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July 30, 2024

Hon. Richard L. Revesz
Administrator, Office of Information and Regulatory Affairs
725 17th Street, NW
Washington, DC 20503

Re: Aligning the Exchange Visitors Skills List with U.S. Economic and Security Interests

Dear Administrator Revesz,

The Department of State (DOS) is in the process of considering a final rule governing the J-1 Exchange Visitor Program Skills List, which is being reviewed by the Office of Information and Regulatory Affairs and the interagency. DOS's review of rules governing the Skills List is based on Executive Order 14110 (October 30, 2023).[1]

We are writing to share insights from existing regulations and research concerning how DOS might identify skills critical to the economic and security interests of the United States when formulating a new or revised Skills List.

Since the latter half of the 20th century, federal statute on immigration—including foreign visitors in cultural and educational exchange—has emphasized specialized knowledge and skills in U.S. immigration decisions.[2] While federal statute and associated regulations related to immigration have evolved over time, the exchange visitor program still requires that exchange visitors complete a two-year physical residency in their home countries prior to immigration to the United States under an H-1B or L-1 work visa. This home residency requirement particularly affects individuals with specialized skills in science, technology, engineering, and mathematics (STEM) and other fields purportedly critical to the economic development of home countries, based on the Skills List.

We are social scientists at RAND, a nonpartisan, nonprofit research organization that helps policymakers make decisions based on the best possible information. We have published several reports that address issues at the intersection of national security, labor markets, and workforce development for federal agencies and other research sponsors.[3] This letter does not contain original research; rather, it uses our professional



[1] In Section 5.1(b)(i) of Executive Order 14110, the President directs the DOS to "consider initiating a rulemaking to establish new criteria to designate countries and skills on the Department of State's Exchange Visitor Skills List as it relates to the 2-year foreign residence requirement for certain J–1 nonimmigrants, including those skills that are critical to the United States."

[2] The United States is not alone in its shift to skills or human capital–based immigration; many Organisation for Economic Co-operation and Development (OECD) members and other countries also focus on human capital in immigration decisions. See Mariele Macaluso, "The Influence of Skill-Based Policies on the Immigrant Selection Process," *Economia Politica*, Vol. 39, 2022. This general shift might also inform revisions to the Skills List and DOS's diplomacy related to the Skills List.

[3] Our illustrative RAND publications include the following: Jon Schmid and Nathaniel Edenfield, *Scientific and Technological Flows Between the United States and China*, RAND Corporation, RR-A2308-1, 2023, https://www.rand.org/pubs/research_reports/RRA2308-1.html; Jon Schmid, *An Open-Source Method for Assessing National Scientific and Technological Standing: With Applications to Artificial Intelligence and Machine Learning*, RAND Corporation, RR-A1482-3,

assessment of published research and regulations to comment on the Skills List and offer recommendations.

In the remainder of this letter, we review relevant background for the Skills List's provenance and purpose. We then discuss two shortcomings in the current Skills List approach and offer two recommendations that DOS might consider when formulating a new or revised Skills List.

**Background**

The Mutual Educational and Cultural Exchange Act of 1961, commonly referred to as the Fulbright-Hays Act, is a comprehensive, Congressional charter for educational and cultural exchange under U.S. immigration law.[4]

In the Fulbright-Hays Act, exchange visitors to the United States can be sponsored for J-1 visas in part by the U.S. government and in part by designated private-sector programs in a public-private partnership. Under the original Immigration and Nationality Act (INA), Fulbright-Hays codifies that exchange visitor programs use the J-1 nonimmigrant visa to admit participating exchange visitors.[5] Fulbright-Hays established that *all* J-1 exchange visitors were subject to a two-year home residency requirement before obtaining H-1 long-term employment status or permanent residency.[6] But, nine years later, Congress amended the INA, stipulating that J-1 visa holders would be subject to a two-year home residency requirement only in certain situations, including government funding from the home country or the United States and when their skills were "clearly required" in their home country, the latter to be prescribed by DOS.[7] While DOS Bureau of Educational and Cultural Affairs, under the Undersecretary for Public Diplomacy, administers the J-1 exchange visitor program, the Bureau of Consular Affairs (CA), under the Undersecretary for Management, is responsible for issuing visas and, for that reason, determining when the two-year

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2021, https://www.rand.org/pubs/research_reports/RRA1482-3.html; Megan Andrew, Brian Briscombe, Raffaele Vardavas, Nazia Wolters, Nabeel Qureshi, Wilson Nham, and Mahshid Abir, *Identifying Strategies for Strengthening the Health Care Workforce in the Commonwealth of Virginia*, RAND Corporation, RR-A2903-1, 2023, https://www.rand.org/pubs/research_reports/RRA2903-1.html; Megan Andrew, Timothy Marler, Jesse Lastunen, Hannah Acheson-Field, and Steven W. Popper, *An Analysis of Education and Training Programs in Advanced Manufacturing Using Robotics*, RAND Corporation, RR-4244-ARMIP, 2020, https://www.rand.org/pubs/research_reports/RR4244.html.

[4] Public Law 87-256, Mutual Educational and Cultural Exchange Act of 1961, September 21, 1961.

[5] U.S. Code, Title 8, Section 1101(a)(15)(J) and U.S. Code, Title 8, Section 1182(e) codifying INA 101(a)(15)(J) and INA 212(e).

[6] See Pub. L. 87-256, Section 109(c), 1961.

[7] See Public Law 91-225, An Act to Amend the Immigration and Nationality Act to Facilitate the Entry of Certain Nonimmigrants into the United States, and for Other Purposes, Section 2, April 7, 1970. The regulations restating 212(e) and the existence of the Skills List are codified at Code of Federal Regulations, Title 22, Foreign Relations; Sections 41.62, Exchange Visitors, and 41.63, Two-Year Home-Country Physical Presence Requirement.

It is unclear how the increase in remote work should drive changes in how the DOS evaluates the Skills List and associated home residency requirement, if at all. For more information on trends in remote work in recent job posting data, see Stephen Hansen, Peter John Lambert, Nicholas Bloom, Steven J. Davis, Raffaella Sadun, and Bledi Taska, "Remote Work Across Jobs, Companies, and Space," National Bureau of Economic Research, WP 31007, March 2023.

home physical presence requirement attaches. CA determines whether a J-1 participant is subject to a two-year home residency obligation and when DOS will recommend a waiver of the requirement. By default, CA also has had responsibility for establishing the Skills List.

Under the 1970 amendments, DOS has identified countries that "clearly require" certain skills, such that J-1 exchange visitors from those countries are obligated to complete two years of physical presence in their home countries before securing permanent status here. Since this responsibility was established by Congress 50 years ago, DOS has relied on each foreign country to help determine its "clearly required" skills through bilateral discussion. The selection of countries choosing to require that their citizens return home and the skills for which there is a home residency requirement are represented on the 2009 Revised Exchange Visitor Skills List.[8]

The Skills List now includes 82 countries; all other countries choose not to participate and therefore do not mandate that their citizens return home after visiting the United States under a J-1 visa. The Skills List currently includes China (for all scientists and engineers), as well as such allies as the Republic of Korea (for most scientists and engineers) and India (for all physical scientists and engineers). In short, the current Skills List subjects approximately 75 percent of the world's population to a two-year home residency requirement based on skills "clearly required" for the development of their home countries. In the 12 times that DOS has published a comprehensive Skills List or Skills List update, it has never indicated if or how skills critical to the United States might figure into the policy prescription on when exchange visitors should be mandated to return to their home countries.[9]

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[8] Since 2009, the Skills List has used codes from the Classification of Instructional Programs (CIP) from the Department of Education as indicators for skills. CIP codes delineate fields of study and are meant to serve as proxies for skills. Not incidentally, the Department of Labor uses occupations and associated tasks and skills in its O*NET database for purposes like the CIP. A crosswalk converting CIP to O*NET codes and vice versa can be found on the O*NET Resource Center website.

[9] See, in chronological order, the following Federal Register Notices:

- DOS, Exchange-Visitor Skills List, *Federal Register*, Vol. 37, No. 80, April 25, 1972, starting on p. 8099 (pp. 49–67 of the linked PDF document) provides an initial comprehensive Skills List.
- DOS, Exchange-Visitor Skills List, *Federal Register*, Vol. 43, No. 29, February 10, 1978, starting on p. 5910 (pp.128–130 of the linked PDF document) removes South Africa and Switzerland and adds the Bahamas, Haiti, Papua New Guinea, Philippines, Western Samoa, and Yemen.
- U.S. Information Agency, Exchange-Visitor Program; Skills List, *Federal Register*, Vol. 49, No. 114, June 12, 1984, starting on p. 24194 (pp. 96–144 of the linked PDF document), comprehensively amends the Skills List; mistakenly adds South Africa; adds China; removes Vietnam, Iran, and Cambodia; suspends Afghanistan; and establishes that exchange visitors from Vietnam, Iran, Cambodia were retroactively no longer subject to the home residency requirement.
- U.S. Information Agency, Exchange Visitor Program Skills List, *Federal Register*, Vol. 51, No. 189, September 30, 1986, starting on p. 34701 (p.135 of the linked PDF document) adds Iraq; adds skills for China; removes South Africa retroactively to correct error; and confirms that China's inclusion on the list is not applicable to Taiwan.

**Shortcomings in the Skills List Can Inform DOS's Review Under Executive Order 14110**

Drawing on our review of research and federal regulations, we identified two main shortcomings in the Skills List, which can help drive DOS's reasoning behind an amended methodology and the resulting new or revised Skills List under Executive Order 14110:

(1) It emphasizes the skill gaps and needs of home countries over those of the United States.

(2) The geopolitical and economic landscape has markedly changed since the last major revision of the Skills List in 2009.[10]

We address each of these in this section. In the following section, we offer two specific recommendations that DOS might consider in formulating a new or revised Skills List based on these noted shortcomings.

*Global Brain Circulation Is Likely More Important Than Home-Country Brain Drain*

Contrary to the economic theory driving the design and implementation of the original Skills List and its updates, recent research has found that the immigration of highly educated individuals does *not* necessarily create "brain drain" by depleting

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- U.S. Information Agency, Exchange-Visitor Program; Skills List, *Federal Register*, Vol. 52, No. 24, February 5, 1987, starting on p. 3774 (pp. 158–159 of the linked PDF document) suspends Libya and adds skill fields for China.
- U.S. Information Agency, Exchange-Visitor Program; Skills List, *Federal Register*, Vol. 52, No. 53, March 19, 1987, starting on p. 8700 (p. 126 of the linked PDF document) is the first effort to correct dates in the September 30, 1986, amendment.
- U.S. Information Agency, Exchange-Visitor Program; Skills List, *Federal Register*, Vol. 52, No. 62, April 1, 1987, starting at p. 10437 (pp. 89–90 of the linked PDF document) completes the date correction for the retroactive removal of South Africa and retroactive addition of fields for China.
- U.S. Information Agency, Exchange-Visitor Program; Skills List, *Federal Register*, Vol. 53, No. 242, December 16, 1988, starting on p. 50619 (p.121 of the linked PDF document) adds fields to the Skills List for China so that almost all fields in all skill groups are listed for China.
- U.S. Information Agency, Exchange Visitor Program; Spain: Deletion from Skills List, *Federal Register*, Vol. 58, No. 143, July 28, 1993, starting from p. 40466 (p. 171 of the linked PDF document) removes Spain.
- U.S. Information Agency, Revised Exchange-Visitor Skills List, *Federal Register*, Vol. 58, No. 143, January 16, 1997, starting on p. 2448 is a comprehensive amendment to the Skills List.
- U.S. Information Agency, Exchange Visitor Program; Skills List, *Federal Register*, Vol. 58, No. 143, December 24, 1997, removes the Czech Republic and providing "retroactive release from the skills list obligation for citizens of countries which are not listed on the Exchange Visitors Skills List" (p. 67432).
- DOS, 2009 Revised Exchange Visitor Skills List, *Federal Register*, Vol. 74, No. 82, April 30, 2009 is a comprehensive amendment to the Skills List that revamps skill fields using CIP codes; adds back Cambodia and South Africa, along with the addition of 14 other countries; and removes 34 countries.

[10] Arguably, the Skills List was outdated even before the most recent revision, given China's economic rise, beginning in the 1990s, and China's especially rapid GDP growth.

skills critical to home countries.[11] Instead, relationships between individuals who remain in the United States after a J-1 visa and those who return to their home countries create and strengthen knowledge and resource networks (i.e., "brain circulation"). These networks, in turn, can create economic gains to home countries. Overall, encouraging international STEM experts to come to the United States is likely to produce global scientific, technological, and economic benefits.[12]

*The United States Is at Risk of Reverse Brain Drain*

In the current geopolitical landscape, the United States risks brain drain of another kind—specifically, "reverse brain drain" from the loss of intellectual property and human capital as visitors return to their home countries under the J-1 visa's home residency rules. Concerns over the loss of these resources are magnified given ongoing security tensions and economic competition. For example, the Biden administration has banned the export of advanced semiconductor technology to China through a series of export controls and prohibitions on outbound investment.[13] Previously, the Trump administration had blocked U.S. suppliers from selling to the Chinese chip manufacturer Fujian Jinhua Integrated Circuit and blocked semiconductor exports to Huawei.[14] China considers technology to be the "main arena" of competition with the United States and has prioritized technological innovation in high-level policy.[15]

China's scientific and technological strength is evident in its ability to produce world-leading technology products in important sectors. While measuring technological leadership is not straightforward, a strong case can be made that China is the global

[11] Constanza Biavaschi, Michał Burzyński, Benjamin Elsner, and Joël Machado, "Taking the Skill Bias out of Global Migration," *Journal of Development Economics*, Vol. 142, January 2020; Michael A. Clemens, "What Do We Know About Skilled Migration and Development," Migration Policy Institute, Policy Brief No. 3, September 2013.

[12] Sari P. Kerr, William Kerr, Çağlar Özden, and Christopher Parsons, "Global Talent Flows," *Journal of Economic Perspectives*, Vol. 30, No. 4, Fall 2016; Clemens, 2013; Shai Bernstein, Rebecca Diamond, Abhisit Jiranaphawiboon, Timothy McQuade, and Beatriz Pousada, "The Contribution of High-Skilled Immigrants to Innovation in the United States," National Bureau of Economic Research, Working Paper No. 30797, December 2022; Ruchir Agarwal, Ina Ganguli, Patrick Gaulé, and Geoff Smith, "Why U.S. Immigration Matters for the Global Advancement of Science," *Research Policy*, Vol. 52, No. 1, January 2023; Biavaschi et al., 2020.

[13] Sujai Shivakumar, Charles Wessner, and Thomas Howell, "Balancing the Ledger: Export Controls on U.S. Chip Technology to China," Center for Strategic and International Studies, February 21, 2024.

[14] "US Targets China over Semiconductors," Reuters, June 30, 2023.

[15] Peter Engelke and Emily Weinstein, "Assessing China's Approach to Technological Competition with the United States," *Strategic Insights Memo*, Atlantic Council, April 24, 2023; Rogier Creemers, Hunter Dorwart, Kevin Neville, Kendra Schaefer, Johanna Costigan, and Graham Webster, "Translation: 14th Five-Year Plan for National Informatization—Dec. 2021," *DigiChina*, Stanford University, January 24, 2022.

leader in quantum key distribution,[16] solar photovoltaic technology,[17] many 5G technologies,[18] and various forms of high-tech manufacturing.[19]

Chinese universities also produce a significant supply of STEM talent, much of which benefits from education in the United States. Since 2007, China has been the world's largest producer of Ph.D.'s in the natural sciences.[20] In 2019, China also surpassed the United States to become the world's largest producer of Ph.D.'s in science and engineering.[21] Additionally, China sends large numbers of students to U.S. colleges and universities, although these numbers have declined since the COVID-19 public health emergency.[22] China is currently the largest supplier of science and engineering doctoral students in U.S. universities.[23] Chinese students, researchers, professors, and postdocs in the United States could pose a significant source of brain drain to the United States. While such international flows generally provide benefits globally and for specific home countries, these benefits can be balanced with a loss of intellectual property and human capital for the United States, especially when home countries are antagonistic to U.S. interests.

*The Global Competition for Individuals in STEM and Other Fields Is Fierce*

The benefits of highly educated immigrants are especially important for U.S. technological innovation and long-term economic growth.[24] The United States has a

[16] Edward Parker, Daniel Gonzales, Ajay K. Kochhar, Sydney Litterer, Kathryn O'Connor, Jon Schmid, Keller Scholl, Richard Silberglitt, Joan Chang, Christopher A. Eusebi, and Scott W. Harold, *An Assessment of the U.S. and Chinese Industrial Bases in Quantum Technology*, RAND Corporation, RR-A869-1, 2022, https://www.rand.org/pubs/research_reports/RRA869-1.html.

[17] Keith Bradsher, "How China Came to Dominate the World in Solar Energy," *New York Times*, March 7, 2024.

[18] Graham Allison, Kevin Klyman, Karina Barbesino, and Hugo Yen, "The Great Tech Rivalry: China vs the U.S.," Belfer Center for Science and International Affairs, Harvard Kennedy School, Harvard University, December 7, 2021.

[19] Allison et al., 2021.

[20] Steven Deitz and Christina Freyman, *The State of U.S. Science and Engineering*, National Science Foundation, National Science Board, NSB-2024-3, March 13, 2024.

[21] Deitz and Freyman, 2024.

[22] National Center for Education Statistics, Table 310.20, "Foreign Students Enrolled in Postsecondary Institutions in the United States, by Contingent, Region, and Selected Countries of Origin: Selected Academic Years, 1980–81 through 2022–23," *Digest of Education Statistics*, January 2024, https://nces.ed.gov/programs/digest/d23/tables/dt23_310.20.asp?current=yes.

[23] Daniel Taylor and Caren A. Arbeit, *The STEM Labor Force: Scientists, Engineers, and Skilled Technical Workers*, National Science Foundation, National Science Board, NSB-2024-5, May 30, 2024.

[24] Nicholas Bloom, John Van Reenen, and Heidi Williams, "A Toolkit of Policies to Promote Innovation," *Journal of Economic Perspectives*, Vol. 33, No. 3, Summer 2019; Kerr et al., 2016; Pierre Azoulay, Benjamin F. Jones, J. Daniel Kim, and Javier Miranda, "Immigration and Entrepreneurship in the United States," *American Economic Review: Insights*, Vol. 4, No. 1, 2022.

robust capacity to attract global STEM talent to work in its firms, universities, and laboratories.[25]

However, many OECD and other countries have mounted aggressive campaigns to attract highly educated immigrants.[26] In China's campaign, talent-recruitment programs are designed to facilitate the transfer of foreign technologies, talent, and expertise into China. These programs aim to recruit highly skilled individuals and their networks, either on a full-time or part-time basis, regardless of nationality. Selected participants are encouraged to relocate to China, conduct research, establish their own companies, and recruit new talent. These programs have successfully attracted many top-tier scientists from the United States and Europe, and these scientists have established successful research and development programs in China.[27]

China is not alone in its efforts to attract highly skilled STEM talent. For instance, Canada has introduced the Global Talent Stream program, which expedites work permit applications for highly skilled foreign workers in STEM fields. Similarly, Australia offers the Global Talent visa program to attract exceptional STEM talent from around the globe. The United Kingdom has also established a Global Talent visa, which aims to attract current and potential leaders in digital technology, science, and engineering worldwide.[28]

**We Highlight Two Ways DOS Might Address Shortcomings in the Skills List Given Existing DOS Authority**

The Skills List is meant to facilitate education and cultural exchange between the United States and other countries, following DOS's diplomatic mission. Retaining this function is critical. However, despite the Skill List's diplomatic provenance and purpose, it affects national economic and security interests and is based on processes that do not appear to take critical evidence into account.

To address noted shortcomings in the Skills List, we offer two recommendations:

- Modernize and update the Skills List using a rigorous, evidence-based methodology.

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[25] Jeremy Neufeld, "The Immigration Advantage in the US-China Strategic Contest for STEM Talent," *Asia Policy*, Vol. 19, No. 2, April 2024. The United States is the most popular destination for international students (Deitz and Freyman, 2024). Survey research also suggests that international doctoral students studying in the United States want to remain in the United States. See Ina Ganguli and Patrick Gaulé, "Will the U.S. Keep the Best and the Brightest (as Postdocs)? Career and Location Preferences of Foreign STEM PhDs," in Ina Ganguli, Shulamit Kahn, and Megan MacGarvie, eds., *The Roles of Immigrants and Foreign Students in U.S. Science, Innovation, and Entrepreneurship*, University of Chicago Press, February 2020.

[26] Macaluso, 2022; Abdurrahman B. Aydemir, "Skill-Based Immigration, Economic Integration, and Economic Performance," IZA World of Labor, 2020; Neufeld, 2024.

[27] Strider Global Intelligence Team, *Quantum Dragon: How China Is Exploiting Western Government Funding and Research Institutes to Leapfrog in Dual-Use Quantum Technologies*, November 2019.

[28] Masud Chand and Rosalie L. Tung, "Skilled Immigration to Fill Talent Gaps: A Comparison of the Immigration Policies of the United States, Canada, and Australia," *Journal of International Business Policy*, Vol. 2, 2019.

- An updated method might leverage a variety of data sources and models already used in economic and other research on potential skill shortages, including (1) new workers' degrees and fields of education from the Integrated Postsecondary Education Data System and the National Student Clearinghouse; (2) current workers' degrees and fields of education from the American Community Survey, the Current Population Survey, and even Social Security or Internal Revenue Service data; (3) employer job openings and skills needs, such as those listed in LinkedIn and Burning Glass; and (4) technological, policy, and other related innovations.[29]
- Quasi-experimental models are critical for understanding the effects of a specific factor on skill shortages (e.g., the effects of the home residency requirement on any artificial intelligence skill shortage in the United States). Planning for quasi-experimental analyses of the impacts of changes to the Skills List could help generate rigorous evidence for robust decisionmaking.[30]
- Additionally, systems models that explicitly aim to model complex dynamics, such as those of the U.S. national and subnational economies, can be useful for evaluating current skill shortages and simulating future shortages. Systems models have proven useful in other federal agency work.[31]

- Strengthen the Skills List by considering interagency sources of data and methods related to the Skills List that might help DOS balance current and future U.S. interests with those of other countries.

  - As noted in the "Background" section of this letter, DOS holds authority for defining a new or revised Skills List.
  - Per its authority, DOS might consider engaging with other federal agencies to procure data and inform its methods for a new or revised Skills List. For example,
    - Department of Labor might help identify, nationally and subnationally, critical fields and skills based on the regular analysis of skills gaps and the fields most relevant to those gaps.
    - Department of Health and Human Services might help identify fields and skills specific to the health-care workforce.[32]

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[29] Alicia Sasser Modestino, Mary A. Burke, Shahriar Sadighi, Rachel Sederberg, Tomere Stern, and Bledi Taska, "No Longer Qualified? Changes in the Supply and Demand for Skills Within Occupations," IZA Institute of Labor Economics, IZA DP No. 16542, October 2023; Daron Acemoglu and David Autor, "Skills, Tasks and Technologies: Implications for Employment and Earnings," in Orley Ashenfelter and David Card, eds., *Handbook of Labor Economics*, Vol. 4B, Elsevier, 2011, pp. 1043–1171.

The suggested data sources are not meant to be exhaustive. There are other potential data sources.

[30] Clemens, 2013.

[31] The Social Security Administration's Model of Income in the Near Term is a prime example of the regular application of a systems model in federal policy work. See Social Security Administration, "Modeling Income in the Near Term (MINT) Overview," webpage, undated, https://www.ssa.gov/policy/about/mint.html.

[32] We have selected two federal agencies as illustrative examples. Other federal agencies might also provide data and methods that support future DOS decisionmaking related to a revised or new Skills List.

We thank you for your time and consideration. We would be happy to meet to discuss further the above points.

Sincerely,

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