FASTSim Publications: Vehicle Analysis Examples (2010–2024)

The following 180 publications from 2010–2024 provide examples of how the National Laboratory of the Rockies' Future Automotive Systems Technology Simulator (FASTSim) can be used to evaluate real-world vehicle efficiency, compare powertrains, assess component changes, or conduct other types of vehicle analyses.

For more recent publications, visit the Publications section of the FASTSim webpage.

2024

1. Potential Adoption and Benefits of Co-Optimized Multimode Engines and Fuels for U.S. Light-Duty Vehicles
   Authors: Doris Oke, Lauren Sittler, Troy R. Hawkins, George G. Zaimes, Hao Cai, Aaron Brooker, Douglas Longman, Ram Vijayagopal, David Gohlke, Emily Newes, Avantika Singh, Jennifer Dunn, and Daniel J. Gaspar
   Journal: *Energy & Fuels* (November 2024)
2. Simulating Impacts From Transit Service Enhancements in the San Francisco Bay Area
   Authors: Cristian Poliziani, A. Zachary Needell, Haitam Laarabi, Rashid Waraich, Annika Todd-Blick, K. Sydny Fujita, Nazanin Rezaei, D. Juan Caicedo, Carlos Guirado, C. Anna Spurlock, and Tom Wenzel
   Journal: *Transportation Research Record: Journal of the Transportation Research Board* (November 2024)
3. Impact of Vehicle-to-Everything Connectivity on Fuel Economy
   Authors: Eric Fong, Blake Lane, and Scott Samuelsen
   Journal: *Transportation Research Part D: Transport and Environment* (November 2024)
4. State of Charge Estimators for Lithium-Ion Batteries Based on a Simplified Electrochemical Representation Coupled With an Equivalent Electric Circuit
   Authors: Savio Oliveira, Jose Júnior, Matheus Farias, Arthur Alves, Suelen Bampi, Thomas Nunes, Rafael Lima, and Antonio Lima
   Report: Congresso Brasileiro de Automática (October 2024)
5. Lightweighting Cost Impacts on Market Adoption and GHG Emissions in U.S. Light-Duty Vehicle Fleet
   Authors: Fan Yang, Aaron Brooker, Sarah Kleinbaum, and David Gotthold
   Journal: *Environmental Research Communications* (October 2024)
6. Assessment of Alternative Fueling Infrastructure in the United States
   Authors: Stephen Lommele, Ranjit R. Desai, Caley Johnson, Amy Snelling, Abby Brown, Mark Singer, Jesse Bennett, Jeff Cappellucci, Johanna Levene, and Christopher Hoehne
   Report: National Laboratory of the Rockies (September 2024)

7. Comparative Analysis of Electric Vehicle Simulator for Accurate Battery Pack Internal Signal Generation
   Authors: Raimondo Gallo, Tommaso Monopoli, Marco Zampolli, R´emi Jaboeuf, Paolo Tosco, Alessandro Aliberti, and Edoardo Patti
   Journal: *IEEE Transactions on Industry Applications* (August 2024)
8. Co-Optimization of Vehicle and Routes (CoVaR) to Improve Commercial Transportation System Efficiency
   Author: Nick Hertlein
   Report: PACCAR (June 2024)
9. Analyzing Residential Charging Demand for Light-Duty Electric Vehicles in Colorado
   Authors: Zhaocai Liu, Polina Alexeenko, Matthew Bruchon, Mingzhi Zhang, and Mithat John Kisacikoglu
   Conference: IEEE Transportation Electrification Conference (June 2024)
10. Simulation Evaluation of a Large-Scale Implementation of Virtual-Phase Link-Based Model Predictive Control
    Authors: Andalib Shams, Qichao Wang, Juliette Ugirumurera, Joseph Severino, Wesley Jones, and Jibonananda Sanyal
    Journal: *Journal of Transportation Engineering, Part A: Systems* (June 2024)
11. Review of Data Governance Approaches in the Field of Transportation Domain
    Authors: Pavel Hrubeš, Martin Langr, and Zuzana Purkrábková
    Conference: Smart Cities Symposium Prague (May 2024)
12. Technology Progress and Clean Vehicle Policies on Fleet Turnover and Equity: Insights From Household Vehicle Fleet Micro-Simulations With ATLAS
    Authors: Ling Jin, Connor P. Jackson, Yuhan Wang, Qianmiao Chen, Tin Ho, C. Anna Spurlock, Aaron Brooker, Jacob Holden, Jeffrey Gonder, Mohamed Amine Bouzaghrane, Bingrong Sun, Shivam Sharda, Venu Garikapati, Tom Wenzel, and Juan Caicedo
    Journal: *Transportation Planning and Technology* (May 2024)
13. Novel Approach for Reducing Train Wheel and Brake Shoe Wear Using Speed Profile Optimization
    Authors: Hasan Adeli, Ahmad Mirabadi, Shahin Yousefi, and Saeed Fazel
    Journal: *Transportation Research Record: Journal of the Transportation Research Board* (February 2024)
14. Real-Time Implementation Comparison of Urban Eco-Driving Controls
    Authors: Aaron I. Rabinowitz, Chon Chia Ang, Yara Hazem Mahmoud, Farhang Motallebi Araghi, Richard T. Meyer, Ilya Kolmanovsky, Zachary D. Asher, and Thomas H. Bradley
    Journal: *IEEE Transactions on Control Systems Technology* (January 2024)
15. Modeling and Comparing the Total Cost of Ownership of Passenger Automobiles With Conventional, Electric, and Hybrid Powertrains

Authors: Vikram Mittal and Rajesh Shah
Journal: *SAE International Journal of Sustainable Transportation, Energy, Environment, and Policy* (January 2024)

2023

1. Modeling the Market-Driven Composition of the Passenger Vehicle Market During the Transition to Electric Vehicles
   Authors: Vikram Mittal and Rajesh Shah
   Journal: *Modelling* (December 2023)
2. AV Operation and Energy Efficiency Improved Through the Evaluation and Demonstration of AV Sensor Technology
   Author: Nicholas E. Brown
   Dissertation: Western Michigan University (December 2023)
3. Technical and Economic Assessment of Battery-Electric and Hydrogen Fuel Cell Heavy-Duty Vehicles for Long-Haul Freight Applications in Iceland
   Authors: A. Alonso-Villar, B. Davídsdóttir, H. Stefánsson, E.I. Ásgerisson, and R. Kristjánsson
   Conference: International Conference on Powertrain Systems for a Sustainable Future (November 2023)
4. Real-Time Implementation Comparison of Urban Eco-Driving Controls
   Authors: Aaron I. Rabinowitz, Chon Chia Ang, Yara Hazem Mahmoud, Farhang Motallebi Araghi, Richard T. Meyer, Ilya Kolmanovsky, Zachary D. Asher, and Thomas H. Bradley
   Report: Mountain-Plains Region (September 2023)
5. Evaluation of Autonomous Vehicle Sensing and Compute Load on a Chassis Dynamometer
   Authors: Nicholas E. Brown, Farhang Motallebiaraghi, Johan Fanas Rojas, Sherif Ayantayo, Richard Meyer, Zachary D Asher, Ali Riza Ekti, Chieh (Ross) Wang, Nicholas A. Goberville, and Ben Feinberg
   Conference: IEEE International Conference on Intelligent Transportation Systems (September 2023)
6. Fast Charging Infrastructure for Electrifying Road Trips to and From National Parks in the Western United States
   Authors: Dong-Yeon Lee, Kaylyn Bopp, Matthew Moniot, and Alicen Kandt
   Report: National Laboratory of the Rockies (September 2023)
7. Energy, Economic, and Environmental Impacts Assessment of Co-Optimized On-Road Heavy-Duty Engines and Bio-Blendstocks
   Authors: Doris Oke, Lauren Sittler, Hao Cai, Andre Avelino, Emily Newes, George G. Zaimes, Yimin Zhang, Longwen Ou, Avantika Singh, Jennifer B. Dunn, and Troy R. Hawkins
   Journal: *Sustainable Energy Fuels* (August 2023)

8. Analyzing the Usage of Wankel Engine Technology in Future Automotive Powertrains
   Authors: Vikram Mittal, Rajesh Shah, and Alexandra Przyborowski
   Journal: *SAE International Journal of Sustainable Transportation, Energy, Environment, and Policy* (August 2023)
9. Minimizing Carbon Footprint for Timely E-Truck Transportation: Hardness and Approximation Algorithm
   Authors: Junyan Su, Qiulin Lin, Minghua Chen, and Haibo Zeng
   Preprint: arXiv (August 2023)
10. Electrification Potential for Heavy-Duty Vehicles in Harsh Climate Conditions: A Case Study Based Technical Feasibility Assessment
    Authors: Albert Alonso-Villar, Brynhildur Davíðsdóttir, Hlynur Stefánsson, Eyjólfur Ingi Ásgeirsson, and Ragnar Kristjánsson
    Journal: *Journal of Cleaner Production* (July 2023)
11. Modelling Battery Packs of Real-World Electric Vehicles from Data Sheet Information
    Authors: Raimondo Gallo, Alessandro Aliberti, Edoardo Patti, Tommaso Monopoli, Marco Zampolli, Rémi Jaboeuf, and Tosco Paolo
    Conferences: IEEE International Conference on Environment and Electrical Engineering and IEEE Industrial and Commercial Power Systems Europe (June 2023)
12. Towards Optimal Energy Management Strategy for Hybrid Electric Vehicle With Reinforcement Learning
    Authors: Xinyang Wu, Elisabeth Wedernikow, Christof Nitsche, and Marco F. Huber
    Conference: IEEE Intelligent Vehicles Symposium (May 2023)
13. Follow the Sun and Go With the Wind: Carbon Footprint Optimized Timely E-Truck Transportation
    Authors: Junyan Su, Qiulin Lin, and Minghua Chen
    Report: City University of Hong Kong (May 2023)
14. An AI-Assisted Systematic Literature Review of the Impact of Vehicle Automation on Energy Consumption
    Authors: Mohammad Noroozi, Hanieh Rastegar Moghaddam, Ankit Shah, Hadi Charkhgard, Sudeep Sarkar, Tapas K. Das, and Timothy Pohland
    Journal: *IEEE Transactions on Intelligent Vehicles* (April 2023)
15. Vehicle Powertrain Simulation Accuracy for Various Drive Cycle Frequencies and Upsampling Techniques
    Authors: Franz O'Meally, Jacob Holden, and Madeline Gilleran
    Conference: SAE World Congress (April 2023)
16. A Comprehensive Review of Wind Turbine Modeling for Addressing Energy Challenges in Nigeria and South Africa in the 4IR Context

Authors: Tolulope Babawurun, Daniel Raphael Ejike Ewim, Temiloluwa Olatunji Scott, and Chukuneye Neye-Akogo
Journal: *Journal of Engineering and Exact Sciences* (March 2023)

17. Zero Emission Long-Haul Heavy-Duty Trucking
Author: Thomas K. Walker III
Report: Clean Air Task Force (March 2023)

18. Evaluation of Real-World Fuel Consumption of Hybrid-Electric Passenger Car Based on Speed-Specific Vehicle Power Distributions
Authors: Fei Peng, Ye Zhang, Guohua Song, Jianchang Huang, Zhiqiang Zhai, and Lei Yu
Journal: *Journal of Advanced Transportation* (February 2023)

19. USAID Colombia Young Leaders Workforce Training Program Action Plans: Planning for Electric Vehicle Charging Infrastructure in Bogota
Authors: Jeff Cappellucci, Dustin Weigl, Sean Esterly, and Hallie Lucas
Report: National Laboratory of the Rockies (February 2023)

20. Valuation of Urban Public Bus Electrification With Open Data and Physics-Informed Machine Learning
Authors: Upadhi Vijay, Soomin Woo, Scott J. Moura, Akshat Jain, David Rodriguez, Sergio Gambacorta, Giuseppe Ferrara, Luigi Lanuzza, Christian Zulberti, Erika Mellekas, and Carlo Papa
Journal: *Journal of Advanced Transportation* (February 2023)

21. Electric Vehicle Batteries Alone Could Satisfy Short-Term Grid Storage Demand by as Early as 2030
Authors: Chengjian Xu, Paul Behrens, Paul Gasper, Kandler Smith, Mingming Hu, Arnold Tukker, and Bernhard Steubing
Journal: *Nature Communications* (January 2023)

22. Scenario-Based Drive Cycle Analysis Framework for Zero Emission Vehicles with Cooperative Driving Automation
Author: Eric Fong
Thesis: University of California Irvine (2023)

23. Railway Vehicle Out-of-Roundness Detection with Multiple Records: Simulation and Algorithm Validation
Author: Vitor Tiago Castro Goncalves
Thesis: University of Porto (2023)

24. Improving Future Vehicle Fuel Economy and Operational Design Domain Through Novel Data Pipelines
Author: Kyle James Carow
Thesis: Western Michigan University (2023)

25. Constrained Route Optimization with Fleet Considerations for Electrified Heavy-Duty Freight Vehicles

Author: Zarin Subah Shamma
Thesis: Utah State University (2023)

26. Systems and Operational Modeling and Simulation to Address Research Gaps in Transportation Electrification
Author: Aaron Rabinowitz
Dissertation: Colorado State University (2023)

27. A Method for Optimizing for Charging Cost in Electric Vehicle Routing
Author: Matthew Lehrer
Thesis: Malmö University (2023)

2022

1. Port of New York and New Jersey Drayage Electrification Analysis
Authors: Andrew Kotz, Kenneth Kelly, Jason Lustbader, Scott Cary, and Brett Oakleaf
Report: National Laboratory of the Rockies (December 2022)
2. Powertrain Performance and Total Cost of Ownership Analysis for Class 8 Yard Tractors and Refuse Trucks
Authors: Spencer Gilleon, Michael Penev, and Chad Hunter
Report: National Laboratory of the Rockies (November 2022)
3. Electric Vehicle Autonomy: Realtime Dynamic Route Planning and Range Estimation Software
Authors: Carter Bailey, Bridger Jones, Max Clark, Robbie Buck, and Mario Harper
Conference: International Conference on Intelligent Transportation Systems (October 2022)
4. Quantifying the Impact of Transportation on Climate – Energy Analytics Dashboard
Authors: M.L. Franz, Stanley Young, Jeffrey Cappellucci, C. Xiong, Jake Holden, and W. Zhou
Conference: Intelligent Transportation Society World Congress (October 2022)
5. Projecting California Light-Duty Vehicle Attributes (2019–2035)
Authors: Catherine Ledna, Aaron Brooker, and Dong-Yeon Lee
Report: National Laboratory of the Rockies (September 2022)
6. Valuation of Public Bus Electrification With Open Data
Authors: Upadhi Vijay, Soomin Woo, Scott J. Moura, Akshat Jain, David Rodriguez, Sergio Gambacorta, Giuseppe Ferrara, Luigi Lanuzza, Christian Zulberti, Erika Mellekas, and Carlo Papa
Preprint: arXiv (September 2022)
7. Evaluating the Current Perceived Cost of Ownership for Buses and Trucks in China
Authors: Xu Hao, Shiqi Ou, Zhenhong Lin, Xin He, Jessey Bouchard, Hewu Wang,

and Liguo Li
Journal: *Energy* (September 2022)

8. How To Support EV Adoption: Tradeoffs Between Charging Infrastructure Investments and Vehicle Subsidies in California
   Authors: Catherine Ledna, Matteo Muratori, Aaron Brooker, Eric Wood, and David Greene
   Journal: *Energy Policy* (June 2022)
9. Estimating Fast Charging Infrastructure Requirements to Fully Electrify Ride-Hailing Fleets Across the United States
   Authors: Matthew Moniot, Yanbo Ge, and Eric Wood
   Journal: *IEEE Transactions on Transportation Electrification* (June 2022)
10. Framework for Wheel Life Model–Phase I
    Authors: Bora Jang and Som Singh
    Report: Federal Railroad Administration (June 2022)
11. Mapping the Opportunity Space to Model the Circular Economy Using Tools Funded by the DOE Office of Energy Efficiency and Renewable Energy
    Authors: Shubhankar Upasani, Julien Walzberg, Dwarak Ravikumar, Alberta Carpenter, Garvin Heath, Ulises Gracida-Alvarez, Thathiana Benavides, Hui Xu, Troy Hawkins, Daniel Desantis, and Joe Cresko
    Report: National Laboratory of the Rockies (April 2022)
12. A System for Electric Vehicle's Energy-Aware Routing in a Transportation Network Through Real-Time Prediction of Energy Consumption
    Authors: Shatrughan Modi and Jhilik Bhattacharya
    Journal: *Complex and Intelligent Systems* (April 2022)
13. Extended Modeling, Calibration, and Validity Assessment of Vehicle Models in Future Automotive Systems Technology Simulator via Real-World Driving Data
    Authors: Karim Hamza, Peter Benoliel, Kang-Ching Chu, and Ken Laberteaux
    Conference: SAE World Congress (March 2022)
14. Hybrid Electric Vehicle Battery-Ultracapacitor Energy Management System Design and Optimization
    Author: Piotr A. Wozniak
    Journal: *Elektronika ir Elektrotechnika* (February 2022)

2021

1. Comparing Total Cost of Ownership of Battery Electric Vehicles and Internal Combustion Engine Vehicles
   Authors: Zhe Liu, Juhyun Song, Joseph Kubal, Naresh Susarla, Kevin W. Knehr, Ehsan Islam, Paul Nelson, and Shabbir Ahmed
   Journal: *Energy Policy* (November 2021)

2. Future Automotive Systems Technology Simulator (FASTSim) Validation Report – 2021
   Authors: Chad Baker, Matthew Moniot, Aaron Brooker, Lijuan Wang, Eric Wood, and Jeffrey Gonder
   Report: National Laboratory of the Rockies (October 2021)
3. Effects of Drivetrain Hybridization on Fuel Economy, Performance, and Costs of a Fuel Cell Hybrid Electric Vehicle
   Authors: Silvio de Almeida and Raphael Kruczan
   Journal: *International Journal of Hydrogen Energy* (October 2021)
4. The Efficient Operating Parameter Estimation for a Simulated Plug-in Hybrid Electric Vehicle
   Authors: Krishna Veer Singh, Rajat Khandelwal, Hari Om Bansal, and Dheerendra Singh
   Journal: *Environmental Science and Pollution Research* (October 2021)
5. Spatial and Temporal Analysis of the Total Cost of Ownership for Class 8 Tractors and Class 4 Parcel Delivery Trucks
   Authors: Chad Hunter, Michael Penev, Evan Reznicek, Jason Lustbader, Alicia Birky, and Chen Zhang
   Report: National Laboratory of the Rockies (September 2021)
6. Comparisons of Real-World Vehicle Energy Efficiency with Dynamometer-Based Ratings and Simulation Models
   Authors: Karim Hamza, Kang-Ching Chu, Matthew Favetti, Peter Keene Benoliel, Vaishnavi Karanam, Kenneth P. Laberteaux, and Gil Tal
   Journal: *World Electric Vehicle Journal* (September 2021)
7. Real-Time Highly Resolved Spatial-Temporal Vehicle Energy Consumption Estimation Using Machine Learning and Probe Data
   Authors: Joseph Severino, Yi Hou, Ambarish Nag, Jacob Holden, Lei Zhu, Juliette Ugirurmurera, Stanley Young, Wesley Jones, and Jibonananda Sanyal
   Journal: *Transportation Research Record: Journal of the Transportation Research Board* (September 2021)
8. Vehicle Technologies and Hydrogen and Fuel Cell Technologies Research and Development Programs Benefits Assessment Report for 2020
   Authors: Aaron Brooker, Alicia Birky, Evan Reznicek, Jeff Gonder, Chad Hunter, Jason Lustbader, Chen Zhang, Lauren Sittler, Arthur Yip, Fan Yang, and Dong-Yeon Lee
   Report: National Laboratory of the Rockies (August 2021)
9. Electric Vehicle Location Routing Problem With Vehicle Motion Dynamics-Based Energy Consumption and Recovery
   Authors: Selin Hulagu and Hilmi Berk Celikoglu
   Journal: *IEEE Transactions on Intelligent Transportation Systems* (July 2021)

10. Development of In-Use Engine Speed/Torque Heat Maps Across Multiple Heavy-Duty Commercial Vehicle Vocations
    Authors: Chen Zhang, Kenneth Kelly, Andrew Kotz, and Eric Miller
    Journal: *International Journal of Engine Research* (July 2021)
11. Automated Transit Fleet Electrification Planning in Response to Route Dynamics, Vehicle Utilization, and Local Climate
    Authors: Karen Ficenec, Grant Payne, Eric Miller, Matthew Moniot, Narayanan Sankar, Namit Singh, and Jonathan Levy
    Report: National Laboratory of the Rockies (June 2021)
12. An Eco-Score System Incorporating Driving Behavior, Vehicle Characteristics, and Traffic Conditions
    Authors: Junshi Xu, Ran Tu, Usman Ahmed, Glareh Amirjamshidi, Marianne Hatzopoulou, and Matthew J. Roorda
    Journal: *Transportation Research Part D: Transport and Environment* (June 2021)
13. Driving Emissions Down: Whole-Supply-Chain Mitigation of Greenhouse Gases from Passenger Vehicles
    Author: Paul Wolfram
    Dissertation: Yale University (June 2021)
14. Electrifying Transit: A Guidebook for Implementing Battery Electric Buses
    Authors: Alana Aamodt, Karlynn Cory, and Kamyria Coney
    Report: National Laboratory of the Rockies and U.S. Agency for International Development (April 2021)
15. On Modeling the Cost of Ownership of Plug-In Vehicles
    Authors: Karim Hamza, Kenneth P. Laberteaux, and Kang-Ching Chu
    Journal: *World Electric Vehicle Journal* (March 2021)
16. In-Route Inductive Versus Stationary Conductive Charging for Shared Automated Electric Vehicles: A University Shuttle Service
    Authors: Ahmed A. S. Mohamed, Eric Wood, and Andrew Meintz
    Journal: *Applied Energy* (January 2021)
17. Design and Validation of a Consumption Framework for Mixed Fleets Considering ICEV, HEV, PHEV, BEV, and FCEV
    Author: Pol Masclans Abelló
    Thesis: Technical University of Munich (2021)

2020

1. An Optimization-Based Planning Tool for On-Demand Mobility Service Operations
   Authors: H. M. Abdul Aziz, Venu Garikapati, Tony K. Rodriguez, Lei Zhu, Bingrong Sun, Stanley E. Young, and Yuche Chen
   Journal: *International Journal of Sustainable Transportation* (November 2020)

2. Comparison of Electric Bus Power Consumption Modelling and Simulation Using Basic Power Model, ADVISOR and FASTSim
   Authors: Chai Wayne Ng and Laoonual Yossapong
   Conference: International Conference on Smart Power and Internet Energy Systems (November 2020)
3. Route-Sensitive Fuel Consumption Models for Heavy-Duty Vehicles
   Authors: Alexander Schoen, Andy Byerly, Euzeli Cipriano dos Santos, and Zina Ben-Miled
   Journal: *SAE International Journal of Commercial Vehicles* (November 2020)
4. Scenarios for Transitioning Cars from ICEV to BEVs and PHEVs Using Household Level GPS Travel Data
   Authors: Wei Ji and Gil Tal
   Journal: *Transportation Research Part D: Transport and Environment* (November 2020)
5. Range Cost-Effectiveness of Plug-in Electric Vehicle for Heterogeneous Consumers: An Expanded Total Ownership Cost Approach
   Authors: Xu Hao, Zhenhong Lin, Hewu Wang, Shiqi Ou, and Minggao Ouyang
   Journal: *Applied Energy* (October 2020)
6. Automotive Lightweight Design: Simulation Modeling of Mass-Related Consumption for Electric Vehicles
   Authors: Francesco Del Pero, Lorenzo Berzi, Andrea Antonacci, and Massimo Delogu
   Journal: *Machines* (September 2020)
7. The Impact of Socio-Demographic Characteristics and Driving Behaviors on Fuel Efficiency
   Authors: He Zhang, Jian Sun, and Ye Tian
   Journal: *Transportation Research Part D: Transport and Environment* (September 2020)
8. Estimating Region-Specific Fuel Economy in the United States from Real-World Driving Cycles
   Authors: Brennan Borlaug, Jacob Holden, Eric Wood, Byungho Lee, Justin Fink, Scott Agnew, and Jason Lustbader
   Journal: *Transportation Research Part D: Transport and Environment* (September 2020)
9. Material Efficiency for Immediate Climate Change Mitigation of Passenger Vehicles
   Authors: Paul Wolfram, Qingshi Tu, Niko Heeren, Stefan Pauliuk, and Edgar Hertwich
   Journal: *Journal of Industrial Ecology* (September 2020)
10. Technical Evaluation of Battery Electric Bus Potential in Mexico City and Leon, Mexico

Authors: Kamyria Coney, Karlynn Cory, and Alexandra Aznar
Report: National Laboratory of the Rockies and U.S. Agency for International Development (September 2020)

11. Hybrid Electric Drivetrain Testing and Design; Cooperative Research and Development Final Report
Authors: Jonathan Burton and Riley Abel
Report: National Laboratory of the Rockies (August 2020)
12. Convolutional Neural Network-Bagged Decision Tree: A Hybrid Approach to Reduce Electric Vehicle's Driver's Range Anxiety by Estimating Energy Consumption in Real Time
Authors: Shatrughan Modi, Jhilik Bhattacharya, and Prasenjit Basak
Preprint: arXiv (August 2020)
13. Influences on Fuel Consumption: The Impact of Driver's Socio-Demographic Characteristics
Authors: He Zhang, Jian Sun, and Ye Tian
Conference: COTA International Conference of Transportation Professionals (August 2020)
14. Trends in Life Cycle Greenhouse Gas Emissions of Future Light Duty Electric Vehicles
Authors: Hanjiro Ambrose, Alissa Kendall, Mark Lozano, Sadanan Wachche, and Lew Fulton
Journal: *Transportation Research Part D: Transport and Environment* (April 2020)
15. RouteE: A Vehicle Energy Consumption Prediction Engine
Authors: Jacob Holden, Nicholas Reinicke, and Jeff Cappellucci
Journal: *SAE International Journal of Advances and Current Practices in Mobility* (April 2020)
16. Real-World Evaluation of National Energy Efficiency Potential of Cold Storage Evaporator Technology in the Context of Engine Start-Stop Systems
Authors: Jason Lustbader, Eric Wood, Michael O'keefe, Nicholas Reinicke, Jeff Mosbacher, Forrest Jehlik, Alvaro Demingo, David Cosgrove, and Yuanpei Song
Conference: SAE World Congress (April 2020)
17. Documentation of Part IV of the RECC Model Framework: Open Dynamic Material Systems Model for the Resource Efficiency-Climate Change Nexus (ODYM-RECC), v2.2
Author: Stefan Pauliuk
Report: Documentation for the UN IRP Assessment of Resource Efficiency and Climate Change Mitigation for G7, India, and China (January 2020)
18. Life Cycle Assessment of a Fuel Cell Electric Vehicle with an MS-100 System: A Comparison Between a Fuel Cell Electric Vehicle and a Battery Electric Vehicle
Authors: Sandra Franz and Anna Liljenroth
Thesis: Chalmers University of Technology (2020)

19. Techno-Economic Design of EV Powertrain Based on Customer Perspective
    Authors: Dishanth Vishwanath and Malatesh Godi
    Thesis: Chalmers University of Technology (2020)

2019

1. Planning Optimization for Inductively Charged On-Demand Automated Electric Shuttles Project at Greenville, South Carolina
   Authors: Ahmed Mohamed, Lei Zhu, Andrew Meintz, and Eric Wood
   Journal: *IEEE Transactions on Industry Applications* (December 2019)
2. Development of E-Help Manual Using Graphical User Interface (GUI) for Battery Management System (BMS) in Electric Vehicle
   Authors: N.H. Mohd Amin, M.R. Ab Ghani, A. Jidin, S. Othman, and Z. Jano
   Journal: *Journal of Advanced Manufacturing Technology* (November 2019)
3. Optimum Planning for Inductively Charged On-Demand Automated Electric Shuttles at Greenville, South Carolina
   Authors: Ahmed Mohamed, Lei Zhu, Andrew Meintz, and Eric Wood
   Conference: IEEE Industry Applications Society Annual Meeting (October 2019)
4. Instantaneous Fuel Consumption Estimation Using Smartphones
   Authors: Samuel Shaw, Yunfei Hou, Weida Zhong, Qingquan Sun, Tong Guan, and Lu Su
   Conference: IEEE 90th Vehicular Technology Conference (September 2019)
5. Estimation of Energy Consumption of Electric Vehicles Using Deep Convolutional Neural Network to Reduce Driver's Range Anxiety
   Authors: Shatrughan Modi, Jhilik Bhattacharya, and Prasenjit Basak
   Journal: *ISA Transactions* (September 2019)
6. Optimizing the Electric Range of Plug-in Vehicles via Fuel Economy Simulations of Real-World Driving in California
   Authors: Kenneth Laberteaux, Karim Hamza, and John Willard
   Journal: *Transportation Research Part D: Transport and Environment* (August 2019)
7. Impact of Time-Varying Passenger Loading on Conventional and Electrified Transit Bus Energy Consumption
   Authors: Luying Liu, Andrew Kotz, Aditya Salapaka, Eric Miller, and William Northrop
   Journal: *Transportation Research Record: Journal of the Transportation Research Board* (June 2019)
8. Light-Duty Hydrogen Infrastructure Analysis at NREL
   Authors: Michael Penev, Chad Hunter, Brian Bush, Elizabeth Connelly, and Maggie Mann
   Conference: Green Transportation Summit (May 2019)

9. Thermal System for Electric Vehicles with Coolant-Based Heat Pump
   Authors: Sourav Chowdhury, Lindsey Leitzel, and Mark Zima
   Journal: *ATZ Worldwide* (May 2019)
10. Core Modeling: Maintenance, Tools, Real-World Energy Impact Estimation, and Toyota Prius Prime Validation
    Authors: Phillip Sharer and Aymeric Rousseau
    Report: 2018 Annual Progress Report, Energy Efficient Mobility Systems (April 2019)
11. Energy Analysis and Optimization of Multi-Modal Inter-City Freight Movement
    Authors: Kevin Walkowicz, Yan Zhou, and Victor Walker
    Report: 2018 Annual Progress Report, Energy Efficient Mobility Systems (April 2019)
12. Infrastructure Spatial Sensing at Intersections (LIDAR)
    Authors: Lei Zhu, Stanley Young, and Erik Rask
    Report: 2018 Annual Progress Report, Energy Efficient Mobility Systems (April 2019)
13. Jamaica Urban Transit Company Drive-Cycle Analysis
    Authors: Mark Singer and Caley Johnson
    Report: National Laboratory of the Rockies (April 2019)
14. Emerging Modeling and Simulations
    Authors: David Gohlke, Jarod Kelly, and Michael Wang
    Report: 2018 Annual Progress Report, Analysis (April 2019)
15. Modeling the Effect of Power Consumption in Automated Driving Systems on Vehicle Energy Efficiency for Real-World Driving in California
    Authors: Karim Hamza, John Willard, Kang-Ching Chu, and Kenneth Laberteaux
    Journal: *Transportation Research Record: Journal of the Transportation Research Board* (March 2019)
16. Alternative Light- and Heavy-Duty Vehicle Fuel Pathway and Powertrain Optimization
    Author: Blake Lane
    Dissertation: University of California, Irvine, Mechanical and Aerospace Engineering (2019)

2018

1. Modelling Energy Consumption of Electric Freight Vehicles in Urban Pickup/Delivery Operations: Analysis and Estimation on a Real-World Dataset
   Authors: C. Fiori and V. Marzano
   Journal: *Transportation Research Part D: Transport and Environment* (December 2018)

2. Impact of Battery Performance on Total Cost of Ownership for Electric Drive Vehicle
   Authors: P. Prevedouros and L. Mitropoulos
   Conference: International Conference on Intelligent Transportation Systems (November 2018)
3. Navigation Application Programming Interface Route Fuel Saving Opportunity Assessment on Large-Scale Real-World Travel Data for Conventional Vehicles and Hybrid Electric Vehicles
   Authors: L. Zhu, J. Holden, and J. Gonder
   Journal: *Transportation Research Record* (October 2018)
4. A Pareto Trade-Off Analysis of Cost Versus Greenhouse Gas Emissions for a Model of a Mid-Sized Vehicle with Various Powertrains
   Authors: K. Hamza, J. Willard, K. Chu, and K. Laberteaux
   Conference: ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (August 2018)
5. A Study on Opportune Reduction in Greenhouse Gas Emissions via Adoption of Electric Drive Vehicles in Light-Duty Vehicle Fleets
   Authors: K. Laberteaux and K. Hamza
   Journal: *Transportation Research Part D: Transport and Environment* (August 2018)
6. Microscopic Series Plug-in Hybrid Electric Vehicle Energy Consumption Model: Model Development and Validation
   Authors: C. Fioria, K. Ahnb, and H. Rakhac
   Journal: *Transportation Research Part D: Transport and Environment* (August 2018)
7. Future Automotive Systems Technology Simulator (FASTSim) Validation Report
   Authors: J. Gonder, A. Brooker, E. Wood, and M. Moniot
   Report: National Laboratory of the Rockies (July 2018)
8. Light-Duty Vehicle Attribute Projections (Years 2015–2030)
   Authors: E. Kontou, M. Melaina, and A. Brooker
   Report: California Energy Commission report prepared by the National Laboratory of the Rockies (July 2018)
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    Author: C. Zhu
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   Authors: A. Pijoan, I. Oribe-Garcia, O. Kamara-Esteban, K. Genikomsakis, C. Borges, and A. Alonso-Vicario
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3. Evaluating the Impact of Road Grade on Simulated Commercial Vehicle Fuel Economy Using Real-World Drive Cycles
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16. Quantifying the Effect of Fast Charger Deployments on Electric Vehicle Utility and Travel Patterns via Advanced Simulation
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