Nathan Gregory Johnson, Ph.D.
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Dr. Nathan Johnson leads numerous efforts at Arizona State University to accelerate energy sector development through innovation in stakeholder value propositions, technology, business models, and policy. In this, Dr. Johnson builds public-private partnerships in the US and internationally to increase energy access, energy security, decarbonization, and economic development. His team and partners lead over $400M of research, development, and scaled implementation, complemented by thought leadership through over 60 publications. Before joining ASU, Dr. Johnson completed product development and business development across 15 countries. His globally focused work continues in the Pacific, Asia, Sub-Saharan Africa, Middle East, and Latin America. Outside of the office, Dr. Johnson enjoys competing in endurance running and regularly tours the countryside by bicycle with his family of five.

Professional Appointments

- **Center Director & Professor**, The Polytechnic School, Arizona State University, since May 2025
- **Associate Professor**, The Polytechnic School, Arizona State University, May 2019 - May 2025
- **Assistant Professor**, The Polytechnic School, Arizona State University, August 2013 - May 2019.
- **Postdoctoral Fellow**, HOMER Energy, NSF/ASEE Small Business Postdoctoral Research Diversity Fellowship Program, November 2011 - July 2013.
- **Senior Engineer and Business Development Manager**, Emerging Consumer Markets Global, BP, May 2007 - December 2008.

Education

- Ph.D. Mechanical Engineering, Iowa State University, 2012
- M.S. International Development, Iowa State University, 2008
- M.S. Mechanical Engineering, Iowa State University, 2005
- B.S. Mechanical Engineering, Iowa State University, 2004

Selected Projects and Funding (selected from over $70M)

- Hopi Nation Community Solar Project. *Co-PI.* Funded by Office of Clean Energy Demonstrations, US Department of Energy. 2024. $9,110,000.
- Accelerating Solar Mini-grid Deployment in Fiji. *PI.* Funded by United States Trade and Development Agency (USTDA). 2023. $1,500,000.
- Transferring Capability for Microgrids and Resilience in DoD Installations. -*PI.* Funded by Environmental Security Technology Certification Program (ESTCP), US Department of Defense. 2022. $1,050,466.
- The ASU-Starbucks Center for the Future of People and the Planet. *PI.* Funded by Starbucks.
- Enhancing Installation Resilience with Electric Vehicle Fleets. *PI.* Funded by Office of Naval Research, US Department of Defense. 2022. $250,00.
- Advancing Modern Power through Utility Partnerships (AmpUp). *Co-PI*. Funded by United States Agency for International Development (USAID). 2021. $39,957,657.
- Securing Installation IoT Devices and 5G Communications for Adaptive Basing. *PI.* Funded by Office of Naval Research, US Department of Defense. 2021. $233,800.
- Building Innovation into Installation Modernization Strategies. *Co-PI.* Funded by Office of Naval Research, US Department of Defense. 2021. $250,000.
- Design, Modeling, and Control of Hybrid ESS for DoD Microgrids (Phase 2). *PI*. Funded by Environmental Security Technology Certification Program (ESTCP), US Department of Defense. 2020. $663,000.

- Rapid Capability Development for a Cyber-effective Navy. *PI.* Funded by Office of Naval Research, US Department of Defense. 2020. $250,000.
- Microgrid Control with Self-regulating Feedback to Enhance Resilience and Economics. *PI.* Funded by Office of Naval Research, US Department of Defense. 2020. $249,999.
- Installation Energy Resilience Using Machine Learning for Continuity of Operations Plan (COOP) and Adaptive Basing. *PI.* Funded by Office of Naval Research, US Department of Defense. 2020. $250,002.
- Situation Awareness and Smart Reconfiguration of Ad-hoc Military Electric Grids Using a Digital-twin. *Co-PI.* Funded by Office of Naval Research, US Department of Defense. 2020. $249,964.
- Design, Modeling, and Control of Hybrid ESS for DoD Microgrids. *Co-PI.* Funded by Environmental Security Technology Certification Program (ESTCP), US Department of Defense. 2019. $235,080.
- Workforce Development Pipeline for Microgrid and Advanced Power Systems Careers. *PI.* Funded by Office of Naval Research, US Department of Defense. 2019. $747,738.
- GCR: Future Urban Trajectories for Urban Resilience. *Co-PI*. Funded by National Science Foundation (NSF). 2019. $3,599,349.
- Distributed Electrical Architectures from Circuits to Systems. *PI.* Funded by Office of Naval Research, US Department of Defense. 2018. $1,999,935.
- Next Generation Energy Technologies and Systems for Civilian and Military Applications (Phase 2). *Co-PI.* Funded by Office of Naval Research, US Department of Defense. 2017. $3,000,000.
- Mini-grid Training and Global Strategic Planning. *PI.* Funded by World Bank. 2017. $46,360.
- A Holistic Water Solution for Undeserved and Refugee Host Communities in Lebanon and Jordon. *Co-PI.* Funded by US Agency for International Development. 2016. $1,947,462.
- Monitoring and Managing Distributed Energy Resources through Interoperable IoT Solutions. *PI.* Funded by Verizon. 2016. $144,830.
- Next Generation Energy Technologies and Systems for Civilian and Military Applications (Phage 1). *Co-PI.* Funded by Office of Naval Research, US Department of Defense. 2015. $1,499,998.
- Mobile Containerized Micro-grid for Disaster Relief. *PI.* Funded by NRG Renew. 2015. $52,087.
- Grid Simulation and Renewable Energy Integration. *PI.* Funded by IncSys. 2015. $121,515.
- Energy Management Systems for Residential Homes. *PI.* Funded by Salt River Project. 2015. $186,387.
- Design and Analysis of a Concentrating Solar Power Air Brayton System. *Co-PI.* Funded by AORA Solar Ltd. 2014. $1,550,000.
- BRIDGE in Sustainable Energy and Information and Communication Technologies. *Co-PI.* Inter-American Development Bank. 2014. $340,137.
- Concept Paper and Proposal for Certification of Solar Technicians in Sub-Saharan Africa and Asia. *Co-PI.* Funded by International Renewable Energy Agency. 2014. $100,000.
- Collaborative Research: RIPS Type 2: Resilience Simulation for Water, Power, & Road Networks. *Co-PI.* Funded by NSF. 2014. $1,949,788.

Selected Publications (selected from over 60)

- Saha, S. S., Scaglione, A., Ramakrishna, R., & Johnson, N. G. (2022). Distribution Systems AC State Estimation via Sparse AMI Data Using Graph Signal Processing. *IEEE Transactions on Smart Grid*
- Arnold, D., Saha, S., Ngo, S., Roberts, C., Scaglione, A., Johnson, N. G., Peisert, S., Pinney, D. (2022). Adaptive Control of Distributed Energy Resources for Distribution Grid Voltage Stability. *IEEE Transactions on Power Systems*
- van Hove, E., Johnson, N. G. (2021). Refugee settlements in transition: Energy access and development challenges in Northern Uganda. *Energy Research & Social Science*, 78, 102103.

- Nelson, J., Johnson, N. G., Fahy, K., Hansen, T. (2020). Statistical development of microgrid resilience during islanding operations. *Applied Energy*, 279, 115724.
- Janko, S., & Johnson, N. G. (2020). Reputation-based competitive pricing negotiation and power trading for grid-connected microgrid networks. *Applied Energy*, 277, 115598.
- Nelson, J., Johnson, N. G. (2020). Model predictive control of microgrids for real-time ancillary service market participation. *Applied Energy*, *269*, 114963.
- Ahmad, N., Chester, M., Bondank*, E.*, Arabi, M., Johnson, N., Ruddell, B. (2020). A synthetic water distribution network model for urban resilience. *Sustainable and Resilient Infrastructure*.
- Budama, V. K., Johnson, N. G., Ermanoski, I., & Stechel, E. B. (2020). Techno-economic analysis of thermochemical water-splitting system for Co-production of hydrogen and electricity. *International Journal of Hydrogen Energy*, 46(2), 1656-1670.
- Nelson, J., Johnson, N. G., Chinimilli, P. T., Zhang, W. (2019). Residential cooling using separated and coupled precooling and thermal energy storage strategies. *Applied Energy*, *252*, 113414.
- Schweitzer, E., Saha, S. S., Scaglione, A., Johnson, N. G., Arnold, D. (2019). Lossy DistFlow formulation for single and multiphase radial feeders. *IEEE Transactions on Power Systems*.
- Janko, S. & Johnson, N. (2018). Scalable multi-agent microgrid negotiations for a transactive energy market. *Applied Energy*, 229, 715-727.
- Nelson, J., Johnson, N. G., Doron, P., & Stechel, E. B. (2018). Thermodynamic modeling of solarized microturbine for combined heat and power applications. *Applied Energy*, *212*, 592-606.
- Burillo, D., Chester, M. V., Ruddell, B., & Johnson, N. (2017). Electricity demand planning forecasts should consider climate non-stationarity to maintain reserve margins during heat waves. *Applied Energy*, *206*, 267-277.
- Bartos, M., Chester, M., Johnson, N., Gorman, B., Eisenberg, D., Linkov, I., Bates, M. (2016) Impacts of rising air temperatures on electric transmission ampacity and peak per-capita electricity load in the United States. *Environmental Research Letters*. 11(11), 114008.

Technology Transfer

1. Nelson, J. & Johnson, N. G. (2021). Adaptive Controls for Energy Systems. National Security Academic Accelerator.
2. Nelson, J. & Johnson, N. G. (2019). Systems and Methods for optimized control of local energy assets for participation in real-time energy markets. Provisional patent.
3. Webster, N. & Johnson, N. G. (2019). Systems and Methods for a distributed energy resource aggregator. Provisional patent.
4. Hamel, D. & Johnson, N. G. (2019). Systems and Methods for a Resilient Infrastructure Simulation Environment (RISE). Provisional patent.

Synergistic Activities

- Board of Directors, United States Energy Association (USEA)
- Faculty, Military Energy Resilience Cohort (MERC)
- Co-chair, Operational and Installation Energy Working Group, Military Operations Research Society (MORS)
- Senior Advisor, XENDEE Corporation | Bankable Energy
- Advisor, Ageto, LLC
- External Technical Advisor, Arizona Public Service
- External Technical Advisor, Salt River Project

Mentored and Supervised at ASU: 230 students, 2 postdocs, 25 staff, 1 assistant research professor