a sufficient amount of their revenue in R&D, and if they do not meet targets, boost their investment or pay rebates to support basic research."¹⁹⁷ 	<ul style="list-style-type: none"> No position.
Data Exclusivity Periods for Biologic Drugs	<ul style="list-style-type: none"> Reduce the data exclusivity period for novel biologic drugs from 12 to 7 years.¹⁹⁸ 	<ul style="list-style-type: none"> No position.
Drug Pricing	<ul style="list-style-type: none"> Permit Medicare to negotiate drug prices.¹⁹⁹ 	<ul style="list-style-type: none"> Permit Medicare to negotiate drug prices.²⁰⁰
Agricultural Innovation	<ul style="list-style-type: none"> Clinton has long been supportive of agricultural innovation. As Secretary of 	<ul style="list-style-type: none"> No position.

State, she advocated for R&D support and science-based regulatory policies for agricultural biotechnology products (GMOs).²⁰¹

Mandatory GMO Food Labels

- Clinton has stated opposition to federal preemption of state labeling mandates.²⁰²
- No position.

CONCLUSION

Whether one believes America is “already great” or needs to be made “great again,” it should be clear that technological innovation is a key factor in that greatness. As such, ensuring that the United States is doing all it can to advance innovation will continue to be central in addressing key policy challenges, including maintaining national security leadership, spurring productivity and wage growth, driving health-care quality improvement and cost reduction, improving education from grade school through graduate school, and reducing greenhouse gas emissions.

That will not happen if government does not develop and implement a coherent set of policies to advance innovation. Some of these policies should involve public-private partnerships, which Clinton has supported. Others should involve corporate tax and regulatory reform, including ensuring that the United States has a more globally competitive tax code, as Trump has advocated.

Yet, more broadly, Republicans all too often focus on limiting or denying government’s contributions to bolstering U.S. innovation and competitiveness, while Democrats often seem more interested in shackling rather than harnessing the power of American enterprise. Each side argues that if the country would just pursue the menu items in their respective agendas, then U.S. competitiveness and innovation will be restored and all will be well. But there are two major problems with these perspectives. First, because neither side wants the other to receive credit for their items, little gets done. Second, even if one side would acquiesce to the other to get some things done, it would not be enough. We need a wide array of policy reforms.

Each side ultimately must bend if we are to restore or maintain U.S. economic greatness. In general, the left needs to accept the fact that successful companies that innovate and compete globally are not the enemy, and that public policy should help companies succeed in creating new products, services, and jobs domestically. For its part, the right should abandon its opposition to government’s role in promoting competitiveness. All the tax cuts and regulatory relief in the world will not enable the United States and its enterprises to succeed in global competition if the country lacks a robust national innovation policy that includes partnerships with the private sector.

Whether one believes America is “already great” or needs to be made “great again,” it should be clear that technological innovation is a key factor in that greatness.

In addition, while both candidates are bringing needed attention to the importance of ensuring that our trade agreements are effectively enforced and that we do much more to confront and roll back the growing tide of what ITIF terms “innovation mercantilism,” there is a real risk that this course correction on trade and globalization will lead off the road and into a ditch. The key for candidates is to continue supporting global integration while also pressing for stronger and more effective enforcement of trade rules.

Finally, it is striking that in this campaign season there has been virtually no discussion of the most troubling and important issue in the U.S. economy, which is the country’s anemic, and recently negative, productivity growth. The economy and quality of life will steadily decline unless the rate of productivity growth is restored to past levels of at least 2 percent per year. That is the basis of sustainable growth in wages and government revenue. Restoring that growth will require accelerating the rate of technological innovation, particularly in areas such as machine learning and robotics, and an increase in the rate of private sector capital investment in the United States. Yet neither candidate has spoken to the issue, nor laid out a productivity agenda.²⁰³

Even in this intense election season, policymakers must work harder to develop a bipartisan consensus around the need to advance a serious and comprehensive competitiveness, innovation, and productivity strategy for the United States.

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