A Climate for Change

ENGINEERINGSUSTAINABILITY'19

April 7-9, 2019

Attendee Information

Convention Center WIFI

To gain free access to the DLLCC WIFI select "**engineering sustainability**" as your network and use the password "**es2019**" (all lowercase).

WHOVA Program App

Whova is being utilized to guide you throughout the conference. You can use Whova to browse the event agenda, network with other attendees and scan and exchange business cards all digitally via your mobile phone. To access the Whova Engineering Sustainability app please follow the instructions below.

Step 1: Download and install the Whova app from App Store (for iPhones) or Google Play (for Android phones).

Step 2: Sign up in the app using the email address you registered with. Invitation code: "**ES19**"

Step 3: You're all set. Now enjoy!

Attendee List, Conference Evaluation and Proceedings

Go to **https://www.engineering.pitt.edu/MCSI/Conference/** if you would like to:

- Download a copy of the ES19 attendee list in PDF format
- Review the conference proceedings which includes extended abstracts from all oral and poster presenters. Use password: **ES19proceedings**
- Provide feedback on all aspects of the event by completing the conference evaluation

Green Building Certification Institute (GBCI)/USGBC Continuing Education Credits

Many of the conference plenary and technical sessions are eligible for USGBC continuing education units. USGBC provides individuals with the ability to self-report CEUs.
Go to **www.usgbc.org** to report your CE hours.

Engineering Sustainability '19 is family-friendly!

Nursing mother? DLLCC Room 412 has been reserved for your private use. Simply stop by the registration desk to reserve your spot and get the key for access.
Questions about other baby needs or childcare? Contact Dr. Melissa Bilec at **mbilec@pitt.edu**.

Monday

8:30 - 9:30 • Opening Plenary, Room 407

Welcome/Intro: Eric J. Beckman, University of Pittsburgh

Suzanne Shelton, Shelton Group

The Time is Now! The Market is Ready – and the Planet is Beyond Ready – for the Private Sector to Move Sustainability Forward

9:45 - 11:25 • Concurrent I: REGENERATIVE BUILT ENVIRONMENT Room 408

Session Chair: Annie Pearce, Virginia Tech

Marion Flore, Carnegie Mellon University

Impact of Benchmarking and Transparency Ordinances on Stakeholder Interactions and Building Energy Efficiency

George Navarro, Eaton

Beneficial Electrification and the Changing Energy Landscape: Moving from Energy Loads to Energy Assets on the Electric Grid

Torkan Fazli, Illinois Institute of Technology

Energy Consumption and Indoor Air Quality Across the U.S. Residential Building Stock in 2050

Aditya Keskar, North Carolina State University

Buildings as Batteries: an Experimental Investigation into Energy Efficiency Impacts of Demand Response

9:45 - 11:25 • Concurrent I: ONE WATER, Room 409

Session Chair: Jeanne VanBriesen, Carnegie Mellon University

Sara Schwetschenau, Carnegie Mellon University

Understanding Variability and Uncertainty in Drinking Water Lead Level Compliance Data in Southwest Pennsylvania

David Lampert, Oklahoma State University

Decreasing the Energy Use in Wastewater Treatment

Margaret Carneal, Virginia Tech

Addressing Dry Drains: A Bioinspired, Interdisciplinary Design Approach

Hema Madaka, Rochester Institute of Technology

Water Footprint Assessment of Consumer Electronics

9:45 - 11:25 • Concurrent I: SUSTAINABLE MOBILITY, Room 410

Session Chair: Sean Qian, Carnegie Mellon University

Jacob Ward, Carnegie Mellon University

On-Demand Ridesourcing has Reduced Per-Capita Vehicle Ownership and Air Pollutant Emissions in U.S. States

Shideh Shams Amiri, Drexel University

Investigating the Relationship Between Household and Neighborhood Characteristics and Transportation Energy Use

Sotonye Ikiriko, Morgan State University

Assessing the Impact of Bus Rapid Transit on Transportation Safety and Sustainable Mobility

Brandie Sebastian, Steel Recycling Institute

Vehicle Lightweighting Trends, Life Cycle GHG Implications, and Future Mobility

11:30 - 12:30 • INVITED SESSION I:A, Room 408

Session Chair: Katelyn Stenger, University of Virginia

Julie Haack, University of Oregon

Greener Sports Product as Intellectual Flypaper: Reducing Impacts, Improving Performance and Creating Business Opportunities

Erin MacDonald, Stanford University

Quantified Cognitive Empathy for Design Stakeholders to Increase Sustainability

11:30 - 12:30 • INVITED SESSION I:B, Room 409

Session Chair: Melissa Bilec, University of Pittsburgh

Bill Reed, Regenesis Group

Regenerative Design and Development: Re-Membering the Patterns of Life

12:40 - 1:40 • Monday Lunch Plenary, Rooms 413-415

Session Chair: Kristen Parrish, Arizona State University

Sustainability on Campus Panel

Aurora Sharrard, University of Pittsburgh

Mick Dalrymple, Arizona State University

Jim Walker, University of Texas at Austin

1:45 - 3:00 • Concurrent II: CIRCULAR ECONOMY, Room 408

Session Chair: Vikas Khanna, University of Pittsburgh

Mohammad Aldaaja, Arizona State University

The Retrofitting Business Model Toward a Circular Built Environment

Jennifer Russell, Bard College

Quantifying the Contribution of Value-Retention Processes (VRPS) to Resource Efficiency within the Circular Economy

Elizabeth Moore, Rochester Institute of Technology

End-of-Vehicle Circular Economy Strategy: Secondary Lithium-ion Battery Deployment for Urban Resilience

1:45 - 3:00 • Concurrent II: ONE WATER, Room 409

Session Chair: Sarah Haig, University of Pittsburgh

Stephen Hilton, University of Michigan

Life-cycle Analysis of Urine Diversion for Wastewater Treatment and Fertilizer Production

Deborah Sills, Bucknell University

Social Hotspots for Aerobic and Anaerobic Wastewater Treatment

Nizar Eldaher, Carnegie Mellon University

Strategy Generation Model for Optimizing Green StormWater Infrastructure Planning

1:45 - 3:00 • Concurrent II: LEARNING & ENGAGEMENT Room 410

Session Chair: Harold Rickenbacker, University of Pi ttsburgh

Robert Woodman, ACF Environmental

The Importance of Collaboration in Green Infrastructure from Design through to Post Installation

Robert Wachter, King's College

Identifying Value Added College Campus Sustainability Initiatives

Michaela Burns, Purdue University Fort Wayne

Students Community Engagement for Revitalizing Fort Wayne Southeast Neighborhood

3:05 - 4:20 • Concurrent III: REGENERATIVE BUILT ENVIRONMENT Room 408

Session Chair: Rebekah Burke, The Citadel

Brandie Sebastian, Steel Recycling Institute

Lessons Learned from Whole Building Designs and Optimization LCA

Martin Nwodo, University of Florida

Exergy as a Measure of Building Sustainability

Diana Chen, University of San Diego

City Intersections: Impact of City and Social Resources on Social Justice

3:05 - 4:20 • Concurrent III: BEHAVIORAL SCIENCE, Room 409

Session Chair: David Sanchez, University of Pittsburgh

Catherine Owsik, University of Virginia

Thinking Beyond the Self: Using Inherited Affect to Encourage Sustainable Decisions

Saptarshi Das, Rochester Institute of Technology

Analyzing the Impact of Geographic and Behavioral Heterogeneity in the Residential Sector on Efficiency Measures and Carbon Abatement Costs

Daniel Hirsch, Texas A&M University

Green Building Minds: Investigating the Perception of Construction Science Students Regarding the Urgency for Sustainable Construction

3:05 - 4:20 • Concurrent III: CASE STUDIES, Room 410

Session Chair: Isaac Smith, Green Building Alliance

Alex Jordan, University of Pittsburgh

Dependence on Insect-Mediated Pollination Service in the United States Economy

Haley Gardner, University of Pittsburgh

Living Building Life Cycle Assessment

Peter Tschofen, Carnegie Mellon University

Fine Particulate Matter Damages and Value Added in the United States Economy

4:30 - 6:00 • POSTER SESSION & SOCIAL, *Garrison Overlook*

Tuesday

8:30 - 9:30 • Tuesday Opening Plenary, Room 407

Moderator: Leidy Klotz, University of Virginia

Sustainability: Where Engineering Meets Behavioral Science Panel

Ines Lima Azevedo, Carnegie Mellon University

Erin MacDonald, Stanford University

Marisa Henry, Johns Hopkins University

9:45 - 10:45 • Invited Session II: A, Room 408

Session Chair: David Dzombak, Carnegie Mellon University

Erich Hester, Virginia Tech

Can Stream Restoration Solve the Excess Nitrogen Problem?

Linda Weavers, Ohio State University

Design Standards for Emerging Technology

9:45 - 10:45 • Invited Session II: B, Room 409

Session Chair: Melissa Bilec, University of Pittsburgh

Eric Williams, Rochester Institute of Technology

How do We Decide what We Know? Epistemology Challenges in Sustainability Modeling

Paul Mathew, Lawrence Berkeley National Laboratory

Efficiency for the Rest of Us: Scale Adoption of Integrated Systems in Commercial Buildings

10:50 - 12:30 • Concurrent IV: CIRCULAR ECONOMY, Room 408

Session Chair: Melissa Bilec, University of Pittsburgh

Shweta Arora, Rochester Institute of Technology

Economic Assessment of Food Waste Management Technologies

Thomas Maani, The University of Toledo

Life Cycle Assessment of Feasible Recycling Methods of Photovoltaic Panels

Carlisle Shealy, Virginia Tech

Making the Case for Bioinclusive Design Through Policy

Miranda Gorman, Carnegie Mellon University

Copper Stocks and Flows in the U.S.: Examination of Metal Resource Sustainability and Circularity

10:50 - 12:30 • Concurrent IV: BEHAVIORAL SCIENCE, Room 409

Session Chair: Tripp Shealy, Virginia Tech

Khalid Osman, The University of Texas at Austin

Willingness to Pay for Improved Quality and Reliability of Water Service in Growing Metropolitans

Michaela Barnett, University of Virginia

When Recycling Campaigns Don't Work: Examining the Effect of Recycling Staff Empowerment on Waste Diversion

Abigail Francisco, Georgia Tech

Engaging Citizens through Community Energy Feedback: Development and User Testing

Kwonsik Song, University of Michigan

Identifying Personalized Behavioral Reference Groups for Normative Feedback

10:50 - 12:30 • Concurrent IV: LEARNING & ENGAGEMENT, Room 410

Session Chair: Haley Gardner, University of Pittsburgh

Sayanti Mukherjee, The State University of New York at Buffalo

A Multivariate Predictive Framework to Assess and Compare the Climate Sensitivities of Sectoral Electricity and Natural Gas Demands

Nicole Barclay, University of North Carolina of Charlotte

Problem Based Learning: Perceptions and Impact on Student Learning in a Sustainable Infrastructure Course

Patrick Hancock, University of Virginia

The Impact of Framing and Perception of "Naturalness" on Climate Engineering Support

Harold Rickenbacker, University of Pittsburgh

The Effects of Air Pollution on Quality of Life: Does the Built Environment Impact Individuals Beyond Physical Health?

12:40 - 1:40 • Tuesday Lunch Plenary, Rooms 413-415

Session Chair: David Dzombak, Carnegie Mellon University

Cyrus Wadia, formally Nike

Sustainable Innovation – A Growth Opportunity, A Leadership Opportunity

1:45 - 3:00 • Concurrent V: ONE WATER, Room 408

Session Chair: Sarah Haig, University of Pittsburgh

Yi Liu, Morgan State University

Sea Level Rise and Land Subsidence in the Baltimore Inner Harbor, Maryland

Kelly Good, Carnegie Mellon University

Evaluating the Effect of Coal-Fired Power Plant Bromide Discharges on Downstream Drinking Water Quality at the National and Watershed Levels

Mo Hu, Virginia Tech

Cognitive Barriers are Limiting More Green Infrastructure: Explanations from a Neuro-Cognitive Study

1:45 - 3:00 • Concurrent V: BEHAVIORAL SCIENCES, Room 409

Session Chair: Aurora Sharrard, University of Pittsburgh

Alex Davis, Carnegie Mellon University

Advances in Behavioral Research on Preference, Sustainability, and Public Policy

Bethany Gordon, University of Virginia

Risk Perceptions of Coastal Infrastructure

Tripp Shealy, Virginia Tech

Government Response to Citizen-Reported Infrastructure Maintenance Requests in New York City Varies by Geographic Location and Socio-Economics



POSTER SESSION & SOCIAL, *Garrison Overlook*

1. **Zhaokai Dong,** University of Pittsburgh, Modeling Performance of Green Infrastructure in Pittsburgh
2. **Jennifer Russell,** Bard College, Market Transformation for Circular Economy: Integrating Eco-Innovation and Consumer Decision-Making in the Presence of Perceived Risk
3. **Aamil Shah,** University of Pittsburgh, Exploring the Potential of Bioremediation to Improve the Structural Resilience and Sustainability of Reinforced Concrete
4. **Emma Coleman,** Virginia Tech, Increasing Bike-Ability through Analysis of Smart Growth Principles
5. **Evan Sherwin,** Carnegie Mellon University, Do Low-Income Electricity Subsidies Make Consumption More Peaky?
6. **Piyush Pradhananga,** Florida International University, LCA of Quarry Rock Dust, a Sustainable Alternative in Concrete
7. **Armin Rahimi-Golkhandan,** Virginia Tech, Influence of Transportation System Diversity on Post-Disaster Human Mobility
8. **Parham Azimi,** Illinois Institute of Technology, Transboundary Air Pollution and Sustainability in Northeast Asia: Attribution-of-Responsibility Framing Effects Among Koreans
9. **S.M. Sajed Sadati**, Iowa State University, Towards Sustainable Transportation: Design and Evaluation of a PV System for Powering Gate Electrification at Airports
10. **Shalini Priyadarshini,** Carnegie Mellon University , Social Sustainability in Construction: an Evaluation from the Labor Force Perspective
11. **MiguelAndres Guerra,** Virginia Tech, The Power of Prototyping Infrastructure Systems: An Approach to Gain User Feedback to Deliver More Sustainable Infrastructure
12. **Nicodeme Wanko,** Morgan State University, An Enhanced Project Scheduling Methodology for Construction of Precast Sustainable Building Systems
13. **Joseph Hollingsworth,** North Carolina State University , Environmental and Economic Assessment of Solar Powered Integrated Greenhouses
14. **Saratu Terreno,** Penn State University, Social-Economical-Technological Solutions to the Sustainability and Resilience of Food, Energy and Energy Systems
15. **Marisa Swift,** Purdue University, Assessing Engineering Seniors' Climate Change Literacy, Motivation, and Agency: A Pressing Issue in Educating the Next Generation of Engineers
16. **Yewande Abraham,** Rochester Institute of Technology, Tracking Energy Performance for Improved Occupant Satisfaction in Office Spaces
17. **Tripp Shealy,** Virginia Tech, Vividness about Future Events Increases Willingness to Pay for More Resilient Infrastructure
18. **Rebekah Burke,** The Citadel, Methods to Assess Student Outcomes in Sustainability in a New Construction Engineering Program
19. **Sandeep Langar,** The University of Texas at San Antonio, Sustainability Measurement Criterion Implementation Patterns- A LEED Review
20. **Sandeep Langar,** The University of Texas at San Antonio, Identifying Characteristics of Societal Migration – a Review of the Literature
21. **Daniela Charles,** Virginia Tech, Improving Undergraduate Researcher Skill Development: A Hybrid Approach
22. **Siliang Lu,** Carnegie Mellon University, How Advanced Technology can Transform Thermal Comfort Management in the Built Environment? – A Review
23. **Alekhya Velagapudi,** University of Pittsburgh, Strategic De-Carbonization of a Developing City: Pittsburgh
24. **Muritala Adegoke,** Morgan State University, Toward a Sustainable Design: Performance Evaluation of AFRP RC Column with Energy Dissipaters
25. **Allen Townsend,** University of Virginia, Informing Investors on Corporate Water Metrics: What Matters?
26. **David Rounce,** University of Alaska Fairbanks, Glacier Change in High Mountain Asia and its Implications on Future Runoff for Downstream Populations
27. **Kathleen Beaudoin,** University of Pittsburgh, Smarter Riversheds: Real-time Water Quality Sensors
28. **Shraddha Praharaj,** University of Virginia, Estimating Nuisance Flooding Impacts on Roadway Networks Using a Data Predictive Approach: A Norfolk, Virginia Case Study
29. **Kangkang Tong,** University of Minnesota, Energy Transitions at Fine Spatial Scale in U.S. Metropolitan Planning Area: Analysis in Minneapolis – St. Paul
30. **Jingyi Qi,** University of North Carolina at Charlotte, Analytical Method Development for Exploring Potential of Endocrine Disrupting Compounds with Low Estrogenic Potency in Estuarine Environment Due to Urbanization
31. **Haley Gardner,** University of Pittsburgh, Living Building Life Cycle Assessment
32. **Wenjian Jia,** University of Virginia, Would You Consider a "Green" Vehicle? Investigating Virginian's Preferences for Electric Vehicles
33. **Philip Agee,** Virginia Tech, A Macroergonomics Path to Human-Centered, High-Performance Buildings
34. **Albert Presto,** Carnegie Mellon University, Evaluating Commuter Mode Switch and Reduction in Vehicle Miles Traveled Using a Distributed Air Pollutant Sensor Network
35. **Yi Liu,** Morgan State University, Sea Level Rise and Land Subsidence in the Baltimore Inner Harbor, Maryland
36. **Vanessa Guerra,** Virginia Tech, Characterizing Informal Care Share in Latin American City
37. **Pahola Jimenez,** Purdue University Fort Wayne , Sustainable Construction Designs as Pre-Figurative Politics
38. **Annabel Sammons,** Rochester Institute of Technology, Enhancing Sustainability Culture in the Workplace: A Framework for Improving EMS Effectiveness and Performance
39. **Olivia Kononiuk,** Rowan University, The Potential of Winery Waste in Biofuels
40. **Steven Baumgartner** and George Karidis, SmithGroup, Water Strategy: Scales of Integration
41. **Javier Orozco-Messana,** Universitat Politecnica de Valencia, ISAlab, Transdisciplinary Sustainability Across the Atlantic for the Built Environment
42. **Xiaodi Sun,** Carnegie Mellon University, Land Use and Ecological Impacts of Deep Decarbonizing the Pennsylvania Electricity Sector
43. **Oludare Owolabi,** Morgan State University, Towards the Development of More Resilient Coastal Buildings
44. **Zachary Miller,** University of Pittsburgh, Measuring Off-Flavors and Anti-oxidants to Improve the Sustainability of Recirculating Aquaculture Systems
45. **Vishal Vaidyanathan,** Carnegie Mellon University, Environmental Exposure to Bisphenol A and Analysis of its Leaching Properties in Various Plastic Repositories
46. **Graham Ambrose,** University of Minnesota, Exploring Motivations, Values and Behavior for Attending Farmers' Markets in the Minneapolis Metro Area
47. **Nathalia Aquino** de Carvalho, University of Pittsburgh, The Role of Nitrogen in Rational Design of Carbon Nitride for Antibacterial Applications
48. **Rachael Sherman,** Arizona State University, Identifying and Categorizing Risks Incumbent in US Nuclear Power Plant Construction Projects
49. **Priya Donti,** Carnegie Mellon University, Inverse Optimal Power Flow: Assessing the Vulnerability of Power Grid Data
50. **Harold Ruckpaul,** Eaton, Remote Community Electrification Projects Go Green!
51. **Siddharth Shukla,** Michigan State University , Building Energy Demand for Commercial Buildings with Transparent Photovoltaic Application for Windows
52. **Michael Whiston,** Carnegie Mellon University, Expert Assessments on Fuel Cell Electric Vehicle Cost and Hydrogen Refueling Infrastructure
53. **Vaclav Hasik,** University of Pittsburgh, Building Life Cycle Assessment Benchmarks using Department of Energy Reference Buildings
54. **Wenjian Jia,** University of Virginia, Evaluating Fuel Tax Revenue Impacts of Electric Vehicle Adoption in Virginia Counties: Application of a Bivariate Linear Mixed Count Model
55. **Brooke Baugher,** Virginia Tech, The Effect of International Service Learning on Student's Perceived Engineering Agency: A National Study
56. **Natasha Nylons,** Morgan State University, Development of Sustainable Roadway Embankment
57. **Erica Cochran Hameen** and **Bobuchi Ken-Opurum,** Carnegie Mellon University, Meta-analysis of Current Environmental and Health Quality Metrics for Construction Contractors During Pre-Occupancy Stages of Construction
58. **Benjamin Chambers,** Virginia Tech, Towards a BIM Framework for Integrated Pest Management and Research
59. **Lin Zeng,** University of Minnesota, Rapid Fine Scale Flood Modelling in Urban Areas to Understand the Nexus Between Climate Risk and Equity : Informing Vulnerability and Green Infrastructure Design
60. **Iza Lantgios,** University of Pittsburgh, Reducing Emissions – Fuel Consumption Reduction Technologies for Pittsburgh Port Authority Buses; Thermoelectric Generators
61. **Philip Agee,** Virginia Tech, A Macroergonomics Path to Human-Centered, Zero Energy Housing
62. **Katelyn Stenger,** University of Virginia, Subtraction – An Underuse Problem Solving Operator
63. **Joshua Cameron,** University of Pittsburgh, Thermal Energy Conversion – Analytic Modeling of an Integrated Thermoelectric Device
64. **William Mai,** Rowan University, Evaluating the Feasibility of Converting Brewery Waste into Biofuel
65. **Dalya Ismael,** Virginia Tech, Measuring the Effect of Goal Framing on Professional Engineers from Kuwait and the United States
66. **Mahsa Safari,** Penn State University, Regenerative Approach to Development and Construction of Building Energy Retrofit Projects
67. **Abigail Ellert,** Duquesne University, Sixth Biennial Greenhouse Gas Emissions Inventory Report Shows Continued Improvement For Duquesne University
68. **Isaac Smith,** Green Building Alliance, Measuring Mobility: Diving Into Pittsburgh's Commuter Data
69. **Daniel Keku,** Virginia Tech , Benefit-Cost Analysis of Homes Constructed using SIPs
70. **Rezvan Mohammadiziazi,** University of Pittsburgh, A Bottom-Up Urban Building Life Cycle Model
71. **Teresa Leatherow,** University of Pittsburgh, Automation and Long-haul Trucking: Challenges and Opportunities for Logistics Solutions Providers in the Digital Age
72. **Mary Semaan,** Virginia Tech, A Novel Approach to Communal Rainwater Harvesting Systems for Single-Family Households
73. **Manish Venugopal,** University of North Carolina at Charlotte, Storm Water Best Management Practices Performance Monitoring and Evaluation
74. **Joseph Zappitelli,** University of Pittsburgh, Identifying Opportunities to Reduce Severe Water Stress through a County Level Analysis of U.S. Industrial Freshwater Withdrawals
75. **Kaitlin Mattos,** University of Colorado Boulder, Use, Maintenance and Sustainability of a "Middle-Tech" Water and Sanitation System
76. **Shakira Hobbs,** University of Kentucky, Advancing the Adoption of Technology: A Study Exploring the Utilization of Behavioral Science Models in Sustainability
77. **Richa Vuppuluri,** University of Virginia, Sustainability Through Pro-Environmental Behavior Approach in Strained Urban Environments
78. **Elizabeth Traut,** Penn State University, Geographic Variation of U.S. Residential Charging Potential for Electric Vehicles
79. **James Katungyi,** Carnegie Mellon University, The Trend Towards Dynamic Indoor Thermal Environments
80. **Oluwatobi Adekanye,** Carnegie Mellon University, Do Led Lightbulbs Save Natural Gas? Detecting Simultaneity Bias in Examining Program Impacts
81. **Maria Saxon,** Virginia Tech, Exploring the Ecological Footprints of Tiny Home Downsizers
82. **Mahpara Habib,** University of Pittsburgh, Harnessing Electricity from Hurricane Waves
83. **Dwayne Jefferson,** Virginia Tech, Improving the Utility of Green Building Certification Resources
84. **Dipti Kamath,** Michigan State University, Modeling Repurposed Battery Availability and Cost Using a System Dynamics Approach
85. **Nicole Barclay,** University of North Carolina at Charlotte, A Framework for the Socio-Technical Evaluation of Green Stormwater Infrastructure Performance
86. **Raimon Calabuig-Moreno,** Universitat Politecnica de Valencia, Urban Sustainability Policy Assessment through GIS
87. **Leann Budzevski,** Virginia Tech, Biophilic Design and Senior Housing Residential Care Communities: Design to Improve Quality of Life for Older Adults
88. **Leon Yacoubian,** University of Virginia, Participatory Action Research with a Community in Gyumri, Armenia for a Better Future
89. **Wendell Grinton,** Virginia Tech, Influencing Behavior Through Energy Feedback Messaging

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