EDGAR VIRGÜEZ, Ph.D.

Energy Systems Engineer & Geographer
Energy Science & Engineering Department, Stanford Doerr School of Sustainability
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Education

Duke University, Durham, North Carolina, United States

Ph.D. Environmental Sciences and Policy – January 2022
Affiliation: Graduate School & Nicholas School of the Environment
Dissertation Title: An interdisciplinary assessment of alternatives for the decarbonization of the electric power sector: Integrating operations research and geospatial analysis to identify cost-efficient strategies for the energy transition

M.A. Environment (Energy & Environment concentration) – July 2018
Affiliation: Graduate School & Nicholas School of the Environment
Thesis Title: Utility-scale photovoltaics and storage: Decarbonizing and reducing greenhouse gases abatement costs

Universidad de los Andes, Bogotá, Colombia

M.Sc. Environmental Engineering – December 2010
Affiliation: Department of Civil and Environmental Engineering, School of Engineering
Thesis Title: Optimal allocation of societal resources into environmental mitigation strategies

B.Sc. Environmental Engineering – May 2009
Affiliation: Department of Civil and Environmental Engineering, School of Engineering
B.Sc. Chemical Engineering – May 2009
Affiliation: Department of Chemical Engineering, School of Engineering
Graduation Project Title: Coal-to-natural gas conversion of Bogota's industry as an essential component of the city's Air Quality Management Plan

Awards, Distinctions & Honors

This section contains a selected list of a) honors and professional awards, b) institutional and professional service distinctions, and c) scholarships and fellowships. An extended description of each award, distinction, and honor, including the supporting organizations and the award amount, can be found in the "Professional Credentials" section of my webpage.

Honors and Professional Awards

Total amount of professional awards: $34,365

[H22]. Editorial Excellence Award - Environment and Energy. *Institute of Physics (IOP) Publishing*. 2026
[H21]. Science for Solutions Award. *American Geophysical Union (AGU)*. 2025
[H20]. Carnegie DEI Grant. *Carnegie Institution for Science*. 2023 & 2024
[H19]. U.S. Carbon Program Leadership Award. *U.S. Carbon Cycle Science Program & North American Carbon Program*. 2022

[H18]. Duke University's 2022 Commencement Student Speaker (finalist) **(<0.1% of Duke's Class of 2022)**. *Duke University*. 2022

[H17]. LatinX Awards: Excellence in Activism Award. *Duke University's Center for Multicultural Affairs & Mi Gente*. 2022

[H16]. Best Student Paper Award (Energy and Environment Specialty Group). *American Association of Geographers*. 2022

[H15]. Chron15: 15 leaders, pioneers, and icons at Duke University. *Duke University Chronicle*. 2021

[H14]. Advancing Diversity and Inclusion Award (Energy and Environment Specialty Group). *American Association of Geographers*. 2021

[H13]. International Awards Program: Graduate/Professional Academic Wizard of the Year. *Duke University International House*. 2021

[H12]. Forever Duke Student Leadership Award **(<0.5% of Duke's Class of 2021)**. *Duke University & Duke Alumni Association*. 2021

[H11]. Dean's Award for Excellence in Teaching **(<0.1% of Duke's Ph.D. students)**. *Duke University Graduate School*. 2021

[H10]. K. Patricia Cross Future Leader Award. *Association of American Colleges and Universities*. 2020

[H9]. Graduate Students Charting the Course for the Future of the Academy. *Beyond the Academy & University of California Los Angeles*. 2020

[H8]. Graduate School Professional Development Grant (PI). *Duke University Graduate School*. 2019-2020

[H7]. Third place (case study competition). Columbia University 13th Annual Energy Symposium. *Columbia University & Booz Allen Hamilton*. 2018

[H6]. Electricity in Latin America and the Caribbean (ELAC) Working Group Grant (Co-PI). *Center for Latin American and Caribbean Studies & Duke University Center for International and Global Studies*. 2017-2018

[H5]. People's Choice Award (case study competition). The Economist's Which MBA? *The Economist & NRG Energy*. 2017

[H4]. Australia Awards International Fellow. *Australia's Department of Economic Development, Jobs, Transport and Resources & Victoria State Government*. 2015

[H3]. Maximum Distinction for Graduate Studies. *Universidad de los Andes*. 2010

[H2]. Procter & Gamble's Prestige Award. *Procter & Gamble (P&G) Colombia*. 2008

[H1]. First place (Social Development Project Category) and best project presentation at the ExpoAndes study case competition. *Universidad de los Andes*. 2003

Institutional and Professional Service Distinctions

[I23]. Nicholas School of the Environment Board of Advisors. *Duke University*. 2026-Present

[I22]. Earthshot Prize Expert Advisory Panel. *Earthshot Prize*. 2024-Present

[I21]. Duke Climate Commitment Philanthropic Campaign Advocates Board. *Duke University*. 2024-Present

[I20]. Schmidt Sciences Climate Institute's Decarbonization and Energy Program Expert Reviewer. *Schmidt Sciences*. 2025

[I19]. Graduate/Professional Young Trustee Nominating Committee. *Duke University Board of Trustees*. 2024-2025

[I18]. Chair of the Graduate/Professional Young Trustee Nominating Committee. *Duke University Board of Trustees*. 2023-2024

[I17]. Duke University Climate Commitment Task Force. *Duke University*. 2023-2024

[I16]. American Association of Geographers' Justice, Equity, Diversity, and Inclusion (JEDI) Committee. *American Association of Geographers*. 2023-2026

[I15]. Duke University Board of Trustees' Committee on Honorary Degrees. *Duke University Board of Trustees*. 2023-2025

[I14]. Duke University Board of Trustees' External Engagement Committee. *Duke University Board of Trustees*. 2023-2025
[I13]. Environmental Research: Energy Executive Editorial Board Member. *Institute of Physics (IOP) Publishing*. 2023-2027
[I12]. American Association of Colleges and Universities' Future Leaders Society Advisory Committee. *American Association of Colleges & Universities*. 2022-2023
[I11]. Graduate/Professional Young Trustee Nominating Committee. *Duke University Board of Trustees*. 2022-2023
[I10]. Carnegie Institution for Science's Brand Refresh Task Force. *Carnegie Institution for Science*. 2022-2023
[I9]. Duke University Board of Trustees' Graduate and Professional Education and Research Committee. *Duke University President*. 2022-2023
[I8]. Duke University Trustee (Board Member). *Duke University Board of Trustees*. 2022-2025
[I7]. Duke University's Senior Associate Dean for International Students Search Committee. *Duke University's Vice Provost/Vice President of Student Affairs*. 2021-2022
[I6]. Duke University's Racial Equity Advisory Council. *Duke University President*. 2021-2022
[I5]. Duke University Board of Trustees' Resources Committee. *Duke University President and Duke University Board of Trustees*. 2020-2021
[I4]. Duke University's Assistant Vice President for Student Affairs Search Committee. *Duke University Vice Provost/Vice President of Student Affairs*. 2020
[I3]. Duke University's Executive Vice President Search Committee. *Duke University President*. 2019-2020
[I2]. Duke University Board of Trustees' Resources Committee. *Duke University President and Duke University Board of Trustees*. 2019-2020
[I1]. Duke University Board of Trustees' Strategic Task Force: Activating the Global Network. *Duke University President and Duke University Board of Trustees*. 2018-2019

Scholarships and Fellowships

Total amount of scholarships and fellowships: $795,945

[S9]. Postdoctoral Research Fellow and Research Fellow. *Carnegie Institution for Science (Gates Venture funding)*. 2022-2025
[S8]. Provost Fellow. *Duke University Provost's Office*. 2020-2021
[S7]. Energy Transition Fellow. *Energy Transition Institute*. 2020
[S6]. Energy Doctoral Student Fellow. *Duke University Energy Initiative*. 2019-2021
[S5]. Bass Instructional Fellow: Digital Education Fellowship. *Duke University Graduate School and Bass Endowment*. 2019-2020
[S4]. Energy Data Analytics Ph.D. Fellow. *Alfred P. Sloan Foundation & Duke University Energy Initiative*. 2018-2019
[S3]. Nicholas School of the Environment Ph.D. Scholar. *Duke University*. 2016-2022
[S2]. Rodolfo Llinas International Fellow. *CEIBA Foundation*. 2016-2020
[S1]. School of Engineering Graduate Scholar. *Universidad de los Andes*. 2009-2010

Professional, Research & Teaching Experience

The responsibilities and selected accomplishments for positions I held before 2015 are available on my LinkedIn profile.

Professional and Research Positions

02/2025-Currently **Managing Director & Research Engineer**
Energy Science & Engineering Department, Doerr School of Sustainability
Stanford University

Responsibilities:
Serve as Managing Director and senior researcher for the EARNEST Consortium, a research initiative with ~$23 million in funding, led by Stanford University and sponsored by the United States Department of Energy (DOE). Focused on identifying and advancing solutions for the future of the United States electricity system, the Consortium brings together 21 partner institutions, including 18 universities and research organizations (e.g., the Massachusetts Institute of Technology, Princeton University, the University of California San Diego, and the Electric Power Research Institute) and 3 national laboratories (i.e., Argonne National Laboratory, Lawrence Livermore National Laboratory, and Pacific Northwest National Laboratory). The Managing Director: a) provides strategic and operational leadership across a research network of more than 130 active members, including over 50 tenure-line faculty, 30 researchers, and 50 graduate students; b) oversees the design and coordination of technical workstreams focused on grid reliability, resilience, and long-term system planning, including the development of open-source models, scalable datasets, and reproducible analytical tools led by institutional research teams; c) supervises the team responsible for producing financial records and managing operational logistics; and d) manages the preparation and submission of required DOE reports, including Research Performance Progress Reports (RPPRs), documenting scientific progress, technical milestones, and inter-institutional collaboration.

Selected Accomplishments:
- **a.** Selected to serve as the inaugural Managing Director of the EARNEST Consortium, playing a central role in establishing its governance structure, research coordination protocols, and multi-institutional partnerships during the program's formative phase.
- **b.** Led the preparation of strategic reports and briefings for the U.S. Department of Energy, synthesizing technical milestones, scientific impact, and alignment with national energy system goals.
- **c.** Supervised administrative and operational teams responsible for financial reporting, compliance oversight, and logistics, ensuring efficient execution of Consortium activities and adherence to DOE requirements.
- **d.** Designed and implemented structured communication mechanisms to align over 130 Consortium members with external stakeholders and DOE program officers, supporting effective coordination and collaborative decision-making. Initiated and oversaw two seminar series: i) a Consortium-wide series open to the public, featuring senior researchers from partner institutions, and ii) the Rising Scholar Seminar, which highlights the work of graduate students and postdoctoral researchers. The public series has received over 1,000 registrations and engaged more than 750 attendees across its first ten installments, reflecting strong interest both within and beyond the Consortium.
- **e.** Distinguished for advancing high-impact research and intellectual leadership in energy systems and decarbonization, recognized by:
  - the American Geophysical Union (AGU) with the 2025 Science for Solutions Award, a prestigious honor from the world's largest Earth and space science society, representing more than 60,000 members globally, recognizing significant contributions to the application of Earth and space science to address complex societal challenges;
  - Institute of Physics (IOP) Publishing with the 2026 Editorial Excellence Award – Environment and Energy, a selective distinction recognizing outstanding intellectual leadership and sustained excellence in peer review and editorial stewardship on the Executive and Editorial Boards of Environmental Research: Energy (EREN), elevating the quality and impact of research informing the global energy transition.
- **f.** Recognized for advancing research and thought leadership in energy systems and decarbonization, invited by:

- Duke University's Nicholas School of the Environment to serve on its Board of Visitors, providing strategic and governance-level guidance to advance the school's research, education, and external engagement priorities;
- Schmidt Sciences' Climate Institute to serve as an expert reviewer for proposals to the 2025 Decarbonization and Energy Virtual Institute (DEVI) in both the initial and final evaluation rounds, assessing projects requesting up to $10 million in funding;
- International Energy Agency (IEA) to peer review a flagship report on pathways to net zero emissions in Colombia, developed in consultation with the Government of Colombia and the Inter-American Development Bank (IDB);
- Macro-Energy Systems (MES) Society to serve on its Board and act as the chair of the 2025 Community Meeting Planning during the AGU Annual Meeting, leading a technical program comprising two oral sessions and a poster session focused on interdisciplinary approaches and community-building to advance shared understanding and shape the society's future research directions.

07/2022-06/2025 **Trustee (Board Member)**
Duke University

Responsibilities:
Serve as a fiduciary member of Duke University's highest governing body, the Board of Trustees. Appointed as the 22nd Young Trustee in the institution's history from the graduate and professional alumni community. Provide strategic oversight and governance across academic, operational, and financial matters to safeguard and advance the university's long-term mission.

Selected Accomplishments:
a. Appointed as one of the forty-one trustees, among Adam Silver (Commissioner of the National Basketball Association), David Taylor (former Chief Executive Officer of Procter & Gamble), J.B. Pritzker (Governor of Illinois), Lisa Borders (former President of the Women's National Basketball Association), Mary Barra (Chief Executive Officer of General Motors), Tim Cook (Chief Executive Officer of Apple), William Kaelin (Nobel Prize laureate), and other distinguished leaders.
b. Recognized as an individual of outstanding character, ability, and vision from the current ~10,000 graduate and professional student body and ~8,000 graduate or professional alums of Duke's Class of 2021 and 2022. Identified as an emerging leader with the qualities necessary to act as a university fiduciary. Selected as the 22nd Young Trustee from the graduate and professional community in the institution's history (~100 years).
c. Appointed to the Board of Trustees:
  - Graduate and Professional Education and Research Committee from 2022 to 2023 as one of the nine trustees (including a Nobel Prize laureate) on the committee, along with three *ex officio* members (including Duke's former Provost, Sally Kornbluth, now President of MIT).
  - External Engagement Committee from 2023 to 2025 as one of the nine trustees on the committee, acting as a strategic forum to review, assess, and advance issues related to the university's external relations (including its upcoming multi-billion-dollar philanthropic campaign).
  - Committee on Honorary Degrees from 2023 to 2025 as one of the five trustees (including a Nobel Prize laureate), awarding honorary degrees to affirm the university's vital interest in and connection with excellence in any valued aspect of human endeavor.
  - Young Trustee Nominating Committee from 2022 to 2025 (including being named Committee Chair), overseeing the screening, interviewing, assessment, and nomination process of the Graduate/Professional Young Trustee candidates to provide a recommendation on one Young Trustee to Duke University's President.
d. Appointed to Duke's strategic philanthropic committees as one of the:

- Fourteen members of the Duke University Climate Commitment Task Force tasked with analyzing and assessing the scope, scale, feasibility, timing, and structure of the university-wide campaign initiative on climate change.
- Thirteen inaugural members of the Duke University Climate Commitment Campaign Advocates Board tasked with advising Duke's Vice President and Vice Provost for Climate and Sustainability and the Alumni Engagement & Development leadership on strategies to achieve fundraising and engagement goals for the university-wide campaign initiative on climate.

02/2022-02/2025 **Deputy Group Leader**
Research Scientist & Postdoctoral Research Scientist
Climate Energy Lab
Carnegie Science (Stanford University)

Responsibilities:
Design, implement, analyze, and summarize innovative research to inform climate and energy decision-making. Supervise group and project logistics by working with group members and affiliated researchers. Procure for medium—and long-term sustainability by overseeing the annual budget (~$750,000), including the approval of travel and research expenses. Coordinate strategic hiring by screening applications and short-listing candidates for extensive review (>300 applicants per year).

Selected Accomplishments:
a. Disseminated research findings (16 published papers and 3 under review) in high-quality scientific journals, including (the rank corresponds to the most recent Science Citation Index Expanded (SCIE) ranking by journal impact factor):
  - Energy & Environmental Science: ranked 3rd/170 in SCIE's Energy & Fuels category (classified in the top-2% within this category);
  - One Earth: ranked 7th/385 in SCIE's Environmental Sciences category (top 2%);
  - Environmental Science & Technology: ranked 18th/358 in SCIE's Environmental Sciences category (top 5%);
  - Applied Energy: ranked 11th/170 in SCIE's Chemical Engineering category (top 10%);
  - Advances in Applied Energy: ranked 13th/170 in SCIE's Energy & Fuels category (top 10%);
  - Proceedings of the National Academy of Sciences of the United States of America: ranked 14th/137 in SCIE's Multidisciplinary Sciences (top 10%).

b. Published op-eds and scientific letters in high-impact media like Science (including one letter featured on the main cover, one letter highlighted in Science's weekly podcast, and one letter featured as one of the top downloaded articles), Nature Cities, and Inside Higher Ed, promoting work environments that facilitate scientific production.

c. Appointed as one of the seven Executive Editorial Board members of the Environmental Research: Energy journal. Recognized as a prominent scientist in the energy field, tasked with giving the journal its scientific authority, providing the publishing team with intelligence on the latest scientific and technological developments, and advocating for the journal within scientific communities.

d. Co-designed, planned, and executed the first three research and development planning sessions (including research collaborators from the California Institute of Technology (Caltech) and the University of California, Irvine). Sessions were designed around three components: i) strategic research, ii) team building, and iii) manuscript writing.

e. Selected to the eight-member Carnegie Task Force: Additive Brand Refresh, tasked with clarifying the institution's brand strategy and story to increase the understanding of its unique position and the differential value from peer organizations. Recognized as an exemplary researcher from the Department of Global Ecology, tasked with representing early-career researchers in the 2022 Carnegie Institution for Science's Board of Trustees annual meeting.

f. Identified as an emerging higher-education leader and rising energy scholar invited by the:
- Earthshot Prize (led by Prince William of Wales) as a member of the Expert Advisory Panel tasked with reviewing Earthshot nominations for their impact potential, uniqueness, and innovation;
- National Academy of Sciences, Engineering, and Medicine (NASEM) and the Association of American Universities (AAU) to discuss the state and future of graduate mentorship in higher education;
- Sloan Foundation and Resources for the Future (RFF) to inform decision-making on the intersection of energy and climate policy.

08/2016-01/2022 **Research Assistant**
Nicholas School of the Environment. Duke University

Responsibilities:
Integrate methods from operations research and geospatial analysis to identify pathways toward sustainable power systems. Conceptualize and formulate analytical tools that support the transition to a deeply decarbonized electric power sector.

Selected Accomplishments:
a. Programmed three analytical tools simulating: i) the production-cost process (day-ahead unit commitment and real-time economic dispatch models) to serve the electricity demand of a service region, including thermal generation assets, hydroelectric dams, and battery energy storage; ii) an availability and suitability analysis of utility-scale photovoltaic projects that account for zoning ordinances (including a user-friendly ArcGIS Pro siting tool); and iii) the geospatial and temporal evolution of generators' outages during ERCOT's energy crisis. Published research findings from their application in six journal papers and one conference proceeding.
b. Awarded scholarships for more than $250,000 (external resources) to complement the internal scholarship received by the Nicholas School of the Environment. Designated as a Rodolfo Llinas Scholar, an Energy Data Analytics Fellow, an Energy Doctoral Student Fellow, a Bass Instructional Fellow, and a Provost Fellow.
c. Served in multiple leadership positions at the school level (e.g., Nicholas School Ph.D. Advocacy Council Co-President serving ~7% of all Duke Ph.D. Students) and institutional level (e.g., Board of Trustees Resources Committee), promoting the enhancement of the educational experience at Duke. Appointed to the search committee for three senior positions at the central administration, including the search committee for the Executive Vice President (Duke University's Chief Administrative and Financial Officer).
d. Mentored undergraduate and graduate students who self-identified as members of minority groups (e.g., Latinos) and early-career practitioners in the energy and environment field. Designed a guide to establish or refine a structure to support peer-to-peer mentoring for doctoral students at Duke. Received multiple nominations (~27) for Duke's highest mentoring award for graduate students (Graduate School Dean's Award for Excellence in Mentoring).
e. Promoted an increased interaction between domestic and international students, founding member of the Nicholas School Global Connections Initiative. Proposed and accompanied the design and implementation of a collaborative agreement between Fundación para el Futuro de Colombia (COLFUTURO) and the Nicholas School of the Environment to foster cooperation through the provision of resources for Colombian graduate students (being this just the second school-specific agreement with a Latin American country).
f. Represented the university at two national study-case energy competitions, achieving a 100% success rate by winning a top prize in both participations.

01/2016-07/2016 **Head of Research Cooperation**
Vice Presidency for Academic Affairs. Universidad de los Andes

Responsibilities:
Define, plan, and execute activities to develop strategic alliances enhancing the university's global research vision.

Selected Accomplishments:
a. Accompanied and structured the formulation of the institutional internationalization strategy for the newly created Office of International Affairs.
b. Established collaboration schemes with internationally recognized research institutions as follows:
- Biosocial Complexity, Sustainability and Mathematical Science Center in partnership with Arizona State University (United States).
- Center of Excellence in Sustainable Mining in partnership with the University of Queensland (Australia).
- Research grants program in nanotechnology and biotechnology in partnership with Instituto Tecnológico y de Estudios Superiores de Monterrey (Mexico).
- Research grants program in support of projects with German and Colombian researchers in partnership with the German Research Foundation - DFG (Germany).
- Tandem research groups in computational biology in partnership with Max Planck Institute (Germany).

06/2015-12/2015 **Head of Internationalization**
Vice Presidency for Research. Universidad de los Andes

Responsibilities:
Define, plan, and execute international activities supporting the development of the university's research. Enable resources for research programs by establishing cooperation agreements and definition of collaboration networks. Direct the Summer Undergraduate Research Fellowship (SURF) Program with North American Universities.

Selected Accomplishments:
a. Conceptualized collaboration mechanisms with Purdue University designing a framework that would consolidate the institutional relationship.
b. Adhered seven allied institutions to the SURF program: Arizona State University, California Institute of Technology, Dartmouth College, Massachusetts Institute of Technology, Purdue University, Rice University, and the University of Colorado at Boulder.
c. Designed a standard operating procedure for the postulation, selection, and preparation of beneficiaries in the SURF program, including a training symposium to enhance research skills.
d. Diversified the number of external sources supporting the SURF program generating a 400% increase in external funding ($107,000).
e. Widened the impact of the SURF program by generating a 65% increase in the number of beneficiaries of the program without increasing the internal funding.

06/2012-05/2015 **Department Coordinator**
Department of Civil and Environmental Engineering. Universidad de los Andes

Responsibilities:
Administer academic and financial processes for undergraduate (Civil Engineering & Environmental Engineering), master (MSc. Civil Engineering & MSc. Environmental Engineering), and doctoral programs of the Civil and Environmental Engineering Department comprising 1,800 students (10% of the total university student body).

Selected Accomplishments:

a. Optimized the Income Distribution Model from the central administration, augmenting the Department's revenue by two million dollars ($2,000,000) and achieving a 99% efficiency during the 2012-2015 period (10% increase).
b. Developed and implemented a standard operating procedure for the academic and administrative processes in the Department.
c. Constructed reports, KPIs, and agendas supporting the National Quality Accreditation of three programs: Master's in Civil Engineering, Bachelor's in Science in Civil Engineering, and Bachelor's in Science in Environmental Engineering. The three programs gained accreditation for periods exceeding national averages.
d. Conceptualized and defined the Departmental Strategic Plan for Faculty Recruitment for 2015-2020.
e. Designed a double-degree agreement with Universidad Catolica de Chile for the Master Programs.

01/2012-05/2015 **Professional Research Assistant**
Urban and Regional Sustainability Research Group. Department of Civil and Environmental Engineering. Universidad de los Andes

10/2013-01/2014 **Consultant**
Interamerican Development Bank (IDB)

12/2010-11/2011 **Consultant Engineer**
Multivac Consultores

05/2010-08/2010 **Academic Guest**
Department of Civil, Environmental and Geomatic Engineering.
Swiss Federal Institute of Technology Zurich (ETH)

06/2007-01/2011 **Research Assistant / Project Researcher (multiple positions)**
Environmental Engineering Research Group & Urban and Regional Sustainability Research Group
Department of Civil and Environmental Engineering. Universidad de los Andes

Teaching Positions

06/2025, 06/2026 **International Summer School**
School of Engineering & School of Management
Universidad de los Andes

Courses: Systems engineering for the energy transition (2026); Managing the energy transition: Business and decarbonization fundamentals (2026); Decarbonization of electric power systems: Methods, tools, & resources (2025)

01/2017-12/2020 **Instructor of the Record**
Nicholas School of the Environment & Trinity College of Arts and Sciences. Duke University

Course: Voices in the Environment (2017, 2018, 2019, 2020)

Selected Accomplishments:
a. Redesigned a course to introduce two pedagogical strategies for achieving vibrant inclusiveness in classroom settings with diverse student populations: a) enabling engagement through authentic assessments and b) introducing global learning that draws on students' cultural heritage (service-learning components). Following positive student reception after the course redesign, the university launched new course sections in three additional languages (i.e., Chinese, French, and German).

b. Published recommendations from the course redesign in two book chapters that provide practical pedagogical tips for graduate students and analyze the role of language and culture in the broader discussion of education for sustainability.
c. Rated as one of the best teachers (top 5%) in undergraduate programs at Duke in Fall 2020 (4.57/5.00 instructor rate). Recognized as a next-generation instructor exemplifying the characteristics of effective college teaching impacting the experience of undergrad and graduate students, receiving awards for contributions to teaching and higher education: Duke's most distinguished teaching award for graduate students, the Graduate School Dean's Award for Excellence in Teaching, and the prestigious K. Patricia Cross Future Leader Award by the Association of American Colleges and Universities.
d. Advocated for projects supporting an enhanced experience for underrepresented groups (e.g., first-generation students), promoting inclusive pedagogical practices. Authored a university-wide resolution adopted by the Graduate and Professional Student Council to remove the GRE as a mandatory admission requirement. Co-sponsored the addition of a new bylaw to prevent hate and bias actions in the student body.

01/2012-05/2016 **Lecturer**
Department of Civil and Environmental Engineering
Universidad de los Andes

Courses: Environmental Thermochemistry (2014-2016), Solid Mechanics (2012-2016), Graduate Project Seminar (2012-2015), Undergraduate Project (2012-2015), and Thesis Seminar (Master Studies) (2012-2015).

Selected Accomplishments:
a. Rated as one of the best professors of the Civil and Environmental Engineering Department, obtaining an average score of 92/100 in student polls (2012-2016 period), serving on average 45 students per course. Scores obtained through all periods were consistently higher than the Department and the School of Engineering average.
b. Redesigned the courses comprising the graduation project cycle in undergraduate programs and thesis cycle in master's programs, including new modules for enhancing transferable skills and using advanced tools in bibliographic databases (e.g., ISI Web of Science).

01/2011-06/2011 **Lecturer**
Politecnico Grancolombiano
Course: Environmental Culture.

08/2005-05/2010 **Teacher Assistant**
School of Engineering. Universidad de los Andes
Courses: Industrial Process Stoichiometry (2005), Industrial Processes Fundamentals (2007), Pollution Prevention (2008), Environmental Modeling (2010), and Mathematical Models in Biology (2010).

Publications & Presentations

This section contains a list of publications classified as a) journal papers, b) conference proceedings, c) books and book chapters, and d) feature articles, op-eds, and scientific letters. Additionally, it includes a selected list of oral and poster presentations.

The following index describes the number of items in each section and provides a hyperlink for easy navigation.

Journal papers (published or in press):	26
Journal papers (submitted & under review):	6
Journal papers (in preparation):	13
Conference proceedings:	4
Book chapters:	3
Books:	1
Feature articles, op-eds, and scientific letters (published or in press):	13
Feature articles, op-eds, and scientific letters (in preparation):	2
Selected oral presentations, conference sessions, and by-invitation-only workshops:	60
Selected poster participations:	19

Each item is listed using the most recent American Psychological Association (APA) citation style.

Journal Papers

a. Published or in press

Citations (Google Scholar):	1,015
h-index (Google Scholar):	16
i10-index (Google Scholar):	20
Average impact factor of journals at the time of publication:	10.07

The impact factor included in each record corresponds to the one reported by Clarivate's Journal Citation Report (JCR) for the year the paper was published. For articles where JCR results are not yet available, the value corresponds to the most recent available impact factor.

[P26]. Chen, S., Lu, X., Hao, J., Virguez, E., Caldeira, K., & Davis, S. (**2026**). The effect of land costs on the economic and sustainability performance of solar photovoltaics in China. *Proceedings of the National Academy of Sciences of the United States of America*, 123, 8. (Research Paper; ISSN: 0027-8424). Impact Factor: 9.14. https://doi.org/10.1073/pnas.2512930123

[P25]. Wongel, A., Freese, L., Virguez, E., Davis, S., & Caldeira, K. (**2025**). Economic development, air conditioning and adaptation to warming. *Environmental Research Letters*, 20, 124045. (Research Paper; ISSN: 1748-9326). Impact Factor: 5.63. https://doi.org/10.1088/1748-9326/ae1f2a

[P24]. Carlino, A., Wongel, A., Duan, L., Virguez, E., Davis, S., Edwards, M., & Caldeira, K. (**2025**). Variability of technology learning rates. *Advances in Applied Energy*, 20, 100252. (Research Paper; ISSN: 2666-7924). Impact Factor: 13.84. https://doi.org/10.1016/j.adapen.2025.100252

[P23]. Li, M., Ma, Q., Shan, R., Abdulla, A., Virguez, E., Gao, S., & Patino-Echeverri, D. (**2024**). Renewable energy quality trilemma and coincident wind and solar droughts. *Communications Earth & Environment*, 5, 661. (Research Paper; ISSN: 2662-4435). Impact Factor: 8.94. https://doi.org/10.1038/s43247-024-01850-5

[P22]. Ruggles, T.*, Virguez, E.*+, Reich, N., Dowling, J., Bloomfield, H., Antonini, E., Davis, S., Lewis, N., & Caldeira, K. (**2024**). Planning reliable wind- and solar-based electricity systems. *Advances in Applied Energy*, 15, 100185. (Research Paper; ISSN: 2666-7924). Impact Factor: 13.84. https://doi.org/10.1016/j.adapen.2024.100185
*** Equally-contributing first authors; + Corresponding author.**

[P21]. Covelli, D.β, Virguez, E., Caldeira, K., & Lewis, N. (**2024**). Oahu as a case study for island electricity systems relying on wind and solar generation instead of imported petroleum fuels.

Applied Energy, 375, 124054. (Research Paper; ISSN: 0306-2619). Impact Factor: 10.97. https://doi.org/10.1016/j.apenergy.2024.124054
ᵝ Graduate student mentee (California Institute of Technology).

[P20]. Kumar, A.ᵝ, Ruggles, T., & Virguez, E.⁺ (**2024**). Disproportionate energy disruptions afflicted rural Hispanic households during winter storm Uri. *Environmental Research: Energy*, 1 (3), 033003 (Perspective Paper; ISSN: 2753-3751). Impact Factor: *Pending*. https://doi.org/10.10188/2753-3751/ad6a1d
⁺ Corresponding author; ᵝ Graduate student mentee (Washington University in St. Louis).

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[PS6]. Freese, L., Rennels, L., Virguez, E., Davis, S., & Caldeira, K. Country-level present value of future climate damage from current annual emissions. **Reviewed version resubmitted** (*Environmental Research Letters*).

[PS5]. Leon, L.ᵝ, Sanchez, M., & Virguez, E.⁺ A continent in transition: South America's emerging leadership in global clean energy. **Review and resubmit** (*Environmental Research: Energy*).
⁺ Corresponding author; ᵝ Graduate student mentee (Universidad de los Andes).

[PS4]. Reich, N.ᵝ, Ruggles, T., Virguez, E., Covelli, D., Caldeira, K., & Lewis, N. Cost-effective approaches to maintaining resource adequacy in renewable electricity systems over decades of weather variability. **Submitted**. Under review.
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[PS3]. Lara, E.ᵝ, Lopez, O., Sierra, R., & Virguez, E.⁺. Modeling and optimization of hydrogen refueling corridors for heavy-duty transport: A techno-economic perspective. **Submitted**. Under review.
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[PS2]. Leon, L.ᵝ, Sanchez, M., Davis, S., & Virguez, E.⁺ Global climate goals depend on South America. **Submitted**. Under review.
⁺ Corresponding author; ᵝ Graduate student mentee (Universidad de los Andes).

[PS1]. Virguez, E.⁺**,** Leon, L.ᵝ**,** Shiran, M., Lukuyu, J., & Perumbillissery, K. Decarbonization is not a template: lessons, limits, and priorities for energy transitions in the Global South. **Submitted**. Under review.
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c. In preparation

[PP13]. Virguez, E.⁺, Dioha, M., Duan, L., Wongel, A., Lewis, N., & Caldeira, K. Disparities in per capita energy consumption within and between countries.
⁺ Corresponding author.

[PP12]. Keeler, B., Bennett, E., Gerber, L., Mason, S., Olander, L., King, E., Rowell, K., Secord, D., Sykora-Bodie, S., Ticktin, T., & Virguez, E. Reforming academic structures to promote engaged scholarship: Scaling bright spots to systemic change

[PP11]. Davis, S. J., Buck, H. J., Cael, B. B., Chakraborty, S., Moreno-Cruz, J., Defries, R., Duffy, P., Guo, D., Hamburg, S. P., Kempton, W., Mutiso, R., Morton, O., Mach, K. J., Marvel, K., Okereke, C., O'Neill, B. C., Papagrygiou, L., Ritchie, H., Rockström, J., Safarzynska, K., Tol, R. S. J., Tongia, R., Trembath, A., Virguez, E., Wang, P., & Caldeira, K. Strong disagreement.

[PP10]. Madruga, D., Guillen, D., Padilla, J., Mendoza, A., Virguez, E., & Azevedo, I. Mapping Mexico's power-grid carbon intensity.

[PP9]. Virguez, E.⁺, Fay, J., & Patiño-Echeverri, D. The role of land-use and zoning in utility-scale solar deployment.

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[PP8]. Suri, D.[ᵝ]*, Virguez, E.*, De Chalendar, J., & Azevedo, I. Grid-level impacts of renewable energy on thermal generation.
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[PP7]. Zhang, A.[ᵝ], Virguez, E., & Azevedo, I. A review of publicly available meteorology datasets for capacity expansion models.
[ᵝ] Graduate student mentee (Stanford University).

[PP6]. Zhang, A.[ᵝ], Virguez, E., Diffenbaugh, N., & Azevedo, I. Climate-informed capacity expansion: insights from the GODEEEP dataset.
[ᵝ] Graduate student mentee (Stanford University).

[PP5]. Virguez, E.[+]. The value of winterization for wind power under scarcity pricing.
[+] Corresponding author.

[PP4]. Suri, D.[ᵝ], Virguez, E., McNeil, W., Bistline, J., & Azevedo, I. Beyond the hype: Empirical assessment and regional divergence in U.S. data center electricity demand.
[ᵝ] Graduate student mentee (Stanford University).

[PP3]. De La Beaumelle, N., Virguez, E., & Azevedo, I. Mapping the global potential of floating offshore wind power.
[ᵝ] Graduate student mentee (Stanford University).

[PP2]. Dinov, V.[ᵝ], Virguez, E., Bistline, J., Samaras, C., & Azevedo, I. The aging U.S. power fleet: Structural trends and implications for the energy transition.
[ᵝ] Graduate student mentee (Stanford University).

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[ᵝ] Graduate student mentee (Stanford University).

Conference Proceedings (indexed and peer-reviewed)

[C4]. Virgüez, E. & Patiño, E. (**2019**). Abating carbon emissions by means of utility-scale photovoltaics and storage: The Duke Energy Progress/Carolinas case study. *FISE-IEEE/CIGRE Conference*, pp. 1-6 (Conference Paper; ISBN: 978-172814230-2).
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Books and book chapters

[BC3]. Suresh, M., Wagnon, J., Hall, T., Campos, R., Wakio, S., Virguez, E. & Sperling, J. (**2024**). Reframing international students' success: Institutional responsibility for international student wellbeing and belongingness. In S. Blake, & G. Pagliarulo (Eds.). *Supporting College Students of Immigrant Origin: New Insights from Research, Policy, and Practice* (pp 332-351). Cambridge: Cambridge University Press. ISBN: 978-1-00940-824-0. **Book Chapter**.

[BC2]. Reisinger, D., Valnes, S., Liu, Y, & Virguez, E. (**2021**). Sustainability across the curriculum: A multilingual and intercultural approach. In M. J. De la Fuente (Ed.). *Education for Sustainable Development in Foreign Language Learning: Content-Based Instruction in College Level Curricula* (pp 197-214). New York: Routledge Research in Language Education. ISBN: 978-0-36753-032-7. **Book Chapter**.

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[B1]. Behrentz, E., Benavides, J., Bocarejo, J., Canal, M., Espinosa, M., Rodríguez, R. … Virguez, E. (**2011**). *Plan Decenal de Descontaminación del Aire para Bogotá*. Bogotá, Colombia: Secretaría Distrital de Ambiente. ISBN: 978-980-6810-45-7. **Book**.

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a. Published or in press

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¤ Highlighted for the first two weeks as one of the four trending articles in Science's journals (>15,000 downloads)

[D11]. Singh, G., Teng, D., Turki, H., Bouchard, L., Chen, Y., Chugh, M., Wen, J., Chen, E., Bezerra, P., Wu, L., Huang, J., Wen, Q., Hartzell, C., Stroup, B., Klinger, M., Perez, E., Virgüez, E., Kirshner, S., Xu, C., & Sharma, V. (**2024**). Changing outdated expectations. *Science*, 383, 24-26. https://doi.org/10.1126/science.adn4211¤
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[D10]. Bismuth, K., Sharma, V., Ross, J., Tang, H., Cao, B., Huang, J., Patel, R., Bezerra, P., Zhang, X., Wen, Q., Oda, F., Verstiuk, O., Khan, M., Virgüez, E., Zhi, Y., & Dedyo, J. (**2023**). Historic introductions. *Science*, 382, 28-30. https://doi.org/10.1126/science.adk8769

[D9]. Heim, B., Bharani, T., Konstantinides, N., Ross, J., Srivastava, S., Elvis, X., Agarwal, D., Waiho, K., Lin, T., Virgüez, E., Strielkowski, W., & Uzonyi, A. (**2023**). AI in search of human help. *Science*, 381, 162-163. https://doi.org/10.1126/science.adi8740¤
¤ **Highlighted in Science's weekly podcast:** https://doi.org/10.1126/science.adj7011

[D8]. Amorim, C., Virgüez, E., Eker, S., Zdenek, C., Bergh, C., Gerarduzzi, C., Ge, Y., Klinger, M., Allareddy, V., Hoots, E., Henriquez, T., Waiho, K., D'Ippoliti, C., Al Harraq, A., Xu, H., Zou, J., Xia, Y., Abdul-Ghani, R., & Chugh, M. (**2023**). The future of scientific societies. *Science*, 380, 30-32. https://doi.org/10.1126/science.adh8182

[D7]. Keeler, B., Locke, C., Bennett, E., Gerber, L., Grimm, N., Guerry, A., Hellmann, H., Kenney, M., King, E., Mason, S., Nibbelink, N., Olander, L., Posner, S., Ricketts, T., Rowell, K., Secord, D., Schively, C., Ticktin, T., Vira, B., & Virgüez, E. (**2022**). Guidebook for the engaged university: best practices for reforming systems of reward, fostering engaged leadership, and promoting action-oriented scholarship. *Beyond the Academy*. Link

[D6]. Virgüez, E. (**2022**). The world is changing: As an early-career scholar, I need the academy to change with it. *Inside Higher Ed*. Link

[D5]. Virgüez, E. (**2022**). How I balanced my Ph.D. research with opening doors for others. *Science*, 376, 662. https://doi.org/10.1126/science.abq8440

[D4]. Virgüez, E. (**2022**). Bring more early early-career scholars into the administrative fold. *Higher Ed Dive*. Link

[D3]. Virguez, E., Stantial, N, & Zhang, Y. (**2019**). Understanding Duke Health Insurance: An Emerging Leaders Institute project. *Duke University's Graduate School Professional Development Blog*. Link

[D2]. Virgüez, E. (**2018**). Enhancing my network of mentors. *Duke University's Graduate School Professional Development Blog*. Link

[D1]. Virgüez, E. (**2018**). Organizing your personal and professional OPTIONS. *Duke University's Graduate School Professional Development Blog*. Link

b. Submitted or in preparation

[DS2]. Virgüez, E. Raising scientists: why our children belong in our biggest moments. *(In preparation)*

[DS1]. Virgüez, E., & Coral, T. The spaces where children discover science. *(In preparation)*

Selected Oral Presentations, Conference Sessions, and By-Invitation-Only Workshops

[O60]. Virguez, E. (**2025**). From polluted skies to reliable grids: A science for solutions journey **(invited talk)**. *American Geophysical Union (AGU) Fall Meeting 2025*. New Orleans, Louisiana, United States. December.

[O59]. Virguez, E., Baker, E., Edwards, M., & Mantegna, E. (**2025**). Macro-Energy Systems: An emergent interdisciplinary field **(session chair)**. *American Geophysical Union (AGU) Fall Meeting 2025*. New Orleans, Louisiana, United States. December.

[O58]. Virguez, E., Ruggles, T., Reich, N., Dowling, J., Bloomfield, H., Antonini, E., Davis, S., Lewis, N., & Caldeira, K. (**2025**). Planning reliable wind- and solar-based electricity systems. *2025 American Association of Geographers Annual Meeting*. Detroit, Michigan, United States. March.

[O57]. Virguez, E. (**2025**). Towards decarbonized net-zero emissions energy systems: A just transition for the Global South **(session chair)**. *2025 American Association of Geographers Annual Meeting*. Detroit, Michigan, United States. March.

[O56]. Virguez, E. (**2025**). The JEDI (Justice, Equity, Diversity, & Inclusion) components in the decarbonization of net-zero emissions energy systems **(session chair)**. *2025 American Association of Geographers Annual Meeting*. Detroit, Michigan, United States. March.

[O55]. Virguez, E., Stock, R., Grobelski, T., & Loyd, J. (**2025**). Putting care to work for equity and inclusion **(panelist and chair)**. *2025 American Association of Geographers Annual Meeting*. Detroit, Michigan, United States. March.

[O54]. Ruggles, T., & Virguez, E. (**2025**). Planning reliable wind- and solar-based electricity systems. *Energy Visions Seminar - Advances in Applied Energy*. Virtual. January.

[O53]. Freese, L., Virguez, E., Davis, S., & Caldeira, K. (**2024**). Country-to-country imposition of climate damage from current emissions. *American Geophysical Union (AGU) Fall Meeting 2024*. Washington DC, United States. December.

[O52]. Li, A., Virguez, E., Dowling, J., Ruggles, T., Wongel, A., Reich, N., Lewis, N., & Caldeira, K. (**2024**). The influence of regional geophysical resource variability on the value of single- and multi-storage technology portfolios. *American Geophysical Union (AGU) Fall Meeting 2024*. Washington, DC. December.

[O51]. Virguez, E., Dioha, M., Duan, L., Wongel, A., Lewis, N., & Caldeira, K. (**2024**) Disparities in per capita energy consumption within and between countries. *2024 Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*. Seattle, Washington. October.

[O50]. Virguez, E., & Grochowicz, A. (**2024**). Net-zero emissions energy systems: Equitable transitions **(session chair)**. *2024 Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*. Seattle, Washington. October.

[O49]. Virguez, E., & Lau, M. (**2024**). Net-zero emissions energy systems: Optimization methods **(session chair)**. *2024 Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*. Seattle, Washington. October.

[O48]. Jenkins, J. & Virguez, E. (**2024**). Decision support for the path to net-zero emissions **(session chair)**. *2024 Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*. Seattle, Washington. October.

[O47]. Li, A., Virguez, E., Dowling, J., Ruggles, T., Wongel, A., Reich, N., Lewis, N., & Caldeira, K. (**2024**). The influence of regional geophysical resource variability on the value of single- and multi-storage technology portfolios. *2024 Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*. Seattle, Washington. October.

[O46]. Dowling, J., Ruggles, T., Virguez, E., Reich, N., Ifkovitz, Z., Davis, S., Li, A., Kennedy, K., Rinaldi, K., Duan, L., S., Caldeira, K., & Lewis, N (**2024**). Opportunities and constraints of hydrogen energy storage systems. *2024 Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*. Seattle, Washington. October.

[O45]. Chen, S., Lu, X., Hao, J., Virguez, E., Caldeira, K., & Davis, S. (**2024**). Land costs impact solar technology choices and carbon mitigation in China. *2024 Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*. Seattle, Washington. October.

[O44]. Virguez, E. (**2024**). Corporate government in higher education: Tackling the 21st century challenges. *International Forum of Corporate Government: Exponential Challenges*. Bogota, Colombia. September.

[O43]. Virguez, E., Dioha, M., Duan, L., Wongel, A., Lewis, N., & Caldeira, K. (**2024**). Disparities in per capita energy consumption within and between countries. *2024 American Association of Geographers Annual Meeting*. Honolulu, Hawaii, United States. April.

[O42]. Virguez, E. (**2024**). Symposium on geospatial data science for sustainability: The geospatial component in the decarbonization of net-zero emissions energy systems **(session chair)**. *2024 American Association of Geographers Annual Meeting*. Honolulu, Hawaii, United States. April.

[O41]. Virguez, E. (**2024**). Towards decarbonized net-zero emissions energy systems: A just transition for the Global South **(session chair)**. *2024 American Association of Geographers Annual Meeting*. Honolulu, Hawaii, United States. April.

[O40]. Virguez, E. (**2024**). The JEDI (Justice, Equity, Diversity, & Inclusion) components in the decarbonization of net-zero emissions energy systems **(session chair)**. *2024 American Association of Geographers 2024 Annual Meeting*. Honolulu, Hawaii, United States. April.

[O39]. Virguez, E. (**2023**). Fostering diversity, equity, and inclusion through community building and knowledge sharing **(panelist)**. *American Geophysical Union (AGU) Fall Meeting 2023*. San Francisco, California, United States. December.

[O38]. Reich, N., Ruggles, T., Virguez, E., Caldeira, K. & Lewis, N. (**2023**). Improving system reliability in wind- and solar-dominated electricity systems via capacity investments. *American Geophysical Union (AGU) Fall Meeting 2023*. San Francisco, United States. December.

[O37]. Suresh, M., Wagnon, J., Hall, T., Virguez, E. & Sperling, J. (**2023**). Reframing international students' success: Emphasizing institutional responsibility for international student well-being and belongingness. *Association for the Study of Higher Education (ASHE) 48th Annual Conference*. Minneapolis, Minnesota. November.

[O36]. Virguez, E., Dioha, M., Wongel, A., Lewis, N., Davis, S., & Caldeira, K. (**2023**). Energy use disparities among and within countries. *2023 Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) National Diversity in STEM Conference*. Portland, Oregon, United States. October.

[O35]. Virguez, E., Wang, X., Fay, J., Johnson, T., & Patiño-Echeverri, D. (**2023**). Revealing the effect of zoning ordinances and state-level land-use restrictions on renewable resources' potential. *2023 Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*. Phoenix, Arizona. October.

[O34]. Dowling, J., Ruggles, T., Reich, N., Virguez, E., Davis, Ifkovitz, Z., Davis, S., Li, A., Rinaldi, K., Kennedy, K., Duan, L., S., Caldeira, K., & Lewis, N. (**2023**). Improving system reliability in wind- and solar-dominated electricity systems via capacity investments. *2023 Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*. Phoenix, Arizona. October.

[O33]. Reich, N., Ruggles, T., Virguez, E., Caldeira, K. & Lewis, N. (**2023**). Techno-economic analysis of hydrogen storage in wind and solar electricity systems. *2023 Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*. Phoenix, Arizona. October.

[O32]. Antonini, E., Virguez, E., Ashfaq, S., Duan, L., Ruggles, T., & Caldeira, K. (**2023**). Historical analysis of global distribution of and trends in wind droughts. *European Geosciences Union (EGU) General Assembly 2023*. Vienna, Austria. April.

[O31]. Virguez, E., Lewis, N., Davis, S., & Caldeira, K. (**2023**). Renewable energy is Republican energy. *2023 American Association of Geographers Annual Meeting*. Denver, Colorado, United States. March.

[O30]. Virguez, E. (**2023).** Looking forward while examining the past: Energy access disparities, Energy and Environment Specialty Group 3rd annual futures and directions panel **(panelist)**. *American Association of Geographers Annual Meeting*. Denver, Colorado, United States. March.

[O29]. Virguez, E., & Kennedy, S. (**2023**). Navigating the academic and non-academic job markets **(session co-lead)**. *Energy Geography Conference*, *Energy and Environment Specialty Group, American Association of Geographers*. Virtual. January.

[O28]. Virguez, E., Lewis, N., Davis, S., & Caldeira, K. (**2023**). Renewable energy is Republican energy. *Energy Geography Conference*, *Energy and Environment Specialty Group, American Association of Geographers*. Virtual. January.

[O27]. Virguez, E. (**2023**). Taking doctoral mentorship seriously: Institutional design for equity and inclusive excellence **(by-invitation-only workshop)**. *National Academy of Sciences, Engineering, and Medicine (NASEM) and American Association of Universities (AAU)*. Washington, DC, United States. January.

[O26]. Virguez, E., Antonini, E., Ashfaq, S., & Davis, S. (**2022**). Net-zero emissions energy systems: Geophysical constraints, consequences, and opportunities **(session convener and in-person chair)**. *American Geophysical Union (AGU) Annual Meeting*. Chicago, Illinois, United States. December.

[O25]. Virguez, E. (**2022**). Energy Insights 2022 **(by-invitation-only workshop)**. *Sloan Foundation and Resources for the Future*. Washington, DC, United States. December.

[O24]. Malinowski, H, Shapiro-Garza, E., Valnes, S., & Virguez, E., (**2022**). Perspectives on decolonizing research **(panelist)**. *Duke at Home in the World, Office of Global Affairs, Duke University*. Durham, North Carolina, United States. November.

[O23]. Virguez, E. (**2022**). Advancing your academic goals while contributing to a more diverse and inclusive higher education sector. *Future Leaders Society, American Association of Colleges & Universities (AAC&U)*. Washington, DC, United States. November.

[O22]. Virguez, E. (**2022**). Debunking myths about the energy transition: The linchpin of the energy transition. *Nicholas School of the Environment*. Durham, North Carolina, United States. November.

[O21]. Virguez, E. (**2022**). How to invite students into meaningful learning? *Teaching on Purpose Program, Kenan Institute for Ethics. Duke University*. Durham, North Carolina, United States. November.

[O20]. Henry, C., Renshaw, J., & Virguez, E. (**2022**). Careers in energy data analytics **(panelist)**. *Energy Data Analytics Program, Duke University & Sloan Foundation. Duke University*. Durham, North Carolina, United States. October.

[O19]. Dioha, M., Ashfaq, S., Virguez, E., & Caldeira, K. (**2022**). Lifting all humanity to the world's energy use per capita: a stylized analysis. *39th United States Association for Energy Economics (USAEE) & International Association for Energy Economics (IAEE) North American Conference*. Houston, Texas, United States. October.

[O18]. Virgüez, E., & Patino-Echeverri, D. (**2022**). Assessing the effect of incorporating land-use parcel-level data and local zoning ordinances when quantifying renewable energy resources potential. *2022 American Association of Geographers Annual Meeting*. New York, New York, United States. February.
Recognized with the Best Student Paper Award by the American Association of Geographers' Energy and Environment Specialty Group.

[O17]. Valnes, S., Liu, Y., Reisinger, D., & Virgüez, E. (**2021**). Language and culture for sustainability: Voices in the Environment. *American Council on the Teaching of Foreign Languages (ACTFL) Annual Convention*. San Diego, California, United States. November.

[O16]. Virgüez, E. (**2021**). Who pays the price for our actions? The toll of the environmental problems for members of developing countries. *Duke Environmental Justice Symposium*. Durham, North Carolina, United States. March.

[O15]. Virgüez, E. (**2020**). Utility-scale photovoltaics and storage: Decarbonizing and reducing greenhouse gases abatement costs. *Energy Data Analytics Symposium: Transforming Energy Systems with Data Science Techniques*. Durham, North Carolina, United States. December.

[O14]. Virgüez, E. & Patiño-Echeverri, D. (**2020**). Enabling utility-scale photovoltaics integration via storage to abate carbon dioxide emissions. *Electric Power Conference*. Denver, Colorado, United States. April *(canceled because of COVID-19 pandemic)*.

[O13]. Virgüez, E., Castillo, J., & Patiño-Echeverri, D. (**2020**). Estimating health and economic benefits of Bogota's air quality management plan, *North Carolina Conference on Latin American Studies (NC-CLAS)*. Charlotte, North Carolina, United States. March *(canceled because of COVID-19 pandemic)*.

[O12]. Abelson, S., Alcivar, M., Christian, C., Nachman, D., Valentine, E., & Virgüez, E. (**2020**). Voices of changemakers: how commitments to learning, community, and equity shape future faculty **(panelist)**. *2020 Annual Meeting of the Association of American Colleges & Universities (AAC&U)*. Washington, D.C., United States. January.

[O11]. Virgüez, E. & Patiño-Echeverri, D. (**2019**). Abating carbon emissions by means of utility-scale photovoltaics and storage: The Duke Energy Progress/Carolinas case study. *FISE IEEE CIGRE Conference*. Medellin, Colombia. December.

[O10]. Virgüez, E. & Patiño-Echeverri, D. (**2019**). Utility-scale photovoltaics and storage: Economic and environmental trade-offs. *Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*. Seattle, United States. October.

[O9]. Virgüez, E. & Patiño-Echeverri, D. (**2019**). Utility-scale photovoltaics plus storage: a cost-effective alternative for decarbonization? *Carnegie Mellon University Center for Climate and Energy Decision Making (CEDM) 2019 Annual Meeting*. Pittsburgh, Pennsylvania, United States. May.

[O8]. Virgüez, E. (**2019**). Supporting utility-scale photovoltaics with storage: The Duke Energy Carolina and Duke Energy Progress case study. *Nicholas School of the Environment Annual Ph.D. Symposium*. Durham, North Carolina, United States. April.

[O7]. Valenzuela, M., Espinosa, M., Virgüez, E. & Behrentz, E. (**2016**). Uncertainty of greenhouse gas emission models: Colombian transportation sector as a case of study. *14th World Conference on Transport Research*. Shanghai, China. July.

[O6]. Amaya, R., Gutierrez, A., Muñoz, F. & Virguez, E. (**2014**). Experience of Universidad de los Andes teaching process safety. *6th CCPS Latin American Conference on Process Safety*. Buenos Aires, Argentina. September.

[O5]. Virguez, E., Olaya, L. & Behrentz. E. (**2013**). Convenience of updating the emission standards for heavy-duty vehicles., *IV Colombian Congress & International Conference on Air Quality & Public Health*. Bogotá, Colombia. August.

[O4]. Faber, M.H. & Virguez-Rodríguez, E. **(2012)**. Supporting decisions on global health and life safety investments. *Life Quality Index (LQI) Symposium, Denmark Technical University*. Lyngby, Denmark. August.

[O3]. Faber, M.H. & Virguez-Rodríguez, E. (**2011**). Supporting decisions on global health and life safety investments. *11th International Conference on Applications of Statistics and Probability in Civil Engineering*. Zurich, Switzerland. August.

[O2]. Fischer, K., Virguez-Rodríguez, E., Sánchez-Silva, M. & Faber, M.H. (**2011**). Defining guidelines for the application of the marginal life-saving costs principle for risk regulation. *11th International Conference on Applications of Statistics and Probability in Civil Engineering*. Zurich, Switzerland. August.

[O1]. Behrentz, E. & Virguez, E. (**2011**). Compressed natural gas on Colombia: study case for public transport vehicles. *XIV Congress of the Colombian Association of Natural Gas (Naturgas)*. Cartagena, Colombia. April.

Selected Posters Participations

[PO19]. Virguez, E., Ruggles, T., Reich, N., Dowling, J., Bloomfield, H., Antonini, E., Davis, S., Lewis, N., & Caldeira, K. (**2024**). Planning reliable wind- and solar-based electricity systems. *American Geophysical Union (AGU) Fall Meeting 2024*. Washington, DC. December.

[PO18]. Virguez, E., Dioha, M., Duan, L., Wongel, A., Lewis, N., & Caldeira, K. (**2024**). Disparities in per capita energy consumption within and between countries. *American Geophysical Union (AGU) Fall Meeting 2024*. Washington, DC. December.

[PO17]. Freese, L., Virguez, E., Davis, S., & Caldeira, K. (**2024**). Country-to-country imposition of climate damage from current emissions. *American Geophysical Union (AGU) Fall Meeting 2024*. Washington DC, United States. December.

[PO16]. Chen, S., Lu, X., Hao, J., Virguez, E., Caldeira, K., & Davis, S. (**2024**). Multi-sector sustainability trade-offs of solar PV tracking technologies. *American Geophysical Union (AGU) Fall Meeting 2024*. Washington DC, United States. December.

[PO15]. Virguez, E., Ruggles, T., & Caldeira, K. (**2024**). Planning reliable wind- and solar-based electricity systems. *Next Generation Challenges in Energy-Climate Modelling Workshop 2024*. Online. September.

[PO14]. Virguez, E., Dioha, M., Wongel, A., Duan, L., Lewis, N., & Caldeira, K. (**2023**). Disparities in per capita energy consumption within and between countries. *American Geophysical Union (AGU) Fall Meeting 2023*. San Francisco, United States. December.

[PO13]. Carlino, A., Wongel, A., Virguez, E., Edwards, M., & Caldeira, K (**2023**). The predictive skill of Wright's law for energy and climate policy support. *American Geophysical Union (AGU) Fall Meeting 2023*. San Francisco, United States. December.

[PO12]. Covelli, D., Virguez, E., Caldeira, K., & Lewis, N. (**2023**). Assessing the feasibility of a 100% renewable electricity system in Oahu. *American Geophysical Union (AGU) Fall Meeting 2023*. San Francisco, United States. December.

[PO11]. Virguez, E. (**2022**). Building bridges over the ocean: Enabling sustainability education for marginalized communities in Latin America. *American Geophysical Union (AGU) Annual Meeting*. Chicago, Illinois, United States. December.

[PO10]. Caldeira, K., Li, A., Virguez, E., Antonini, E., Dowling, J., Duan, L., Dioha, M., Reich, N., Lewis, N., Davis, S. & Ruggles, T. (**2022**). A macro energy model framework for transparent analysis of implications of energy systems assumptions. *American Geophysical Union (AGU) Fall Meeting 2022*. Chicago, United States. December.

[PO9]. Li, A., Dowling, J., Virguez, E., Ruggles, T., Lewis, N., & Caldeira, K. (**2022**). Is there space for a third storage technology in variable renewable electricity systems with short- and long-duration storage? *American Geophysical Union (AGU) Fall Meeting 2022*. Chicago, United States. December 12 – 16.

[PO8]. Antonini, E., Virguez, E., Ashfaq, S., Duan, L., & Caldeira, K. (**2022**). Geophysical limits to wind power reliability. *American Geophysical Union (AGU) Fall Meeting 2022*. Chicago, United States. December.

[PO7]. Ashfaq, S., Enrico, A., Virguez, E., Duan, L., Dioha, M., Ruggles, T., Davis, S., & Caldeira, K. (**2022**). The value of additional hydroelectric and pumped hydroelectric storage for a deeply decarbonized power system. *American Geophysical Union (AGU) Fall Meeting 2022*. Chicago, United States. December.

[PO6]. Virguez, E. (**2022**). Informing the sustainability of the Earth system: Insights from an early-career researcher at the Department of Global Ecology. *Carnegie Institution for Science, Board of Trustees Annual Meeting*. Pasadena, California, United States. November.
***Selected as the early-career researcher representing the Department of Global Ecology at the annual meeting of the Board of Trustees.**

[PO5]. Li, A., Dowling, J., Virguez, E., Ruggles, T., Lewis, N., & Caldeira, K (**2022**). Relative value of short-, mid-, and long-duration storage technologies in reliable wind and solar electricity systems. *Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*. Indianapolis, Indiana, United States. October.

Selected as one of the nine finalists for the 2022 INFORMS Best Poster Award from >200 poster participants*

[PO4]. Valenzuela, M., Espinosa, M., Virguez, E., & Behrentz, E. (**2015**). Uncertainty of greenhouse gas emission models: Colombian transportation sector as a case study. *V International Congress of Air Quality and Public Health.* Bucaramanga, Colombia. August.

[PO3]. Espinosa, M., Márquez, J.C.F., Orjuela, J.P., Virguez, E., Sefair, J.A., Medaglia, A.L. & Behrentz, E. (**2011**). An optimization model for selecting and programming projects for Bogota's Air Quality Decennial Decontamination Plan. *III International Congress of Air Quality and Public Health*. Medellin, Colombia. December.

[PO2]. Virguez, E. & Behrentz, E. (**2011**). Compressed natural gas in Colombia: study case for public transport vehicles. *III International Congress of Air Quality and Public Health*. Medellin, Colombia. December.

[PO1]. Virguez, E., Obando, D.C., Muñoz, F., Sánchez, E.M. & Behrentz, E. (**2009**). Risk assessment of air pollution exposure using the Life Quality Index (LQI). *II International Congress of Air Quality and Public Health.* Cartagena, Colombia. July.

Research & Consultancy Projects

Number of research or consultancy projects: 25
Total budget of projects: $26,312,024

Each item lists the name of the project (underlined), role (bolded), supporting organizations (italics), and budget.

[PR25] Decisions for reliability, affordability, and sustainability. **Managing Director.** *Sustainability Accelerator - Stanford University*. $150,000. 2026-2027.

[PR24] Defining reliability and resilience in the context of the North American grid. **Co-Principal Investigator.** *Sloan Foundation*. $50,000. 2026-2027.

[PR23] A decision-informed tool for reliable, affordable, secure, and sustainable power for AI. **Managing Director and Senior Researcher.** *Precourt Institute for Energy - Stanford University*. $100,000. 2026-2027.

[PR22] Secure and sustainable electricity supply to support economic growth in Taiwan. **Managing Director and Senior Researcher.** *Precourt Institute for Energy - Stanford University*. $250,000. 2026-2027.

[PR21] Improving grid planning by understanding future large loads growth trajectories. **Managing Director and Senior Researcher.** *Bits & Watts Initiative - Stanford University*. $65,000. 2025-2026.

[PR20] A listening forum on the future of philanthropic funding for energy, environment, and climate research. **Researcher.** *Sloan Foundation.* $50,000. 2025.

[PR19] Equitable, affordable & resilient nationwide energy system transition (EARNEST) consortium. **Managing Director and Senior Researcher.** *Stanford University*. $22,894,597. 2025-2026.

[PR18]. Modeling Tools for Energy Systems Analysis (MOTESA), Bass Connections Project. **Researcher**. *Duke University*. $25,000. 2016-2017.

[PR17]. Risk analysis in the treatment of polychlorinated biphenyl by chlorination. **Researcher**. *Colombian Ministry for Environmental Affairs and Sustainable Development.* $28,500. 2016.

[PR16]. Data-driven definition of Colombia's air quality policy roadmap. **Consultant**. *Korea Environment Corporation (KECO)*. $4,050. 2015.

[PR15]. Environmental and economic assessment of implementing compressed natural gas as the primary fuel for Bogota's public transport system. **Principal Investigator (PI)**. *Colombian Association of Natural Gas (Naturgas). Universidad de los Andes.* $32,500. 2014-2015.

[PR14]. Demonstration and assessment of battery-electric buses for mass transit in Colombia. **Consultant**. *Interamerican Development Bank (IDB)*. $500,000. 2013-2014.

[PR13]. Revision and adjustment of risk assessment models analyzing climatological and external events. **Project Coordinator**. *Empresa Colombiana de Petroleos (Ecopetrol) S.A. Universidad de los Andes*. $425,670. 2012-2013.

[PR12]. Developing a cost-benefit study for updating normative emission standards of mobile sources. **Main Researcher**. *Colombian Ministry for Environmental Affairs and Sustainable Development & World Bank.* Universidad de los Andes. $18,357. 2012.

[PR11]. Infrastructure as the basis of production sectors: Analysis of critical points and vulnerabilities of the Colombian transport network affected by environmental disasters. **Researcher**. *Engineering School Research Center, Universidad de los Andes.* $60,000. 2012.

[PR10]. Identification of small and mid-size enterprises (SME) with the highest potential to implement an energy efficiency program. **Principal Investigator (PI)**. *Corporación Ambiental Empresarial - Cámara de Comercio de Bogotá. Multivac Consultores*. $4,000. 2011.

[PR9]. Environmental and economic assessment of implementing compressed natural gas as the primary fuel for public transport vehicles. **Principal Investigator (PI)**. *Colombian Association of Natural Gas (Naturgas).* Universidad de los Andes. $10,000. 2011.

[PR8]. Economic feasibility study for the construction of a transfer station on Magdalena, Colombia, applying return of investment techniques. **Main Consultant**. *Sociedad de Acueducto, Alcantarillado y Aseo de Barranquilla S.A. - Fundación Reto Colombia. Multivac Consultores*. $7,500. 2010-2011.

[PR7]. Design of the environmental plan for the Integrated Resources District of Zárate-Malibú-Veladero swamp zone. **Researcher**. *Corporación Autónoma Regional del Magdalena (CORPAMAG) - Fundación Reto Colombia. Multivac Consultores.* $190,000. 2010-2011.

[PR6]. Environmental impact assessment of Bogota's Integrated System for Public Transport. **Researcher**. *Bogota's Ministry of Finance, Inter-American Development Bank & Universidad de los Andes*. $500,000. 2010.

[PR5]. Risk management of infrastructure systems during natural events. **Researcher.** *Engineering Faculty Research Center, Universidad de los Andes*. $25,000. 2010.

[PR4]. Formulation of Bogotá's Decennial Atmospheric Decontamination Plan. **Researcher**. *Bogota's Secretary for Environmental Affairs, Transmilenio S.A. & Universidad de los Andes*. $325,000. 2008-2010.

[PR3]. Development of Colombia's area sources classification guidelines and establishment of environmental control programs. **Researcher.** *Colombian Ministry for Environment, Housing, and Development, & Universidad de los Andes.* $108,900. 2008-2009.

[PR2]. Emissions assessment (isokinetic sampling) of fossil-fuel-fired stationary sources whose primary fuel is used oil. **Researcher.** *Colombian Ministry for Environment, Housing, and Development, & Universidad de los Andes.* $37,950. 2008-2009.

[PR1]. Definition of the technical elements used to formulate local standards to improve Bogota's air quality. **Researcher.** *Bogota's Secretary for Environmental Affairs & Universidad de los Andes*. $450,000. 2007-2008.

Professional Training, Affiliations & Skills

Certificates and Professional Programs

[CE5]. Certificate in college teaching – 2022
Institution: Graduate School, Duke University
Location: Durham, North Carolina, United States

[CE4]. Emerging leaders institute - 2019
Institution: Graduate School, Duke University
Location: Durham, North Carolina, United States

[CE3]. Geospatial analysis certificate program – 2018
Institution: Nicholas School of the Environment, Duke University
Location: Durham, North Carolina, United States

[CE2]. Applying research for sustainable and inclusive growth: linking universities, industry and government - 2015
Institution: Department of Economic Development, Jobs, Transport and Resources, Australian Government
Location: Melbourne, Australia

[CE1]. Innovating with sense - 2015
Institution: Proa Consulting
Location: Bogota, Colombia

Affiliation to Professional Associations

[PA6]. Air & Waste Management Association (A&WMA)
[PA5]. American Association of Geographers (AAG)
[PA4]. American Geophysical Union (AGU)
[PA3]. Association of American Colleges & Universities (AAC&U)
[PA2]. Institute for Operations Research and the Management Sciences (INFORMS)
[PA1]. Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)

Languages

[L3]. French (Beginner - A1)
[L2]. English (Proficient – C1)
[L1]. Spanish (Native speaker)

Computational Skills

Languages: C, C++, Optimization Programming Language (OPL), Python, Structured Query Language (SQL), & Visual Basic
Software: ArcGIS, ArcGIS Pro, Aspen Plus, Crystal Ball, Homer, IBM ILOG CPLEX Optimization Studio, Matlab, Microsoft Office Suite, & Tableau

Institutional & Community Service

Participation in Institutional Boards, Councils, and Committees

Each item lists the name of the board, council, or committee, followed by the role (italics), institution (underlined), and years of service.

[IB41]. Nicholas School of the Environment Board of Advisors, *Board Member*, Duke University (2026)
[IB40]. Decarbonization and Energy Virtual Institute, *Expert Reviewer*, Schmidt Sciences (2025)
[IB39]. Macro Energy Systems Society, *Board Member*, Macro Energy Systems Society (2025-2026)
[IB38]. Community Meeting Planning Committee, *Co-chair*, Macro-Energy Systems Steering Committee (2025)
[IB37]. Duke University Climate Commitment Campaign Advocates Board, *Member*, Duke University (2024-2026)
[IB36]. Graduate/Professional Young Trustee Nominating Committee, *Committee Member*, Duke University President (2024-2025)
[IB35]. Earthshot Prize Expert Advisory Panel, *Member*, Earthshot Prize (2024-2026)
[IB34]. Graduate/Professional Young Trustee Nominating Committee, *Committee Chair*, Duke University President (2023-2024)
[IB33]. Duke University Climate Commitment Task Force, *Task Force Member*, Duke University (2023-2024)
[IB32]. American Association of Geographers' (AAG) Justice, Equity, Diversity, and Inclusion (JEDI) Committee, *Committee Member*, American Association of Geographers (AAG). (2023-2026)
[IB31]. Committee on Honorary Degrees, *Committee Member*, Duke University Board of Trustees (2023-2024)
[IB30]. External Engagement Committee, *Committee Member*, Duke University Board of Trustees (2023-2024)
[IB29]. Environmental Research: Energy Journal, *Editorial Board Member*, Institute of Physics (2023-2025)

[IB28]. American Association of Geographers' (AAG) Justice, Equity, Diversity, and Inclusion (JEDI) Membership Sub-Committee, *Committee Member*, American Association of Geographers (AAG). (2023-2024)
[IB27]. AAG Energy and Environment Specialty Group Advisory Board, *Chair*, American Association of Geographers (2023-2025)
[IB26]. AAC&U's Future Leaders Society Advisory Committee, *Committee Member*, American Association for Colleges & Universities (2022-2023)
[IB25]. AAG Energy and Environment Specialty Group's Diversity, Inclusivity, and Equity Committee, *Committee Member*, American Association of Geographers (2022-2023)
[IB24]. Graduate/Professional Young Trustee Nominating Committee, *Board Member & Chair*, Duke University Board of Trustees (2022-2022)
[IB23]. Brand Refresh Task Force, *Task Force Member*, Carnegie Institution for Science (2022-2023)
[IB22]. Graduate and Professional Education and Research Committee, *Committee Member*, Duke University Board of Trustees (2022-2023)
[IB21]. Duke University Board of Trustees, *Board Member (Young Trustee)*, Duke University Board of Trustees (2022-2025)
[IB20]. Carbon Offsets Advisory Board, *Board Member*, Duke University Office of Sustainability (2021-2022)
[IB19]. Graduate School Dean's Award for Excellence in Teaching Selection Committee, *Committee Member*, Duke University Graduate School (2021)
[IB18]. Senior Associate Dean for International Students Search Committee, *Committee Member*, Duke University (2021-2022)
[IB17]. Racial Equity Advisory Council, *Committee Member*, Duke University (2021-2022)
[IB16]. Graduate and Professional Students' Housing Working Group, *Group Member*, Duke University (2021-2022)
[IB15]. International Students Support Committee, *Committee Member*, Duke University (2021-2022)
[IB14]. Board of Trustees Resources Committee, *Committee Member*, Duke University Board of Trustees (2020-2021)
[IB13]. Graduate and Professional Student Advisory Board, *Committee Member*, Duke University (2020-2021)
[IB12]. Executive Committee Reform Working Group, *Group Member*, Duke's Graduate & Professional Student Council (2020)
[IB11]. Duke University's Assistant Vice President for Student Affairs Search Committee. *Committee Member*, Duke University (2020)
[IB10]. Duke University's Executive Vice President Search Committee, *Committee Member*, Duke University (2019-2020)
[IB9]. Board of Trustees Resources Committee, *Committee Member*, Duke University Board of Trustees (2019-2020)
[IB8]. Duke Student Alumni Board, *Board Member*, Duke Alumni Association (2019-2020)
[IB7]. Graduate & Professional Student Council, *Ph.D. Environment Program Representative,* Duke University (2019-2021)
[IB6]. Board of Trustees Strategic Task Force: Activating the Global Network, *Task Force Member*, Duke University Board of Trustees (2018-2019)
[IB5]. Graduate Student Affairs Advisory Committee, *Committee Member*, Duke University (2018-2021)
[IB4]. Nicholas School Doctoral Programs Advocacy Council, *Co-President & Treasurer*, Duke University (2017-2018)
[IB3]. Nicholas School of the Environment Energy Club, *Doctoral Students Representative*, Duke University (2016-2019)
[IB2]. Student Association for Geospatial Analysis, *Doctoral Students Representative,* Duke University (2017-2018)

Journal Reviewer and Editorial Boards

[JR15]. Applied Energy
[JR14]. Communications Earth & Environment (Nature Portfolio)
[JR13]. Earth's Future
[JR12]. Energies
[JR11]. Energy
[JR10]. Energy Science & Engineering
[JR9]. Environmental Research: Energy
[JR8]. Environmental Research Letters
[JR7]. Environmental Science & Technology
[JR6]. iScience
[JR5]. Journal of Energy Storage
[JR4]. Nature Communications
[JR3]. Nature Sustainability
[JR2]. Scientific Reports (Nature Portfolio)
[JR1]. Sustainability

Mentorship and Volunteering Activities

[M16]. Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) Mentor Activation for Students Program. Mentor (2024)
[M15]. Advancing Inclusive Mentoring Program. Trainee (2024)
[M14]. American Geophysical Union (AGU) College of Fellows Mentoring Network. Program Participant (2023-2024)
[M13]. Lumiere Education. Mentor (2020-2022)
[M12]. Duke F1RSTS. Mentor (2018-2021)
[M11]. Ekpa'palek Empowering Latinos. Mentor (2019-2020)
[M10]. Nicholas School Global Connections Initiative. Academic Programs Leader (2017-2020)
[M9]. Nicholas School Partners, Duke University. Co-President (2017-2019)
[M8]. International House, Duke University. International House Orientation Peer (2017-2019)
[M7]. Sustainable Duke, Duke University. Volunteer (2016-2018)
[M6]. Duke Community Service, Duke University. Volunteer (2016-2018)
[M5]. Habitat for Humanity Durham. Volunteer. (2016-2018)
[M4]. Colombian Christian Church. Youth Leader Coordinator (2015-2016)
[M3]. Un Techo para mi País. Volunteer (2009-2010)
[M2]. Asociación Alianza Educativa, Universidad de los Andes. Instructor (2003-2007)
[M1]. Colombian Red Cross. Junior Voluntary Member (1995-2002)

References

References are listed alphabetically using their last name and categorized into research, higher education, and teaching. Additional references are available on my LinkedIn profile.

Research

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