The organizing committee for the ISSST conference welcomes you to this year’s exciting conference. The International Symposium for Sustainable Systems and Technology has a well-founded reputation for bringing together thought leaders in the sustainability of complex systems. This year’s conference is no exception with keynotes from MIT’s Timothy G. Gutowski who looks at sustainability from the broad, fundamental perspective of thermodynamics and the Green Alliance’s Sarah Brown who is at the forefront of a real grassroots sustainability effort. Other speakers include key industrial leaders in sustainability metrics, sustainability pioneers in the academic world, and innovators in government and the non-profit world.

We invite you to participate with us in this exploration of sustainability. We welcome questions and dialog during the formal sessions. We invite you to continue this discussion at our poster session on Wednesday evening where you will have an opportunity to discuss the latest study results with student and professional poster presenters and network with conference attendees. Thursday night offers an opportunity to explore Boston and the student volunteers at the reception desk will have a few suggestions for small and large groups.

The organizers are interested in your views of the conference and how we can make our complex systems more sustainable. Please share your opinions with the organizing committee or by filling out a conference survey form on the final day (or on-line). We are always looking for new members with new ideas to help organize the conference so please consider volunteering your time and effort to make the 2013 conference even more successful.

We hope you find this event professionally and personally useful. It represents a unique opportunity to bring together multiple disciplines and stakeholders to communicate progress and challenges to improve the sustainability of our technology-driven world.

Sincerely,

Thos. P. Seager
COMMITTEE MEMBERS

CONFERENCE CHAIR
Tom Seager (Arizona State University)

PAST CONFERENCE CHAIRS
H. Scott Matthews (Carnegie Mellon University)
Braden Allenby (Arizona State University)

TECHNICAL PROGRAM CO-CHAIRS
Matt Eckelman (Northeastern University)
Lise Laurin (Earthshift Inc.)
Chris Yuan (University of Wisconsin-Milwaukee)

FINANCE CHAIR
Jeremy Gregory (Massachusetts Institute of Technology)

PUBLICITY CHAIRS
Randy Kirchain (Massachusetts Institute of Technology)
Colin Fitzpatrick (University of Limerick)

STUDENT PAPER AND POSTER SESSION CHAIRS
Vikas Khanna (University of Pittsburgh)
Gabrielle Gaustad (Rochester Institute of Technology)

WEBMASTER
Chris Yuan (University of Wisconsin-Milwaukee)
WSP Digital
POSTER SESSION

Evaluating Algal Fertilizer as a Co-Product of Algal Biofuels Production
Claire Antaya

Parametric Life Cycle Modeling of Multi-Family Dwellings
Kim Bawden

Comparative Life Cycle Assessment of Alternatives to Animal Based Food Products
Andrew Berardy and Thomas Seager

Incorporating Alternative Secondary Materials into Aluminum Recycling
Tracey Brommer, Elsa Olivetti and Randolph Kirchain

Energy Smart House for a Smart Grid
Andreia Carreiro

Optimization of Material Recovery for Multistage Municipal Solid Waste Recycling Processes under Uncertainty
Jiyoun Chang, Elsa Olivetti and Randolph Kirchain

LCA streamlining of manufacturing impact, a case study of running shoes
Natalia Duque Ciceri, Lynette Cheah, Randolph Kirchain, Elsa Olivetti and Rich Roth

A Case Study of the Integration of Distributed Bioethanol Production into the Food Waste Hierarchy
Jacqueline Ebner and Eric Williams

A Stochastic Programming Model for Sustainable Capacity Expansion
Serkan Erbis

Energy Dependent Analytical Model for Sustainable Portable Computing Devices
Toolika Ghose

Municipal Solid Waste Policy Lessons for Material Sustainability of Emerging Technology in New York State
Michele Goe and Gabrielle Gaustad

Technologies for Waste and Environmental Management in Industrial Networks
Stewart Hickey

Environmental traceability in product life cycle.
Miriam Kozemjakin da Silva, Sébastien Remy and Tatiana Reyes Carrillo

On the way to Dynamic Environmental Assessment
Bertrand Laratte

An automated energy management system in a Smart Grid context
Marta Lopes
POSTER SESSION

Stewardship of Nano-enabled Batteries
Jennifer Nash

A Multi-Sector Approach as Guide for Future Electric Energy Systems
Efrain O’Neill-Carrillo

End User Power Utilization and a Sustainability Response Monitoring
Sidney Pendelberry and Michael Thurston

Evaluating Non-Price Scarcity Signals to Promote Sustainable Material Use
Nathalie Rivest, Nathaniel Fleming, Elisa Alonso, Frank Field, Randolph Kirchain and Richard Roth

Best Management Practice, Sustainable Systems Web-Documentation Methods and an Active Code Example
Paul Ranky

Greenhouse Gas Emissions Assessment of IT Products: A Product Attribute to Impact Algorithm
Lynn Reis

Enabling Fuel Efficient Vehicles Through Improved Design Tools
Nathalie Rivest, Richard Roth, Theresa Lee and Randolph Kirchain

Work in Progress - A Systems Engineering Approach for Educational Explorations of Bike Machine Energy
Sanford Rotter and Tom Zinnen

A Community Ecology Framework to Assess Evolving Diversity of Household Electronic Products
Erinn Ryen and Callie Babbitt

Energy saving options in the materials sector: Case of aluminum
Sahil Sahni

Disaster Debris Management and Recovery for Housing Stock in San Francisco: A dynamic analysis of C&D recycling and reuse
Zahraa Saiyed

Assessing the Potential for Domestic Demand Response Strategies
Ana Soares

The development of e-waste inventory in Macau
Qingbin Song, Zhishi Wang and Jinhui Li

Understanding the 2010 Human Development Index
Susan Spierre
POSTER SESSION

Service Life Cycle Decision Framework for Improved Asset Sustainability
Chandramouli Venkatesan, Michael Thurston and Mark Walluk

Towards Anticipatory Life Cycle Assessment of Nano-enabled Energy Technologies
Ben Wender and Thomas Seager

Life Cycle Sustainability Assessment of Wood Derived Drop-in Biofuels - Case of the Northeast Forest Based Product Industry
Nana Bortsie-Aryee

Environmental Assessment of CNT Lithium-ion Battery Fabrication
Ali Hakimian

Research on LCD Active Disassembly Structure Reliability Based on Smart Materials
Shouxu Song, Dongxu Li, Qingdi Ke and Ziyu Tang

Jordan Garfinkle

Analysis of different reverse logistics scenarios for sorting end of life products based on life cycle assessment methodology
Eva Ponce-Cueto, Edgar E Blanco and Natalia Duque Ciceri

Remanufacturing Processes of Electric Vehicle Battery
Monsuru Ramoni

ISSST Special Technical Committee on Sustainable Computing
Amip Shah
Wednesday May 16

**SYSTEMS (Wilbur Colonial) ** Jun-Ki Choi, Chair

Managing the Effects of Climate Change on Water and Energy Resources in the Southwestern U.S. using Embedded Resource Accounting

Combining operator and expert knowledge for climate and global change decision making: An application of integrated missions sustainability at the U.S. Army Corps of Engineers

Cascading Geographical Technological Diffusion: case study of residential fuels cells in the United States

An Integrated Sustainability Analysis of Building-related Construction Waste Management Systems

Swedish WEEE system – Evaluations, Challenges and Recommendations

**INFO-COMM-TECH 1 (Schubert/Charles) ** Amip Shah, Chair

Can Cloud Computing Lead to Increased Sustainability of Mobile Devices?

Life Cycle Assessment of a Modular Router: Analysis, Uncertainty and Applications

Impact of Geographic Location on the Energy Footprint of ICT Services

What’s your Number?: Navigating the Shifting Landscape of ICT Carbon Footprint

Labels and Standards Carbon Footprint of a Typical Dell Rack Server

**ENERGY & POWER (Library) ** Chris Yuan, Chair

Domestic Load Characterization for Demand-Responsive Energy Management Systems

Power Quality Monitoring in Sustainable Energy System

‘Environmentally conscious design of autonomous power supplies for distributed micro-systems’

Beyond Traditional Power Systems: Energy Externalities, Ethics and Society

Energy Sustainability for small cities and military installations: Problems and Solutions

---

**FUTURE FACULTY FORUM Pre-conference workshop. (Wilbur/Colonial, walk-ins welcome)**

**WELCOME & OPENING KEYNOTE Tim Gutowski, MIT (Empire Ballroom)**

---

**PROGRAM SESSIONS**

**SYSTEMS (Wilbur Colonial) ** Jun-Ki Choi, Chair

Managing the Effects of Climate Change on Water and Energy Resources in the Southwestern U.S. using Embedded Resource Accounting

Combining operator and expert knowledge for climate and global change decision making: An application of integrated missions sustainability at the U.S. Army Corps of Engineers

Cascading Geographical Technological Diffusion: case study of residential fuels cells in the United States

An Integrated Sustainability Analysis of Building-related Construction Waste Management Systems

Swedish WEEE system – Evaluations, Challenges and Recommendations

**INFO-COMM-TECH 1 (Schubert/Charles) ** Amip Shah, Chair

Can Cloud Computing Lead to Increased Sustainability of Mobile Devices?

Life Cycle Assessment of a Modular Router: Analysis, Uncertainty and Applications

Impact of Geographic Location on the Energy Footprint of ICT Services

What’s your Number?: Navigating the Shifting Landscape of ICT Carbon Footprint

Labels and Standards Carbon Footprint of a Typical Dell Rack Server

**ENERGY & POWER (Library) ** Chris Yuan, Chair

Domestic Load Characterization for Demand-Responsive Energy Management Systems

Power Quality Monitoring in Sustainable Energy System

‘Environmentally conscious design of autonomous power supplies for distributed micro-systems’

Beyond Traditional Power Systems: Energy Externalities, Ethics and Society

Energy Sustainability for small cities and military installations: Problems and Solutions
**PROGRAM SESSIONS**

**Wednesday May 16**

**AFTERNOON BREAK - Coffee, tea, soft drinks, water, chips, fresh fruit**

**INDUSTRIAL ECOTOLOGY (Wilbur Colonial) Bhavik Bakshi, Chair**
- LoopLocal – A heuristic visualization tool for the strategic facilitation of industrial symbiosis facilitation of industrial symbiosis
- Toward a Network Perspective for Understanding Resilience and Sustainability in Industrial Symbiotic Networks
- In-use Material Stock Analysis using Nighttime Satellite Data - Case study of telecom poles in Asian countries
- The Evolving Metabolism of a Developing Economy – Insight from India’s Growth
- Accounting for ecosystem services in supply chain management

**INFO-COMM-TECH 2 (Schubert/Charles) Randolph Kirchain, Chair**
- Sources of Variability in Data Center Lifecycle Assessment
- Decision Process, Constraints, and Design for a Green Data Center: It Sounds Good, But How Well Will it Work?
- Achieving Optimal Resource Efficiency and Sustainability: The Green Grid’s Data Center Maturity Model
- A Social Scoping Assessment to Identify Hotspots in the Laptop Life Cycle

**PHOTOVOLTAICS (Library) Timothy Gutowski, Chair**
- Strengthening the Case for Recycling Photovoltaics: An Energy Payback Analysis
- Comparative Hazard Assessment of Emerging Photovoltaic Processing Methods
- Recycling Potential of Photovoltaics Modules’
- Impact of PV Growth on CO2 emission in the world

**PHOTOVOLTAICS** (Library) Timothy Gutowski, Chair

**INDUSTRIAL ECOTOLOGY (Wilbur Colonial) Bhavik Bakshi, Chair**

**INFO-COMM-TECH 2 (Schubert/Charles) Randolph Kirchain, Chair**

**PHOTOVOLTAICS (Library) Timothy Gutowski, Chair**

15:00-17:00 PARALLEL SESSIONS
Thursday May 17

PROGRAM SESSIONS

BREAKFAST: Fruit juice, coffee, danish & bagels.

STUDENT ORGANIZING COMMITTEE MEETING (Wilbur/Colonial)

LCA APPLICATIONS I (Wilbur Colonial)  Colin Fitzpatrick, Chair

- Use Phase Analysis of PC’s using Hard Disk Drive S.M.A.R.T.
  Shane Hickey, Colin Fitzpatrick and Stewart Hickey
- Using Statistical Models of Book Sales to Assess the GHG Reduction Potential of Print on Demand
  Stephen Wood, Chris Preist and Lauren Basson
- Tourist Food Menu Using Probabilistic Underspecification Methodology
  Yinjin Lee, Xu Yang and Edgar Blanco
- Carbon footprint of lighting products by use of streamlined Life Cycle Assessment
  Huabo Duan, Elsa A. Olivetti and Randolph E. Kirchain
- Process Based Life-Cycle Assessment of Natural Gas from the Marcellus Shale
  Alexander Dale, Melissa Bilec and Radisav Vidic

MANUFACTURING (Schubert/Charles)  Christoph Ostendorp, Chair

- Thermodynamic Modeling of Low Pressure CVD for Nano-TiO2 Film Preparation
  Tao Li, Jun Feng Yang, Hong-Chao Zhang and Chris Yuan
- Nano-particle emissions from Atomic Layer Deposition
  Jingwan Huo and Chris Yuan
- An eco-design tool for manufacturers of semi-conductor technologies: Looking for environmental opportunities in the design phase
  Aurélie Villard, Marc Mantelli, Alan Lelah and Daniel Brissaud
- Making metal products efficiently: exergy maps of global steel and aluminium flows
  Jonathan Cullen
- Intel Corporation uses Advanced Monitoring and Chemical Control in their Chilled Water Plants for Water Conservation
  Christoph Ostendorp and Brian Jenkins

ENERGY (Library)  Gabrielle Gaustad, Chair

  Derrick Carlson, H. Scott Matthews and Mario Bergés
- Bounding scenario analysis: a case study of future energy demand of China’s steel sector
  Eric Williams, Ramzy Kahhat and Shinji Kaneko
- Beyond life cycle analysis: Using an agent-based approach to model the emerging bio-energy industry
  Andrew Heairet, Sonika Choudhary, Shelle Miller and Ming Xu
- Assessing the Sustainability of Renewable Energy Technologies
  Reggie Caudill, Zhenqing Zheng, Joseph Wright and Jaime Bustamante
- Environmental Footprint Analysis of On-shore and Off-shore Wind Energy Technologies
  Mehdi Noori, Murat Kucukvar and Omer Tatari

MORNING BREAK: Coffee, tea
Thursday May 17

**ETHICAL/ SOCIAL (Wilbur Colonial)** Lise Laurin, Chair

Can nanotechnology decontaminate water in a morally contested context? Rider Foley, Arnim Wiek, Braden Kay and Richard Rushforth

Unexpected Outcome by Consumer’s Behavior Kotaro Kawajiri, Tomohiro Tabata and Tomohiko Ihara

Assessing Social Impacts: The Good, the Bad and the Ugly Lise Laurin and Melissa Hamilton

Cultured Meat: The Systemic Implications of an Emerging Technology Carolyn Mattick

Durban: Geoengineering as a Response to Cultural Lock-In Brad Allenby

**POLICY (Schubert/Charles)** Jacqueline Isaacs, Chair

Determining an equitable approach to International Climate Policy Susan Spierre, Thomas Seager and Evan Selinger


Towards an international, horizontal policy approach to address standby power consumption in electrical and electronic equipment Shailendra Mudgal, Kurt Muehmel and Eric Labouze

EU RoHS Recast – New Requirements and Impacts for the Information and Communications Technology Industry Debra Horn

Environmental Assessment of Information Technology Products Alex Degher (HP)

**TRANSPORT 1 (Library)** Troy Hawkins, Chair

Estimating Toxicity Across the Life Cycle of Transportation Options Troy Hawkins, Wesley Ingwersen, Debalina Sengupta, Xue Xiaobo and Smith Raymond

Electric Vehicles in Portugal: An integrated energy, greenhouse gas and costs life-cycle analysis Fausto Freire and Pedro Marques

A Field Study on the Acceptance of Extended Floating Car Data for Real-time Monitoring Traffic Conditions Andreas Pell, Friedrich Starkl and Martin Menrad

Strategies for Integrating Life Cycle Assessment with Urban Sustainability Transportation Policy Mikhail Chester, William Eisenstein, Stephanie Pincetl, Juan Matute, Paul Bunje, Zoe Elizabeth and Julia Campbell

Reducing co2 emission of private cars: A model of co-evolving firms and consumers Eric Brouillat, Vanessa Oltra and Alexander Van der Vooren
Thursday May 17

**DECISION (Wilbur Colonial) Melissa Bilec, Chair**

Integration of MCDA Tools in Valuation of Comparative LCA: A Critique on Norris, 2001

Developing a Life Cycle Inspired Sustainable Design Tool for the Sustainable Apparel Coalition

Akers of Material Consumption

Construction Management Waste Reuse Decisions: Relating decision making parameters and Market Incentive Structures

Applying Business Analytics to Maximize Value from Asset Reutilization

**PRODUCT STANDARDS 1 (Schubert/Charles) Holly Elwood, Moderator**

Pushing the boundaries for sustainable products — Beyond today’s standards

**TRANSPORT 2 (Library) Fausto Freire, Chair**

Optimal Design and Allocation of Electrified Vehicles and Dedicated Charging Infrastructure for Minimum Life Cycle Greenhouse Gas Emissions and Cost

Evaluating the life cycle emissions from lightweight PHEV in a regional context

Impact of Federal Incentives in Promoting Sustainability Through the Adoption of Hybrid Electric Vehicles

Assessing Clean Vehicle Systems under Constraints of Water and Land Resources

Environmental Efficiency Analysis of U.S. Passenger Transportation Modes: A Synergistic Use of a Hybrid-LCA Model and Mathematical Optimization

Valentina Prado, Kristin Rogers and Thomas P Seager

Neethi Rajagopalan, Jay Golden, Roland Geyer, Krishna Manda, Martin Patel, Richard Venditti, Joost Vogtlander and Julie Zimmerman

Sahil Sahni, Pamela Silva and Timothy Gutowski

Kimberlee Marcellus, Sabrina Spatari and Patricia Gallagher

Pitipong Lin, Kevin O’Connor and Jeffrey Boniello

Elizabeth Traut, Chris Hendrickson, Erica Klampfl, Yimin Liu and Jeremy Michalek

Anne Marie Lewis, Jarod C. Kelly and Gregory A. Keoleian

Alan Jenn, Inês Azevedo and Pedro Ferreira

Hua Cai and Ming Xu

Murat Kucukvar and Omer Tatari

AFTERNOON BREAK - Coffee, tea, soft drinks, water, cookies, fresh fruit
Friday May 18

BREKKFAST (Washington Ballroom): oatmeal, cold cereal, yogurt.

LEADERSHIP & 2013 ORGANIZING COMMITTEE MEETING (Wilbur/Colonial, open to all participants)

BUILDING (Wilbur Colonial) Amy Landis, Chair

- A Spreadsheet Tool to Support Energy Efficient Procurement in Building Construction
- Integrating Indoor Environmental Quality in a Dynamic Life Cycle Assessment of Buildings
- Life-cycle cost optimization model extended with environmental impact assessment for energy management of service buildings
- Utilizing Measured Energy Usage to Analyze Design Phase Energy Models

SUSTAINABILITY DIALOG (Schubert/Charles) Lise Laurin, Moderator

- What can better communication up and down the supply chain, across disciplines, and between academia and industry achieve for a more sustainable future?

LCA APPLICATIONS II (Library) Matt Eckelman, Chair

- The water footprint of thermal power production: closing methodological gaps of regionalization and heat emissions
- Incorporating Use-Phase Energy into LCA
- Comparative greenhouse gas assessment of anesthetic agents
- Application of Life Cycle Analysis on Medical Procedures: Vaginal and Cesarean Section Births
- Socio-Technical Implications of Renewable Energy Sources – Africa Health Care Case Study including Monte-Carlo Simulation

MORNING BREAK: Coffee, tea
Data uncertainty and quality: emerging issues for Life Cycle Assessment Data and Databases
Joyce Cooper

Evaluating policies under uncertainty: meeting the U.S. CAFE standards in 2016 and 2025
Parisa Bastani, John B. Heywood and Chris Hope

Uncertainty and variability in the carbon footprint of U.S. coal-/fired power production
Mara Hauck, Zoran Steinmann, Ian Laurenzi, Ramkumar Karuppiah, Alessandro Faldi and Mark Huijbregts

Enabling Robust Comparative Life Cycle Assessment by Leveraging Uncertainty: The Case of Hand Drying Systems
Jeremy Gregory, Trisha Montalbo and Randolph Kirchain

Sustainability of Photovoltaics: Recycling and Dynamic LCA
Jun-Ki Choi

Quantifying the Global Flow of E-Waste: Case Study of Used Computers exported from the United States
Ramzy Kahhat, Eric Williams and Soumya Poduri

Streamlined Characterization of United States Used Electronics Flows
T. Reed Miller, Jeremy Gregory and Randolph Kirchain

Inventory Contribution and Impact Assessment for End-of-Life Processing of Lithium-ion Batteries in the US
Chelsea Bailey, Xue Wang, Callie Babbitt and Gabrielle Gaustad

Variability and Uncertainty in Consumption of Freshwater for Field Crop Life Cycle Assessment
Ezra Kahn and Joyce Cooper

Sustainable Wellbeing Education in Engineering
Callie Babbitt, Chair

A Model Transdisciplinary Design for Environment Curriculum: Blending Perspectives from Industrial and Engineering Design

Engineering the Engineer: The Failure of Engineering Education and What To Do About

SYSTEMS THINKING FOR SUSTAINABILITY Envisioning Trans-disciplinary Transformations in STEM Education

Sustainable Green Engineering System Design and Quality Educational Challenges, and Solutions

Sustainability of Photovoltaics: Recycling and Dynamic LCA
Jun-Ki Choi

Quantifying the Global Flow of E-Waste: Case Study of Used Computers exported from the United States
Ramzy Kahhat, Eric Williams and Soumya Poduri

Streamlined Characterization of United States Used Electronics Flows
T. Reed Miller, Jeremy Gregory and Randolph Kirchain

Inventory Contribution and Impact Assessment for End-of-Life Processing of Lithium-ion Batteries in the US
Chelsea Bailey, Xue Wang, Callie Babbitt and Gabrielle Gaustad

Variability and Uncertainty in Consumption of Freshwater for Field Crop Life Cycle Assessment
Ezra Kahn and Joyce Cooper

Sustainable Wellbeing Education in Engineering
Callie Babbitt, Chair

A Model Transdisciplinary Design for Environment Curriculum: Blending Perspectives from Industrial and Engineering Design

Engineering the Engineer: The Failure of Engineering Education and What To Do About

SYSTEMS THINKING FOR SUSTAINABILITY Envisioning Trans-disciplinary Transformations in STEM Education

Sustainable Green Engineering System Design and Quality Educational Challenges, and Solutions

Sustainability of Photovoltaics: Recycling and Dynamic LCA
Jun-Ki Choi

Quantifying the Global Flow of E-Waste: Case Study of Used Computers exported from the United States
Ramzy Kahhat, Eric Williams and Soumya Poduri

Streamlined Characterization of United States Used Electronics Flows
T. Reed Miller, Jeremy Gregory and Randolph Kirchain

Inventory Contribution and Impact Assessment for End-of-Life Processing of Lithium-ion Batteries in the US
Chelsea Bailey, Xue Wang, Callie Babbitt and Gabrielle Gaustad

Variability and Uncertainty in Consumption of Freshwater for Field Crop Life Cycle Assessment
Ezra Kahn and Joyce Cooper

Sustainable Wellbeing Education in Engineering
Callie Babbitt, Chair

A Model Transdisciplinary Design for Environment Curriculum: Blending Perspectives from Industrial and Engineering Design

Engineering the Engineer: The Failure of Engineering Education and What To Do About

SYSTEMS THINKING FOR SUSTAINABILITY Envisioning Trans-disciplinary Transformations in STEM Education

Sustainable Green Engineering System Design and Quality Educational Challenges, and Solutions

Sustainability of Photovoltaics: Recycling and Dynamic LCA
Jun-Ki Choi

Quantifying the Global Flow of E-Waste: Case Study of Used Computers exported from the United States
Ramzy Kahhat, Eric Williams and Soumya Poduri

Streamlined Characterization of United States Used Electronics Flows
T. Reed Miller, Jeremy Gregory and Randolph Kirchain

Inventory Contribution and Impact Assessment for End-of-Life Processing of Lithium-ion Batteries in the US
Chelsea Bailey, Xue Wang, Callie Babbitt and Gabrielle Gaustad

Variability and Uncertainty in Consumption of Freshwater for Field Crop Life Cycle Assessment
Ezra Kahn and Joyce Cooper

Sustainable Wellbeing Education in Engineering
Callie Babbitt, Chair

A Model Transdisciplinary Design for Environment Curriculum: Blending Perspectives from Industrial and Engineering Design

Engineering the Engineer: The Failure of Engineering Education and What To Do About

SYSTEMS THINKING FOR SUSTAINABILITY Envisioning Trans-disciplinary Transformations in STEM Education

Sustainable Green Engineering System Design and Quality Educational Challenges, and Solutions

Sustainability of Photovoltaics: Recycling and Dynamic LCA
Jun-Ki Choi

Quantifying the Global Flow of E-Waste: Case Study of Used Computers exported from the United States
Ramzy Kahhat, Eric Williams and Soumya Poduri

Streamlined Characterization of United States Used Electronics Flows
T. Reed Miller, Jeremy Gregory and Randolph Kirchain

Inventory Contribution and Impact Assessment for End-of-Life Processing of Lithium-ion Batteries in the US
Chelsea Bailey, Xue Wang, Callie Babbitt and Gabrielle Gaustad

Variability and Uncertainty in Consumption of Freshwater for Field Crop Life Cycle Assessment
Ezra Kahn and Joyce Cooper

Sustainable Wellbeing Education in Engineering
Callie Babbitt, Chair

A Model Transdisciplinary Design for Environment Curriculum: Blending Perspectives from Industrial and Engineering Design

Engineering the Engineer: The Failure of Engineering Education and What To Do About

SYSTEMS THINKING FOR SUSTAINABILITY Envisioning Trans-disciplinary Transformations in STEM Education

Sustainable Green Engineering System Design and Quality Educational Challenges, and Solutions

Sustainability of Photovoltaics: Recycling and Dynamic LCA
Jun-Ki Choi

Quantifying the Global Flow of E-Waste: Case Study of Used Computers exported from the United States
Ramzy Kahhat, Eric Williams and Soumya Poduri

Streamlined Characterization of United States Used Electronics Flows
T. Reed Miller, Jeremy Gregory and Randolph Kirchain

Inventory Contribution and Impact Assessment for End-of-Life Processing of Lithium-ion Batteries in the US
Chelsea Bailey, Xue Wang, Callie Babbitt and Gabrielle Gaustad

Variability and Uncertainty in Consumption of Freshwater for Field Crop Life Cycle Assessment
Ezra Kahn and Joyce Cooper

Sustainable Wellbeing Education in Engineering
Callie Babbitt, Chair

A Model Transdisciplinary Design for Environment Curriculum: Blending Perspectives from Industrial and Engineering Design

Engineering the Engineer: The Failure of Engineering Education and What To Do About

SYSTEMS THINKING FOR SUSTAINABILITY Envisioning Trans-disciplinary Transformations in STEM Education

Sustainable Green Engineering System Design and Quality Educational Challenges, and Solutions

Sustainability of Photovoltaics: Recycling and Dynamic LCA
Jun-Ki Choi

Quantifying the Global Flow of E-Waste: Case Study of Used Computers exported from the United States
Ramzy Kahhat, Eric Williams and Soumya Poduri

Streamlined Characterization of United States Used Electronics Flows
T. Reed Miller, Jeremy Gregory and Randolph Kirchain

Inventory Contribution and Impact Assessment for End-of-Life Processing of Lithium-ion Batteries in the US
Chelsea Bailey, Xue Wang, Callie Babbitt and Gabrielle Gaustad

Variability and Uncertainty in Consumption of Freshwater for Field Crop Life Cycle Assessment
Ezra Kahn and Joyce Cooper

Sustainable Wellbeing Education in Engineering
Callie Babbitt, Chair

A Model Transdisciplinary Design for Environment Curriculum: Blending Perspectives from Industrial and Engineering Design

Engineering the Engineer: The Failure of Engineering Education and What To Do About

SYSTEMS THINKING FOR SUSTAINABILITY Envisioning Trans-disciplinary Transformations in STEM Education

Sustainable Green Engineering System Design and Quality Educational Challenges, and Solutions

Sustainability of Photovoltaics: Recycling and Dynamic LCA
Jun-Ki Choi

Quantifying the Global Flow of E-Waste: Case Study of Used Computers exported from the United States
Ramzy Kahhat, Eric Williams and Soumya Poduri

Streamlined Characterization of United States Used Electronics Flows
T. Reed Miller, Jeremy Gregory and Randolph Kirchain

Inventory Contribution and Impact Assessment for End-of-Life Processing of Lithium-ion Batteries in the US
Chelsea Bailey, Xue Wang, Callie Babbitt and Gabrielle Gaustad

Variability and Uncertainty in Consumption of Freshwater for Field Crop Life Cycle Assessment
Ezra Kahn and Joyce Cooper
MARRIOTT COURTYARD DOWNTOWN BOSTON
FLOORPLAN

275 TREMONT ST, BOSTON, MASSACHUSETTS 02116 USA
The ISSST organizing committee would like to thank the generous support of Hewlett Packard Laboratories for sponsoring the student poster and paper competitions.

This program sponsored by EarthShift, LLC.