David L. McCollum

Distinguished R&D Staff ◈ Oak Ridge National Laboratory
Joint Faculty Professor ◈ University of Tennessee
2360 Cherahala Boulevard, Knoxville, Tennessee 37932 (USA) ◈ mccollumdl@ornl.gov
www.ornl.gov/staff-profile/david-l-mccollum ◈ scholar.google.com/citations?user=LjmiTtQAAAAJ&hl=en

PROFESSIONAL EXPERIENCE

Distinguished R&D Staff, *Oak Ridge National Laboratory*, Knoxville, Tennessee, USA, 4/2024-Present
Joint Faculty Professor, *Baker School of Public Policy, University of Tennessee*, USA, 3/2024-Present
Senior R&D Staff, *Oak Ridge National Laboratory*, Knoxville, Tennessee, USA, 9/2021-3/2024
Guest Senior Research Scholar, *International Inst. for Applied Systems Analysis*, Laxenburg, Austria, 10/2021-Present
Research Fellow in Energy and Environment, *Baker School of Public Policy, U. of Tennessee*, USA, 1/2016-Present
Senior Scientist, *IPCC WGIII Technical Support Unit, Imperial College London*, UK, 7/2020-7/2023
Principal Technical Leader, *Electric Power Research Institute (EPRI)*, Palo Alto, California, USA, 2/2019-9/2021
Senior Research Scholar, *International Institute for Applied Systems Analysis*, Laxenburg, Austria, 2/2011-1/2019
Graduate Researcher, *University of California, Davis, Institute of Transportation Studies*, USA, 9/2005-3/2011
Research Aide, *Argonne National Laboratory*, Washington, DC, USA, 9-12/2007
Assistant Language Teacher, *Japan Exchange and Teaching Program*, Sendai, Japan, 7/2004-7/2005
Research Intern, *National Renewable Energy Laboratory*, Golden, CO, USA, 6-8/2003
Legislative Intern, *United States Senate Committee on Governmental Affairs*, Washington, DC, USA, 5-8/2001

EDUCATION

University of California, Davis, Davis, CA, USA
Ph.D., Transportation Technology & Policy (2011);
M.S., Agricultural & Resource Economics (2008); M.S., Transportation Technology & Policy (2007)
The University of Tennessee (UT), Knoxville, TN, USA
B.S., Chemical Engineering, Chemistry minor (2004), *summa cum laude and University Honors Scholar*
Ajou University, Suwon, South Korea (study abroad, 2002)

EXPERTISE & INTERESTS

Integrated assessment and multi-sector dynamics of global change and its human drivers and impacts
Analysis of energy, climate, and broader sustainability objectives, including assessing their inter-linkages
Energy-economic systems modeling and scenario analysis to inform policy-making and corporate decision-making
Techno-economic analysis (TEA) and life-cycle analysis (LCA) of emerging technologies and processes
Transportation and urban systems modeling and analysis (technology, policy, consumer behavior)
Electricity sector modeling and analysis (end-use electrification, grid resilience, and markets and regulation)
Computing and digitalization futures analyses exploring energy, resource, and environmental implications
Sustainability finance (investment needs for achieving energy, climate, and other societal goals)

IMPACT & INFLUENCE

***h*-index = 71, citations = 33,700** (October 2026, Google Scholar)
>$11.5 million of funding secured and directly managed (since 2021)
~100 different staff supported with funding (since 2021)
>20 colleagues hired and/or closely mentored, primarily early-career (since 2011)
>10 Ph.D. students (co)supervised at universities in multiple countries (since 2011)
>50 invited scientific talks, keynote addresses, and public lectures at U.S. and international events (since 2021)
~40 workshops, conference sessions, panels, and other events co-organized, with up to 200 attendees (since 2021)
Regular community engagement (public lectures, podcasts, media interviews, school visits)

Multiple invited appointments to U.S. and international bodies and boards (e.g., NASEM, IPCC, European Union)

MAJOR RESEARCH ACTIVITIES & PRINCIPAL INVESTIGATOR ROLES (SELECTED)

Genesis Mission AI for International Power Systems Planning, 2026-Present. Co-Leading a $779K analysis effort to extend the reach of U.S.-developed AI models, tools, and validation frameworks to Mission Innovation partner countries; developing a generalizable capability that speeds up grid and other infrastructure planning by allowing future potential asset and network configurations to be tested operationally at decision-relevant scales (e.g., kilometer-level resolution); leveraging AI-based diffusion models as land use and land cover map synthesis platforms to represent future landscape conditions in countries where detailed data products are lacking (15-20 staff)

SERA: Southeast Resilience Accelerator Initiative, *2026-Present*. Co-leading a >$20M effort to enable integrated data, modeling, and innovation frameworks and approaches that couple hydrologic, energy, infrastructure, and human dynamics across scales and sectors from stream to river basin, consumer to grid, and neighborhood to region, with the goal of delivering actionable datasets, tools, technology, and insights that inform regional and national stakeholders as they plan and operate more resilient, interconnected energy, water, and other infrastructure systems (>50 staff)

ARMADA: Action Relevant Modeling and Decision Analysis, *2024-Present*. Director of a $2.1M effort to build a powerful modeling and scenario analysis platform operating at decision-relevant scales and taking a holistic view of technology-infrastructure expansion over decadal timescales and under deep uncertainty (20-25 staff)

QUEENS: Quantum for the Environment, Economy, and National Security, *2025-Present*. Leading a $250K analysis effort exploring alternative futures for quantum computing and associated infrastructure; estimating future potential energy and physical resource impacts of quantum-accelerated AI data centers at scale (5-10 staff)

CIFRA: Computing Infrastructure Futures and Resource Assessments, *2025-Present*. Leading a $400K collaborative effort between ORNL and the Univ. of Virginia to advance the frontier of integrated modeling and whole-systems scenario analysis with respect to AI data center deployment over mid-to-long term timeframes, considering multiple spatial scales and co-evolving dynamics in urban infrastructure and human systems (10-15 staff)

ReX Data Centers: Circular Economy Strategies for AI Data Center Components, *2026-Present*. Leading a $200K project to explore the capacity of the U.S. industrial base and associated supply chains to produce the critical components and materials required for next-generation data centers through reuse, repair, recycling, and repurposing (ReX) of currently classified waste, especially from decommissioned equipment from existing data centers (<5 staff)

Enhanced Circularity of Power Transformers, *2026-Present*. Leading a $300K collaborative effort between ORNL and Arizona State University to evaluate and accelerate circular economy strategies for power transformers (e.g., for copper, aluminum, and steel); primary objectives include developing future scenarios that incorporate reuse, repair, recycling, remanufacturing, and repurposing ("ReX") strategies and quantifying economic, workforce, and investment impacts associated with increased circularity (5-10 staff)

Intergovernmental Panel on Climate Change

Seventh Assessment Report (2025-28): Lead Author, Ch. 14 – Integration and interactions across sectors and systems
Sixth Assessment Report (2022): Lead and Contributing Author and WG III Technical Support Unit; Multiple topics
Special Report on 1.5 °C (2018): Contributing Author; Energy investment needs for deep decarbonization pathways
Fifth Assessment Report (2014): Lead Author and Contributing Author; Co-benefits and risks of climate mitigation

Circular Bioeconomy Systems (CBS), *2025-Present*. Theme Lead for "Decision Science" within the CBS Convergent Research Initiative of the University of Tennessee - Oak Ridge Innovation Institute (UT-ORII); focus is on developing methods and standards to measure and maximize the social, environmental, and economic value of carbon pools and streams, thereby making these materials recyclable for the benefit of society

Integrated Energy Futures, *2022-Present*. Co-Lead; $400K/yr; multi-lab effort sponsored by the DOE-EERE Strategic Analysis Team to develop advanced capabilities and workflows for multi-sectoral pathways modeling (50-100 staff)

DecisionScience@ORNL, *2021-2024*. Director of an internal effort to build a diverse analysis community within ORNL; managed an internal budget of >$500K to seed new ideas and establish world-leading capabilities; oversaw 10 projects that leveraged techno-economic analysis (TEA), life-cycle analysis (LCA), and geospatial science to explore the future scaling potential of emerging technologies and processes (>150 staff)

EDITS Consortium (Energy Demand changes Induced by Technological and Social innovations), *2019-Present*. Led by IIASA and RITE. Study Team contributions: (1) Energy Security, (2) End-Use Energy Demand Data.

Net Zero World Initiative, *2021-2025*. ORNL Lab Lead and Co-Manager for Partnerships within the cross-lab NZW Action Center. NZW was a partnership between U.S. federal agencies, U.S. national laboratories, foreign governments, and philanthropies to support countries' rapid achievement of energy systems decarbonization. (50-100 staff)

Energy Modeling Forum 37 Exercise (EMF-37): Deep Decarbonization & High Electrification Scenarios for North America, *2021-2025*. Study Team contributions: (1) Transportation, (2) Ancillary Impacts, (3) Hydrogen

E3SM-GCAM Exploration of CDR, *2022-23*. Exploring the effectiveness of land-based carbon dioxide removal (CDR) in stringent mitigation pathways using world-leading earth systems and integrated assessment models (E3SM, GCAM)

Green Climate Fund, *2019-2021*. "Scaling up climate finance in the context of Covid-19: A science-based call for financial decision-makers"

IIASA-ISC, *2020-21*. "Transformations within reach: Pathways to a sustainable and resilient world – Rethinking energy solutions", International Institute for Applied Systems Analysis, Austria, and International Science Council, Paris

U.S. Power Sector Transformation and Air Quality Study, *2020-21*, Energy-economic modeling for six U.S. electric utilities to explore the co-benefits of decarbonization and electrification in their service territories

U.S. and Canadian Net-Zero Emissions Studies, *2019-21*, Modeling of economy-wide decarbonization pathways to reach net-zero emissions by 2050; stakeholder engagement with U.S. and Canadian utilities to inform decision making

COMMIT Project, *2018-20*, Enhancing the energy transitions and climate policy modeling capacity of G20 developing countries in support of their enhanced NDC submissions and long-term strategies (European Commission DG-CLIMA)

CD-LINKS Project, *2016-19*, Exploring technology and policy pathways toward well below 2 °C, with a focus on energy infrastructure investment needs globally and for major economies (European Commission Horizon 2020)

United Nations Environment Programme Finance Initiative (UNEP-FI), *2017-18,* Worked with leading international banks to promote use of energy and emissions scenarios for informing risk valuation (motivated by TCFD)

U.S. Environmental Protection Agency, Office of Transportation and Air Quality Project, *2016-18*, Designed and carried out modeling analyses of the energy-emissions leakage effects of US biofuels policies, with RTI International

International Council for Science (ICSU/ISC), *2016-17*, Coordinated a team of experts to draft a chapter on energy-related Sustainable Development Goal interactions, and served on editorial team for entire report

Asian Development Bank (ADB), 2015, Co-led energy transitions analysis for the 'Roadmap for Carbon Capture and Storage Demonstration and Deployment in the People's Republic of China'

United Nations Environment Programme (UNEP), The Emissions Gap Report 2014, Lead Author of 'Chapter 2: What emission levels will comply with temperature limits?'

Global Energy Assessment, *2009-12*, Lead Author of 'Chapter 17: Energy Pathways for Sustainable Development'

Multi-Path Transportation Futures Study, *2007*, Argonne National Laboratory, Characterized transport fuel production options by costs, emissions and water use

Models for Carbon Dioxide Transport and Underground Storage, *2005-06*, University of California, Davis, Investigated techno-economic models for CO_2 compression, pipeline transport, and geological storage

LEADERSHIP POSITIONS, ADVISORY BOARDS & COMMITTEES (SELECTED)

Science Lead for "Energy, Transport, and Infrastructure", ORNL Southeast Resilience Accelerator Initiative (SERA)

Technical Co-Lead for Decision Science & Analysis, ORNL Next-Generation Data Centers Institute (NGDCI)

Lead Organizer, Aspen Global Change Institute (AGCI) Workshop on *Human behavior in global change models: Cross-disciplinary synthesis for future directions*, November 2025

Member, Quantum and Society Alliance for Research (QUASAR)

Member, Research Coordination Network on the Digital Economy and the Environment (RCN-DEE)

Member, International Science Council's *Global Roster of Experts*

Review Editor, United Nations Environment Programme (UNEP), Global Environment Outlook #7 (GEO-7), Chapter on *Staying on the path we are on – global implications*

Review Editor, Second Austrian Climate Assessment Report (AAR2), Ch. 3: *Settlements, Mobility and Spatial Planning*

Review Editor, U.S. 5th National Climate Assessment, Ch. 18: *Sector Interactions, Multiple Stressors, and Complex Systems*

Co-Chair, Working Group on *Connecting MSD Research to Operations*, Multi Sector Dynamics Community of Practice

Leadership Team, ORNL Climate Change Science Institute (CCSI)

Member, Expert Group on Energy's Interlinkages with Other SDGs in the framework of the SDG7 Technical Advisory Group (SDG7 TAG), United Nations Department of Economic and Social Affairs (UN DESA)

Associate Editor, *Renewable and Sustainable Energy Transition* (Elsevier)

Board of Directors, Friends of IIASA

Member, U.S. Committee for IIASA; National Academies of Sciences, Engineering and Medicine (NASEM); Board on International Scientific Organizations (BISO)

Member, Planning Committee for the *U.S. Research Data Summit 2023*; National Academies of Sciences, Engineering, and Medicine (NASEM), Policy and Global Affairs Division

External Advisory Council, *EmPOWERment* National Science Foundation (NSF) Research Traineeship Program, The Ohio State University

Scientific Advisory Board, EU Horizon 2020 Project *LOCOMOTION*

Scientific Advisory Board, EU Horizon Europe Project *DIAMOND*

Advisory Team, TEMOA modeling for the project *Open Energy Outlook for the United States*

Steering Committee, National Renewable Energy Laboratory, TEMPO transportation pathways model

Scientific Advisory Group, Science Based Targets Initiative

Steering Committee Member, International Transport Energy Modeling Consortium (iTEM)

Advisory Board Member (previously), International Transport Forum of the OECD, Decarbonising Transport Initiative

Reviewer for *Science*, *Nature*, *Nature Climate Change*, *Nature Energy*, *Nature Sustainability, Nature Cities, Nature Communications*, *Environmental Research Letters*, *Climatic Change*, *Joule*, *Energy and Climate Change*, *Energy Economics*, and others

Ph.D. student (co)supervision at international universities: ETH-Zurich (Switzerland); Utrecht University (The Netherlands); Chalmers University (Sweden); Simon Fraser University (Canada); University College Cork (Ireland); Vienna University of Economics and Business (Austria); University of California, Davis (USA); Carnegie Mellon University (USA); Boston University (USA); Georgia Tech (USA)

PEER-REVIEWED PUBLICATIONS (SELECTED)

Pandey, B., **D.L. McCollum** et al. "Teleconnected Compute as an Urban Infrastructure Challenge" (forth., *Nature Cities*).

McCollum, D.L., E. Verdolini, T. Han, and A. Clarens. "Computing and Digitalization through a Multi-Disciplinary Lens: Future Implications for Energy, Resources, and Environment," (in review, *Energy and Climate Change*)

van Valkengoed, A., **D.L. McCollum** et al. "Overcoming epistemological fault lines to advance the representation of human behaviour in global change research," (in review, *Nature Sustainability*).

Riahi, K., L. Clarke, ... **D.L. McCollum** et al. "Mitigation benchmarks from the 2025 community update of global emissions pathways," (in review, *Nature Climate Change*).

Simpson, N., **D.L. McCollum** et al. "Assessing losses and damages from climate change," (in review, *One Earth*).

Lopez, G., C. Breyer, **D.L. McCollum** et al. "Short-term shocks in renewable energy policy incentives do not affect long-term viability of energy system defossilization," (in review, *PNAS*).

Niamir, L., O. Edelenbosch, **D.L. McCollum** et al. "Between deserts and oases: mapping demand-side data gaps," (in review, *Nature Sustainability*).

Khayambashi, K., A. Clarens, **D.L. McCollum** et al. "Load complementarity between data centers and heat pumps provides a blueprint for beneficial electrification," (in review, *Energy and Climate Change*).

Pandey, B., **D.L. McCollum** et al. "Decision-Scale Integrated Assessment of Trade-offs for Place-Based Energy Infrastructure Deployment," (in prep).

Simpson, N., **D.L. McCollum** et al. "Risk from responses to climate change: maladaptation and malmitigation," (in prep).

Al Khourdajie, A., ... **D.L. McCollum** et al. "Navigating the unexpected: the Disruption-Resilient Pathways framework for mitigation scenarios under disruptive events," (in prep)

Contestabile, M., **D.L. McCollum** et al. "The 2026 oil crisis: a window of opportunity for road freight decarbonization," (in prep).

Mital, E., A. Kishore, M. Marathe, **D.L. McCollum** et al. "Synthesizing a Digital Twin of Virginia Electric Heat Pump Adoption," (in prep).

McCollum, D.L. (2026). "Intercity carbon transfers from vehicle electrification," *Nature Cities*.

Grubler, A., L. Steg, N. Bento, B. Boza-Kiss, S. De Stercke, **D. McCollum**, S. Nick, S. Pachauri, A. van Valkengoed, C. Zimm, T.L. Alves, and C. Qin (2026). "The undervalued quality-of-life benefits of demand-side energy and climate strategies," *Communications Sustainability*, 1:97.

McCollum, D.L., S. Bhanja, S. Chehade, A. Delgado, M. Pan, and N. Sharma (2026). "Energy and physical resource impacts of quantum computing merit greater attention," *Nature Reviews Clean Technology*.

McCollum, D.L., N. Sharma, M. Pan, W. Yao, S. Bhanja, S. Chehade, and A. Delgado (2026). "Uncertain Quantum Computing Futures and Potential Energy and Physical Resource Impacts at Scale," *Renewable and Sustainable Energy Transition*.

Mao, J., Y. Hao ... **D.L. McCollum** et al. (2026). "Enhanced Rock Weathering for Sustainable Carbon Capture: Advances, Challenges, and Future Prospects in Terrestrial Ecosystems," *Reviews in Environmental Science and Bio/Technology*.

Brown, M.A., N.K. Palsule, P.E. Thornton, and **D.L. McCollum** (2026). "Regional energy security: Case study of path dependence and adoption readiness in the Southeastern United States," *Applied Geography*. Vol. 190.

Hoehne, C., M. Muratori, J. Bistline, C. Lenox, **D.L. McCollum** et al. (2025). "Transportation in net-zero emissions futures: Insights from the EMF-37 model intercomparison study," *Energy and Climate Change*, Vol. 6.

McCollum, D.L. (2025). "Collaborative energy and land use planning," *Nature Sustainability*. 8 (6), 584-585.

National Academies of Sciences, Engineering, and Medicine (2025). "U.S. Research Data Summit: Strengthening Cooperation Across Organizations and Sectors: Proceedings of a Workshop," Washington, DC: The National Academies Press. https://doi.org/10.17226/29064.

Zhou, R., M. Jin, Z. Li, Y. Xiao, **D. McCollum**, and A. Li (2025). "Techno-economic analysis and network design for CO_2 conversion to jet fuels in the United States," *Renewable and Sustainable Energy Reviews*, Vol. 210.

Loughlin, D.H., A.R. Barron, C.B. Chettri, A. O'Meara, L. Sarmiento, D. Dong, **D.L. McCollum** et al. (2024). "Health and Air Pollutant Emission Impacts of Net Zero CO_2 by 2050: Scenarios from the Energy Modeling Forum 37 Study," *Energy and Climate Change*, Vol. 5.

Melaina, M.W., C.S. Lenox, M. Browning, **D.L. McCollum**, O. Bahn, and S. Ou (2024). "Modeling hydrogen markets: Energy system model development status and decarbonization scenario results," *Energy and Climate Change*, Vol. 5.

Mach, K.J., K. Jagannathan, L., Shi, L.L. Turek-Hankins, J.R. Arnold, C. Brelsford, A.N. Flores, J. Gao, C.E. Martin, **D.L. McCollum**, R. Moss, J. Niemann, B. Rashleigh, and P.M. Reed (2024). "Research to confront climate change complexity: Intersectionality, integration, and innovative governance," *Earth's Future*, 12.

Bento, N., A. Grubler, B. Boza-Kiss, S. De Stercke, V. Krey, **D.L. McCollum**, C. Zimm, and T. Alves (2024). "Leverage demand-side policies for energy security," *Science*, 383 (6686), 946-949.

Brown, M. A., P. E. Thornton, R. L. Gruber, S. Hubbard, M. Lapsa, E. Lara-Curzio, T. C. Lieuwen, **D. McCollum**, M. Oxman, D. Stanton, M. Twardy, and R. Wagner (2024). "2023 Southeast Decarbonization Workshop - Activating science, business, and community partnerships," Oak Ridge National Laboratory. ORNL/TM-2024/3470.

Bistline, J.E.T. G. Blanford, J. Grant, E. Knipping, **D.L McCollum** et al. (2022). "Economy-wide evaluation of CO2 and air quality impacts of electrification in the United States," *Nature Communications* (13:1), 1-12.

Zakeri, B., K. Paulavets, L. Barreto-Gomez, L. Gomez Echeverri, S. Pachauri, B. Boza-Kiss, C. Zimm, J. Rogelj, F. Creutzig, D. Ürge-Vorsatz, D.G. Victor, M.D. Bazilian, S. Fritz, D. Gielen, **D.L. McCollum**, L. Srivastava, J.D. Hunt, and S. Pouya (2022). "Pandemic, War, and Global Energy Transitions," *Energies*, 15 (17).

Yeh, S., J. Gil, P. Kyle, P. Kishimoto, P. Cazzola, M. Craglia, O. Edelenbosch, P. Fragkos, L. Fulton, Y. Liao, L. Martinez, **D.L. McCollum**, J. Miller, R. Pereira, and J. Teter (2022). "Improving future travel demand projections: a pathway with an open science interdisciplinary approach," *Progress in Energy*, 4.

IPCC Working Group III Contribution to the 6th Assessment Report (2022) - Lead Author for *Summary for Policymakers* and *Technical Summary*; and Contributing Author for *Chapter 3 (Mitigation Pathways Compatible with Long-term Goals)*, *Chapter 6 (Energy Systems)*, and *Annex III (Scenarios and Modelling Methods)*

Bhardwaj, C., J. Axsen, and **D. McCollum** (2022). "Which 'Second-best' Climate Policies Are Best? Simulating Cost-effective Policy Mixes for Passenger Vehicles," *Resource and Energy Economics*, 101319.

Bhardwaj, C., J. Axsen, and **D. McCollum** (2022). "How to design a zero-emissions vehicle mandate? Simulating impacts on sales, GHG emissions and cost-effectiveness using the AUtomaker-Consumer Model (AUM)," *Transport Policy* (117).

McCollum, D.L. and A. Al Khourdajie (2021), "Little room for new fossil fuel development if global temperatures are to stay below 1.5°C," *Joule*, Vol. 5, Issue 10, 2542-2545.

Skea, J., P. Shukla, A. Al Khourdajie, and **D. McCollum** (2021), "Intergovernmental Panel on Climate Change: Transparency and integrated assessment modeling," *Wiley Interdisciplinary Reviews: Climate Change*, Vol. 12, Issue 5.

McCollum, D.L. (2021). "Machine learning for energy projections," *Nature Energy*.

Bistline, J.E.T., C.W. Roney, **D.L. McCollum**, and G.J. Blanford (2021). "Deep decarbonization impacts on electric load shapes and peak demand," *Environmental Research Letters*.

Bhardwaj, C., J. Axsen, and **D. McCollum** (2021). "Simulating automakers' response to zero emissions vehicle regulation," *Transportation Research Part D: Transport and Environment*, Vol. 94, 102789.

Knighton, L.T. et al. (2021). "Techno-Economic Analysis of Product Diversification Options for Sustainability of the Monticello and Prairie Island Nuclear Power Plants," INL/EXT-21-62563-Rev001. US-DOE Office of Nuclear Energy.

DeCarolis, J.F., P. Jaromillo, J.X. Johnson, **D.L. McCollum** et al. (2020). "Leveraging Open-Source Tools for Collaborative Macro-energy System Modeling Efforts," *Joule*, 4 (12), 2523-2526.

Andrijevic, M., C.F. Schleussner, M.J. Gidden, **D.L. McCollum**, and J. Rogelj (2020). "COVID-19 recovery funds dwarf clean energy investment needs," *Science*, 370 (6514), 298-300.

McCollum, D., A. Gambhir, J. Rogelj, and C. Wilson (2020). "Energy modellers should explore extremes more systematically in scenarios," *Nature Energy* 5 (2), 104-107.

Zhou, W., **D.L. McCollum** et al. (2020). "Decarbonization pathways and energy investment needs for developing Asia in line with well below 2 °C," *Climate Policy* 20 (2), 232-245.

Bhardwaj, C., J. Axsen, F. Kern, **D. McCollum** (2020). "Why have multiple climate policies for light-duty vehicles? Policy mix rationales, interactions and research gaps," *Transportation Research Part A: Policy and Practice* (135).

Zhou, W., **D. McCollum** et al. (2019). "A comparison of low carbon investment needs between China and Europe in stringent climate policy scenarios," *Environmental Research Letters* 14 (5), 054017.

Parkinson, S., V. Krey, D. Huppmann, T. Kahil, **D. McCollum** et al. (2019). "Balancing clean water-climate change mitigation tradeoffs," *Environmental Research Letters* 14 (1): e014009.

van den Berg, N.J., H.L. van Soest, A.F. Hof, M.G.J. den Elzen, D.P. van Vuuren, W. Chen, L. Drouet, J. Emmerling, S. Fujimori, N. Höhne, A.C. Kõberle, **D. McCollum** et al. "Implications of various effort-sharing approaches for national carbon budgets and emission pathways," *Climatic Change*.

Edelenbosch, O.Y., **D.L. McCollum**, H. Pettifor, C. Wilson, and D.P. van Vuuren (2018). "Interactions between social learning and technological learning in electric vehicle futures," *Environmental Research Letters* 13 (12): e124004.

Weber, C, **D.L. McCollum** et al. (2018). "Mitigation scenarios must cater to new users," *Nature Climate Change* 8.

McCollum, D.L., C. Wilson et al. (2018). "Interaction of consumer preferences and climate policies in the global transition to low-carbon vehicles," *Nature Energy* Vol. 3, 664–673.

McCollum, D.L., W. Zhou et al. (2018). "Energy investment needs for fulfilling the Paris Agreement and achieving the Sustainable Development Goals," *Nature Energy*, Vol. 3, 589-599.

Grubler, A., C. Wilson, N. Bento, B. Boza-Kiss, V. Krey, **D.L. McCollum** et al. (2018). "A Low Energy Demand Scenario for Meeting the 1.5°C Target and SDGs without Negative Emission Technologies," *Nature Energy*, Vol. 3, 515-527.

McCollum, D.L., L. Gomez Echeverri, S. Busch et al. (2018). "Connecting the Sustainable Development Goals by their energy inter-linkages," *Environmental Research Letters* 1 (3).

Jewell, J., **D. McCollum** et al. (2018). "Limited emission reductions from fuel subsidy removal except in energy exporting regions," *Nature*, 554: 229-233.

McCollum, D., L. Gomez Echeverri, K. Riahi, and S. Parkinson (2017). "SDG7: Ensure Access to Affordable, Reliable, Sustainable and Modern Energy for All", In: A guide to SDG interactions: from science to implementation. Eds. Griggs, D.J., M. Nilsson, A.S. Stevance, and D. McCollum, pp. 127-173 International Council for Science, Paris.

McCollum, D.L., C. Wilson et al. (2017). "Improving the behavioral realism of global integrated assessment models: An application to consumers' vehicle choices," *Transportation Research Part D: Transport and Environment* 55: 322-342.

Edelenbosch, O.Y., **D.L. McCollum** et al. (2017). "Decomposing passenger transport futures: comparing results of global integrated assessment models," *Transportation Research Part D: Transport and Environment* 55: 281-293.

Pettifor, H., C. Wilson, **D.L. McCollum**, and O.Y. Edelenbosch (2017). "Modelling social influence and cultural variation in global low-carbon vehicle transitions", *Global Environmental Change* 47: 76-87.

McCollum, D.L., J. Jewell et al. (2016). "Quantifying uncertainties influencing the long-term impacts of oil prices on energy markets and carbon emissions," *Nature Energy*, Vol. 1, Issue 6, Article number: 16077.

Jewell, J., V. Vinichenko, **D. McCollum** et al. (2016). "Comparison and interactions between the long-term pursuit of energy independence and climate policies," *Nature Energy*, Vol. 1, Issue 6, Article number: 16073.

Cameron, C., S. Pachauri, N. Rao, **D. McCollum**, J. Rogelj, and K. Riahi (2016). "Policy tradeoffs between climate mitigation and clean cook stove access in South Asia," *Nature Energy*, Vol. 1, Issue 1, Article number: 15010.

Creutzig, F., P. Jochem, O.Y. Edelenbosch, L. Mattauch, D.P. van Vuuren, **D. McCollum**, and J. Minx (2015). "Transport: A roadblock to climate change mitigation?," *Science*, Vol. 350, Issue 6263, 911-912.

von Stechow, C., **D. McCollum** et al. (2015). "Integrating Global Climate Change Mitigation Goals with Other Sustainability Objectives: A Synthesis," *Annual Review of Environment and Resources*, Vol. 40, 363-394.

van Sluisveld, M.A.E., J.H.M. Harmsen, N. Bauer, **D.L. McCollum** et al. (2015). "Comparing future patterns of energy system change in 2 °C scenarios with historically observed rates of change," *Global Environmental Change* 35, 436-449.

Lucas, P., J. Nielsen, K. Calvin, **D.L. McCollum** et al. (2015). "Future energy system challenges for Africa: Insights from Integrated Assessment Models," *Energy Policy*, Vol. 86, 705-717.

Tavoni, M., E. Kriegler, K. Riahi, D.P. van Vuuren, T. Aboumahboub, A. Bowen, K. Calvin, E. Campiglio, T. Kober, J. Jewell, G. Luderer, G. Marangoni, **D. McCollum**, M. van Sluisveld, A. Zimmer, B. van der Zwaan (2015). "Post-2020 climate agreements in the major economies assessed in the light of global models," *Nature Climate Change* 5, 119-126.

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MEDIA & INTERVIEWS (SELECTED)

Ezratty, O., and **McCollum, D.** (2026). *Quantum Computing Futures through a Multisector Lens* (MultiSector Dynamics Community of Practice Webinar; MSD-LIVE and @multisectordynamicscommuni757 on YouTube; 2026-07-09)

BBC. *What is Helium-3 and could we get it from the moon?* (C. Baraniuk; 2026-06-16)

Physics Today. *How much electricity does a quantum computer need?* (J. Duncombe; 2026-06-15)

IPCC. *COP27 Egypt: Decarbonising the energy sector* (@IPCCGeneva on YouTube; 2023-02-13)

Carbon Brief. *Clean energy investment 'must be 50% higher' to limit warming to 1.5C* (J. Timperley; 2018-06-18)

Scientific American. *UN Sustainable Energy Effort Could Keep Warming below 2 Degrees Celsius* (J. Pyper; 2013-02-25)

The Guardian. *At the edge of the carbon cliff* (S. Leahy; 2012-12-18)

HONORS & AWARDS (SELECTED)

Gulbenkian Prize for Humanity 2022 (for work on the IPCC 6th Assessment Report)

ORNL Supplemental Performance Award for Paramount Accomplishment (2x: 2022, 2023)

Fulbright Full Research Grant to Germany (US Department of State) *[Declined]*

German Academic Exchange Service (DAAD) Dissertation Grant to Germany *[Declined]*

US National Academy of Sciences Fellowship for IIASA's Young Scientists Summer Program

Ernest E. Hill Fellowship for studying Carbon-Neutral Alternative Energy Solutions (UC-Davis)

Dwight David Eisenhower Graduate Transportation Fellowship (US Dept of Transportation)

Sustainable Transportation Center Dissertation Fellowship (UC-Davis & US Dept of Transportation)

Sustainable Transportation Center's Outstanding Student of the Year for 2010 (UC-Davis & US Dept of Transportation)

Chevron Corporation Graduate Research Fellowship

Achievement Rewards for College Scientists Fellowship (2007-08 & 2009-10)

UC-Davis Institute of Transportation Studies Outstanding MS Thesis Award

Tau Beta Pi Engineering Honor Society Graduate Fellowship

University of Tennessee Chemical Engineering Outstanding Senior Award

Tennessee Society of Professional Engineers Scholarship

LANGUAGES (SELECTED)

English - fluent (native speaker)

German – conversant (upper intermediate level), both written and spoken