

FAN TONG

Phone: +1 (412) 576-7174 | Email: fantong@lbl.gov | Website: <http://fantong.info>

Research Interests

Develop and perform analysis of sustainable energy technologies and systems to inform research, development, and deployment opportunities and strategies.

Current Employment

Energy/Environmental Policy Project Scientist/Engineer 2019/02-
Energy Analysis & Environmental Impacts Division
Lawrence Berkeley National Laboratory
Supervisors: Corinne Scown (LBNL), Maximilian Auffhammer (UC Berkeley)

Education

Ph.D. in Engineering and Public Policy 2016
Carnegie Mellon University, Pittsburgh, Pennsylvania, US
Thesis: The Good, the Bad, and the Ugly: Economic and Environmental Implications of Using
Natural Gas to Power On-Road Vehicles in the United States
Committee: Paulina Jaramillo (co-chair), Inês Azevedo (co-chair), Chris Hendrickson, Jeremy
Michalek, Zhen (Sean) Qian

Master of Science (M.S.) in Engineering and Public Policy 2015
Carnegie Mellon University, Pittsburgh, Pennsylvania, US

Bachelor of Engineering (B.E.) in Electrical Engineering 2010
Tsinghua University, Beijing, China

Publications

[Google Scholar](#) citations: 234, h-index: 7, i10-index: 6.

Peer-reviewed journal papers

1. **Tong, F.**; Yuan, M.; Lewis, N.S.; Davis, S.J.; Caldeira, K.* Effects of deep reductions in energy storage costs on highly reliable wind and solar electricity systems. Forthcoming at **iScience**.

2. Dowling, J.A.; Rinaldi, K.Z.; Ruggles, T.H.; Davis, S.J.; Yuan, M.; **Tong, F.**; Lewis, N.S.*; Caldeira, K.* Role of long-duration energy storage in variable renewable electricity systems. **Joule**, 4, 1-22. at **Joule**.
3. **Tong, F.***; Azevedo, I*. What are the best combinations of fuel-vehicle technologies to mitigate climate change and air pollution effects across the United States? **Environmental Research Letters**, 2020, 15 074046.
4. Zhang, C.; Wang, D.*; Wang, B.; **Tong, F.**; Battery degradation minimization-oriented hybrid energy storage system for electric vehicles. **Energies**, 2020, 13(1), 246.
5. **Tong, F.***; Azevedo, I; Jaramillo, P. Economic viability of a natural gas refueling infrastructure for long-haul trucks. **Journal of Infrastructure Systems**, 2019, 25, 4018039.
6. Wang, C.; Wang, R.; Hertwich, E.; Liu, Y.*; **Tong, F.** Water scarcity risks mitigated or aggravated by the inter-regional electricity transmission across China. **Applied Energy**, 2019, 238, 413-422.
7. Qin, Y.*; **Tong, F.**; Yang, G.; Mauzerall, D. L.* Challenges of using natural gas as a carbon mitigation option in China. **Energy Policy**, 2018, 117, 457-462.
8. **Tong, F.***; Hendrickson, C; Biehler, A.; Jaramillo, P.; & Seki, S. Life cycle ownership and environmental externality of alternative fuel options for transit buses. **Transportation Research Part D: Transport and Environment**, 2017, 57, 287-302.
9. Qin, Y.; Edwards, R.; **Tong, F.**; Mauzerall, D.L.* Can switching from coal to shale gas bring net carbon reductions to China? **Environmental Science & Technology**, 2017, 51 (5), 2554-2562.
10. **Tong, F.***; Jaramillo, P.; Azevedo, I. Comparison of life cycle greenhouse gases from natural gas pathways for light duty vehicles. **Energy & Fuels**, 2015, 29, 6008-6018.
11. **Tong, F.***; Jaramillo, P.; Azevedo, I. Comparison of life cycle greenhouse gases from natural gas pathways for medium and heavy-duty vehicles. **Environmental Science & Technology**, 2015, 49 (12), 7123-7133.
12. Gilbraith, N.*; Jaramillo, P.; **Tong, F.**; Faria, F. Comments on Jacobson et al.'s proposal for a wind, water, and solar energy future in New York State. **Energy Policy**, 2013, (60), 68-69.

Research Grants

1. Fan Tong (PI). *Opportunities to reduce energy storage costs through technology learning, storage deployment in vehicle and stationary markets, and advanced manufacturing*. U.S. Department of Energy (DOE). Office of Energy Efficiency and Renewable Energy (EERE). Office of Strategic Programs. 2020-2022. **\$350,000**.
2. Fan Tong (PI). *Standardized and Transparent Modeling of Electrification Opportunities for New Mobility Services and Heavy-Duty Freight using the Grid-Integrated Electric Mobility Model*. U.S. Department of Energy (DOE). Office of Energy Efficiency and Renewable Energy (EERE). Vehicle Technologies Office. 2019-2022. **\$750,000**.

Honors and Awards

Full list available upon request.

- **Rising Environmental Leaders Program (RELP) Scholar, Stanford University, 2018**
20 graduate students and postdoc scholars selected for their excellence and commitment to environmental research across Stanford University
- **Second Prize Student Poster, Carnegie Mellon University's inaugural Energy Week, 2016**
A competitive award selected by external referees from about 60 posters presented by graduate students and postdoc scholars across the campus
- **Ji-Dian Liang Fellowship, Carnegie Mellon University, 2016**
A merit fellowship awarded to top one doctoral student of Chinese heritage who excels in scholarship within the School of Engineering
- **Northrop Grumman Fellowship, Carnegie Mellon University, 2013-14**
A merit fellowship awarded to top two engineering doctoral students whose multidisciplinary research is associated with strategic directions within the School of Engineering.
- **Steinbrenner Institute Graduate Research Fellowship, Carnegie Mellon University, 2013-14**
A merit fellowship awarded to top four exceptional rising second-year doctoral students at Carnegie Mellon University
- **Tsinghua Friendship-Toshiba Scholarship, Tsinghua University, 2008-09**
A merit fellowship awarded to top 5% students at Tsinghua University

Media Coverage

Full list available upon request.

8. "Study: EVs 3 times more polluting than gas cars in some states", E&E News, July 8, 2020, <https://www.eenews.net/energywire/stories/1063524185>
7. "Clean energy grids and electric vehicles key to beating climate change and air pollution", Institute of Physics, July 7, 2020, <https://phys.org/news/2020-07-energy-grids-electric-vehicles-key.html>
6. "Natural Gas Adoption And Mitigating China's Coal Use", Science Trends, June 11, 2018, <https://sciencetrends.com/natural-gas-adoption-and-mitigating-chinas-coal-use/>
5. "Electric buses are coming, and they're going to help fix 4 big urban problems", Vox, October 24, 2017, <https://www.vox.com/energy-and-environment/2017/10/24/16519364/electric-buses>
4. "CMU analysis finds BEVs powered with natural gas-based electricity have about 40% of the lifecycle GHGs of a conventional gasoline vehicle", Green Car Congress, August 21, 2015, <http://www.greencarcongress.com/2015/08/20150821-cmu.html>

3. “GHG Benefits Limited When Using NatGas”, CSP Daily News, August 12, 2015, <http://www.cspnet.com/fuels-news-prices-analysis/fuels-analysis/articles/ghg-benefits-limited-when-using-natgas>
2. “CMU study compares lifecycle GHGs of natural gas pathways for MHDVs; MD BEVs can deliver large reductions, but diesel hard to beat for Class 8”, Green Car Congress, May 27, 2015, <http://www.greencarcongress.com/2015/05/20150527-cmu.html>
1. “A Reality Check on a Plan for a Swift Post-Fossil Path for New York”, New York Times, June 18, 2013, <https://dotearth.blogs.nytimes.com/2013/06/18/a-reality-check-on-a-plan-for-a-swift-post-fossil-path-for-new-york/>

Professional Activities

Guest Editors for Peer-reviewed Journals

Regional Environmental Change – Special Issue "Mitigation and adaptation strategies under uncertainties in East Asia"

Frontiers in Energy Research – Special Issue “Upscaling Low-Carbon Energy Resources: Exploring the Material Supply Risk, Environmental Impacts and Response Policies”

Academic Conference Program Committee

International Symposium on Sustainable Systems and Technology (ISSST) 2018.

Academic Conference Session Chairs

United States Association of Energy Economics (USAEE) Annual Meeting 2018; International Symposium on Sustainable Systems and Technology (ISSST) 2018; International Society for Industrial Ecology-International Symposium on Sustainable Systems and Technology (ISIE-ISSST) 2017 Joint Conference.

Referee for Peer-Reviewed Journals

Proceedings of the National Academy of Sciences

Applied Energy

Resources, Conservation and Recycling

Journal of Industrial Ecology

Transportation Research Part D: Transport & Environment

Transportation in Visualization

Regional Environmental Change

Sustainability

Social Sciences

Utilities Policy

Environmental Science & Technology

Environmental Science & Technology Letters

Journal of Cleaner Production

Energy Policy

Transportation Research Record

Transport Policy

Elementa: Science of the Anthropocene

Energies

International Journal of Sustainable

Transportation

Environmental Pollution

Energy, Ecology and Environment
Energy Technology
Journal of Natural Gas Science & Engineering

Weather, Climate and Society
Chemical Engineering Research and Design

Referee for Academic Conferences

Transportation Research Board (TRB) Annual Meeting (2018-2020)
International Symposium on Sustainable Systems and Technology (ISSST) 2018
International Society for Industrial Ecology-International Symposium on Sustainable Systems and Technology (ISIE-ISSST) 2017 Joint Conference
Chinese Overseas Transportation Association (COTA) International Conference for Transportation Professionals (CICTP2017)

Other Referee Services

Report published by National Renewable Energy Laboratory (NREL)
Report produced by PRIME coalition (a nonprofit organization partnering with philanthropists to place charitable capital into market-based solutions to climate change).

Professional Affiliations

American Chemistry Society (ACS), International Society of Industrial Ecology (ISIE), American Association for the Advancement of Science (AAAS), International Association of Energy Economics (IAEE)/United States Association for Energy Economics (USAEE)

Invited Talks

- 2020 Lawrence Berkeley National Laboratory (Berkeley, CA, US)
- 2019 The State University of New York College of Environmental Science and Forestry (Syracuse, NY, U.S.)
Southern University of Science and Technology (Shenzhen, Guangdong, China)
- 2018 National Renewable Energy Laboratory (Golden, CO, U.S.)
Building Technologies Office, U.S. Department of Energy (Washington, D.C, U.S.)
School of Public Policy and Management, Tsinghua University (Beijing, China)
- 2017 Center for Air, Climate and Energy Solutions (CACES) (a U.S. EPA funded research center) (Stanford, CA, U.S.)
School of Chemical Engineering and Technology, Sun Yat-sen University (Guangzhou, Guangdong, China)
U.S. Department of Transportation (Washington, D.C, U.S.)
Carnegie Mellon University's policy briefing event at the Cannon House Office Building ("Pipelines, Trucks, Buses and Automobiles: Where, When, Which?") (Washington, D.C., U.S.)
National Governors Association (NGA) (Washington, D.C., U.S.)
Energy Systems Division, Argonne National Laboratory (Argonne, IL, U.S.)
National Resources Defense Council (NRDC) (New York City, NY, U.S.)

- 2016 Center for Air, Climate and Energy Solutions (CACES) (a U.S. EPA funded research center) (Pittsburgh, PA, U.S.)
 Scott Hall Dedication Event, Carnegie Mellon University (Pittsburgh, PA, U.S.)
 School of Business Administration, China University of Petroleum, Beijing (Beijing, China)
- 2015 *STEPS Workshop: Technological, Economic and Environmental Potential of Natural Gas as a Sustainable Transportation Fuel in the US*, Institute of Transportation Studies (ITS), University of California, Davis (Davis, CA, U.S.)
- 2014 Institute of Transportation Studies (ITS), University of California, Davis (Davis, CA, U.S.)

Conference Presentations/Posters with Peer-reviewed Abstracts

Acronyms: IAEE = International Association for Energy Economics; USAEE = United States Association for Energy Economics; ISIE = International Society for Industrial Ecology; ISSST = International Symposium on Sustainable Systems and Technology; GRC = Gordon Research Conference; GRS = Gordon Research Seminar; TRB = Transportation Research Board; AAAS = American Association for the Advancement of Science; ASCE = American Society of Civil Engineers

- 2020 15th International Conference on Waste Management and Technology (Virtual)
 TRB (Washington, DC, US)
- 2019 IAEE-USAEE (Denver, CO, U.S.)
- 2018 Young Environmental Scholars Conference, Stanford University (Stanford, CA, U.S.)
 IAEE-USAEE (Washington D.C., U.S.)
 ISSST (Buffalo, NY, U.S.)
 GRC & GRS (Les Diablerets, Switzerland)
- 2017 IAEE-USAEE (Houston, TX, U.S.)
 ISIE-ISSST (Chicago, IL, U.S.)
 Engineering Sustainability (Pittsburgh, PA, U.S.)
 TRB (Washington, D.C., U.S.)
- 2016 ISSST (Phoenix, AZ, U.S.)
 AAAS (Washington D.C., U.S.)
- 2015 Energy & Resource Systems Engineering (Beijing, China)
 IAEE-USAEE (Pittsburgh, PA, U.S.)
 ISSST (Dearborn, MI, U.S.)
- 2014 Energy Policy Research Conference (San Francisco, CA, U.S.)
 ASCE Shale Energy Engineering (Pittsburgh, PA, U.S.)
 IAEE-USAEE (New York City, NY, U.S.)