

**BENJAMIN D. LEIBOWICZ, PH.D.**  
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**ACADEMIC POSITIONS**

The University of Texas at Austin	Associate Professor (with tenure)	2022 – Present
	Banks McLaurin Fellowship in Engineering	2023 – Present
	Assistant Professor	2016 – 2022
<ul style="list-style-type: none"> <li>• <i>Primary appointment:</i> <ul style="list-style-type: none"> <li>○ Graduate Program in Operations Research and Industrial Engineering</li> <li>○ Walker Department of Mechanical Engineering</li> </ul> </li> <li>• <i>Other appointments:</i> <ul style="list-style-type: none"> <li>○ Lyndon B. Johnson School of Public Affairs (by courtesy)</li> <li>○ Energy and Earth Resources Graduate Program</li> </ul> </li> </ul>		

**Visiting Positions**

Visiting Scholar	University of Chicago, Institute for Mathematical and Statistical Innovation	June – July 2024
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**EDUCATION**

Stanford University	Management Science and Engineering	Ph.D.	June 2016
Stanford University	Management Science and Engineering	M.S.	June 2013
Harvard University	Physics (magna cum laude, Economics minor)	A.B.	May 2011

**RESEARCH INTERESTS**

**Applications:** energy and environment, energy systems, public policy, technological change, sustainable cities, infrastructure resilience

**Methods:** optimization, systems analysis, economic modeling, game theory, equilibrium modeling, stochastic control

**OTHER PROFESSIONAL EXPERIENCE**

Research Assistant	Stanford University Energy Modeling Forum	Stanford, CA	2012 – 2016
Peccei Award Fellow	International Institute for Applied Systems Analysis	Laxenburg, Austria	2014 – 2015
Young Scientists Summer Program Fellow	International Institute for Applied Systems Analysis (fellowship from National Academy of Sciences)	Laxenburg, Austria	2013
Research Assistant	Harvard University Center for the Environment	Cambridge, MA	2008 – 2010
Research in Industrial Projects for Students Fellow	Zuse Institute Berlin (fellowship from Institute for Pure and Applied Mathematics)	Berlin, Germany	2010
Research Experience for Undergraduates Fellow	Dalian University of Technology (fellowship from National Science Foundation)	Dalian, China	2009
Simons Summer Research Fellow	Stony Brook University	Stony Brook, NY	2006

**HONORS AND AWARDS****Individual Awards**

Best Advisor	Mechanical Engineering Graduate Student Board (MEGSB), The University of Texas at Austin	2023
Banks McLaurin Fellowship in Engineering (endowed faculty fellowship)	The University of Texas at Austin	2023
Runner Up, Early Career Best Paper Award	Section on Energy, Natural Resources, and the Environment (ENRE), Institute for Operations Research and the Management Sciences (INFORMS)	2021
Outstanding Young Investigator Award	Energy Systems Division, Institute of Industrial and Systems Engineers (IISE)	2020
Walker Scholar	Walker Department of Mechanical Engineering, The University of Texas at Austin	2019
Peccei Award	International Institute for Applied Systems Analysis	2014
Young Scientists Summer Program Fellowship	National Academy of Sciences	2013
School of Engineering Fellowship	Stanford University	2011
Research in Industrial Projects for Students Fellowship	Institute for Pure and Applied Mathematics	2010
Research Experience for Undergraduates Fellowship	National Science Foundation	2009
Simons Summer Research Fellowship	Stony Brook University	2006

**Selected Awards Won by Supervised Students**

Dennis J. O'Brien USAEE Best Student Paper Award	United States Association for Energy Economics (USAEE) (student: Connor Colombe)	2023
P.E.O. Scholar Award	P.E.O. Sisterhood (student: Rachel Moglen)	2023
Mickey Leland Energy Fellowship	Department of Energy, Office of Fossil Energy (student: Erick Jones)	2020
Runner Up, Dennis J. O'Brien USAEE Best Student Paper Award	United States Association for Energy Economics (USAEE) (student: Baturay Calci)	2019
Full Fellowship	The National Graduate Education for Minorities (GEM) Consortium (student: Erick Jones)	2018

**PUBLICATIONS**

Notes: Underlined author name = supervised UT Austin student. <sup>P</sup> = supervised postdoctoral researcher.

**A. Refereed Journal Papers (49)**

- [49] Sambasivam, B.<sup>P</sup>, [Colombe, C.](#), Hasenbein, J., Leibowicz, B.D., 2024. Optimal resource placement for electric grid resilience via network topology. *Reliability Engineering & System Safety*, accepted. DOI: [10.1016/j.ress.2024.110010](#)
- [48] Leibowicz, B.D., [Zhang, N.](#), Carvallo, J.P., Larsen, P.H., Carr, T., Baik, S., 2024. The importance of capturing power system operational details in resource adequacy assessments. *Electric Power Systems Research* 228, 110057. DOI: [10.1016/j.eprsr.2023.110057](#)
- [47] [Moglen, R.L.](#), Chawla, K.P., Levi, P., Sun, Y., Phillips, O., Leibowicz, B.D., Jenkins, J.D., Grubert, E.A., 2023. The state of macro-energy systems research: Common critiques, current progress, and research priorities. *iScience* 26, 106325. DOI: [10.1016/j.isci.2023.106325](#)
- [46] Leibowicz, B.D., Sanstad, A.H., [Zhu, Q.](#), Larsen, P.H., Eto, J.H., 2023. Electric utility valuations of investments to reduce the risks of long-duration, widespread power interruptions, part II: Case studies. *Sustainable and Resilient Infrastructure* 8, 203-222. DOI: [10.1080/23789689.2022.2138163](#)
- [45] Sanstad, A.H., Leibowicz, B.D., [Zhu, Q.](#), Larsen, P.H., Eto, J.H., 2023. Electric utility valuations of investments to reduce the risks of long-duration, widespread power interruptions, part I: Background. *Sustainable and Resilient Infrastructure* 8, 311-322. DOI: [10.1080/23789689.2022.2148450](#)
- [44] [Moglen, R.L.](#), Barth, J., Gupta, S., [Kawai, E.](#), Klise, K., Leibowicz, B.D., 2023. A nexus approach to infrastructure resilience planning under uncertainty. *Reliability Engineering & System Safety* 230, 108931. DOI: [10.1016/j.ress.2022.108931](#)
- [43] Rueda, V., Young, M.H., Faust, K., Rateb, A.M., Leibowicz, B.D., 2022. System dynamics modeling in local water management: Assessing strategies for the city of Boerne, Texas. *Water* 14, 3682. DOI: [10.3390/w14223682](#)
- [42] [Kawai, E.](#), Ozawa, A., Leibowicz, B.D., 2022. Role of carbon capture and utilization (CCU) for decarbonization of industrial sector: A case study of Japan. *Applied Energy* 328, 120183. DOI: [10.1016/j.apenergy.2022.120183](#)
- [41] [Jayadev, G.](#), Leibowicz, B.D., Bard, J.F., [Calci, B.](#), 2022. Risk-averse stochastic bilevel programming: An application to natural gas markets. *Computers & Industrial Engineering* 169, 108151. DOI: [10.1016/j.cie.2022.108151](#)
- [40] [Jayadev, G.](#), Leibowicz, B.D., Bard, J.F., [Calci, B.](#), 2022. Strategic interactions between liquefied natural gas and domestic gas markets: A bilevel model. *Computers & Operations Research* 144, 105807. DOI: [10.1016/j.cor.2022.105807](#)
- [39] Motalebi, S., Barnes, T., [Lu, L.](#), Leibowicz, B.D., Niet, T., 2022. The role of U.S.-Canada electricity trade in North American decarbonization pathways. *Energy Strategy Reviews* 41, 100827. DOI: [10.1016/j.esr.2022.100827](#)
- [38] [Bourque, C.M.](#), Clarno, K.T., Leibowicz, B.D., 2022. High-level fuel fabrication facility designs from discrete-event simulation. *Annals of Nuclear Energy* 168, 108893. DOI: [10.1016/j.anucene.2021.108893](#)
- [37] [Zhu, Q.](#), Leibowicz, B.D., Busby, J.W., Shidore, S., Adelman, D.E., Olmstead, S.M., 2022. Enhancing policy realism in energy system optimization models: Politically feasible decarbonization pathways for the United States. *Energy Policy* 161, 112754. DOI: [10.1016/j.enpol.2021.112754](#)
- [36] [Jones, E.C.](#), Leibowicz, B.D., 2022. Climate risk management in agriculture using alternative electricity and water resources: A stochastic programming framework. *Environment Systems and Decisions* 42, 117-135. DOI: [10.1007/s10669-021-09838-8](#)
- [35] [Brozynski, M.T.](#), Leibowicz, B.D., 2022. A multi-level optimization model of infrastructure-dependent technology adoption: Overcoming the chicken-and-egg problem. *European Journal of Operational Research* 300, 755-770. DOI: [10.1016/j.ejor.2021.10.026](#)
- [34] [Zhu, Q.](#), Leibowicz, B.D., 2022. A Markov decision process approach for cost-benefit analysis of infrastructure resilience upgrades. *Risk Analysis* 42(7), 1585-1602. DOI: [10.1111/risa.13838](#)

- [33] Waxman, A.R., Corcoran, S., Robison, A., Leibowicz, B.D., Olmstead, S.M., 2021. Leveraging scale economies and policy incentives: Carbon capture, utilization & storage in Gulf clusters. *Energy Policy* 156, 112452. DOI: [10.1016/j.enpol.2021.112452](https://doi.org/10.1016/j.enpol.2021.112452)
- [32] Calci, B., Leibowicz, B.D., Bard, J.F., Jayadev, G., 2021. Incorporating learning-by-doing into mixed complementarity equilibrium models. *Computers & Industrial Engineering* 159, 107472. DOI: [10.1016/j.cie.2021.107472](https://doi.org/10.1016/j.cie.2021.107472)
- [31] Carvallo, J.P., Zhang, N., Leibowicz, B.D., Carr, T., Galbraith, M., Larsen, P.H., 2021. Implications of a regional resource adequacy program for utility integrated resource planning. *The Electricity Journal* 34, 106960. DOI: [10.1016/j.tej.2021.106960](https://doi.org/10.1016/j.tej.2021.106960)
- [30] Bandyopadhyay, A., Leibowicz, B.D., Webber, M.E., 2021. Solar panels and smart thermostats: The power duo of the residential sector? *Applied Energy* 290, 116747. DOI: [10.1016/j.apenergy.2021.116747](https://doi.org/10.1016/j.apenergy.2021.116747)
- [29] Calci, B., Leibowicz, B.D., Bard, J.F., 2022. North American natural gas markets under LNG demand growth and infrastructure restrictions. *The Energy Journal* 43 (2), 17-40. DOI: <https://doi.org/10.5547/01956574.43.2.bcal>
- Runner Up, Dennis J. O'Brien USAEE Best Student Paper Award, 2019
- [28] Kamei, M., Wangmo, T., Leibowicz, B.D., Nishioka, S., 2021. Urbanization, carbon neutrality, and Gross National Happiness: Sustainable development pathways for Bhutan. *Cities* 111, 102972. DOI: [10.1016/j.cities.2020.102972](https://doi.org/10.1016/j.cities.2020.102972)
- [27] Jones, E.C., Leibowicz, B.D., 2021. Co-optimization and community: Maximizing the benefits of distributed electricity and water technologies. *Sustainable Cities and Society* 64, 102515. DOI: [10.1016/j.scs.2020.102515](https://doi.org/10.1016/j.scs.2020.102515)
- [26] Naeini, M.E., Leibowicz, B.D., Bickel, J.E., 2020. Can you trust a model whose output keeps changing? Interpreting changes in the social cost of carbon produced by the DICE model. *Environment Systems and Decisions* 40, 301-320. DOI: [10.1007/s10669-020-09783-y](https://doi.org/10.1007/s10669-020-09783-y)
- [25] Carvallo, J.P., Zhang, N., Murphy, S.P., Leibowicz, B.D., Larsen, P.H., 2020. The economic value of a centralized approach to distributed resource investment and operation. *Applied Energy* 269, 115071. DOI: [10.1016/j.apenergy.2020.115071](https://doi.org/10.1016/j.apenergy.2020.115071)
- [24] Bandyopadhyay, A., Leibowicz, B.D., Beagle, E.A., Webber, M.E., 2020. As one falls, another rises? Residential peak load reduction through electricity rate structures. *Sustainable Cities and Society* 60, 102191. DOI: [10.1016/j.scs.2020.102191](https://doi.org/10.1016/j.scs.2020.102191)
- [23] Brozynski, M.T., Leibowicz, B.D., 2020. Markov models of policy support for technology transitions. *European Journal of Operational Research* 286, 1052-1069. DOI: [10.1016/j.ejor.2020.03.066](https://doi.org/10.1016/j.ejor.2020.03.066)
- [22] Leibowicz, B.D., 2020. Urban land use and transportation planning for climate change mitigation: A theoretical framework. *European Journal of Operational Research* 284, 604-616. DOI: [10.1016/j.ejor.2019.12.034](https://doi.org/10.1016/j.ejor.2019.12.034)
- Runner Up, INFORMS ENRE Early Career Best Paper Award, 2021
- [21] Waxman, A.R., Khomaini, A., Leibowicz, B.D., Olmstead, S.M., 2020. Emissions in the stream: Estimating the greenhouse gas impacts of an oil and gas boom. *Environmental Research Letters* 15, 014004. DOI: [10.1088/1748-9326/ab5e6f](https://doi.org/10.1088/1748-9326/ab5e6f)
- [20] Jayadev, G., Leibowicz, B.D., Kutanoglu, E., 2020. U.S. electricity infrastructure of the future: Generation and transmission pathways through 2050. *Applied Energy* 260, 114267. DOI: [10.1016/j.apenergy.2019.114267](https://doi.org/10.1016/j.apenergy.2019.114267)
- [19] Zhu, Q., Leibowicz, B.D., 2020. Vehicle efficiency improvements, urban form, and energy use impacts. *Cities* 97, 102486. DOI: [10.1016/j.cities.2019.102486](https://doi.org/10.1016/j.cities.2019.102486)
- [18] Phathanapirom, U.B., Haas, D.A., Leibowicz, B.D., 2020. A game-theoretic approach to nuclear fuel cycle transition analysis under uncertainty. *Annals of Nuclear Energy* 137, 107112. DOI: [10.1016/j.anucene.2019.107112](https://doi.org/10.1016/j.anucene.2019.107112)

- [17] Zhang, N., Leibowicz, B.D., Hanasusanto, G.A., 2020. Optimal residential battery storage operations using robust data-driven dynamic programming. *IEEE Transactions on Smart Grid* 11, 1771-1780. DOI: [10.1109/TSG.2019.2942932](https://doi.org/10.1109/TSG.2019.2942932)
- [16] Jones, E.C., Leibowicz, B.D., 2019. Contributions of shared autonomous vehicles to climate change mitigation. *Transportation Research Part D: Transport and Environment* 72, 279-298. DOI: [10.1016/j.trd.2019.05.005](https://doi.org/10.1016/j.trd.2019.05.005)
- [15] Leibowicz, B.D., Punjabi, K., O'Shaughnessy, E., Margolis, R., 2019. Rules of the rooftop: Platform design and price reductions in an online solar photovoltaic marketplace in the United States. *Energy Research & Social Science* 48, 194-204. DOI: [10.1016/j.erss.2018.10.010](https://doi.org/10.1016/j.erss.2018.10.010)
- [14] Leibowicz, B.D., Lanham, C.M., Brozynski, M.T., Vázquez-Canteli, J.R., Castillo Castejón, N., Nagy, Z., 2018. Optimal decarbonization pathways for urban residential building energy services. *Applied Energy* 230, 1311-1325. DOI: [10.1016/j.apenergy.2018.09.046](https://doi.org/10.1016/j.apenergy.2018.09.046)
- [13] Brozynski, M.T., Leibowicz, B.D., 2018. Decarbonizing power and transportation at the urban scale: An analysis of the Austin, Texas Community Climate Plan. *Sustainable Cities and Society* 43, 41-54. DOI: [10.1016/j.scs.2018.08.005](https://doi.org/10.1016/j.scs.2018.08.005)
- [12] Deetjen, T.A., Conger, J.P., Leibowicz, B.D., Webber, M.E., 2018. Review of climate action plans in 29 major U.S. cities: Comparing current policies to research recommendations. *Sustainable Cities and Society* 41, 711-727. DOI: [10.1016/j.scs.2018.06.023](https://doi.org/10.1016/j.scs.2018.06.023)
- [11] Leibowicz, B.D., 2018. Policy recommendations for a transition to sustainable mobility based on historical diffusion dynamics of transport systems. *Energy Policy* 119, 357-366. DOI: [10.1016/j.enpol.2018.04.066](https://doi.org/10.1016/j.enpol.2018.04.066)
- [10] Vitter, J.S., Berhanu, B., Deetjen, T.A., Leibowicz, B.D., Webber, M.E., 2018. Optimal sizing and dispatch for a community-scale potable water recycling facility. *Sustainable Cities and Society* 39, 225-240. DOI: [10.1016/j.scs.2018.02.023](https://doi.org/10.1016/j.scs.2018.02.023)
- [9] Leibowicz, B.D., 2018. Welfare improvement windows for innovation policy. *Research Policy* 47, 390-398. DOI: [10.1016/j.respol.2017.12.009](https://doi.org/10.1016/j.respol.2017.12.009)
- [8] Leibowicz, B.D., 2018. The cost of policy uncertainty in electric sector capacity planning: Implications for instrument choice. *The Electricity Journal* 31, 33-41. DOI: [10.1016/j.tej.2017.12.001](https://doi.org/10.1016/j.tej.2017.12.001)
- [7] Leibowicz, B.D., 2017. Effects of urban land-use regulations on greenhouse gas emissions. *Cities* 70, 135-152. DOI: [10.1016/j.cities.2017.07.016](https://doi.org/10.1016/j.cities.2017.07.016)
- [6] Leibowicz, B.D., Krey, V., Grubler, A., 2016. Representing spatial technology diffusion in an energy system optimization model. *Technological Forecasting and Social Change* 103, 350-363. DOI: [10.1016/j.techfore.2015.06.001](https://doi.org/10.1016/j.techfore.2015.06.001)
- [5] Leibowicz, B.D., 2015. Growth and competition in renewable energy industries: Insights from an integrated assessment model with strategic firms. *Energy Economics* 52, 13-25. DOI: [10.1016/j.eneco.2015.09.010](https://doi.org/10.1016/j.eneco.2015.09.010)
- [4] Wilkerson, J.T., Leibowicz, B.D., Turner, D.D., Weyant, J.P., 2015. Comparison of integrated assessment models: Carbon price impacts on U.S. energy. *Energy Policy* 76, 18-31. DOI: [10.1016/j.enpol.2014.10.011](https://doi.org/10.1016/j.enpol.2014.10.011)
- [3] Leibowicz, B.D., 2014. Evaluation of post-Fukushima Japanese electricity strategies: A stochastic simulation model. *International Journal of Energy Research* 38, 1578-1598. DOI: [10.1002/er.3181](https://doi.org/10.1002/er.3181)
- [2] Leibowicz, B.D., Roumpani, M., Larsen, P.H., 2013. Carbon emissions caps and the impact of a radical change in nuclear electricity costs. *International Journal of Energy Economics and Policy* 3, 60-74.
- [1] Leibowicz, B.D., Abbot, D.S., Emanuel, K., Tziperman, E., 2012. Correlation between present-day model simulation of Arctic cloud radiative forcing and sea ice consistent with positive winter convective cloud feedback. *Journal of Advances in Modeling Earth Systems* 4, M07002. DOI: [10.1029/2012MS000153](https://doi.org/10.1029/2012MS000153)

## **B. Refereed Journal Papers Submitted and Under Revision (8)**

- [8] Bourque, C.M., Leibowicz, B.D., Clarno, K.T. Nuclear fuel fabrication facility design optimization through simulation. Submitted.
- [7] Calci, B., Leibowicz, B.D., Bard, J.F., Jayadev, G. A bilevel approach to multi-period natural gas pricing and investment in gas-consuming infrastructure. Submitted.
- [6] Colombe, C., Leibowicz, B.D., Mendoza, B.R. The effects of policy uncertainty and risk aversion on carbon capture, utilization, and storage investments. Under revision at *Energy Policy*.
- Dennis J. O'Brien USAEE Best Student Paper Award, 2023
- [5] Leibowicz, B.D. Optimal technology adoption subsidies with consumer switching costs and strategic firms. Submitted.
- [4] Liu, D., Leibowicz, B.D., Bard, J.F., Zhu, Y., Guo, Y., Shao, Y. Optimal investment planning for production networks with fixed production profiles. Under revision at *Computers & Operations Research*.
- [3] Moglen, R.L., Leibowicz, B.D., Kwasinski, A., Cruse, G. Optimal restoration of power infrastructure following a disaster with environmental hazards. Under revision at *Socio-Economic Planning Sciences*.
- [2] Olmstead, S.M., Leibowicz, B.D., Mason, C.F., Waxman, A.R., Huber-Rodriguez, H.R., Stemmler, J. Ambiguous climate policy: A tax credit will increase the use of carbon capture technology, but will it reduce carbon dioxide emissions? Submitted.
- [1] Zhang, N., Leibowicz, B.D. Co-optimization of utility capacity planning and rate design with demand-side resources. Submitted.

### **C. Refereed Conference Proceedings (10)**

- [10] Bandyopadhyay, A., Conger, J.P., Beagle, E.A., Webber, M.E., Leibowicz, B.D., 2020. Energetic and economic potential for load control for residential customers in Austin, TX. *Proceedings of the ASME 2020 International Mechanical Engineering Congress & Exposition*. DOI: [10.1115/IMECE2020-23114](https://doi.org/10.1115/IMECE2020-23114)
- [9] Bourque, C.M., Thompson, C.J., Clarno, K.T., Leibowicz, B.D., 2020. Coupling simulation technologies to assist nuclear fuel fabrication facility design. *Proceedings of the 2020 American Nuclear Society Winter Meeting*. DOI: [10.13182/T123-33395](https://doi.org/10.13182/T123-33395)
- [8] Jayadev, G., Leibowicz, B.D., Kutanoglu, E., 2019. U.S. electricity infrastructure of the future: Generation and transmission pathways through 2050. *Proceedings of the 37<sup>th</sup> USAEE/IAEE North American Conference*.
- [7] Bandyopadhyay, A., Conger, J.P., Webber, M.E., Leibowicz, B.D., 2019. A decision support tool for distributed solar and storage investments: A case study in Austin, TX. *Proceedings of the ASME 2019 International Mechanical Engineering Congress & Exposition*. DOI: [10.1115/IMECE2019-11068](https://doi.org/10.1115/IMECE2019-11068)
- [6] Bandyopadhyay, A., Ramirez-Meyers, K., Wikramanayake, E.D., Leibowicz, B.D., Webber, M.E., Bahadur, V., 2019. A capacity planning model for microgrids in rural India. *Proceedings of the ASME 2019 International Mechanical Engineering Congress & Exposition*. DOI: [10.1115/IMECE2019-11707](https://doi.org/10.1115/IMECE2019-11707)
- [5] Leibowicz, B.D., 2017. The cost of policy uncertainty in electric sector capacity planning: Implications for instrument choice. *Proceedings of the 35<sup>th</sup> USAEE/IAEE North American Conference*.
- [4] Leibowicz, B.D., 2017. Effects of urban land-use regulations on greenhouse gas emissions. *Proceedings of the 2017 International Energy Workshop*.
- [3] Leibowicz, B.D., 2016. Technology-push, demand-pull, and strategic R&D investment. *Proceedings of the 34<sup>th</sup> USAEE/IAEE North American Conference*.
- [2] Leibowicz, B.D., 2015. Growth and competition in renewable energy industries: Insights from an integrated assessment model with strategic firms. *Proceedings of the 33<sup>rd</sup> USAEE/IAEE North American Conference*.
- [1] Leibowicz, B.D., 2013. Representing international technology spillovers in a computable general equilibrium energy-economic model. *Proceedings of the 2013 International Energy Workshop*.

**D. Technical Reports (7)**

- [7] Carvalho, J.P., Zhang, N., Leibowicz, B.D., Carr, T., Baik, S., Larsen, P.H., 2023. A guide for improved resource adequacy assessments in evolving power systems: Institutional and technical dimensions. *Lawrence Berkeley National Laboratory Technical Report*.
- [6] King, C.W., Rhodes, J.D., Zarnikau, J., Lin, N., Kutanoglu, E., Leibowicz, B.D., Niyogi, D., Rai, V., Santoso, S., Spence, D., Tompaidis, S., Zhu, H., Funkhouser, E., Austgen, B., 2021. The Timeline and Events of the February 2021 Texas Electric Grid Blackouts. *The University of Texas at Austin Energy Institute*.
- [5] Carvalho, J.P., Zhang, N., Leibowicz, B.D., Carr, T., Galbraith, M., Larsen, P.H., 2020. Implications of a regional resource adequacy program on utility integrated resource planning: Study for the Western United States. *Lawrence Berkeley National Laboratory Technical Report*.
- [4] Sanstad, A.H., Zhu, Q., Leibowicz, B.D., Larsen, P.H., Eto, J.H., 2020. Case studies of the economic impacts of power interruptions and damage to electricity system infrastructure from extreme events. *Lawrence Berkeley National Laboratory Technical Report*.
- [3] Hall, J., Kuo, S., Ruiz-Juri, N., Machemehl, R., Baumanis, C., Leibowicz, B.D., Olmstead, T., 2019. An overview of methods for safety improvement project selection. *The University of Texas at Austin Center for Transportation Research, Strategic Safety Improvements project, final report to City of Austin*.
- [2] Leibowicz, B.D., Punjabi, K., O’Shaughnessy, E., Margolis, R., 2018. Effects of platform design on the customer experience in an online solar PV marketplace. *National Renewable Energy Laboratory Technical Report 6A20–71178*.
- [1] Grubler, A., Leibowicz, B.D., Krey, V., Bento, N., Riahi, K., 2014. Lessons learned from technology diffusion in the past for future scenarios — integrating the influence of costs, size, and market characteristics into integrated assessment models. *RITE-IIASA collaborative study, Alternative pathways toward sustainable development and climate stabilization (ALPS) II project, final report*.

**E. Op-Eds (11)**

- [11] Leibowicz, B.D. Bipartisan infra plan not perfect, but it’s a good start on climate change. *Infrastructure Investor*, June 30, 2021.
- [10] Leibowicz, B.D. Wind power reliability — low expectations are OK. *Austin American-Statesman*, February 25, 2021.
- [9] Leibowicz, B.D. Don’t blame wind energy for the crisis. *San Antonio Express-News*, February 23, 2021.
- [8] Leibowicz, B.D., Farhat, K. How Amazon can use its HQ2 search to boost clean energy. *Dallas Morning News*, March 15, 2018.
- [7] Leibowicz, B.D., Farhat, K. How Amazon’s HQ2 could advance the clean energy economy. *Austin American-Statesman*, March 13, 2018.
- [6] Farhat, K., Leibowicz, B.D. Can Amazon make us greener? *Houston Chronicle*, March 7, 2018.
- [5] Leibowicz, B.D. Uncertain effects with driverless vehicles. *San Antonio Express-News*, December 9, 2017.
- [4] Leibowicz, B.D. Shared autonomous vehicles could do more harm than good. *Austin American-Statesman*, November 29, 2017.
- [3] Leibowicz, B.D. With right policies, cities can curb climate change. *Houston Chronicle*, June 28, 2017.
- [2] Leibowicz, B.D. Cities can work on climate change – with the right policies. *Austin American-Statesman*, June 19, 2017.
- [1] Leibowicz, B.D. U.S. Cities Don’t Need the Paris Accord to Fight Climate Change. *Fortune*, June 13, 2017.



## PRESENTATIONS

### A. Invited Lectures, Seminars, and Panels

- [25] Leibowicz, B.D., 2022. Multi-agent optimization models of natural gas markets. *ExxonMobil Modeling, Optimization, and Data Science (MODS) Group*, virtual seminar.
- [24] Leibowicz, B.D., 2022. My climate change mitigation research at IIASA: Past and present. *International Cooperation for Global Challenges: 50 Years of Building Research Bridges at IIASA*, hosted by the *International Institute for Applied Systems Analysis* and the *National Academy of Sciences*, Boston, MA.
- [23] Leibowicz, B.D., 2022. **Panel Moderator:** Beyond the Least Cost Paradigm. *Macro-Energy Systems Speaker Series*, virtual panel.
- [22] Leibowicz, B.D., Busby, J.W., 2022. Sectoral feasibility of greenhouse gas mitigation and clean energy transitions. *UT Energy Week*, virtual conference.
- [21] Leibowicz, B.D., 2021. Cost-benefit analysis of infrastructure resilience upgrades: Theoretical, computational, and empirical advances. *Department of Engineering Systems and Environment, University of Virginia*, Charlottesville, VA.
- [20] Leibowicz, B.D., 2021. **Panelist:** Getting Started in Public Sector Operations Research. *INFORMS Section on Public Sector Operations Research*, INFORMS Annual Meeting, Anaheim, CA.
- [19] Leibowicz, B.D., 2021. **Panel Moderator:** Technology Pathways: Fork in the Road? *UT Energy Week*, Austin, TX (virtual due to COVID-19).
- [18] Leibowicz, B.D., 2020. **Panelist:** “Smart” is the Word of the Hour – Let’s Talk Smart Homes, Smart Buildings and Smart Communities. *Electrification 2020: International Conference & Exposition*, hosted by the *Electric Power Research Institute*, Charlotte, NC (**anceled** due to COVID-19).
- [17] Leibowicz, B.D., Carvallo, J.P., Carr, T., Galbraith, M., 2020. Implications of a regional resource adequacy program on utility integrated resource planning (team presentation). *Western Interstate Energy Board*, public webinar.
- [16] Leibowicz, B.D., 2020. The economic value of a centralized approach to distributed resource investment and operation. *Georgia Tech Energy Systems and Optimization Workshop*, Atlanta, GA (virtual due to COVID-19).
- [15] Leibowicz, B.D., 2020. **Panelist:** Macro-Energy Systems: Toward a New Discipline. *Stanford University Energy Seminar*, Stanford, CA (virtual due to COVID-19).
- [14] Leibowicz, B.D., 2020. **Panel Moderator:** Critiques of Macro-Energy Systems Research and Our Responses as a Field. *Stanford University Macro-Energy Systems Workshop*, Stanford, CA (virtual due to COVID-19).
- [13] Leibowicz, B.D., 2020. Optimal U.S. electricity infrastructure investment pathways through 2050. *Asia Pacific Energy Research Center Annual Conference*, Tokyo, Japan (virtual due to COVID-19).
- [12] Leibowicz, B.D., 2020. U.S. electricity infrastructure of the future: Generation and transmission pathways through 2050. *Strategic Energy Analysis Center, National Renewable Energy Laboratory*, Golden, CO (virtual seminar).
- [11] Leibowicz, B.D., 2020. Decarbonizing the U.S. energy economy: Importance of the demand side. **Panelist:** Policy and Business Implications of a Green New Deal. *UT Energy Week*, Austin, TX.
- [10] Leibowicz, B.D., 2020. Urban land use and transportation planning for climate change mitigation: A theoretical framework. *Department of Industrial and Systems Engineering Graduate Seminar, University of Tennessee*, Knoxville, Knoxville, TN.
- [9] Leibowicz, B.D., 2020. Urban land use and transportation planning for climate change mitigation: A theoretical framework. *IIASA-RITE International Workshop Towards Improved Understanding, Concepts, Policies, and Models of Energy Demand*, *International Institute for Applied Systems Analysis*, Laxenburg, Austria.

- [8] Leibowicz, B.D., 2019. Beyond the building: Residential electrification and affordable housing in their broader energy and urban contexts. **Panelist:** The Customer Experience. *The Electrification Experience*, hosted by the *Electric Power Research Institute* and *CPS Energy*, San Antonio, TX.
- [7] Leibowicz, B.D., 2019. Sustainable Development Goals 7 and 11: Affordable and clean energy in a context of rapid urbanization. **Panelist:** Sustainable Development Goals for Cities. *Sustainable Built Environment Conference*, Tokyo, Japan.
- [6] Leibowicz, B.D., 2019. Urban land use and transportation planning for climate change mitigation: A theoretical framework. *Institute for Global Environmental Strategies*, Hayama, Japan.
- [5] Leibowicz, B.D., 2019. Robust data-driven dynamic programming and applications in energy storage. *Idaho National Laboratory*, Idaho Falls, ID.
- [4] Leibowicz, B.D., 2018. Cities and global change: Trends, policy developments, and research directions. *International Institute for Applied Systems Analysis*, Laxenburg, Austria.
- [3] Leibowicz, B.D., 2017. Integrated systems modeling of energy, the economy, and the environment. *Sandia National Laboratories*, Albuquerque, NM.
- [2] Leibowicz, B.D., 2017. Effects of urban land-use regulations on greenhouse gas emissions. *U.S. Green Building Council, Central Texas Chapter*, Austin, TX.
- [1] Leibowicz, B.D., 2015. Technology-push, demand-pull, and strategic R&D investment. *Stanford University Environmental and Energy Policy Analysis Center*, Stanford, CA.

#### **B. Technical Presentations at Conferences**

- [58] Moglen, R., Leibowicz, B.D., Kwasinski, A., Cruse, G., 2022. Restoration and recovery of interdependent infrastructure after a nuclear detonation. *INFORMS Annual Meeting*, Indianapolis, IN.
- [57] Colombe, C., Leibowicz, B.D., 2022. Tax credit uncertainty and carbon capture infrastructure development. *INFORMS Annual Meeting*, Indianapolis, IN.
- [56] Zhu, Q., Leibowicz, B.D., Busby, J.W., Shidore, S., Adelman, D.E., Olmstead, S.M., 2022. Enhancing policy realism in energy system optimization models: Politically feasible decarbonization pathways for the United States. *INFORMS Annual Meeting*, Indianapolis, IN.
- [55] Leibowicz, B.D., 2022. Redefining resource adequacy in modern power systems. *INFORMS Annual Meeting*, Indianapolis, IN.
- [54] Zhu, Q., Leibowicz, B.D., Busby, J.W., Shidore, S., Adelman, D.E., Olmstead, S.M., 2022. Enhancing policy realism in energy system optimization models: Politically feasible decarbonization pathways for the United States. *Macro-Energy Systems Workshop*, Stanford, CA.
- [53] Leibowicz, B.D., Zhu, Q., Busby, J.W., Shidore, S., Adelman, D.E., Olmstead, S.M., 2022. Enhancing policy realism in energy system optimization models: Politically feasible decarbonization pathways for the United States. *IISE Annual Conference*, Seattle, WA.
- [52] Moglen, R., Barth, J., Gupta, S., Kawai, E., Leibowicz, B.D., Klise, K., 2021. A nexus approach to infrastructure resilience planning under uncertainty. *INFORMS Annual Meeting*, Anaheim, CA.
- [51] Calci, B., Leibowicz, B.D., Bard, J.F., Jayadev, G., 2021. Multi-period pricing under price history dependent investments in consumption infrastructure: An application in natural gas sector. *INFORMS Annual Meeting*, Anaheim, CA.
- [50] Lu, L., Zhang, N., Leibowicz, B.D., 2021. Designing electric vehicle charging infrastructure to enable disaster evacuation. *INFORMS Annual Meeting*, Anaheim, CA.
- [49] Leibowicz, B.D., Calci, B., Bard, J.F., Jayadev, G., 2021. Incorporating learning-by-doing into mixed complementarity equilibrium models. *INFORMS Annual Meeting*, Anaheim, CA.

- [48] Moglen, R., Klise, K., Leibowicz, B.D., 2021. Water infrastructure resilience: A case study in the U.S. Virgin Islands. *IISE Annual Conference*, Montreal, Canada (virtual due to COVID-19).
- [47] Leibowicz, B.D., Calci, B., Bard, J.F., Jayadev, G., 2021. Incorporating learning-by-doing into mixed complementarity equilibrium models. *IISE Annual Conference*, Montreal, Canada (virtual due to COVID-19).
- [46] Bourque, C.M., Thompson, C.J., Clarno, K.T., Leibowicz, B.D., 2020. Coupling simulation technologies to assist nuclear fuel fabrication facility design. *2020 American Nuclear Society Winter Meeting*, Chicago, IL (virtual due to COVID-19).
- [45] Jayadev, G., Leibowicz, B.D., Bard, J.F., Calci, B., 2020. Strategic interactions between liquefied natural gas and domestic gas markets: A bilevel model. *INFORMS Annual Meeting*, National Harbor, MD (virtual due to COVID-19).
- [44] Zhu, Q., Leibowicz, B.D., 2020. Sectoral greenhouse gas mitigation in the U.S. *INFORMS Annual Meeting*, National Harbor, MD (virtual due to COVID-19).
- [43] Moglen, R., Klise, K.A., Leibowicz, B.D., 2020. Water infrastructure resilience: A case study in the U.S. Virgin Islands. *INFORMS Annual Meeting*, National Harbor, MD (virtual due to COVID-19).
- [42] Calci, B., Leibowicz, B.D., Bard, J.F., Jayadev, G., 2020. A complementarity-based equilibrium model with endogenous technological change and an application to natural gas markets. *INFORMS Annual Meeting*, National Harbor, MD (virtual due to COVID-19).
- [41] Leibowicz, B.D., Brozynski, M.T., 2020. A bilevel optimization model of infrastructure-dependent technology adoption: Overcoming the chicken-and-egg problem. *INFORMS Annual Meeting*, National Harbor, MD (virtual due to COVID-19).
- [40] Leibowicz, B.D., 2020. Urban land use and transportation planning for climate change mitigation: A theoretical framework. *IISE Annual Conference*, New Orleans, LA (virtual due to COVID-19).
- [39] Zhang, N., Leibowicz, B.D., Hanasusanto, G.A., 2020. Optimal residential battery storage operations using robust data-driven dynamic programming. *MIT A+B Applied Energy Symposium*, Cambridge, MA (virtual due to COVID-19).
- [38] Leibowicz, B.D., Jayadev, G., Kutanoglu, E., 2019. U.S. electricity infrastructure of the future: Generation and transmission pathways through 2050. *37<sup>th</sup> USAEE/IAEE North American Conference*, Denver, CO.
- [37] Calci, B., Leibowicz, B.D., Bard, J.F., 2019. Not on my coast? North American natural gas markets under LNG demand growth and infrastructure restrictions. *37<sup>th</sup> USAEE/IAEE North American Conference*, Denver, CO. **Runner Up for the 2019 Dennis J. O'Brien USAEE Best Student Paper Award.**
- [36] Leibowicz, B.D., Zhang, N., Hanasusanto, G.A., 2019. Optimal residential battery storage operations using robust data-driven dynamic programming. *INFORMS Annual Meeting*, Seattle, WA.
- [35] Leibowicz, B.D., Jayadev, G., Kutanoglu, E., 2019. U.S. electricity infrastructure of the future: Generation and transmission pathways through 2050. *INFORMS Annual Meeting*, Seattle, WA.
- [34] Zhang, N., Carvallo, J.P., Leibowicz, B.D., Larsen, P.H., Murphy, S., 2019. Generation and transmission planning with decentralized distributed resource decision making. *INFORMS Annual Meeting*, Seattle, WA.
- [33] Brozynski, M.T., Leibowicz, B.D., 2019. A game-theoretic model of infrastructure-dependent technology adoption: Overcoming the chicken-and-egg problem. *INFORMS Annual Meeting*, Seattle, WA.
- [32] Bandyopadhyay, A., Ramirez-Meyers, K., Wikramanayake, E.D., Leibowicz, B.D., Webber, M.E., Bahadur, V., 2019. A capacity planning model for microgrids in rural India. *ASME 2019 International Mechanical Engineering Congress & Exposition*, Salt Lake City, UT.
- [31] Bandyopadhyay, A., Conger, J.P., Webber, M.E., Leibowicz, B.D., 2019. A decision support tool for distributed solar and storage investments: A case study in Austin, TX. *ASME 2019 International Mechanical Engineering Congress & Exposition*, Salt Lake City, UT.

- [30] Bandyopadhyay, A., Leibowicz, B.D., Conger, J.P., Beagle, E.A., Webber, M.E., 2019. A convex optimization tool to model customer behavioral issues in demand response initiatives in the residential sector. *Texas A&M Conference on Energy*, College Station, TX.
- [29] Leibowicz, B.D., Lanham, C.M., Brozynski, M.T., Vázquez-Canteli, J.R., Castillo Castejón, N., Nagy, Z., 2019. Optimal decarbonization pathways for urban residential building energy services. *Sustainable Built Environment Conference*, Tokyo, Japan.
- [28] Jayadev, G., Leibowicz, B.D., Kutanoglu, E., 2019. U.S. energy infrastructure of the future: Electricity capacity planning through 2050. *International Conference on Continuous Optimization (ICCOPT)*, Berlin, Germany.
- [27] Leibowicz, B.D., 2019. Urban land use and transportation planning for climate change mitigation: A theoretical framework. *INFORMS International Meeting*, Cancun, Mexico.
- [26] Calci, B., Leibowicz, B.D., Bard, J.F., 2019. North American natural gas market and infrastructure under different LNG export scenarios. *IAEE International Conference*, Montreal, Canada.
- [25] Bandyopadhyay, A., Conger, J.P., Webber, M.E., Leibowicz, B.D., 2019. A techno-economic model to assess optimal distributed energy resource investments in the residential sector. *IAEE International Conference*, Montreal, Canada.
- [24] Zhang, N., Leibowicz, B.D., Hanasusanto, G.A., 2019. Optimal residential battery storage operations using robust data-driven dynamic programming. *IISE Annual Conference*, Orlando, FL.
- [23] Leibowicz, B.D., Brozynski, M.T., 2019. Markov models of policy support for technology transitions. *IISE Annual Conference*, Orlando, FL.
- [22] Brozynski, M.T., Leibowicz, B.D., 2018. Markov models of policy support for technology transitions. *INFORMS Annual Meeting*, Phoenix, AZ.
- [21] Jayadev, G., Leibowicz, B.D., Kutanoglu, E., 2018. U.S. energy infrastructure of the future: Electric sector pathways through 2050. *INFORMS Annual Meeting*, Phoenix, AZ.
- [20] Leibowicz, B.D., 2018. Representing the demand side in energy system optimization models. *INFORMS Annual Meeting*, Phoenix, AZ.
- [19] Jones, E.C., Leibowicz, B.D., 2018. The role of shared autonomous vehicles in climate change mitigation. *Graduate Education for Minorities (GEM) Annual Board Meeting and Conference*, Los Angeles, CA.
- [18] Leibowicz, B.D., Punjabi, K., O'Shaughnessy, E., Margolis, R., 2018. Effects of platform design on solar PV prices in an online marketplace. *IAEE International Conference*, Groningen, Netherlands.
- [17] Bandyopadhyay, A., Ramirez-Meyers, K., Wikramanayake, E.D., Leibowicz, B.D., Webber, M.E., Bahadur, V. A capacity planning model for microgrids in rural India. *IAEE International Conference*, Groningen, Netherlands.
- [16] Leibowicz, B.D., Brozynski, M.T., 2018. Decarbonizing power and transportation at the urban scale: An analysis of the Austin, Texas Community Climate Plan. *International Energy Workshop*, Gothenburg, Sweden.
- [15] Leibowicz, B.D., 2018. Effects of urban land-use regulations on greenhouse gas emissions. *Intergovernmental Panel on Climate Change (IPCC) Cities and Climate Change Science Conference*, Edmonton, Canada.
- [14] Leibowicz, B.D., 2017. The cost of policy uncertainty in electric sector capacity planning: Implications for instrument choice. *Energy Policy Research Conference*, Park City, UT.
- [13] Leibowicz, B.D., 2017. The cost of policy uncertainty in electric sector capacity planning: Implications for instrument choice. *INFORMS Annual Meeting*, Houston, TX.
- [12] Leibowicz, B.D., 2017. Policy recommendations for a transition to sustainable mobility based on historical diffusion dynamics of transport systems. *INFORMS Annual Meeting*, Houston, TX, 2017.
- [11] Brozynski, M.T., Leibowicz, B.D., 2017. Optimal pathways to net-zero emissions: A study of Austin, Texas. *INFORMS Annual Meeting*, Houston, TX.

- [10] Vitter, J.S., Berhanu, B., Deetjen, T.A., Leibowicz, B.D., Webber, M.E., 2018. Optimal dispatch and equipment sizing of a community-scale water recycling facility for electric demand flexibility. *INFORMS Annual Meeting*, Houston, TX.
- [9] Leibowicz, B.D., 2017. Effects of urban land-use regulations on greenhouse gas emissions. *International Energy Workshop*, College Park, MD.
- [8] Leibowicz, B.D., 2017. The cost of policy uncertainty in electric sector capacity planning: Implications for instrument choice. *35<sup>th</sup> USAEE/IAEE North American Conference*, Houston, TX.
- [7] Leibowicz, B.D., 2016. Technology-push, demand-pull, and strategic R&D investment. *INFORMS Annual Meeting*, Nashville, TN.
- [6] Leibowicz, B.D., 2016. Technology-push, demand-pull, and strategic R&D investment. *34<sup>th</sup> USAEE/IAEE North American Conference*, Tulsa, OK.
- [5] Leibowicz, B.D., 2015. Growth and competition in renewable energy industries: Insights from an integrated assessment model with strategic firms. *33<sup>rd</sup> USAEE/IAEE North American Conference*, Pittsburgh, PA.
- [4] Leibowicz, B.D., Krey, V., Grubler, A., 2014. Representing spatial technology diffusion in an energy system optimization model. *Energy Systems Conference*, London, United Kingdom.
- [3] Leibowicz, B.D., Krey, V., Grubler, A., 2014. Representing spatial technology diffusion in an energy system optimization model. *Integrated Assessment Modeling Consortium Annual Meeting*, College Park, MD.
- [2] Leibowicz, B.D., 2013. Representing international technology spillovers in a computable general equilibrium energy-economic model. *International Energy Workshop*, Paris, France.
- [1] Leibowicz, B.D., 2013. Representing international technology spillovers in a computable general equilibrium energy-economic model. *The University of Texas at Austin Energy Forum*, Austin, TX.

### **C. Other Invited Workshop Participation**

- [3] **Participant.** *Cybersecurity Manufacturing Innovation Institute (CyManII) Roadmap Workshop*, virtual event, 2021.
- [2] **Participant and Commentator.** *Workshop on Accelerating Climate-Mitigating Technology Development and Deployment*, College Park, MD, 2018. Convened by Harvard Kennedy School and University of Maryland.
- [1] **Participant.** *Sandia National Laboratories Academic Alliance Faculty Field Day*, Livermore, CA, 2018.

### **GRANTS AND CONTRACTS**

<b>EXTERNAL RESEARCH FUNDING</b>				
<b>Role and Co-Investigators</b>	<b>Title</b>	<b>Sponsor</b>	<b>Grant Total (My Share)</b>	<b>Grant Period</b>
Co-PI J. Bard (PI)	Project Portfolio Optimization with Fixed Production Profile	ExxonMobil Upstream Research Company	\$450,000 (\$225,000)	9/2022 – 8/2025
PI J. Hasenbein (Co-PI)	Sampling Design for Random Inspections	Department of Homeland Security (via Texas A&M)	\$250,000 (\$125,000)	11/2022 – 11/2024
Co-PI C. Werth (PI), D. Eaton (Co-PI), A. Huang (Co-PI), P. Sela (Co-PI)	NRT-INFEWS: Graduate Student Education: Reducing Energy Barriers for Novel Water Supply Use in Sustainable Agriculture	National Science Foundation	\$3,020,324 (\$604,065)	9/2018 – 8/2024

PI*	Economic Impact of Nuclear Detonations: The Nuclear Economic Consequence Analysis Tool (NECAT)	Defense Threat Reduction Agency (via University of Southern California)	\$412,562 (\$316,667)	9/2021 – 7/2024
Co-PI S. Olmstead (PI), A. Waxman (Co-PI), C. Mason (Co-PI)	The Economics of Scaling Carbon Capture, Utilization, and Storage	Alfred P. Sloan Foundation	\$849,981 (\$212,495)	6/2021 – 5/2024
PI	LBNL Electricity Markets and Policy Group	Lawrence Berkeley National Laboratory	\$296,927 (\$296,927)	3/2019 – 9/2024
Co-PI J. Bard (PI), T. Edgar (Co-PI)	Energy Market Dynamic Modeling	ExxonMobil Upstream Research Company	\$619,508 (\$206,503)	6/2018 – 5/2022
Senior Investigator*	Services Necessary to Design, Develop, and Test Mechanical Designs for Application at LANL	Los Alamos National Laboratory	\$73,438 (\$73,438)	1/2019 – 12/2020
Co-PI A. Waxman (PI), S. Olmstead (Co-PI)	Strategies for Mitigating Climate Impacts of Gulf Coast Industrial Facilities	The Cynthia and George Mitchell Foundation	\$62,851 (\$20,950)	3/2019 – 12/2019
Senior Investigator*	Strategic Safety Improvements	City of Austin	\$2,000 (\$2,000)	5/2019 – 10/2019
<b>Subtotal: External Funding</b>			<b>\$6,037,591</b> <b>(\$2,083,045)</b>	
<b>INTERNAL RESEARCH FUNDING</b>				
<b>Role and Co-Investigators</b>	<b>Title</b>	<b>Sponsor</b>	<b>Grant Total (My Share)</b>	<b>Grant Period</b>
Co-Lead Q. Huang (Co-Lead)	Data-Driven View Planning for 3D Reconstruction	UT Austin Office of the VPR, Associate Professor X Project	\$99,914 (\$50,300)	1/2023 – 12/2023
Co-PI K. Kockelman (PI)	Smart Charging (and Discharging) of BEVs for Lower Grid Emissions and Better Grid Performance	UT Austin Energy Institute	\$60,000 (\$30,000)	9/2022 – 8/2023
PI	Low Demand Levers for Climate Mitigation: Amplification Through Economic Upstream Effects and Spillovers	Texas Global Faculty Research Seed Grants	\$9,800 (\$9,800)	1/2022 – 12/2022
PI J. Hasenbein (Co-PI)	Micro-to-Macro Systems Modeling	UT Austin Energy Institute	\$55,000 (\$27,500)	11/2021 – 11/2022
Co-Lead J. Busby (Co-Lead), D. Adelman (Member) S. Olmstead (Member)	Sectoral Feasibility of Greenhouse Gas Mitigation and Clean Energy Transitions	UT Austin Energy Institute	\$245,000 (\$61,250)	1/2020 – 6/2022
PI	Designing Electric Vehicle Charging Infrastructure to Enable Disaster Evacuation	UT Austin Department of Mechanical Engineering Seed Grant Program	\$20,000 (\$20,000)	1/2021 – 8/2021

PI	Walker Scholar Award	UT Austin Department of Mechanical Engineering	\$20,000 (\$20,000)	4/2019 – 8/2021
Senior Investigator*	Energy Infrastructure of the Future	UT Austin Energy Institute	\$51,635 (\$51,635)	1/2018 – 5/2019
<b>Subtotal: Internal Funding</b>			<b>\$561,349</b> <b>(\$270,485)</b>	
<b>ALL RESEARCH FUNDING</b>				
<b>Grand Total: All Funding</b>			<b>\$6,598,940</b> <b>(\$2,353,530)</b>	

\* For these projects, Dr. Leibowicz was allocated the listed funding to conduct specific research as part of a broader project with more collaborators and a larger budget.

## SERVICE TO THE PROFESSION

### Memberships in Professional Societies

Institute of Industrial and Systems Engineers (IISE)

Institute for Operations Research and the Management Sciences (INFORMS)

International Association for Energy Economics (IAEE)

United States Association for Energy Economics (USAEE)

### Elected Leadership Positions

President-Elect (Board Member)	INFORMS Section on Energy, Natural Resources, and the Environment (ENRE)	2022 – Present
Secretary-Treasurer (Board Member)	INFORMS Section on Energy, Natural Resources, and the Environment (ENRE)	2020 – 2022
Director (Board Member)	IISE Energy Systems Division	2020 – 2022

### Editorial Service

Editorial Board Member	<i>Energy Sources, Part B: Economics, Planning, and Policy</i>	2019 – Present
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### Conference Organization

#### **Conference Leadership**

Organizing Committee Member (Sponsored Sessions Co-Chair)	<i>INFORMS Annual Meeting, Phoenix, AZ</i>	2023
Conference Executive Committee Member	<i>40<sup>th</sup> USAEE/IAEE North American Conference, Chicago, IL</i>	2023
Program Committee Member	<i>Macro-Energy Systems Workshop, Stanford, CA</i>	2022
Steering Committee Member	<i>Stanford University Macro-Energy Systems Workshop, Stanford, CA (virtual due to COVID-19)</i>	2020
Scientific Committee Member	<i>Sustainable Built Environment Conference, Tokyo, Japan</i>	2019
Co-Organizer	<i>Sandia-UT Energy Collaboration Workshop, Austin, TX</i>	2018

#### **Cluster / Track Chair**

Track Co-Chair	Energy Systems track, <i>IISE Annual Conference</i> , Montreal, Canada (virtual due to COVID-19)	2021
Cluster Chair	ENRE — Energy and Climate cluster, <i>INFORMS Annual Meeting</i> , National Harbor, MD (virtual due to COVID-19)	2020
Cluster Co-Chair	ENRE — Energy cluster, <i>INFORMS Annual Meeting</i> , Seattle, WA	2019
Cluster Chair	Energy and Climate cluster, <i>INFORMS Annual Meeting</i> , Phoenix, AZ	2018
Cluster Chair	Energy and Climate cluster, <i>INFORMS Annual Meeting</i> , Houston, TX	2017

**Session Chair**

ENRE Awards Session, <i>INFORMS Annual Meeting</i> , Phoenix, AZ	2023
Oil, Gas, and the Future of Energy, <i>INFORMS Annual Meeting</i> , Phoenix, AZ	2023
Electric Reliability and Resilience, <i>INFORMS Annual Meeting</i> , Phoenix, AZ	2023
ENRE Awards Session, <i>INFORMS Annual Meeting</i> , Indianapolis, IN	2022
Energy Infrastructure Network Optimization, <i>INFORMS Annual Meeting</i> , Indianapolis, IN	2022
ENRE Awards Session, <i>INFORMS Annual Meeting</i> , Anaheim, CA	2021
Macro-Energy Systems: Energy Infrastructure Resilience, <i>INFORMS Annual Meeting</i> , Anaheim, CA	2021
Energy Modeling Platform for North America — Supporting Worldwide Open Modeling Efforts, <i>INFORMS Annual Meeting</i> , Anaheim, CA	2021
Energy Systems Track Best Paper Competition, <i>IISE Annual Conference</i> , Montreal, Canada (virtual due to COVID-19)	2021
Optimization in Energy and Resource Systems, <i>IISE Annual Conference</i> , Montreal, Canada (virtual due to COVID-19)	2021
Critiques of Macro-Energy Systems Research and Our Responses as a Field (panel organizer and moderator), <i>Stanford University Macro-Energy Systems Workshop</i> , Stanford, CA (virtual due to COVID-19)	2021
The Challenges of Going Green: Solutions for Utilities and Firms, <i>INFORMS Annual Meeting</i> , Seattle, WA	2019
Energy Demand Analysis, <i>37<sup>th</sup> USAEE/IAEE North American Conference</i> , Denver, CO	2019
The Future of Energy: A Systems Perspective, <i>INFORMS Annual Meeting</i> , Phoenix, AZ	2018
Demand Modeling, <i>International Energy Workshop</i> , Gothenburg, Sweden	2018
Energy and Climate Themes in Transportation, <i>INFORMS Annual Meeting</i> , Houston, TX	2017
Systems Modeling Approaches to Energy Analysis, <i>INFORMS Annual Meeting</i> , Houston, TX	2017
Future Pathways and Uncertainties, <i>International Energy Workshop</i> , College Park, MD	2017
Energy III, <i>INFORMS Annual Meeting</i> , Nashville, TN	2016

**Award Chair and Committees**

Committee Member	Career Achievement Award, IISE Energy Systems Division	2024
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Chair	Outstanding Young Investigator Award, IISE Energy Systems Division	2022
Chair	Best Paper Award Competition, Energy Systems Track, <i>IISE Annual Conference</i>	2021

**Grant Proposal Review Service**

Alfred P. Sloan Foundation  
 ConTex Collaborative Research Grants  
 National Science Foundation  
 UT Austin Energy Institute

**Journal Referee Service**

*Applied Energy*  
*Cities*  
*Economics of Energy & Environmental Policy*  
*Energies*  
*Energy*  
*Energy and Buildings*  
*Energy and Climate Change*  
*Energy Economics*  
*Energy Policy*  
*Energy Research and Social Science*  
*Energy Sources, Part B: Economics, Planning, and Policy*  
*Energy Systems*  
*Environment International*  
*Environmental Modelling and Software*  
*Environmental Research Letters*  
*Environmental Science & Technology*  
*European Journal of Comparative Economics*  
*European Journal of Operational Research*  
*Frontiers in Energy*  
*IEEE Access*  
*IEEE Transactions on Power Systems*  
*IISE Transactions*  
*International Journal of Electrical Power and Energy Systems*  
*International Journal of Energy Sector Management*  
*International Journal of Production Research*  
*Journal of Cleaner Production*  
*Journal of Environmental Management*  
*Journal of Planning Education and Research*  
*Journal of the Association of Environmental and Resource Economists*  
*Management Science*  
*Nature Climate Change*  
*Optimization and Engineering*  
*PLoS ONE*  
*Research Policy*  
*Risk Analysis*  
*Socio-Economic Planning Sciences*  
*Sustainable and Resilient Infrastructure*  
*Sustainable Cities and Society*  
*Technological Forecasting and Social Change*  
*The Energy Journal*

*The Engineering Economist*  
*Transportation Research Part D: Transport and Environment*  
*Utilities Policy*

### **Advisory Committees and Working Groups**

Member	Policies on Weatherization and Electric Reliability (POWER) Committee, UT Energy Institute	2021
Steering Committee Member	Macro-Energy Systems Community	2020 – Present
Member	Working Group on Multisector Impacts of Energy Transitions, Multisector Dynamics	2020 – 2022
Steering Committee Member	Austin Climate Equity Plan, City of Austin	2019 – 2021
Academic Advisory Group Member	Carbon Reduction Assessment of New Enterprises (CRANE), Prime Coalition	2019 – 2020

### **SERVICE TO THE UNIVERSITY**

Walker Department of Mechanical Engineering	Faculty Search Committee (ORIE Subcommittee)	2023 – Present
	Building Renovation Committee	2022 – Present
	Faculty Search Committee	2021 – 2022
	Faculty Mentor, Career Gateway Electives (Industrial Engineering and Management)	2019 – Present
Graduate Program in Operations Research and Industrial Engineering	Member, Graduate Student Recruiting Committee	2016 – 2022
	Communications and Outreach Coordinator	2022 – Present
	Graduate Student Recruiting Coordinator	2016 – 2022

### **STUDENT AND POSTDOCTORAL SUPERVISIONS**

#### **Ph.D. Supervisions Completed**

[9] Zhang, Nan	“Optimization Tools for Emerging Challenges in Power Systems” <i>Placement:</i> Research Scientist, Amazon Lab126	5/2022	Operations Research and Industrial Engineering	The University of Texas at Austin
[8] Calci, Baturay <i>Co-supervisor:</i> Jonathan Bard	“Natural Gas Market Applications of Multi-Agent Optimization” <i>Placement:</i> Applied Scientist II, Uber	5/2022	Operations Research and Industrial Engineering	The University of Texas at Austin
[7] Jones, Erick	“Multi-System Optimization: Intermittent Production, Flexible Demand, Emerging Technologies” <i>Placement:</i> Assistant Professor (tenure track), UT Arlington	8/2021	Operations Research and Industrial Engineering	The University of Texas at Austin

[6] Jayadev, Gopika <i>Co-supervisor:</i> Jonathan Bard	“Optimization Approaches for Energy Infrastructure Network Design”  <i>Placement:</i> Machine Learning Scientist, Apple	5/2021	Operations Research and Industrial Engineering	The University of Texas at Austin
[5] Zhu, Qianru	“Operations Research Models of Climate Change Mitigation and Adaptation at Diverse Scales”  <i>Placement:</i> Engineer/Scientist II, Electric Power Research Institute	5/2021	Operations Research and Industrial Engineering	The University of Texas at Austin
[4] Naeini, Milad <i>Co-supervisor:</i> J. Eric Bickel	“Uncertainty in Cost-Benefit Analysis of Climate Policy: Climate-Economy Model Evaluation and Extension”  <i>Placement:</i> Data Scientist, Circle K	5/2021	Operations Research and Industrial Engineering	The University of Texas at Austin
[3] Bandyopadhyay, Arkasama <i>Co-supervisor:</i> Michael Webber	“Techno-Economic Methods for Analyzing the Energetic and Economic Effects of Solar, Storage, and Demand Response”  <i>Placement:</i> Research Assistant Professor, Texas A&M University	8/2020	Mechanical Engineering	The University of Texas at Austin
[2] Brozynski, Max	“Operations Research Models of Technology Transitions and the Role of Policy Support”  <i>Placement:</i> Senior Consultant, Echelon Analytics	5/2020	Operations Research and Industrial Engineering	The University of Texas at Austin
[1] Phathanapirom, Urairisa “Birdy” <i>Co-supervisor:</i> Derek Haas	“Autonomous Decision Making in Fuel Cycle Simulators using a Game Theoretic Approach”  <i>Placement:</i> Postdoctoral Research Associate, Oak Ridge National Laboratory	12/2018	Mechanical Engineering	The University of Texas at Austin

### **M.S. Supervisions Completed**

[10] Lu, Le “Helen”	“Designing electric vehicle charging infrastructure to enable disaster evacuation”	8/2022	Operations Research and Industrial Engineering	The University of Texas at Austin
[9] Corcoran, J. Sean	“Perceptions of Risk in Increasingly Capital-Intensive Electricity Grids: Measuring the Impacts of Accurate Cost of Capital Representation on Planning for Future Energy Systems”  <i>Director’s Award for Best Energy and Earth Resources M.S. Theses</i>	5/2022	Energy and Earth Resources	The University of Texas at Austin

[8] Morton, Ella <i>Co-supervisor:</i> Shadi Goodarzi	“Optimizing Hydrogen Production Capacity and Day Ahead Market Bidding for a Wind Farm”	12/2021	Operations Research and Industrial Engineering	The University of Texas at Austin
[7] Ramthun, Eli <i>Co-supervisor:</i> [David Adelman	“Winds of Change: Assessing Direct and Indirect Effects of Variable Renewable Energy Growth on the ERCOT Market”	12/2021	Energy and Earth Resources	The University of Texas at Austin
[6] Kawai, Eiji	“The Role of Carbon Capture and Utilization in Industrial Sector Decarbonization: A Case Study of Japan”	5/2021	Energy and Earth Resources	The University of Texas at Austin
[5] Bourque, Cade <i>Co-supervisor:</i> Kevin Clarno	“Production Through Simulation: Using Simulation Technologies to Create and Evaluate Nuclear Fuel Fabrication Facility Designs”	12/2020	Mechanical Engineering	The University of Texas at Austin
[4] Speetles, Brittany <i>Co-supervisor:</i> Michael Webber	“Representative Day Selection in Capacity Expansion Modeling”	5/2020	Mechanical Engineering	The University of Texas at Austin
[3] Lanham, Christopher	“Optimal Decarbonization Pathways for Urban Residential Building Energy Services”  <i>Director’s Award for Best Energy and Earth Resources M.S. Theses</i>	5/2018	Energy and Earth Resources	The University of Texas at Austin
[2] Tutton, Peter <i>Co-supervisor:</i> Susan Hovorka	“Carbon Capture and Storage Network Optimization Under Uncertainty”  <i>Director’s Award for Best Energy and Earth Resources M.S. Theses</i>	5/2018	Energy and Earth Resources	The University of Texas at Austin
[1] Punjabi, Kunal*	“Effects of Platform Design on Solar PV Prices in an Online Marketplace”	12/2017	Operations Research and Industrial Engineering	The University of Texas at Austin

\* This student completed an M.S. report rather than an M.S. thesis.

### **Postdoctoral Supervisions Completed**

[1] Sambasivam, Balasubramanian	<i>Co-supervisors:</i> John Hasenbein Kara Kockelman	11/2021 – 11/2023	The University of Texas at Austin
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### **Ph.D. Supervisions in Progress**

#### **A. Students admitted to candidacy and/or passed Ph.D. qualifying exam**

[7] Albeladi, Abdullah – Operations Research and Industrial Engineering

[6] Colombe, Connor — Operations Research and Industrial Engineering

[5] Kumar, Yash – Operations Research and Industrial Engineering (co-supervisor: Raghu Bollapragada)

[4] Liu, Donghao — Operations Research and Industrial Engineering (co-supervisor: Jonathan Bard)

[3] Ma, Huidi — Operations Research and Industrial Engineering (co-supervisor: John Hasenbein)

[2] Maynor, Katrina — Operations Research and Industrial Engineering (co-supervisor: J. Eric Bickel)

[1] Moglen, Rachel — Operations Research and Industrial Engineering

**B. Post M.S. students preparing to take Ph.D. qualifying exam**

[2] Blandford, Stephen – Operations Research and Industrial Engineering

[1] Hebel, Nina – Operations Research and Industrial Engineering

**M.S. Supervisions in Progress**

[1] Pimentel, Aidan — Operations Research and Industrial Engineering (co-supervisor: J. Eric Bickel)

**Ph.D. Committees Completed**

Operations Research and Industrial Engineering — 8

- Colin Small, 2023
- Ai Zhao, 2023
- Xiangyi Fan, 2023
- Joshua Woodruff, 2020
- Andrew Beck, 2020
- Jia Guo, 2020
- Zachary Smith, 2019
- Chris Hadlock, 2017

Mechanical Engineering — 9

- Nick Willems, 2022
- Anna Schleifer, 2021
- Neal Mann, 2020
- Samuel Johnson, 2019
- Sam Aminfard, 2018
- William Gurecky, 2018
- Kazunori Nagasawa, 2018
- Thomas Deetjen, 2018
- Scott Vitter, 2018

Electrical and Computer Engineering – 1

- Saadallah Kaasir, 2022

Public Policy — 1

- Cale Reeves, 2019

**M.S. Committees Completed**

Energy and Earth Resources — 6

- Vianey Rueda, 2021
- Meiyan Chen, 2021
- Eli Ramthun, 2021
- Sergio Leon Marquez, 2020
- Mark Reid, 2019
- Dinuk Prathaj Haputhanthri, 2017

**Undergraduate Research Supervisions**

Undergraduate Honors Theses — 2

- Morgan Santoni-Colvin, 2021
- Pranav Nair, 2020

## Undergraduate Research Assistantships (paid) — 3

- Leah Dubiel, 2022 – 2023
- Benjamin Mendoza, 2021 – 2022
- Elena Koung, 2020 (co-supervisor: Kevin Clarno)

## ME 377K Projects — 1

- Anmol Mathur, 2019

**TEACHING****ORI 390Q.8 (formerly ORI 397): Systems Modeling (new course)**

Many of the most pressing policy challenges of our time transcend traditional disciplinary boundaries and necessitate the use of systems models to analyze possible solutions. This course shows how methodological approaches from operations research and industrial engineering can be applied to construct such models. Particular emphasis is devoted to models that combine concepts from engineering, economics, natural sciences, and policy. The featured models showcase a broad range of methodological approaches, such as optimization, simulation, dynamic programming, decision analysis, stochastic processes, and dynamical systems. Example applications are drawn from fields including energy and climate change, health policy, transportation, and national security. More generally, the course trains students to build mathematical models that represent complex real-world problems.

- Taught in 2017, 18, 19, 20, 21, 22, 23

**ORI 390R.1: Applied Probability**

Concepts of probability and mathematical statistics; application of these analytical methods to planning and evaluation of research and industrial experimentation. Basic probability theory, combinatorial analysis of random phenomena, conditional probability and independence, parametric families of distributions, expectation, distributions of functions of random variables, limit theorems.

- Taught in 2016, 18, 19, 20, 21, 22, 23

**ORI 384 (formerly ORI 397): Emerging Trends in ORIE**

This course introduces students to the full breadth of ORIE research areas by bringing in distinguished seminar speakers working at the forefront of various methodologies and application domains. These speakers include professors from other universities; researchers from national laboratories and research institutes; practitioners who use ORIE methods in the private sector; and occasionally, experts from the UT community. The course emphasizes information literacy, effective written communication of research concepts, critical analysis of academic research, direct engagement with ORIE researchers, and active preparation for thesis and dissertation research.

- Taught in 2018, 23

**ME 353: Engineering Finance**

Evaluating the financial impact of engineering decisions. Comparing alternatives with cash flow analysis considering rate of return, inflation, and taxes, with emphasis on analyzing risk. Managing complex projects with activity scheduling and resource allocation considering cash flows. Methods include probabilistic analysis and simulation.

- Taught in 2017, 19, 20, 22, 23

**CONSULTING**

Senior Advisor	FTI Consulting	2022 – Present
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**VITA**

**Dr. Benjamin D. Leibowicz** is an Associate Professor at The University of Texas at Austin, where he holds the endowed Banks McLaurin Fellowship in Engineering. His primary appointment is in the Operations Research and Industrial Engineering graduate program, which is administered through the Walker Department of Mechanical Engineering. Dr. Leibowicz also holds a courtesy appointment in the Lyndon B. Johnson School of Public Affairs and supervises student research in the Energy and Earth Resources graduate program.

Dr. Leibowicz develops mathematical models and methods to improve decision-making on energy and environmental policy and strategy issues. His primary research interests are energy systems, energy and climate policy analysis, integrated assessment modeling, technological change, and sustainable cities. He approaches these topics from an interdisciplinary perspective and develops modeling frameworks that combine methods from optimization, systems analysis, economic modeling, game theory, and stochastic control.

Dr. Leibowicz's research projects are funded by federal agencies, industrial corporations, private foundations, and national laboratories, among others. He has published in many of the leading journals in his research areas including *The Energy Journal*, *Energy Economics*, *Energy Policy*, *European Journal of Operational Research*, *Risk Analysis*, *IEEE Transactions on Smart Grid*, and *Research Policy*. In 2020, Dr. Leibowicz received the Outstanding Young Investigator Award from the Energy Systems Division of the Institute of Industrial and Systems Engineers (IISE). He was then named the Runner Up for the Early Career Best Paper Award given by the Energy, Natural Resources, and the Environment (ENRE) section of the Institute for Operations Research and the Management Sciences (INFORMS) in 2021.

Dr. Leibowicz is the current President-Elect of the INFORMS ENRE section and will begin a two-year term as President in 2024. He has served as an elected Board Member of the INFORMS ENRE section since 2020 and previously served as a Board Member of the IISE Energy Systems Division. Dr. Leibowicz also serves on the Editorial Board of *Energy Sources, Part B: Economics, Planning, and Policy*. From 2017 through 2020, Dr. Leibowicz served as a Cluster Chair or Co-Chair at four consecutive INFORMS Annual Meetings.

Prior to joining UT Austin, Dr. Leibowicz received both PhD and MS degrees in Management Science and Engineering from Stanford University, and earned a BA in Physics with a minor in Economics from Harvard University. While working toward his PhD, he was a research fellow in the Energy and Transitions to New Technologies programs at the International Institute for Applied Systems Analysis.

Citizenship: United States

Birthplace: New York, NY, USA