Understanding & Addressing Energy Affordability in the United States Workshop

February 25, 2026

National Academy of Sciences Building
2101 Constitution Avenue Northwest
Washington, DC 20418

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NATIONAL ACADEMIES *Sciences Engineering Medicine*

UNDERSTANDING AND ADDRESSING ENERGY AFFORDABILITY IN THE UNITED STATES WORKSHOP

Statement of Task

Increasing energy costs for American consumers are elevating the issue of energy affordability to the forefront of economic and policy debates. These consumers include individual residential/commercial customers as well as industrial facilities, data centers, and large institutions. The National Academies of Sciences, Engineering, and Medicine will host a workshop to identify key factors contributing to rising energy costs, and discuss potential policy and technology solutions to energy affordability challenges. Workshop sessions will consider geographic and sectoral (e.g., electricity or heating, residential or industrial) factors that impact energy prices, as well as lessons that can be learned from historical and international experiences. The workshop will foster cross-disciplinary discussions and interaction amongst state and federal policymakers, utilities, researchers, consumer advocates, and the interested public. A poster session featuring early-career researchers will highlight cutting-edge scholarship on energy affordability challenges and solutions.

Understanding and Addressing Energy Affordability in the United States

A Workshop

Increasing energy costs for American consumers are elevating the issue of energy affordability to the forefront of economic and policy debates. These consumers include individual residential/commercial customers as well as industrial facilities, data centers, and large institutions. This workshop seeks to identify key factors contributing to rising energy costs and discuss potential policy and technology solutions to energy affordability challenges. Workshop sessions will consider geographic and sectoral (e.g., electricity or heating, residential or industrial) factors that impact energy prices, and elevate household experiences and industrial responses to changing energy costs. This workshop is hosted by the ***National Academies Forum on Energy Systems Transformation and Decarbonization***. Tune in the workshop's livestream here and join Slido to send in questions and comments.

WEDNESDAY, FEBRUARY 25, 2026

8:30 AM

Welcome & Opening Remarks

Steve Comello, EFI Foundation, *National Academies Forum on Energy Systems Transformations and Decarbonization Chair*

8:45 AM

Drivers & Patterns of Changing Energy Costs

Increasing energy costs for American consumers are elevating the issue of energy affordability to the forefront of economic and policy debates. A moderated panel discussion will provide an overview of energy affordability in the U.S. and the historical context of the challenges being experienced today. A Q&A session with the audience will follow.

Moderator: Susan Tierney, Analysis Group, *Workshop Planning Committee Member*

Speakers:

- Ryan Wiser, Lawrence Berkeley National Laboratory
- Geoffrey Blanford, Electric Power Research Institute
- H.G. Chissell, Advanced Energy Group
- Suzanne Ogle, SGA Natural Gas Association

10:15 AM **BREAK**

10:30 AM **Residential Consumer Perspective on Changing Energy Costs**

Energy costs affect household budgets directly, motivating the need to consider dimensions of energy affordability across regions, energy types, and income levels. Keynote presentations will cover metrics for measuring energy affordability and policy motivations for addressing discrepancies in energy affordability at the household-level, highlighting the challenges that exist at the nexus of these topics. A fireside chat will elevate opportunities to address challenges related to residential energy affordability. Q&A with the audience will follow.

Moderator: Evan Michelson, Alfred P. Sloan Foundation

Keynote Presenters:

- Destenie Nock, Carnegie Mellon University
- Sanya Carley, University of Pennsylvania

12:00 PM **LUNCH**

1:00 PM **Industrial, Commercial, and Municipal Perspectives on Changing Energy Costs**

Commercial and industrial energy users are also affected by changes in energy costs. A moderated discussion will follow to explore how energy costs affect these customer classes, and how energy affordability considerations influence commercial and industrial investments and activities. Q&A with the audience will follow.

Moderator: Latonia Batiste, WSP USA (retired), *Workshop Planning Committee Member*

Speakers:

- Clifford Ho, SB Energy
- Camille Lopez, Black Owners of Solar Services
- Wayne Blaylock, Dow

2:30 PM **BREAK**

2:45 PM

Mitigating Energy Cost Impacts – Policy and Technology Options

Energy affordability issues are affecting American households and businesses. This session will highlight potential policy and technology solutions to address energy affordability challenges. Q&A with the audience will follow.

Moderator: Carlos Martín, Resources for the Future

Speakers:

- Charles Hua, Powerlines
- Melissa Lavinson, Commonwealth of Massachusetts
- Paula Glover, Alliance to Save Energy
- Devin Hartman, R Street
- Suzanne Glatz, Glatz Energy Consulting

4:30 PM

Understanding and Addressing Energy Affordability in the United States - Workshop Summary

Increasing energy costs for American consumers are elevating the issue of energy affordability to the forefront of economic and policy debates. These consumers include individual residential/commercial customers as well as industrial facilities, data centers, and large institutions. Workshop sessions have considered geographic and sectoral factors that impact energy prices, and elevated household experiences with and industrial responses to changing energy costs. Members of the Workshop Planning Committee and session moderators will summarize their high-level takeaways from the workshop.

Moderator: Julia Haggerty, Montana State University, *Workshop Planning Committee Chair*

Speakers:

- Susan Tierney, Analysis Group, *Workshop Planning Committee Member*
- Evan Michelson, Alfred P. Sloan Foundation
- Latonia Batiste, WSP USA (retired), *Workshop Planning Committee Member*
- Carlos Martin, Resources for the Future
- Stephen Comello, EFI Foundation, *Workshop Planning Committee Member*

5:15 PM

ADJOURN WORKSHOP

5:15 PM to 6:30 PM

Poster Session & Reception

Workshop sessions consider geographic and sectoral factors that impact energy prices, elevating household experiences and industrial responses to changing energy costs. This poster session workshop poster session seeks to highlight cutting-edge scholarship on energy affordability challenges and solutions. Attendees may wander through poster hall in the National Academies' Great Hall to interact with poster presenters and mingle with workshop participants.

Workshop Planning Committee Biographies

Julia Haggerty (chair), Montana State University

Julia Haggerty is Professor of Geography and Department Head in the Department of Earth Sciences at Montana State University and University Fellow at Resources for the Future. She previously led the U.S. DOE and EPA -funded Region 8 Thriving Communities Technical Assistance Center. A resource geographer, Haggerty's expertise is in community-engaged, place-based research on rural and Tribal economic and community development and related natural resource and energy policy issues. Her research has been supported by grants from the NSF, US DOE, USDA NIFA, USGS, and the Alfred P. Sloan Foundation. An active network-builder in the energy social science research community, Haggerty co-led the Energy Impacts research coordination network from 2015-2017 (NSF #1528422), co-leads the Resilient Energy Economies initiative, and holds board positions with the Global Coal Transitions research coordination network (NSF #2215165) and the Health Effects Institute Energy Research Board. Haggerty received the 2020 Fulbright Global Scholar award and the Professional Geographer Award from the Association of American Geographers in 2019. Haggerty's degrees include a BA from Colorado College in Liberal Arts, Ph.D. from the University of Colorado in History, and a certificate in Applied Compassion from Stanford University School of Medicine. Haggerty's previous engagements with the National Academies were as a consensus report author for Accelerating Decarbonization in the United States from 2020-2023 and as an appointed member of the Roundtable on Unconventional Hydrocarbons from 2015-2018.

Stephen Comello, EFI Foundation

Stephen D. Comello is the Executive Vice President at the EFI Foundation and Managing Director of its Energy Futures Finance Forum. In early 2025, he was appointed Executive Director of the Nuclear Scaling Initiative, a collaboration between EFI Foundation, the Clean Air Task Force and the Nuclear Threat Initiative. Previously, he served as a faculty member at the Stanford Graduate School of Business for over a decade, co-leading the Rapid Decarbonization Initiative. With a 23-year career dedicated to scaling emerging energy and environmental technologies, Comello specializes in policy and business model innovations. His expertise spans technoeconomic analysis, policy and project finance, corporate strategy in the energy transition, and open innovation. At Stanford, he held leadership roles in various research initiatives and industrial affiliate programs. He has authored numerous publications in energy policy, industrial organization, development economics, innovation management, and carbon accounting. Stephen holds bachelor's and master's degrees in mechanical and industrial engineering from the University of Toronto and a Ph.D. in civil and environmental engineering from Stanford University. Originally from Canada, he now resides in Washington, D.C.

Latonia Batiste, WSP USA (retired)
Latonia Viverette Batiste is an Environmental Scientist with nearly 30 years of experience in energy, sustainability, and regulatory sectors. Most recently, she served as the Assistant Vice President in the Sustainability, Energy, and Climate Change sector at WSP, USA, and as the Interim Development Director of the start-up nonprofit Growing Green Project. She is the 2016 Founding Director of Sustainability and Energy Efficiency at Xavier University of Louisiana. As a social entrepreneur, she is the Founding Principal Environmental Scientist of Ivy Environmental Consulting. Currently, she co-designs carbon reduction strategies and programs for Fortune 50-500 companies and manages teams through high-profile energy infrastructure and climate finance mergers and acquisitions. She holds a Ph.D. in Higher Education (Environmental Sustainability) from Jackson State University, an M.S. in public health degree in environmental science from Tulane University, and a B.S. degree in biology from Xavier University of Louisiana. She enjoys developing climate literacy tools for the youth, leading youth climate justice workshops, mentoring BIPOC communities, and serving in leadership roles with the Gulf Research Program of The National Academies of Sciences, Engineering, and Medicine as the Committee Chairperson of the Gulf Scholars Program.

Susan Tierney, Analysis Group
Dr. Susan Tierney, a Senior Advisor at Analysis Group, is an expert on energy economics, regulation and policy, particularly in the electric and gas industries. She focuses on utility economics and ratemaking, wholesale and retail market analysis and design, technology and market trends, regional transmission organizations, siting electric and gas infrastructure, electric system reliability, gas-electric market integration, decarbonization policy, and other environmental policy and regulation. Previously, she served as the Assistant Secretary for Policy at the U.S. Department of Energy. In Massachusetts, she was the Secretary of Environmental Affairs, Commissioner at the Department of Public Utilities, and Executive Director of the Energy Facilities Siting Council. She chairs the boards of: the National Academies of Sciences, Energy and Medicine's Board on Energy and Environmental Systems; Resources for the Future; and the Alfred P. Sloan Foundation. She is a director of: the Barr Foundation; the Coalition for Green Capital; the Energy Foundation; and Climate Lead. She has a Ph.D. and Masters degree in regional planning from Cornell University. She is a National Associate of NASEM's National Research Council and her NASEM committee service includes the committees on the Climate Crossroads Initiative, Accelerating Decarbonization of the U.S. Energy System (2020-2022) and on the Future of Electric Power in the U.S. (2021).

Workshop Speaker Biographies

Geoffrey Blanford, Electric Power Research Institute
Dr. Geoffrey J. Blanford is a Principal Technical Executive in EPRI's Energy Systems and Climate Analysis group, where he has worked since 2006. He is an expert on energy-economy modeling and integrated assessment and leads development of energy systems modeling at EPRI. His current research activities include energy affordability, end-use electrification, and economy-wide decarbonization policy. He was a lead author for the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report and serves as co-director of the International Energy Workshop (IEW). He holds a B.A. in mathematics from Yale University, a M.S. in operations research from Columbia University, and a Ph.D. in management science and engineering from Stanford University.

D. Wayne Blaylock, Dow
D. Wayne Blaylock is Commercial Director for Dow Chemical's Energy & Climate business, where he leads business activities for Dow's advanced nuclear reactor project developing four Xe-100 units at Dow's Seadrift, Texas site in collaboration with X-energy and the U.S. Department of Energy. Previously, Blaylock managed Dow's Canadian feedstock supply, including leading negotiations to secure feedstock for Dow's upcoming world-scale net-zero ethylene complex expansion. His background includes global feedstocks and energy business development, global commodity markets strategy and analysis, and process research and development across multiple Dow units. A common theme across these roles has been innovation in manufacturing and energy, sustainability, and academic collaboration. Blaylock holds a BS from Tennessee Tech and a Ph.D. from MIT in chemical engineering, where his research focused on computational heterogeneous catalysis for steam methane reforming. He has authored six granted patents and 11 research publications, and serves on the Technical Advisory Board for the Reaction Chemistry and Engineering Journal.

Sanya Carley, University of Pennsylvania
Dr. Sanya Carley is Presidential Distinguished Professor of Energy Policy and City Planning at the Stuart Weitzman School of Design; Vice Provost of Climate Science, Policy, and Action; and the Mark Alan Hughes Faculty Director of the Kleinman Center for Energy Policy at the University of Pennsylvania. She holds a secondary appointment at the Wharton School and is a University Fellow at Resources for the Future. She also co-directs the Energy Justice Lab. Dr. Carley's research focuses on energy justice and just transitions, energy insecurity, electricity and transportation markets, and public perceptions of energy infrastructure and technologies. With the Energy Justice Lab team, she built and maintains the Utility Disconnection Dashboard. Dr. Carley received her Ph.D. in public policy from the University of North Carolina at Chapel Hill, M.S. in urban and regional planning from the University of Wisconsin-Madison, and bachelor's degrees in economics and sustainable development from Swarthmore College.

H.G. Chissell, Advanced Energy Group

H.G. Chissell is the Founder and CEO of Advanced Energy Group (AEG Group), a competitive stakeholder mobilization platform dedicated to systemic change on climate, health, and energy at the city and regional level. Serving over 50 million people and sponsored by more than 65 companies, utilities, and organizations, AEG supports public and private leaders across 8 US markets, emphasizing inclusive collaboration as essential for systemic change. H.G. Chissell has designed and led hundreds of Stakeholder Challenges with 5,000+ leaders and 500+ speakers across the US, including Hawaii and Puerto Rico. In 2024, he launched The Carbon League, a non-profit supporting volunteer Task Forces emerging from AEG workshops to deliver measurable impact in 90-day sprints. H.G. has received significant recognition, including the 2014 Federal Energy Management Program Award for ancillary market integration at Fort Meade and the 2021 President's Award for Excellence in Leadership from the National Society of Black Engineers Boston Professionals. He has served as Advisor to Puerto Rico 100, Board Director for the New England Clean Energy Council and heet.org, and completed his role as Co-Chair of the IEEE PES Grid Edge Innovation Challenge in 2025. He is a frequent lecturer and keynote speaker, having recently addressed events for ComEd, Baltimore Gas Electric, Pepco Holding's, and Xylem Reach, and was a featured moderator for the U.S. Department of Energy Grand Storage Challenge/MidWest in 2020. H.G. grew up in Baltimore, graduated from Swarthmore College, and studied architecture at Drexel University.

Suzanne Glatz, Glatz Energy Consulting

Ms. Glatz is an energy industry consultant with over 40 years of engineering and planning experience in the RTO and utility sectors. Before founding Glatz Energy Consulting, she served as the Director of Strategic Initiatives and Interregional Planning at PJM Interconnection, where her key focus areas included public policy planning, transmission planning, and Order 1000 competitive planning. Prior to her role at PJM, Ms. Glatz spent 11 years at PPL Electric Utilities, holding various management and engineering positions in transmission planning, distribution planning, and regulatory functions related to the transmission business. She also worked as a consulting engineer for 15 years, specializing in system analysis, engineering, and design for transmission and distribution projects across several engineering firms. Ms. Glatz is a registered Professional Engineer. She holds a Bachelor of Science in Electric Power Engineering from Rensselaer Polytechnic Institute, a Master of Science in Electrical Engineering from the New Jersey Institute of Technology, and an Executive MBA from Temple University's Fox School of Business.

Paula Glover, Alliance to Save Energy

Paula R. Glover is the President of the Alliance to Save Energy, a bipartisan, nonprofit coalition of business, government, environmental, and academic leaders advocating to advance federal energy efficiency policy. As the seventh president in the organization's 45-year history and a long-time member of the Board of Directors, Ms. Glover provides over 25 years of industry expertise and leadership. Under Ms. Glover's leadership, the Alliance to Save Energy has played an instrumental role in advancing sweeping energy policies such as the Infrastructure Investment and Jobs Act as well as the Inflation Reduction Act. Additionally, the Alliance has secured billions of dollars in federal funding for energy efficiency programs, amplified its work on energy justice, and worked to advance the next generation of technologies with the Active Efficiency Collaborative. She has also led a significant advocacy push for wide-reaching energy efficiency policies through the Alliance's Energy 2040 Initiative. Ms. Glover's deep expertise and leadership has been instrumental in driving policy initiatives, promoting energy efficiency technologies, and fostering partnerships between government, industry, and academia. Ms. Glover has also long been a champion for leading efforts on diversity, equity, and inclusion. Prior to her time at The Alliance, she served as President and CEO of the American Association of Blacks in Energy, a non-profit professional association whose focus is to ensure that African Americans and other minorities have input into the discussions and development of energy policy, regulations, and environmental issues.

Devin Hartman, R Street

Devin Hartman is director of Energy and Environmental Policy at the R Street Institute. He leads a team that brings a pragmatic and analytically sound pro-market perspective to energy and environmental policy. He rejoined R Street in 2020 after serving as the president and CEO of the Electricity Consumers Resource Council (ELCON), the national association of large industrial users of electricity. He represented large consumers on the Members Representatives Committee of the North American Electric Reliability Corporation from 2019-2020. Before ELCON, Devin established R Street's electricity policy program in 2016 based on principles of market competition, consumer choice and good governance. He has previously worked for the Federal Energy Regulatory Commission, the Indiana Utility Regulatory Commission, the U.S. Environmental Protection Agency and various energy and environmental policy nonprofit organizations. Devin received a BS in economics and BA in political science and environmental studies from Iowa State University, and holds an MPA and an M.S. in environmental science from Indiana University. He is an active member and past council member of his local chapter of the U.S. Association for Energy Economics.

Clifford Ho, SB Energy

Dr. Cliff Ho is a Senior Manager of Advanced Renewable Energy at SB Energy, where he is helping to develop integrated energy technologies and energy-storage solutions for large data/load centers. Cliff previously worked at Sandia National Laboratories for over 30 years, where he developed technologies and models to address problems in energy, water, and the environment. He is a Fellow of the American Society of Mechanical Engineers, Associate Editor of Elsevier's Solar Energy Journal, and a past invited member of the National Academies Transportation Research Board. Dr. Ho has expertise in diverse areas of the energy ecosystem, including nuclear waste management, water resources, sensing and monitoring, industrial process heat, technoeconomic analyses, grid technologies, and innovative solar technologies for electricity, heat, and transportation fuels. From 2022 to 2024, Dr. Ho served as a Legislative Fellow in the Office of U.S. Senator Martin Heinrich and advised on a wide range of energy policies, further enhancing his understanding of the intersection between technology, policy, and industry needs. Dr. Ho authored several bills pertaining to grid reliability, nuclear waste management, permitting, and alternative process heat for industries. Dr. Ho received the Outstanding Professor Award from the University of New Mexico in 1997 and the national Asian American Engineer of the Year Award in 2010. Dr. Ho received R&D 100 Awards in 2013 for the development of the Solar Glare Hazard Analysis Tool and in 2016 for the Falling Particle Receiver for Concentrating Solar Energy. He won Discover magazine's "The Future of Energy in Two-Minutes-or-Less" video contest in 2008. Dr. Ho received his B.S. in Mechanical Engineering from the University of Wisconsin Madison in 1989 and his M.S. and Ph.D. in Mechanical Engineering from the University of California Berkeley in 1990 and 1993.

Charles Hua, Powerlines

Charles Hua is the Founder and Executive Director of PowerLines, a nonprofit seeking to modernize the utility regulatory system to lower utility bills and grow the economy. Previously, Hua served as Senior Policy Advisor at the U.S. Department of Energy and Researcher at Lawrence Berkeley National Laboratory. Hua's work has been featured in outlets such as the New York Times, Wall Street Journal, TIME, CBS News, Bloomberg, Financial Times, and Politico. He has been recognized for his work as a TIME100 Next "Influential Rising Star," U.S. Presidential Scholar, and as an Aspen Institute Fellow. Hua holds an A.B. from Harvard College.

Melissa Lavinson, Commonwealth of Massachusetts
Melissa Lavinson serves as the Executive Director of the Office of Energy Transformation for the Commonwealth of Massachusetts. She is charged with the hands-on execution of the clean energy transition, including ensuring the availability and readiness of electrical infrastructure, electric and gas transition coordination, and a just and equitable transition for impacted workers, communities, and businesses. Lavinson is also charged with convening an Energy Transformation Advisory Board comprised of industry, labor, environmental justice, technology, consumer, and supply chain representatives, among others, to accelerate cooperation, understanding, and action. Prior to joining the Healey-Driscoll Administration, she served as Head of Corporate Affairs for National Grid, New England, leading state and municipal government relations, community and stakeholder engagement, media relations, municipal customer management, strategic communications, and the company's philanthropic program in New England. Previously, Lavinson was Senior Vice President of Federal Government and Regulatory Affairs and Public Policy at Exelon Corporation and Senior Vice President of Governmental and External Affairs for Pepco Holdings, Inc., the parent company of Pepco, Delmarva Power, and Atlantic City Electric, which provide gas and electric service to Delaware, Maryland, New Jersey and the District of Columbia. Lavinson also spent more than 20 years at California-based PG&E Corporation, including as Vice President of Federal Affairs and Policy and Chief Sustainability Officer. Earlier in her career, she worked at MRW and Associates and in ICF Consulting's Climate Change Practice. Lavinson holds a bachelor's degree in Economics from Hamilton College.

Camille Lopez, Black Owners of Solar Services
Camille Lopez (LEED-GA, GPRO, and CC-P) has close to 20 years of sustainability program management experience in the nonprofit, public and private sectors, including managing post-Katrina rebuilding efforts to create a more resilient New Orleans. Her climate work is centered in a deep commitment to the principles of environmental justice and racial equity. She currently leads a Health Sustainability Project on behalf of Black Owners of Solar Services, and has previously served as Program Manager at the City of New Orleans' Office of Resilience and Sustainability, Net Zero Manager at Accenture, Program Director at Global Green USA, and Sustainability Instructor at the University of New Orleans. Ms. Lopez is a graduate of UC Berkeley, the George Washington University Elliott School of International Affairs, and the National Renewable Energy Laboratory's Energy Executive Energy Leadership Academy ("Energy Execs"). Her former board engagements include the Louisiana Climate Task Force, the Southeast Sustainability Directors Network, the Louisiana USGBC, the Colorado Public Utilities Commission Equity Advisory Group, and the Boulder Valley School District Sustainability Advisory Group. Ms. Lopez also served as a Peace Corps volunteer in Romania.

Carlos Martín, Resources for the Future
Carlos Martín is the Vice President for Research and Policy Engagement at RFF. He has over 25 years of experience researching housing technology and the physical quality of existing homes. Dr. Martín's research on housing adaptation to climate change, housing decarbonization, disaster mitigation and recovery, substandard housing, housing and environmental justice, and construction innovation and workforce. Carlos came to RFF from the Harvard Joint Center for Housing Studies, where he was Project Director of the Remodeling Futures Program and a Lecturer at the Harvard Graduate School of Design. Joint Center from the Urban Institute, where he was a senior fellow. Previously, he was a Rubenstein Fellow at the Brookings Institution, Senior Fellow and Practice Lead for the Built Environment at the Urban Institute, assistant staff vice president for construction codes and standards at the National Association of Home Builders, SRP professor for energy and the environment at Arizona State University, and coordinator for the US Department of Housing and Urban Development's Partnership for Advancing Technology in Housing. Carlos has served on several National Academy of Science committees and civil-sector and federal advisory boards including ones at HUD, EPA, FEMA, the McKnight Foundation, National Housing Trust, Climate Resolve, Resilient Cities Catalyst, Elevate Energy, and Insurance for Good. Carlos received his BSAD in architecture from MIT and his MEng and Ph.D. degrees in civil and environmental engineering from Stanford University.

Evan Michelson, Alfred P. Sloan Foundation
Evan Michelson is a Program Director at the Alfred P. Sloan Foundation. Michelson is responsible for overseeing the Foundation's Energy and Environment program, which seeks to inform the societal transition toward low-carbon energy systems in the United States by investigating economic, environmental, technological, and distributional issues. The Energy and Environment program is unique for its focus on supporting influential, interdisciplinary research, training, networking, and dissemination efforts. He also manages the Foundation's grantmaking to the Sloan Digital Sky Survey, a transformational international astrophysics research collaboration focused on exploring the evolution and structure of the universe, the formation of stars and galaxies, the history of the Milky Way, and the science behind black holes and dark matter.

Destenie Nock, Carnegie Mellon University
Dr. Destenie Nock is an Assistant Professor of Civil & Environmental Engineering and Engineering & Public Policy at Carnegie Mellon University. Her research develops data-driven metrics to identify disparities in energy use and quantify social impacts of bulk power systems. She was named a 2024 Science Defender by the Union of Concerned Scientists for research highlighting health risks faced by households forgoing energy use, and for her advocacy in regulatory and utility spaces. She has published over 70 papers in leading journals including Nature Energy and Joule. Dr. Nock received her Ph.D. in Industrial Engineering and Operations Research from the University of Massachusetts Amherst. She earned a MSc from Queen's University of Belfast, and two BS degrees in Electrical Engineering and Applied Math at North Carolina A&T State University.

Suzanne Ogle, SGA Natural Gas Association
Suzanne Ogle is President and CEO of the SGA Natural Gas Association, representing utilities and energy system partners across North America. With more than three decades of executive leadership experience, she brings a practical, systems-level perspective to energy affordability, infrastructure investment, and grid reliability. Suzanne works at the intersection of operations, policy, and workforce readiness, engaging directly with utilities, regulators, and federal partners on how energy cost pressures emerge, and how they compound across fuel supply, infrastructure modernization, extreme weather, labor constraints, and regulatory complexity. Her work emphasizes understanding *cost drivers across the full energy system*, rather than isolating individual fuels or technologies. Her insights have been featured in *The New York Times*, *Forbes*, and major national broadcast networks, and she is a frequent contributor to industry and policy forums focused on reliability, resilience, and consumer impacts. Suzanne is known for fostering evidence-based dialogue and solution-oriented discussion, particularly in cross-disciplinary settings where tradeoffs must be examined honestly. She is the author of *Grit for the Grid*, which outlines a pragmatic framework for balancing affordability, reliability, and emissions reduction through a technology-inclusive energy system. Suzanne continues to work with policymakers, regulators, and practitioners to advance durable, consumer-aware approaches to energy system evolution.

Ryan Wiser, Lawrence Berkeley National Laboratory
Ryan Wiser is a Senior Scientist at Lawrence Berkeley National Laboratory. Ryan helps lead a 60-person department that seeks to inform public and private decision making within the U.S. electricity sector through research on electric system planning, reliability and regulation. Ryan has published over 100 peer-reviewed journal articles, 20 book chapters, and 400 other conference papers, magazine articles and research reports. He regularly advises public and private entities on issues related to the power sector. Ryan holds a B.S. in Civil Engineering from Stanford University and an M.S. and Ph.D. in Energy and Resources from the University of California, Berkeley.

Understanding and Addressing Energy Affordability in the United States

Poster Session

Increasing energy costs for American consumers are elevating the issue of energy affordability to the forefront of economic and policy debates. These consumers include individual residential/commercial customers as well as industrial facilities, data centers, and large institutions. Workshop sessions consider geographic and sectoral factors that impact energy prices, elevating household experiences and industrial responses to changing energy costs. This poster session seeks to highlight cutting-edge scholarship on energy affordability challenges and solutions.

POSTERS

California's Affordability Challenge: Structural Drivers and Solutions

Presented by: Muhammad Jalal Awan, The Utility Reform Network

Abstract: California's three major investor-owned utilities, serving approximately 32 million customers under cost-of-service regulation, have seen sustained bill growth, with average residential rates rising faster than inflation and ranking among the highest in the nation. Using public data and published literature, this analysis identifies three primary drivers: (1) real transmission and distribution (T&D) capital assets increased by roughly 97% between 2010 and 2022, largely due to wildfire mitigation, grid hardening, and climate adaptation investments; (2) T&D operations and maintenance costs rose sharply after 2018, with PG&E's T&D O&M more than doubling between 2018 and 2022; and (3) authorized returns on equity remain above the national average at approximately 10%, increasing revenue requirements associated with rapidly increasing rate base. These cost pressures translate into highly regressive outcomes, disproportionately burdening lower-income and inland communities. Under the CPUC's Affordability Ratio (AR)—which measures annual energy burden as the share of household income spent on utility bills—PG&E's AR20 (20th income percentile) averages roughly 7% systemwide, with many inland areas exceeding 15–20%, far above median-income burdens and higher than those in publicly owned utility territories. Near term, regulators should emphasize least-cost solutions—advanced fault detection and sectionalizing over broad undergrounding, targeted electrification instead of blanket gas replacement, smarter TOU optimization with connected meters, and AI-assisted regulatory review—alongside inflation-constrained general rate case (GRC) proposals, and executive pay tied to affordability, safety, and reliability. Medium term, a transparent, metrics-based performance-based approach (or "PBR-lite") framework without immediate financial penalties can improve accountability while limiting gaming risk. Longer term, incremental structural reforms—such as selective public ownership of generation or transmission and targeted competition at the distribution edge—may enhance financing efficiency and public trust while managing transition costs.

Administrative Burden and Access to Energy Assistance Programs: Institutional and Policy Determinants of Energy Affordability in the U.S.

Presented by: Aparajita Datta, University of Houston

Abstract: Energy affordability in the United States is shaped not only by rising utility bills but also by the policy and institutional mechanisms that determine whether households can access government utility bill assistance programs. Even when assistance programs are available, administrative complexity can limit their effectiveness and impact. The Low-Income Home Energy Assistance Program (LIHEAP) provides support for energy bills, disconnection prevention, and critical home energy repairs for income-eligible households, yet fewer than one-third of eligible households nationwide receive assistance. This study examines how the administrative burden embedded in LIHEAP's program design affects participation among income-eligible households. Using state-level variation in program rules and procedures, the analysis constructs an item-response-based index of administrative burden from eight indicators drawn from state LIHEAP websites. These measures are linked to household-level participation outcomes using data from the EIA's Residential Energy Consumption Survey. By moving beyond traditional energy burden metrics focused on prices, the study highlights how institutional design shapes energy affordability at the household level. Results indicate that disparities in program administration across states create uneven burdens, such that a higher administrative burden substantially reduces the likelihood that eligible households receive LIHEAP assistance. These effects are observed across White, Black, and Asian households, with disproportionately larger negative impacts for Black and Asian households. The findings suggest that ostensibly neutral program rules and procedures can generate regressive affordability outcomes, undermining the intended goals of policies. The results underscore the importance of incorporating administrative design into energy affordability strategies. As rising infrastructure and regulatory costs continue to pressure household electricity bills, improving affordability will require pairing investments in assistance programs with program redesign efforts that reduce institutional and procedural barriers.

Biophysical Impacts of Land-Cover Conversion: Linking Carbon Storage Loss, Land Surface Temperature Increases, and Energy Burden in the U.S. Gulf Coast

Presented by: Gabriel de Oliveira, Stokes School of Marine and Environmental Sciences

Abstract: Rising energy costs in the United States are disproportionately affecting coastal and low-lying regions, where climate exposure, land-use change, and ecosystem degradation interact to amplify household energy burdens beyond what is captured by electricity rates alone. In the U.S. Gulf Coast, transitions from wetlands, floodplain forests, and other carbon-rich coastal ecosystems to degraded or urbanized land covers reduce natural climate regulation, intensify heat and flooding risks, and increase cooling demand - leading to higher total energy bills for residential, commercial, and industrial consumers. This study is informed by the ongoing development of the University of South Alabama's Delta and Coastal Alabama Wildlife, Fisheries and Carbon Flux Observatory, funded by GOMESA and currently being established in the Mobile-Tensaw Delta. The observatory provides a framework to investigate how land-use and land-cover transitions influence carbon fluxes, surface energy balance, and microclimate regulation, and how these biophysical processes translate into changes in energy demand and consumer energy burden at the community scale. Rather than focusing solely on electricity prices or rates, this work adopts a holistic energy-burden

perspective that integrates total household energy expenditures, climate-driven demand (particularly cooling), and exposure to extreme heat and flooding. By linking ecosystem carbon dynamics with land-surface processes and socio-environmental vulnerability, the study highlights how degradation of natural carbon sinks can indirectly exacerbate energy affordability challenges, especially in coastal regions already facing climate stressors. The results aim to demonstrate that conserving and restoring carbon-rich coastal ecosystems can serve as complementary, nature-based strategies for decarbonization while also mitigating long-term energy burdens. This integrated approach offers actionable insights for equitable energy policy, climate resilience planning, and energy affordability in the U.S. Gulf Coast and other climate-exposed regions.

Proposed Regulatory Rulemaking to Standardize Large Load Electric Grid Interconnection Nationwide

Presented by: Carolyn Dougherty, Johns Hopkins University

Abstract: The energy demand of data centers and other large load customers is forecasted to grow exponentially, necessitating significant expansion of the electric power grid to provide reliable energy to new and existing customers. Current cost-recovery practices frequently distribute the expense of electric grid upgrades across the entire ratepayer base, effectively increasing residential energy bills to subsidize the interconnection of new data centers. The growing financial burden is fueling significant public opposition to data center construction and other large load developments, hindering economic growth. To address the challenge of meeting business needs quickly while ensuring equitable cost allocation, this timely project proposes an evidence-based, nationally applicable public utility commission rulemaking that defines parameters for the large load interconnection process. An extensive national evaluation of proposed and existing rulemakings and tariffs was conducted to pinpoint key regulatory failures, flaws, and effective solutions. Then, regulatory solutions were crafted, issue by issue, and compiled into a set of proposed rules. The proposed rules aim to (1) implement equitable cost allocation requirements for intrastate transmission and distribution upgrades, (2) encourage load flexibility and strategic site selection to alleviate grid stress, and (3) create transparency in the large load interconnection process. This deliverable directly responds to the Secretary of Energy's October 2025 Advance Notice of Proposed Rulemaking, which calls for federal rules to standardize large load interconnection, but does so at the state level.

Extreme Heat on Residential Electricity Demand: A Case Study in a Hot-Humid Climate

Presented by: Stacy Godfreey-Igwe, Carnegie Mellon University

Abstract: Extreme heat events are a growing concern across the United States, placing strain on both municipal electricity systems and climate-vulnerable households. During peak summer demand, residential electricity bills often increase, with costs disproportionately impacting lower-income households with limited financial capacity to maintain thermal comfort. Understanding how residential electricity consumption responds across income groups during extreme heat is essential for assessing energy burden and designing equitable utility interventions. This study examines how residents adjust energy consumption in response to extreme Heat Index conditions in Tallahassee, Florida, a hot-humid climate region in the southeastern United States. Using daily household-level electricity usage data from approximately 80,000 households during summer 2019, we estimate a

piecewise linear regression model with household and month fixed effects. We identify a structural breakpoint at approximately 106°F Heat Index, beyond which incremental electricity consumption growth declines, consistent with behavioral or technical constraints on cooling demand. Stratifying our analysis by Census tract-level income, we find significant heterogeneity in consumption responses across income groups. Above the breakpoint, the lowest income quintile increases consumption at only 0.52% per °F compared to 1.53% per °F for the highest income quintile, a disparity that persists between disadvantaged and non-disadvantaged Census tracts as defined by the Climate and Economic Justice Screening Tool (CEJST), even within middle-income households. Subset analysis of households receiving air-conditioning and heat-pump efficiency rebates reveals higher breakpoints and steeper responses above the breakpoint, but income-based disparities remain. Together, these findings highlight an important dimension of residential energy burden: lower-income households appear less able to sustain electricity consumption increases during extreme heat, potentially raising risks to thermal safety as cooling needs intensify. The results offer utilities and policymakers actionable insights for designing targeted efficiency programs, energy assistance, and heat-response policies to reduce cooling-related burdens among vulnerable populations.

Energy Affordability as a Condition of Energy Dominance: System-Level Pathways to Energy Advantage

Presented by: J. Michael Grappone, Lawrence Livermore National Laboratory

Abstract: Increased attention to energy costs has elevated energy affordability as a system-level factor shaping the U.S. government's energy dominance goals. In this study, energy dominance is defined as the intersection of energy abundance, energy independence, and energy advantage. Energy affordability emerges as a system-level outcome of U.S. energy dominance through which domestic energy capability is translated into economic and strategic advantage. Energy costs directly affect household budgets, industrial competitiveness, and the political durability of long-term energy generation trends, which positions energy affordability as a national concern alongside reliability and security objectives. Focusing just on electricity, real U.S. electricity prices have generally tracked inflation over the last 45 years, with deviations concentrated in periods of supply disruption, fuel price shocks, and infrastructure or market constraints. Recent increases in electricity prices are unevenly distributed across regions and are associated with fuel mix and availability, as well as infrastructure and policy factors rather than uniform national scarcity. These patterns suggest that affordability challenges are regionally contingent and driven by the overall energy system. The analysis further finds that energy abundance, which is characterized by sufficient domestic supply; diversified resource portfolios; and operational flexibility, is closely associated with stable and predictable energy costs. A renewed push for energy independence reinforces this effect by reducing exposure to global fuel volatility and geopolitical disruptions that propagate into consumer energy bills. Together, abundance and independence create the conditions necessary to achieve a strategic energy advantage by helping to enable energy-intensive economic activity and by supporting reindustrialization, digital infrastructure, and manufacturing critical for national security. Our findings indicate that energy policies that explicitly incorporate abundance,

independence, and affordability at the system level are better positioned to sustain energy dominance while delivering durable economic and strategic benefits.[1]

Energy Affordability in Competitive Retail Electricity Markets

Presented by: Yufan Ji, Ohio State University

Abstract: Rising energy costs have renewed concerns about energy affordability, particularly for households with limited ability to absorb price volatility or navigate complex retail electricity markets. This poster presents findings from a large, interdisciplinary research program examining equity and efficiency in deregulated retail electricity markets, focusing on Ohio and Pennsylvania. We analyze more than two million daily residential electricity supply offers (2014-2023), integrated with wholesale market prices, utility default service rates, and verified household electricity bills and interviews. Household-level data cover a broad cross-section of households with robust representation of low-income and disadvantaged communities, collected in partnership with community organizations, including food banks and the Ohio Consumers' Counsel. Using econometric and machine learning, we triangulate evidence across data sources to identify mechanisms shaping bill outcomes and household energy burden. We find that a majority of competitive retail offers historically exceeded utility default prices, often by margins substantially larger than the savings from below-market offers. Even well-informed consumers could access a welfare-improving offer on fewer than two-thirds of days in most years, indicating persistent structural barriers to effective consumer choice. Beyond per-kWh rates, suppliers strategically modify contract architecture and price components – including contract length, early termination fees, fixed charges, renewable content and promotional features – in response to wholesale market conditions. We document substantial and systematic heterogeneity in consumer preferences, information constraints, and exposure to high-cost contracts across income groups. Together, these findings suggest that rising energy bills reflect not only fuel costs and infrastructure investment, but also retail market design, contract architecture and complexity, and uneven consumer protections. This research informed Ohio House Bill 15 deliberations and has been cited in multiple policy and media venues. Results highlight the need for bill-level affordability metrics and decision-support tools that better reflect distributional and behavioral realities in competitive electricity markets.

Community Energy, Energy Burden, and Affordability: Evidence from Houston

Presented by: Maria Perez Arguelles, University of Houston

Abstract: Rising energy bills and growing exposure to extreme weather have made energy affordability and energy burden central concerns in U.S. energy policy. While community-based energy projects, such as community solar, local resilience hubs, and energy efficiency programs, are often promoted as tools to improve energy accessibility and equity, there is limited empirical evidence on how these initiatives are perceived by residents, how they interact with existing institutional structures, and whether they effectively reduce energy burden in vulnerable communities. This study uses a mixed-methods approach to examine how community-oriented

[1] This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344. The views and opinions of the author expressed herein do not necessarily state or reflect those of the United States government or Lawrence Livermore National Security, LLC. LLNL-ABS-2014723-DRAFT

energy strategies can contribute to affordability, resilience, and more effective energy policy design. We focus on Houston, Texas, a city that combines high climate exposure, recurring grid disruptions, and substantial income inequality with a central role in the U.S. energy system. The analysis integrates publicly available data with qualitative interviews and a large-scale household survey. Semi-structured interviews were conducted with 11 energy-sector stakeholders between May and August 2025, and a survey of approximately 1,500 residents was conducted in September 2025. Preliminary results show that energy burden in Houston disproportionately affects Black, Hispanic, and low-income households, who report both higher bills and greater vulnerability to extreme temperatures. Younger and Hispanic respondents are significantly less informed about existing mitigation programs, such as cooling centers and community solar, despite expressing strong support for energy efficiency-oriented and affordability-focused policies. On the institutional side, both community organizations and implementing agencies report limited system-level understanding and weak long-term coordination, which constrains the effectiveness of existing interventions. These findings suggest that energy affordability is not only a question of prices or rates, but also of policy design, information, and institutional capacity. To this end, our study identifies practical design principles for targeting energy-burden relief and improving the real-world effectiveness of community-based energy policies in high-risk urban regions. [2]

Reasons and Solutions for Rising Residential Electricity Rates

Presented by: Chase Robinson, Colorado School of Mines

Abstract: Americans paid more for electricity and natural gas in 2025, and that is expected to continue into 2026. There are many factors contributing to rising utility prices, but the primary causes are rising fuel costs, aging infrastructure, and increased demand. Natural gas prices have spiked in recent years due to increased exports, rising domestic power generation demand, and extreme weather. Aged infrastructure results in significant transmission costs and requires large

[2] Relevant Reports: Buttorff, G. J., Danilola, S. T., Granato, J., Miers, C. M., Mohtadi, S., Perez Argüelles, M. P., Pinto, P. M., Sipole, S. L., Upchurch, G. P., Vallejo, A., & Wong, M. C. S. (2025, September). *Houston cares about climate change: Policy preferences and partisan gaps* (CPP Report No. 3-2025). University of Houston, Hobby School of Public Affairs. https://www.uh.edu/hobby/research/space-city-panel/cpp_panel_report_3_sustainability.pdf; Buttorff, G. J., Mohtadi, S., Perez Argüelles, M. P., Pinto, P. M., Sipole, S. L., Vallejo, A., & Wong, M. C. S. (2025). *Texas Trends Survey 2025: Understanding Household Energy Burden and Perceptions in Texas* (University of Houston & Texas Southern University). University of Houston Hobby School of Public Affairs. https://www.uh.edu/hobby/txtrends/energy.pdf; Yeswanth Reddy Yannam, Jian Shi, Aparajita Datta, Kailai Wang, Ramanan Krishnamoorti, Joseph B Powell, Debalina Sengupta, Xinyue Ye, "Toward a Human-Centered Energy Transition: Concepts, Models, Challenges, and Research Opportunities", Utility Policy, 2026 (accepted for publication); Behnam Sabzi, Jian Shi, Gino Lim, Farzane Ezzati, Kailai Wang, "Energy equity-centered planning of community microgrids", Sustainable Cities and Society, 2025. https://www.sciencedirect.com/science/article/abs/pii/S2210670725003610; Behnam Sabzi, Gino J Lim, Jian Shi, Saeedeh Abbasi, "Equitable power grid restoration considering decision maker's risk tolerance", Computers & Industrial Engineering, 2025. https://www.sciencedirect.com/science/article/abs/pii/S0360835225008976; Weilong Chen, Xinran Zhang, Ling Zhu, Jian Shi, Zheng Chang, Zhu Han, Yanru Zhang, "Socially Aware Load Forecasting Utilizing Large Language Models", IEEE Transactions on Industrial Informatics, 2025. https://ieeexplore.ieee.org/document/11182158; Weilong Chen, Xinru Liu, Xinran Zhang, Jian Shi, Han Yang, Zhu Han, Yanru Zhang, "SocioDiff: A Socio-Aware Diffusion Model for Residential Electricity Consumption Data Generation", IEEE Transactions on Smart Grid, 2025. https://ieeexplore.ieee.org/document/11021430; Weilong Chen, Jian Shi, Yixin Liang, Ling Zhu, Zheng Chang, Yanru Zhang, Zhu Han, "Privacy-Preserving SocioAware Short-Term Residential Load Forecasting", ICC 2025-IEEE International Conference on Communications, 2025. https://ieeexplore.ieee.org/document/11161554; Jieyu Lei, Shibin Gao, Xiaoguang Wei, Jian Shi, Tao Huang, Nikos D Hatziargyriou, CY Chung, "A shareholdingbased resource sharing mechanism for promoting energy equity in peer-to-peer energy trading", IEEE Transactions on Power Systems, 2022. https://ieeexplore.ieee.org/document/9966850.

capital investments, all of which are passed on to consumers. Demand for electricity is outpacing power generation due to the push for electrification, rising air conditioning use, and data center growth. None of these reasons for increased utility costs exists in a vacuum; therefore, research is required to identify the parts and how they interact to form the whole energy grid. My poster will clearly identify the policy and technical causes of rising utility costs in terms of the US natural gas market, aged infrastructure, and increased demand. The goal is to educate the public and provide policymakers with tangible recommendations to lower costs and thus improve the quality of life for all American families.

Recent Trends in U.S. Energy Burdens

Presented by: Eric Scheier, University of North Carolina at Chapel Hill

Abstract: Energy burdens (household energy expenditure as percentage of income) change over time across geographic scales. Investigating trends addresses critical American energy affordability concerns. While studies typically focus on a geographic region, the topology of the electric grid and retail electricity rates vary significantly by service territory even within a nearby neighborhood, city, or county. Here, we present a multi-level geographic analysis of U.S. energy burden across 196 utility service territory assignments (representing 174 unique utilities), 3,222 counties, and 52 states and territories (2018-2022). Using county-level aggregates from DOE LEAD data, we find profound geographic disparities and dramatic temporal heterogeneity where some communities improved 65%+ while others worsened 315%+. This poster presents: (1) dynamic heat maps showing percent change in energy burden concentration, (2) temporal trend visualizations revealing county and utility scale disparities concealed by state averages, and (3) policy targeting matrices for high-priority interventions. The multi-level analysis enables targeted design: utility rate reforms, county assistance programs, and state standards tailored to local conditions.

Income, Institutions, and Residential Electricity Rates: How Market Structure Conditions the Income–Rate Relationship

Presented by: Yutong Si, Columbia University Mailman School of Public Health

Abstract: Prior research has documented disparities in energy burden and affordability, but less attention has been paid to the institutional designs that shape retail electricity rates. This study addresses the gap by examining whether and how state-level electricity market structure (i.e., the presence or absence of residential retail choice, hereafter referred to as competitive and regulated markets) conditions the relationship between income and residential electricity rates. This study draws on the Institutional Analysis and Development (IAD) framework to conceptualize electricity markets as governance systems in which regulatory rules affect cost allocation and pricing. Examining ZIP code-level data on residential electricity rates and household income, and controlling for other sociodemographic, institutional, and energy transition characteristics, this study estimates income-rate gradients under competitive and regulated markets using regression models. Results show that, on average, ZIP codes in competitive markets face significantly higher electricity rates and exhibit a progressive income–rate relationship (i.e., higher-income ZIP codes facing higher rates) that is absent in regulated states. However, quantile regression reveals that these differences between market structures are not uniform across the rate distribution. Instead, the divergence between competitive and regulated markets becomes statistically significant primarily in the upper

tail of the rate distribution. By conceptualizing electricity rates as institutional outputs, this study contributes to energy justice scholarship by showing how market structures not only average rate levels but also the distributional patterns of electricity pricing across communities, with important implications for rate design and for addressing the energy affordability crisis.

Wires and fire: Wildfire investment and network cost differences across California's power providers

Presented by: Madalsa Singh, Rochester Institute of Technology

Abstract: Electricity affordability is a salient policy concern in California. We compare drivers of increasing utility costs for three types of power providers in California: investor-owned utilities (IOUs), publicly owned utilities (POUs), and community choice aggregators (CCAs). Since 2019, the IOU and CCA residential baseline electricity rates have increased by 44–80 % after accounting for inflation, making them some of the most expensive power providers in the United States. POU prices, however, remained nearly unchanged. We compare long-term trends in capital assets, returns, and operation and maintenance expenses to identify sources of increasing utility costs, one of the factors contributing to rising electricity prices in the state. Across IOUs, generation capital assets have declined. Fuel and power purchase expenses have increased, although these increases remain within their historical ranges. Transmission and distribution (T&D) expenses have increased significantly and are the majority of overall costs. T&D operations and maintenance spiked following major wildfires after years of remaining constant despite an aging and expanding electricity grid. CCAs reach price parity with IOUs due to the high costs of T&D infrastructure and exit fees levied on them. POUs, which service smaller territories with low wildfire risks, also expanded their T&D capital assets, operations, and maintenance expenses, but the increase is modest. We foresee continued price divergence among power providers due to wildfire mitigation costs, which will have important affordability consequences.

From geographical averages to individual household data to inform climate, energy affordability and health policy decisions

Presented by: Alexandra Snell, PSE Healthy Energy

Abstract: Increases in residential energy bills (EIA 2025, NEADA 2025) will mean even more American households will struggle to pay their bills, endure unsafe temperatures at home, or forgo other necessities like food and medicine to cover energy costs (Drebohl et al. 2020, SECC 2025). Strategic deployment of modern resources, such as efficient electrification and distributed generation and storage, can improve affordability while also meeting climate goals and grid needs. However, identifying effective pathways is complex and sensitive to local factors such as climate, poverty, demographics, and the built environment. Determining pathways is challenging due to limited energy consumption data and a lack of integrated tools to investigate impacts of potential policies and programs. For example, many studies and online tools rely on estimates of affordability statistics at the census tract or county scale, but these struggle to account for significant differences between households within those geographies. To address this gap, we simulated a synthetic dataset of all US households that includes demographic and building attributes, and detailed estimates of energy consumption and cost. This dataset estimates over $30 billion in bill assistance is needed annually to bring household energy costs down to just six percent of income for all US

households. Furthermore, we developed the forthcoming and publicly-available National Energy Affordability Tool (NEAT) that generates statistics with increased spatial and demographic granularity on energy affordability and emissions. Additionally, NEAT includes a policy decision tool to determine how various intervention scenarios, such as efficiency and electrification, may affect affordability and emissions as rates and grid emissions change. We will share examples illustrating how this tool can inform more robust and holistic decision-making across geographic scales by supporting identification and comparison of intervention pathways that meet climate, grid, and affordability needs. NEAT is available for early access walkthroughs and additional analytical support.

PRESENTER BIOGRAPHIES

Muhammad Jalal Awan, The Utility Reform Network

Dr. Jalal Awan is an Energy and Climate Policy Analyst at The Utility Reform Network (TURN), where he focuses on electric and gas utility general rate case (GRC) applications, infrastructure investment, and gas system planning in California regulatory proceedings on behalf of ratepayers. Since joining TURN in 2023, Dr. Awan has sponsored or co-sponsored testimony in multiple CPUC proceedings, including general rate cases, gas planning dockets, wildfire risk applications, and electrification filings. His work centers on evaluating cost benefit assessments, risk modeling, performance metrics, and the affordability impacts of large-scale electric and gas distribution investments. Prior to TURN, Dr. Awan was an Assistant Policy Researcher at the RAND Corporation, where he conducted quantitative and mixed-methods research and presented findings to federal agencies and national policy bodies. He holds a Ph.D. in Policy Analysis from the Pardee RAND Graduate School, an M.S. in Green Technologies from the University of Southern California as a Fulbright Scholar, and a B.S. in Electrical Power Engineering. Dr. Awan's research spans energy systems, infrastructure economics, regulatory design, and public-interest policy.

Aparajita Datta, University of Houston

Aparajita Datta is the Energy Policy Associate for the Division of Energy and Innovation at the University of Houston. Her work focuses on energy affordability and security, evaluating administrative burdens as a source of inequality in American institutions and policies. She also works on multidisciplinary themes related to infrastructure resilience and reliability, federal and state policies to support and advance low-carbon technologies, public opinion and education, and workforce development. She formerly served as a Christine Mirzayan Science and Technology Policy Fellow at the National Academies of Sciences, Engineering, and Medicine, and as a Fellow for Civically Engaged Research at the American Political Science Association. Aparajita holds a bachelor's degree in computer science and engineering from the University of Petroleum and Energy Studies, India. She holds master's degrees in energy management, public policy, and political science, and a Ph.D. in Political Science from the University of Houston.

Gabriel de Oliveira, Stokes School of Marine and Environmental Sciences
Dr. Gabriel de Oliveira is an Assistant Professor in the Stokes School of Marine and Environmental Sciences at the University of South Alabama and a Senior Scientist I at the Dauphin Island Sea Lab. A former Early-Career Fellow of the U.S. National Academies of Sciences, Engineering, and Medicine (NASEM) Gulf Research Program and an Ambassador for the American Geophysical Union's Local Science Partners Program (LSPP), he studies biosphere-atmosphere interactions, land-cover change, and carbon-water cycling in climate-sensitive coastal and tropical ecosystems. He earned his MSc and PhD in Remote Sensing from Brazil's National Institute for Space Research (INPE) and completed postdoctoral training at the University of Kansas and the University of Toronto. He also served as a Distinguished Visiting Professor at Tel Aviv University. He currently leads GOMESA-funded research developing the University of South Alabama's Delta and Coastal Alabama Wildlife, Fisheries and Carbon Flux Observatory, integrating satellite remote sensing, eddy-covariance flux measurements, and field observations to link ecosystem carbon dynamics, surface energy balance, and energy demand in rapidly transforming coastal regions.

Carolyn Dougherty, Johns Hopkins University
Carolyn Elaine Dougherty is an energy strategy researcher specializing in the application of geospatial data science to grid resilience. With six years of experience in geospatial intelligence and five years dedicated to state energy resilience strategy, she focuses on leveraging spatial analytics to quantify grid vulnerabilities and strategically direct state, federal, and utility resources. This research-driven approach ensures that infrastructure investments are economically prudent, maintain grid reliability, and enhance long-term resilience. A December 2025 graduate of the Master of Science in Energy Policy and Climate program at Johns Hopkins University, Carolyn is dedicated to academic integrity and objective, bipartisan analysis. Her work is grounded in the principle of informed consent, positing that transparency and data-driven decision-making are fundamental components of the social contract between electric industry stakeholders and the public. Carolyn's research utilizes quantitative and qualitative data analysis to identify opportunities for grid optimization and examination of energy affordability. Her work informs the implementation of policies that provide evidence-based justifications for cost allocations and system investments.

Stacy Godfreey-Igwe, Carnegie Mellon University
Stacy Godfreey-Igwe is a second-year PhD student and Rales Fellow in the joint Engineering & Public Policy (EPP) and Civil & Environmental Engineering program at Carnegie Mellon University, under the direction of Dr. Destenie Nock. Her research examines disparities in residential energy demand under extreme heat conditions, and focuses on how energy affordability constraints can shape household cooling behavior. She is broadly interested in energy equity, grid reliability, and translating technical research into actionable policy recommendations for climate-vulnerable communities. As a native Texan, her commitment to energy equity grew out of the 2021 Winter Storm Uri, which underscored how energy system failures disproportionately impact marginalized communities. Prior to pursuing a PhD, Stacy worked as a Science Policy Fellow and interned within the U.S. Department of Energy's Building Technologies Office in Washington, DC. In these roles, she contributed to policy analyses informing energy technology deployment efforts for federal stakeholders, allowing her to connect technical research with policy decision-making. She earned dual BS degrees from the Massachusetts Institute of Technology in Mechanical Engineering and African & African Diaspora Studies. Beyond her research and academic work, Stacy is committed to mentorship and broadening diverse participation in science policy and energy fields. She develops and facilitates curriculum through EPP's SUCCEED program, a climate, energy, and environmental justice workshop for high school students local to Pittsburgh, and serves as a departmental representative in Carnegie Mellon's Graduate Student Assembly.

J. Michael Grappone, Lawrence Livermore National Laboratory
J. Michael Grappone is a National Security Systems Analyst at Lawrence Livermore National Laboratory specializing in system-of-systems modeling, risk assessment, and analytic tools for critical infrastructure protection. He holds a Ph.D. in Geophysics and Mechanical Engineering and brings expertise in data analytics, machine learning, stochastic simulation, and physical risk modeling. Michael leads analytical efforts linking energy systems performance to U.S. energy dominance and national security outcomes. He develops integrated frameworks that evaluate energy technologies and portfolios to assess their strategic value. His work combines capacity expansion modeling, power system optimization, and supply chain analysis to examine how infrastructure constraints, rapid load growth, and geopolitical volatility affect long-term price stability and industrial competitiveness. He has led projects optimizing electric grids and energy supply chains, developed scoring algorithms for adversary risk assessment, and designed novel geophysical research instrumentation. His current research integrates intelligent adversary risk assessment architectures to connect energy system performance with broader national priorities.

Yufan Ji, Ohio State University

Yufan Ji is a PhD candidate in Civil Engineering at The Ohio State University and affiliated with the RAMSIS Lab and the Energy Markets & Policy Group. Her interdisciplinary research integrates engineering analysis, economics, and data science to examine energy affordability, market efficiency, and consumer protection in deregulated retail electricity markets in the United States. Motivated by growing disparities in household energy burdens, her work focuses on how market design and supplier behavior shape consumer outcomes—particularly for low-income and disadvantaged communities. Using a combination of econometric methods, causal inference, and machine learning, her research triangulates evidence across data sources to assess affordability beyond electricity rates alone, emphasizing bill-level impacts and behavioral frictions. Her recent work documenting inefficiencies and distributional impacts in retail electricity markets has been published in the Journal of Critical Infrastructure Policy and translated into policy briefs for regulators and consumer advocates. In parallel, she has contributed methodological research on uncertainty-aware causal forest inference, published in Expert Systems with Applications, strengthening the reliability of causal estimates used in applied policy settings. Additional work examines pricing strategies for renewable electricity products and the interaction between wholesale market conditions and retail contract design. Beyond research, Yufan was featured in the Alfred P. Sloan Foundation Energy & Environment program newsletter (April 2025) and her research has informed Ohio House Bill 15, a landmark reform of Ohio's energy policy. Through her work, she seeks to advance evidence-based approaches to equitable energy transitions, effective market oversight, and improved affordability outcomes for households.

Maria Perez Arguelles, University of Houston

Maria P. Perez Arguelles, Ph.D., is a research assistant professor at the Hobby School of Public Affairs. She has worked as a research associate at the Hobby School's Center for Public Policy (CPP) since 2020, where she has supported multiple projects on Texas Trends, community resilience, natural hazards, Texas Metro Blueprint, and more. Dr. Perez Arguelles teaches the Master of Public Policy capstone class and co-teaches a workshop on the Data Science for Energy Transition, a multi-university summer program supported by the National Science Foundation to train college students with skills needed in the diversifying energy industry. Her research interests focus on sustainability, community resilience to natural hazards, community energy and urban policy using spatial, quantitative and survey methods to develop data-driven, equity-centered solutions that inform policymaking. Living in Houston has exposed her to the vulnerability many communities face. This has strengthened her commitment to identifying policy and data-driven solutions that enhance resilience and energy justice in normal times and at the onset of natural disasters. She holds a B.S. in Economics from Universidad the Los Andes in Bogota Colombia, and a M.S. in Agricultural Economics and Ph.D. in Urban and Regional Science from Texas A&M University.

Chase Robinson, Colorado School of Mines
Chase Robinson graduated from Southern University and A&M College with a degree in mechanical engineering and received a master's in advanced energy systems at the Colorado School of Mines in May 2025. Chase is pursuing a Ph.D. in mechanical engineering. His research involves developing scalable thermal energy storage material at the National Renewable Energy Laboratory, with the next steps being to model and test the material on lithium-ion battery cells and battery packs. The research goals are to improve thermal management and, thus, the performance of the electrochemical batteries while validating my thermal energy storage material. Chase and his team have recently begun establishing a Space Act Agreement with NASA Marshall Space Flight Center with the hope of conducting microgravity testing. His personal goal is to either commercialize my work or start a company. As for broader impacts, thermal energy storage materials within the context of energy systems can improve system efficiency by reducing heat losses, matching supply with demand, and minimizing total energy consumption. These system performance benefits improve the reliability, lifespan, and performance of the electrical grid and, in turn, reduce costs for residential consumers.

Eric Scheier, University of North Carolina at Chapel Hill
Eric Scheier is a Ph.D. student at the University of North Carolina at Chapel Hill's Environment, Ecology, and Energy Program (E3P) working with Dr. Noah Kittner's Sustainable and Resilient Energy Group (SREG), where his research focuses on energy affordability, geographic disparities in energy burdens, and the equitable deployment of distributed energy resources. Eric's interest in energy affordability stems from a deep personal and professional commitment to ending energy poverty. His prior work with Dr. Kittner, published in Nature Communications (2022), highlighted how current policies disproportionately burden vulnerable communities. Eric previously served as Research Scientist at Climate Change AI, collaborating with Google DeepMind on systematic reviews of climate and machine learning data gaps, and as Senior Power Analyst at Silicon Valley Clean Energy, where he built 24x7 clean energy procurement models for major technology companies. Earlier, he was a fellow in the U.S. Department of Energy's Solar Energy Innovators Program, evaluating distributed energy resource adoption and energy burdens using agent-based models and behavioral research. His career also included quantitative analysis of energy markets and risk management at ENEL Energy & Commodity Management and solar project finance at Sol Systems. Before returning to academia for his Ph.D., he founded Emrgi, a sustainability utility dedicated to democratizing access to clean energy and ending energy poverty. Eric's broader research interests include energy market dynamics, distributed energy resource integration, policy-relevant measurement frameworks, and the intersection of quantitative modeling with environmental justice. Through his work, Eric aims to bridge rigorous quantitative analysis with actionable policy design, informing geographically-targeted interventions that address America's energy affordability crisis.

Yutong Si, Columbia University Mailman School of Public Health
Yutong Si (she/her) is an Associate Research Scientist at Columbia University's Mailman School of Public Health. She received her Ph.D. in Public Policy from Northeastern University in 2024. Her research examines the intersection of data science and public policy. Substantively, her work investigates how institutions, narratives, and networks shape energy transition, electricity affordability, and health equity outcomes. Methodologically, she uses mixed methods, including computational text analysis, social network analysis, and quantitative approaches. Her work has appeared in Policy Studies Journal, Energy Research & Social Science, Energy Strategy Reviews, Sustainable Development, Climatic Change, and PLOS Climate, among other journals. She is currently working on projects funded by Brown University's Climate Social Science Network and the New York State Energy Research and Development Authority. As an American Bar Foundation/JPB Foundation Access to Justice Early-Career Scholar (January–October 2026), she analyzes electricity rate cases across states to understand how institutional design shapes procedural justice in energy regulation.

Madalsa Singh, Rochester Institute of Technology
Dr. Madalsa Singh is an assistant professor at the Golisano Institute of Sustainability at the Rochester Institute of Technology. Dr. Singh studies carbon-constrained energy systems, with an emphasis on transport and electricity sectors. Her research develops place-based, equitable, and affordable strategies to rapidly reduce air emissions from energy use. Previously, Dr. Singh was a postdoctoral research fellow at the University of California Santa Barbara. She received a Ph.D. from Stanford University and an undergraduate degree from IIT Bombay.

Alexandra Snell, PSE Healthy Energy
Alexandra Snell is a Community Impact Scientist at PSE Healthy Energy and is completing her PhD from Texas A&M with a dual focus on structural geology and geoscience education. At PSE Healthy Energy she has aided or led multiple research studies, including a study of the intersection of affordability and climate risks in Pennsylvania and the potential for health and safety impacts from affordability challenges. Ms. Snell additionally regularly collaborates with community organizations to identify key considerations driven by community feedback for scientific research. Ms. Snell has helped bring a variety of audiences into the development of PSE's National Energy Affordability Tool (NEAT). She aims to make NEAT as accessible and impactful as possible for a variety of audiences through workshops, technical assistance and the development of use cases and capturing case studies. Prior to joining PSE, she consulted organizations on leveraging research and data visualizations to improve education, equity, accessibility, diversity, and inclusion in the sciences. Her doctoral research includes a 5-year quantitative and qualitative study of the impacts of social climate on student retention, learning and belonging; and conducted a quantitative study of the impacts of COVID-19 on graduate and undergraduate students.

Forum on Energy System Transformations and Decarbonization

The transformation of the United States' energy system provides unprecedented opportunities for leadership in innovation, economic growth, and decarbonization, but it will not be without significant challenges. This forum seeks to address critical issues arising from ongoing growth and changes in the energy system to meet increasing energy demands and respond to climate change. The forum convenes an interdisciplinary set of experts to provide a strategic, rapid response capability for grappling with the dynamic nature of energy system transitions and serve as a venue for independent, high-quality advising on the future of nation's energy systems.

This Forum is supported by the **Alfred P. Sloan Foundation**, the **Clean Economy Project**, and a grant from the **National Academy of Sciences Cynthia and George Mitchell Endowment for Sustainability Science**.

Understanding & Addressing Energy Affordability: Trends in U.S. Electricity Prices Webinar

Increasing electricity prices for American consumers have garnered national attention in recent months, as residential prices are outpacing the rate of inflation in large regions of the country. This webinar sought to understand the root causes of these price increases and how to mitigate them.

Understanding and Addressing Energy Affordability in the United States Workshop

Increasing energy costs for American consumers are elevating the issue of energy affordability to the forefront of economic and policy debates. This workshop will host a workshop to identify key factors contributing to rising energy costs and discuss potential policy and technology solutions to energy affordability challenges.

Exploring Opportunities for Energy Parks Webinar Series

Energy Parks are an emerging approach to designing integrated hubs that co-locate generation, storage, and large-scale load (e.g. data centers, advanced manufacturing) at one point of interconnection to the electric grid. This 2-part webinar series that will explore potential benefits of energy parks and challenges to their deployment.