

## MELISSA M. BILEC, PhD, LEED AP

Roberta A. Luxbacher Faculty Fellow

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### CAREER SUMMARY

- Secured ~\$6.25 million as PI or Co-PI, including 9 NSF grants.
- Developed a research program in the realm of high-performance buildings and communities, sustainable healthcare, life cycle assessment, and indoor air quality.
- Published 105 peer reviewed articles - 58 peer reviewed journal articles and 47 peer reviewed conference proceedings. An additional 6 articles are submitted and under review.
- Graduated 8 PhD students with 4 PhD students in progress. Advised 32 undergraduate researchers. 3 Post-Doctoral advisees.
- Developed a new M.S. in Sustainable Engineering degree and an Undergraduate Certificate in Sustainability.
- Received the four education excellence awards, including Carnegie Science Center Award in Higher Education and funding from NSF for developing innovative engineering education programs; developed four new sustainability classes.
- Leadership: Deputy Director at the Mascaro Center for Sustainable; ELATE training
- Committed to diversity efforts, serving on Engineering Diversity Advisory Committee and AGEP Internal Advisory Board, co-faculty advisor for Graduate Women in Engineering Network (GWEN)
- Developed an international collaboration in France with Centre Scientifique et Technique du Bâtiment (CSTB) and University of Toulouse.

### EDUCATION

Ph.D. Civil Engineering	University of Pittsburgh	2007
M.S. Civil Engineering	University of Pittsburgh	1999
B.S. Civil Engineering	University of Pittsburgh	1997

### APPOINTMENTS

2017 to Present:	Roberta A. Luxbacher Faculty Fellow
2015 to Present:	Deputy Director, Mascaro Center for Sustainable Innovation, University of Pittsburgh, Pittsburgh, PA
2014 to Present:	Associate Professor, Department of Civil and Environmental Engineering University of Pittsburgh, Pittsburgh, PA
2011 to 2014:	Assistant Professor, Department of Civil and Environmental Engineering University of Pittsburgh, Pittsburgh, PA (tenure stream)
2007 to 2015:	Assistant Director, Education and Outreach, Mascaro Center for Sustainable Innovation, University of Pittsburgh, Pittsburgh, PA
2010 to 2012:	Director, Construction Management and Green Construction Program
2008 to 2011:	Assistant Professor, Department of Civil and Environmental Engineering University of Pittsburgh, Pittsburgh, PA (non-tenure stream)

2007 to 2010:	Co-Director, Center for Sustainable Transportation Infrastructure, University of Pittsburgh, Pittsburgh, PA
2007 to 2008:	Visiting Research Assistant Professor, Department of Civil and Environmental Engineering University of Pittsburgh, Pittsburgh, PA
2004 to 2007:	Graduate Research Assistant, Department of Civil and Environmental Engineering, University of Pittsburgh
1999 to 2007:	Senior Project Engineer, Urban Redevelopment Authority, Pittsburgh, PA
1999:	Structural Engineer, SAI Consulting Engineers, Pittsburgh, PA

## REFEREED JOURNAL PUBLICATIONS

### **PRIMARY STUDENT ADVISEES UNDERLINED, CO-ADVISED STUDENTS ITALICIZED.**

SINCE THE MEANING OF AUTHOR ORDER VARIES IN SUSTAINABLE ENGINEERING, OUR COLLABORATIVE RESEARCH TEAMS HAVE AGREED TO THE STUDENT AS THE FIRST AUTHOR, AS APPROPRIATE, WITH PI/PRIMARY ADVISOR LAST.

### **Accepted/Published**

58. Dancz, C.L.A., Ketchman, K.J., Burke, R.D., Hottle, T.A., Bilec, M.M., Parrish, K., Landis, A.E. (2017 accepted) "Utilizing Civil Engineering Senior Design Capstone Projects to Evaluate Students' Sustainability Education Across Engineering Curriculum." Accepted ASEE, *Advances in Engineering Education*.
57. Dancz, C.L.A., Bilec, M.M., Landis, A.E. (2017 accepted). "Incorporating Sustainability into Engineering Education Through an Active and Experiential Sustainable Engineering Module (Chair Lab)." Accepted *Journal of Professional Issues in Engineering Education*
56. Unger, S. R., Hottle, T. A., Hobbs, S. R., Thiel, C. L., Campion, N., Bilec, M. M., & Landis, A. E. (2017). "Do single-use medical devices containing biopolymers reduce the environmental impacts of surgical procedures compared with their plastic equivalents?" *Journal of Health Services Research & Policy*. <http://dx.doi.org/10.1177/1355819617705683>
55. Whiston, M. M., Collinge, W. O., Bilec, M. M., and Schaefer, L. A., 2017 (accepted). "Exergy and economic comparison between kW-scale hybrid and atmospheric solid oxide fuel cell systems," *J. Power Sources*, accepted.
54. Hottle, T., Bilec, M.M., Landis, A.E. (2017). "Biopolymer Production and End of Life Comparisons Using Life Cycle Assessment." *Resources, Conservation & Recycling*, 122, 295-306. <http://dx.doi.org/10.1016/j.resconrec.2017.03.002>
53. Dancz, C.L.A., Parrish, K., Bilec, M.M., Landis, A.E. (2017 accepted). "Assessment of Students' Mastery of Construction Management and Engineering Concepts through Board Game Design." Accepted *Journal of Professional Issues in Engineering Education and Practice*.
52. Vora, N., Shah, A., Bilec, M.M., Khanna, V. (2017). Food-Energy-Water Nexus: Quantifying Embodied Energy and GHG emissions from Irrigation through Virtual Water Transfers in Food Trade. *ACS Sustainable Chemistry & Engineering*, 5(3), 2119–2128. <http://dx.doi.org/10.1021/acssuschemeng.6b02122>
51. Hasik, V., Anderson, N.E., Collinge, W.O., Thiel, C.L., Khanna,V., Wirick, J., Piacentini, R., Landis, A.E., Bilec, M.M. (2017). "Evaluating the life cycle environmental benefits and tradeoffs of water reuse systems for net-zero buildings." *Environmental Science & Technology*. 51(3), 1110-1119. <http://dx.doi.org/10.1021/acs.est.6b03879>
50. Ketchman, K.J., Antaya, C.L.A., Burke, R., Parrish, K.P., Landis, A.E., Bilec, M.M. (2017). "Sustainable Engineering Cognitive Outcomes: Examining Different Approaches for

- Curriculum Integration." *ASCE Journal of Professional Issues in Engineering Education and Practice*. [http://dx.doi.org/10.1061/\(ASCE\)EI.1943-5541.0000324](http://dx.doi.org/10.1061/(ASCE)EI.1943-5541.0000324) - sthash.OMOVhlZ9.dpuf
49. Al-Ghamdi, S., Bilec, M.M. (2016). "On-Site Renewable Energy and Green Building Rating Systems: A System-Level Analysis." *Environmental Science & Technology*. 50, 4606-4614. <http://dx.doi.org/10.1021/acs.est.5b05382>
  48. Al-Ghamdi, S., Bilec, M.M. (2016). "Green Building Rating Systems and Whole-Building LCA: A Comparative Study of the Existing Assessment Tools." *ASCE Journal of Architectural Engineering*, 04016015, [http://dx.doi.org/10.1061/\(ASCE\)AE.1943-5568.0000222](http://dx.doi.org/10.1061/(ASCE)AE.1943-5568.0000222)
  47. Chopra, S.S., Dillon, T., Bilec, M.M., Khanna, V. (2016). "A Network-based Framework for Assessing Infrastructure Resilience: A Case Study of London Metro System." *Journal of Royal Society Interface*. 13:20160113. <http://dx.doi.org/10.1098/rsif.2016.0113>
  46. Unger, S., Campion, N.A., Bilec, M.M., Landis, A.E. (2016). "Evaluating quantifiable metrics for hospital green checklists." *Journal of Cleaner of Production*. 127, 20 June 2016, 134-142. <http://dx.doi.org/10.1016/j.jclepro.2016.03.167>
  45. Campion, N., Thiel, C.L., Focareta, J., Bilec, M.M. (2016). "Understanding Green Building Design & Healthcare Outcomes: An Evidence Based Design Analysis of an Oncology Unit." *ASCE Journal of Architectural Engineering*. 04016009. [http://dx.doi.org/10.1061/\(ASCE\)AE.1943-5568.0000217](http://dx.doi.org/10.1061/(ASCE)AE.1943-5568.0000217)
  44. Xu, H., Collinge, W.O., Schaefer, L.A., Landis, A.E., Bilec, M.M., Jones, A.K. (2016). "Towards a Commodity Solution for the Internet of Things." *Elsevier Journal of Computers and Electrical Engineering*. 52, Issue C, May 2016, 138-156 <http://dx.doi.org/10.1016/j.compeleceng.2016.03.009>
  43. Hottle, T., Luna Agüero, M., Bilec, M.M., Landis, A.E. (2016). "Alkaline Amendment for the Enhancement of Compost Degradation for Polylactic Acid (PLA) Biopolymer Products." *Compost Science & Utilization*. 24(3), 159-173. <http://dx.doi.org/10.1080/1065657X.2015.1102664>
  42. Collinge, W.O., DeBlois, J., Landis, A.E., Schaefer, L.A., Bilec, M.M. (2016). "A hybrid dynamic-empirical building energy modeling approach for an existing campus building." *ASCE Journal of Architectural Engineering*. 04015010. [http://dx.doi.org/10.1061/\(ASCE\)AE.1943-5568.0000183](http://dx.doi.org/10.1061/(ASCE)AE.1943-5568.0000183)
  41. Meeks, D.L., Hottle, T.A., Bilec, M.M., Landis, A.E. (2015). "Composted biopolymer use in the real world: Stakeholder interviews to better understand use and disposal in the U.S." *Resources, Conservation & Recycling*. 105, Part A, December 2015, 134-142. [doi:10.1016/j.resconrec.2015.10.022](https://doi.org/10.1016/j.resconrec.2015.10.022)
  40. Whiston, M., Bilec, M.M., Schaefer, L.A. (2015). "'Influence of the charge double layer on solid oxide fuel cell stack behavior." *Journal of Power Sources*. 293, 20 October 2015, 767-777. [doi:10.1016/j.jpowsour.2015.05.085](https://doi.org/10.1016/j.jpowsour.2015.05.085)
  39. Al-Ghamdi, S., Bilec, M.M. (2015). "Life-Cycle Thinking and the LEED Rating System: Global Perspective on Building Energy Use and Environmental Impacts." *Environmental Science & Technology*. 49(7) 4048-4056. <http://dx.doi.org/10.1021/es505938u>
  38. Campion, N., Thiel, C.L., Copley-Woods, N., Swanzey, L., Landis, A.E., Bilec, M.M. (2015). "Environmental Life-Cycle Impacts of Surgical Material Supply: A Comparative LCA of Disposable Custom Packs." *Journal of Cleaner Production*. 94, 1 May 2015, 46-55. <http://dx.doi.org/10.1016/j.jclepro.2015.01.076>

37. Hottle, T.A., Bilec, M.M., Brown, N.R., Landis, A.E. (2015). "Toward zero waste: Composting and recycling for sustainable venue based events." *Waste Management*. 38, April 2015, 86-94. <http://dx.doi.org/10.1016/j.wasman.2015.01.019>
36. Thiel, C.L., Woods, N., Landis, A.E., Eckelman, M.E., Guido, R., Sherman, J., Bilec, M.M. (2015). "Environmental Impacts of Surgical Procedures: Life Cycle Assessment of Hysterectomy in the US." *Environmental Science & Technology*, 49(3) 1779-1786. <http://dx.doi.org/10.1021/es504719g>
35. Whiston, M., Bilec, M.M., Schaefer, L.A. (2015). "SOFC Stack Model for Integration into a Hybrid System: Stack Response to Control Variables." *Journal of Fuel Cell Science and Technology*. 12(3), 031006, 11 pages, <http://dx.doi.org/10.1115/1.4029877>
34. Olinzock, M.A., Saunders, C.L., Collinge, W.O., Landis, A.E., Jones, A.K., Schaefer, L.A., Bilec, M.M. (2015). "Life Cycle Assessment Survey of the Building Community: Summary of Findings from 2011 to 2012." *International Journal of Life Cycle Assessment*. 20(3) 318-331, <http://dx.doi.org/10.1007/s11367-014-0834-y>
33. Collinge, W.O., Landis, A.E., Jones, A.K., Schaefer, L.A., Bilec, M.M. (2014). "Productivity metrics in dynamic LCA for whole buildings: using a post-occupancy evaluation to evaluate energy and indoor environmental quality tradeoffs." *Building and the Environment*. 82, December 2014, 339-348. <http://dx.doi.org/10.1016/j.buildenv.2014.08.032>
32. Thiel, C.L., Needy, K.L., Ries, R.J., Hupp, D., Bilec, M.M. (2014). "Building Design and Performance: A Comparative Longitudinal Assessment of a Children's Hospital." *Building and the Environment*. 78, August 2014, 130-136. <http://dx.doi.org/10.1016/j.buildenv.2014.04.001>
31. Dale, A.T., Bilec, M.M. (2014), "The Regional Energy & Water Supply Scenarios (REWSS) Model, Part I: Framework, Procedure, and Validation." *Sustainable Energy Technologies and Assessments*, 7, September 2014, 227-236. <http://dx.doi.org/10.1016/j.seta.2014.02.003>
30. Dale, A.T., Bilec, M.M. (2014), "The Regional Energy & Water Supply Scenarios (REWSS) Model, Part II: Case Studies in Pennsylvania and Arizona." *Sustainable Energy Technologies and Assessments*, 7, September 2014, 237-246. <http://dx.doi.org/10.1016/j.seta.2014.02.006>
29. Banawi, A.A., Bilec, M.M. (2014). "Applying Lean, Green, and Six-Sigma Framework to Improve Exterior Construction Process in Saudi Arabia." *Journal of Construction Engineering and Project Management*. 4(2), 12-22. <http://dx.doi.org/10.6106/JCEPM.2014.4.2.012>
28. Banawi, A.A., Bilec, M.M. (2014). "A Framework to Improve Construction Processes: Integrating Lean, Green, and Six-Sigma." *International Journal of Construction Management*, 14(1), 58-71. <http://dx.doi.org/10.1080/15623599.2013.875266>
27. Dale, A.T., Lucena, A.F., Marriott, J., Borba, B.S., Schaeffer, R., Bilec, M.M. (2013). "Modeling Future Life-Cycle Environmental Impacts of Electricity Supplies in Brazil." *Energies*, 6(7), 3182-3208. <http://dx.doi.org/10.3390/en6073182>
26. Hottle, T., Bilec, M.M., Landis, A.E. (2013). "Cradle-to-Cradle Sustainability Assessments of Bio-based Polymers." *Polymer Degradation and Stability*, 98(9), 1898-1907. <http://dx.doi.org/10.1016/j.polymdegradstab.2013.06.016>

25. Dale, A.T., Khanna, V., Vidic, R.D., Bilec, M.M. (2013). "Process Based Life-Cycle Assessment of Natural Gas from the Marcellus Shale." *Environmental Science & Technology*, 47(10), 5459–5466. <http://dx.doi.org/10.1021/es304414q>
24. Deblois, J., Bilec, M.M., Schaefer, L.A. (2013). "Simulating Home Cooling Load Reductions for a Novel Opaque Roof Solar Chimney Configuration." *Applied Energy*, 112, December 2013, 142-151. <http://dx.doi.org/10.1016/j.apenergy.2013.05.084>
23. Saunders, C.L., Landis, A.E., Mecca, L., Jones, A.K., Schaefer, L.A., Bilec, M.M. (2013). "Analyzing the Practice of Life Cycle Assessment: Focus on the Building Sector." *Journal of Industrial Ecology*, 17(5), 777-788. DOI: 10.1111/jiec.12028.
22. Ketchman, K. and Bilec, M.M. (2013). "Quantification of Particulate Matter from Construction Activities using a Life Cycle Approach." *Journal of Construction and Engineering Management*, 139(12) A4013007-1 to 10. [http://dx.doi.org/10.1061/\(ASCE\)CO.1943-7862.0000776](http://dx.doi.org/10.1061/(ASCE)CO.1943-7862.0000776)
21. Thiel, C.L., Campion, N., Landis, A.E., Jones, A.K., Schaefer, L.S., Bilec, M.M. (2013). "A Materials Life Cycle Assessment of a Net-Zero Energy Building." *Energies*, 6(2), 1125-1141. <http://dx.doi.org/10.3390/en6021125>
20. Collinge, W.O., Landis, A.E., Jones, A.K., Schaefer, L.A., Bilec, M.M. (2013). "Indoor Environmental Quality in a Dynamic Life Cycle Assessment for Whole Buildings: Focus on Human Health Chemical Impacts." *Buildings and the Environment*, 62, 182-190. <http://dx.doi.org/10.1016/j.buildenv.2013.01.015>
19. Shrake, S.O., Bilec, M.M., Landis, A.E. (2013). "The application of a multi-faceted approach to evaluating and improving the life cycle environmental performance of service industries." *Journal of Cleaner Production*, 42, 263-276. <http://dx.doi.org/10.1016/j.jclepro.2012.10.039>
18. Collinge, W.C., Landis, A.E., Jones, A., Schaefer, L., Bilec, M.M. (2013). "A Dynamic Life Cycle Assessment: Framework and Application to an Institutional Building." *International Journal of Life Cycle Assessment*, 18(3), 538-552. <http://dx.doi.org/10.1007/s11367-012-0528-2>
17. Deblois, J., Bilec, M.M., Schaefer, L.A. (2013) "Design and Zonal Building Information Modeling of a Roof Integrated Solar Chimney." *Renewable Energy*, 52(0), 241-250. <http://dx.doi.org/10.1016/j.renene.2012.10.023>
16. Aktas, C.B., Ryan, K.C., Sweriduk, M., Bilec, M.M. (2012). "Critical Success Factors to Limit Constructability Issues on a Net-Zero Energy Home." *Journal of Green Building*, 7(4), 100-115. <http://dx.doi.org/10.3992/jgb.7.4.100>
15. Xiaobo, X., Collinge, W., Landis, A.E., Bilec, M.M., Shrake, S. (2012). "Regional Life Cycle Assessment of Soybean Derived Biodiesel for Transportation Fleet." *Energy Policy*, 48, 295-303. <http://dx.doi.org/10.1016/j.enpol.2012.05.025>
14. Campion, N., Thiel, C.L., DeBlois, J., Woods, N.C., Landis, A.E., Bilec, M.M. (2012) "Life Cycle Perspectives of Delivering an Infant in the US." *Science of the Total Environment*, 425, 191-198. <http://dx.doi.org/10.1016/j.scitotenv.2012.03.006>
13. Rajagopalan, N., Bilec, M.M., Landis, A.E. (2012). Evaluation of Green Product Labeling Systems with Life Cycle Assessment. *International Journal of Life Cycle Assessment*, 17(6), 753-763, doi:10.1007/s11367-012-0416-9.

12. Aktas, C.B., Bilec, M.M. (2012). "Service Life Predication of Residential Interior Finishes for Life Cycle Assessment." *International Journal of Life Cycle Assessment*, 17 (3), 362-371. doi:10.1007/s11367-011-0367-6
11. Aktas, C.B., Bilec, M.M. (2012). "Impact of Lifetime on U.S. Residential Building LCA Results." *International Journal of Life Cycle Assessment*, 17(3), 337-349. doi: 10.1007/s11367-011-0363-x
10. Dale, A., Bilec, M.M., Marriott, J., Hartley, D., Jurgens, C., Zatcoff, E., (2010). "Preliminary Comparative Life Cycle Impacts of Streetlight Technologies." *Journal of Infrastructure Systems*, 17 (4), 193-199. doi:10.1061/(ASCE)IS.1943-555X.0000064
9. Shrake, S., Landis, A.E., Bilec, M.M., Collinge, W., Xiaobo, X. (2010). "A Comparative Analysis of Performance and Cost Metrics Associated with Diesel to Biodiesel Fleet Transition." *Energy Policy*, 38(2010), 7451-7456. <http://dx.doi.org/10.1016/j.enpol.2010.08.031>
8. Rajagopalan, N., Bilec, M.M., Landis, A.E. (2010). "Residential Life Cycle Assessment Modeling: Comparative Case Study of Insulating Concrete Forms and Traditional Building Materials." *Journal of Green Building*, 5(3), 95-106. <http://dx.doi.org/10.3992/jgb.5.3.95>
7. Bilec, M. M., Geary, M., Ries, R. J., Needy, K. L., & Cashion, M. (2010). "A method for quantifying the benefits of greening a healthcare facility." *Engineering Management Journal*, 22(3), 3-11.
6. Bilec, M.M., Ries, R.J., Matthews, H.S. (2010). "Life Cycle Assessment Modeling of Construction Processes for Buildings." *Journal of Infrastructure Systems*, 16(3), 199-205.
5. Bilec, M.M., Needy, R., Gokhan, N.M., Ries, R., Horman, M., Phelps, A.F., Enache-Pommer, E., Little, S., McGregor, B., and Sheane, C. (2009). "Analysis of the Design Process of Green Children's Hospitals: Focus on Process Mapping and Lessons Learned." *Journal of Green Building*, (4) 1, 121-134. <http://dx.doi.org/10.3992/jgb.7.4.100>
4. Bilec, M.M., and Ries, R. (2007). "Preliminary Study of Green Design and Project Delivery Method in the Public Sector." *Journal of Green Building*, 2(2), 151-160.
3. Bilec, M.M., Ries, R., Matthews, H.S. (2007). "Sustainable Development and Green Design – Who is Leading the Green Initiative?" *Journal of Professional Issues in Engineering Education and Practice*, 133(4), 265-269.
2. Bilec, M., Ries, R., Matthews, H. S., and Sharrard, A. L. (2006). "Example of a Hybrid Life Cycle Assessment of Construction Processes." *Journal of Infrastructure Systems*, 12(4), 207-215.
1. Ries, R., Bilec, M., Gokhan, N. M., and Needy, K. L. (2006). "The Economic Benefits of Green Buildings: A Comprehensive Case Study." *The Engineering Economist*, 51(3), 259-295 (Ranked #3 as the most often downloaded article in 2009).

## SUBMITTED

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6. Tian, S., Bilec, M.M. (2017 submitted). "Integrating Site Specific Dispersion Modeling into Life Cycle Assessment: Focus on Inhalation Risks in Chemical Production. Submitted to *Journal of Cleaner Production*.



5. Ketchman, K.J., Riley D., Bilec, M.M. (2017 submitted). "A Survey of Homeowners' Motivations for the Adoption of Energy Efficiency Measures: Evaluating a Holistic Energy Assessment Program." Submitted to *ASCE Journal of Architectural Engineering*
4. Burke, R.D., Dancz, C.L.A., Ketchman, K.J., Bilec, M.M., Boyer, T.H., Davidson, C., Landis, A.E., Parrish, K.P. (2016 submitted). "Engineering Faculty Perspectives on Sustainability Integration in Engineering Curriculum." Submitted to *Environmental Engineering Science*.
3. Thiel, C.L., Woods, N.C., Bilec, M.M. (2017 submitted). "Strategies to Reduce Greenhouse Gas Emissions from Laparoscopic Surgery." Submitted to *Lancet, Planetary Health*
2. Thiel, C.L., Carvalho, R. F., Hess, L., Tighe, J., Bilec, M.M., Baratz, M. (2016). "Minimal Custom Pack Design and Wide-Awake Hand Surgery: Reducing Waste and Spending in the Orthopedic Operating Room." Submitted to *Journal of Hand Surgery*.
1. Chhabra, J., Hasik, V., Bilec, M.M., Warn, G.P (2016 submitted). "A probabilistic approach for assessing the environmental performance of building designs accounting for natural hazards." Submitted to *ASCE Journal of Architectural Engineering*.

#### REFEREED CONFERENCE PROCEEDINGS

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47. Hasik, V., Chhabra, J. P. S., Warn, G. P., & Bilec, M. M. (2017). "Investigation of the Sustainability and Resilience Characteristics of Buildings Including Existing and Potential Assessment Metrics". Proceedings from the ASCE Architectural Engineering Institute Conference, April 11-13, 2017, Oklahoma City, Oklahoma
46. Rickenbacker, H.J., Collinge, W.O., Hasik, V., Bilec, M.M. (2016). "Indoor Air Quality Assessments of Diverse Buildings in an Energy Conservation District from a Life Cycle Assessment Lens: Short Paper." Proceedings of the 3rd ACM International Conference on Systems for Energy-Efficient Built Environments (BuildSys 2016). November 15-17, 2016. Stanford, California. DOI: <https://doi.org/10.1145/2993422.2993424>
45. Antaya-Dancz, C.L., Ketchman, K.J., Burke, R.A., Mahmud, R., Bilec, M.M., Adams, E.A., Parrish, K., Allenby, B., Khanna, V., Landis, A.E. (2016). "Integrating Sustainability Grand Challenges and Experiential Learning into Engineering Curricula: Years 1 through 3." American Society for Engineering Education, June 26-29, 2016 New Orleans, LA.
44. Ketchman, K.J., Riley, D., Khanna, V., Bilec, M.M. (2016). "Evaluation of Holistic Energy Assessment Program." International Conference on Sustainable Design, Engineering, and Construction, May 18-20, 2016, Tempe, Arizona. Procedia Engineering, 145, 468-475. doi:<http://dx.doi.org/10.1016/j.proeng.2016.04.020>
43. DeBlois, J., Collinge, W.O., Bilec, M.M., Schaefer, L.A. (2015). "Calibration and Modeling for a Dashboard that Provides Real-Time Feedback on Energy Saving Strategies." Proceedings of Building Simulation Conference 2015, December 12-15, 2015, Hyderabad, India.
42. Campion, N.A., Mokashi, M., Wylie, A., Bilec, M.M. (2015). "Integrating Environmental and Cost Assessments for Data Driven Decision-Making: A Roof Retrofit Case Study." Proceedings of the International Symposium on Sustainable Systems and Technology, v. 3, May 18-20, 2015, Dearborn, Michigan.
41. Al-Ghamdi, S., Bilec, M.M. (2015). "Whole-Building LCA and Green Building Rating Systems: Exploratory Review of the Available Tools." Proceedings of the International Symposium on Sustainable Systems and Technology, v. 3, May 18-20, 2015, Dearborn, Michigan.

41. Antaya-Dancz, C., Ketchman, K.J., Burke, R., Bilec, M.M., Adams, E.A., Allenby, B., Chester, M., Khanna, V., Parrish, K., Seager, T.S., Landis, A.E. (2015). "Integrating Sustainability Grand Challenges and Experiential Learning into Engineering Curricula: Years 1 and 2." American Society for Engineering Education, June 14-17, 2015 Seattle, WA.
39. Antaya-Dancz C., Ketchman, K.J., Bilec, M.M., Landis, A.E. (2015). "Redesign of a Sustainability Experiential Learning Module for Transferability and Portability." Proceedings of American Society of Engineering Educators, June 14-17, 2015, Seattle, Washington.
38. H. Xu, M. M. Bilec, W. O. Collinge, L. A. Schaefer, A. E. Landis, and A. K. Jones, Improving Efficiency of Wireless Sensor Networks Through Lightweight In-Memory Compression, International Conference on Dependable Systems and Networks (IGSC), 2015.  
DOI: 10.1109/IGCC.2015.7393696
37. Xu, H., Bilec, M. M., Collinge, W.O., Schaefer, L.A., Landis, A.E., and Jones, A.K. (2015) "Lynx: A Self-Organizing Wireless Sensor Network with Commodity Palmtop Computers." Proceedings of ACM/IEEE System Level Interconnect Prediction 2015, June 7-11, 2015, San Francisco, California.
36. Collinge, W.O., Thiel, C.L., Al-Ghamdi, S.G., Woloschin, C.L., Soratana, K., Landis, A.E., Bilec, M.M. (2015). "Integrating life cycle assessment with green building and product rating systems: North American perspective." Procedia Engineering from International Conference on Sustainable Design, Engineering and Construction. May 10-13, 2015, Chicago, Illinois. 10.1016/j.proeng.2015.08.500
35. Al-Ghamdi, S. and Bilec, M.M. (2014). "Green Building Rating Systems and Environmental Impacts of Energy Consumption from an International Perspective." Proceedings of the 2014 International Conference on Sustainable Infrastructure, Committee on Sustainability of the American Society of Civil Engineers, November 6-8, 2014, Long Beach, California, pp. 631-640. doi: 10.1061/9780784478745.058
34. Hottle, T.A., Bilec, M.M., Meeks, D.L., Landis, A.E. (2014). "Biopolymer Wastes: Assessing the Shift to Compost-based Waste Management." American Center for Life Cycle Assessment, Proceedings of LCA XIV, October 6-8, 2014, San Francisco, California.
33. Marks, J., Ketchman, K.J., Riley, D.R., Brown, L.R., Bilec, M.M. (2014). "Understanding the Benefits of the Flipped Classroom in the Context of Sustainable Engineering." Proceedings of American Society of Engineering Educators, June 15-18, 2014, Indianapolis, Indiana.
32. Antaya, C.L., Parrish, K., Bilec, M.M., Landis, A.E. (2014). "Assessing Comprehension with Student-Developed Construction Games." Proceedings of American Society of Engineering Educators, June 15-18, 2014, Indianapolis, Indiana.
31. Bilec, M.M., Mosse, D., Smith, M.S., Cartier, J.L. (2014). "University of Pittsburgh Developing Highly Qualified Middle Grades Teachers with Expertise in STEM Disciplines via SUSTAINS." Proceedings of American Society of Engineering Educators, June 15-18, 2014, Indianapolis, Indiana.
30. Collinge, W.O., Thiel, C.L., Campion, N., Landis, A.E., Bilec, M.M. (2014). "Evaluation of a Living Building using Dynamic LCA." Proceedings of International Symposium on Sustainable Systems and Technology, May 18-21, 2014, Oakland, California.



29. DeBlois, J.C., Collinge, W.O., Bilec, M.M., Jones, A.K., and Schaefer, L.A., (2014) "Modeling a Multi-Purpose Public Building with Stochastic Gains and Occupancy Schedules," *ASHRAE Winter Meeting*, January 18-14, 2014, New York, NY, 12093.
28. Jones, A.K., Chen, Y., Collinge, W.O., Xu, H., Schaefer, L.A., Landis, A.E., Bilec, M.M. (2013) "Considering Fabrication in Sustainable Computing." *Proceedings of the International Conference on Computer Aided Design (ICCAD)*, pp. 206-210, November 18-21, 2013, San Jose, California.
27. Xu, H., Bilec, M.M., Schaefer, L.A., Landis, A.E., Jones, A.K. (2013). "Ocelot: A Wireless Sensor Network and Computing Engine with Commodity Palmtop Computers." *Conference Proceedings, Green Computing Conference (IGCC)*, June 27-29, 2013, Arlington, Virginia. [doi: 10.1109/IGCC.2013.6604482](https://doi.org/10.1109/IGCC.2013.6604482)
26. Saunders, C., Landis, A.E., Schaefer, L.A., Jones, A.K., Bilec, M.M. (2013). "Understanding Energy Models Results in the Context of a Building's Lifetime: Focus on a High Performance Building." *Conference Proceedings, International Symposium on Sustainable Systems and Technology*, May 15-17, 2013, Cincinnati, Ohio.
25. Landis, A.E., Shrake, S.O., Bilec, M.M. (2012). "Life Cycle Assessment to Assess and Improve small service business operations." *American Center for Life Cycle Assessment, Proceedings of LCA XII*, September 27-29, 2012, Tacoma, Washington.
24. Thiel, C., Bilec, M.M, Needy, K.L. (2012). "Impacts of Green Design on Hospital Performance in the United States." *Proceedings of Smart and Sustainable Built Environments: Emerging economies*. June 27-29, 2012, Sao Paulo, Brazil.
23. Collinge, W.O., DeBlois, J., Sweriduk, M., Landis, A.E., Jones, A.K., Schaefer, L.A., Bilec, M.M. (2012). "Measuring Whole-Building Performance with Dynamic Life-Cycle Assessment: A Case Study of a Green University Building." *International Symposium on LCA and Construction*. July 10-12, 2012, Nantes, France.
22. Collinge, W.O., Landis, A.E., Jones, A.K., Schaefer, L.A., Bilec, M.M. (2012). "Integrating Indoor Environmental Quality Metrics in a Dynamic Life Cycle Assessment Framework For Buildings." *2012 IEEE International Symposium on Sustainable Systems and Technology*. May 16-18, 2012, Boston, Massachusetts.
21. Thiel, C.L., Campion, N., DeBlois, J., Woods, N.C., Landis, A.E., Bilec, M.M. (2012). "Life Cycle Assessment of Medical Procedures: Vaginal and Cesarean Section Births." *2012 IEEE International Symposium on Sustainable Systems and Technology*. May 16-18, 2012, Boston, Massachusetts.
20. Saunders, C.L., Landis, A.E. Jones, A.K., Schaefer, L.A., Bilec, M.M. (2012). "Utilizing Measured Energy Usage to Analyze Design Phase Energy Models." *Proceedings of 2012 IEEE International Symposium on Sustainable Systems and Technology*. May 16-18, 2012, Boston, Massachusetts.
19. Collinge, W.O., Bilec, M.M., Landis, A.E., Jones, A.K., Schaefer, L.A. (2011). "Scenario Modeling for Dynamic Life Cycle Assessment of Commercial and Institutional Building." *American Center for Life Cycle Assessment, Proceedings of LCA XI*, October 4-6, 2011, Chicago, Illinois.
18. Shrake, S.O., Landis, A.E., Bilec, M.M. Gomes Da Silva, M. (2011). "The Development and Implementation of Life Cycle Assessment courses in Brazilian Universities." *American*

Center for Life Cycle Assessment, Proceedings of LCA XI, October 4 -6, 2011, Chicago, Illinois.

17. Thiel, C., Shake, S.O., Campion, N., Bilec, M.M., Landis, A.E., Woods, N. (2011). "Applications of Life Cycle Assessment: Sustainable Healthcare." American Center for Life Cycle Assessment, Proceedings of LCA XI, October 4 -6, 2011, Chicago, Illinois.
16. Stamatakis, N., Osterwood, K., Bilec, M.M., Landis, A.E. (2011). "Consumers and Composting: Assessing Willingness to Pay for Composting in a Commercial Setting using Contingent Valuation." American Center for Life Cycle Assessment, Proceedings of LCA XI, October 4 - 6, 2011, Chicago, Illinois.
15. Bilec, M.M., Hendrickson, C., Landis, A.E., Matthews, H.S. (2011). "Updating the Benchmark Sustainable Engineering Education Report – Trends from 2005 to 2010." Proceedings of 118<sup>th</sup> American Society for Engineering Education Annual Conference and Exposition, June 26 - 29, 2011, Vancouver, BC, Canada.
14. Landis, A.E., Bilec, M.M., Klotz, L., Pearce, A.R. (2011). "Lessons learned from a Distance Learning Research Methods Course co-taught by Clemson, University of Pittsburgh, and Virginia Tech. Proceedings of 118<sup>th</sup> American Society for Engineering Education Annual Conference and Exposition, June 26 - 29, 2011, Vancouver, BC, Canada.
13. Shrake, S., Landis, A.E., Bilec, M.M., (2011). "Greening the Service Industries: A Case Study of the United States Engineering Consulting Firm." Proceedings of the 2011 IEEE International Symposium on Sustainable Systems and Technology. May 16-18, 2011, Chicago, Illinois. *Received 2<sup>nd</sup> place award for best student conference paper.*
12. Collinge, W.O., Liao, L., Xu, H., Saunders, C.L., Bilec, M.M., Landis, A.E., Jones, A.K., Schaefer, L.A. (2011). "Enabling Dynamic Life Cycle Assessment of Buildings with Wireless Sensor Networks" Proceedings of the 2011 IEEE International Symposium on Sustainable Systems and Technology. May 16-18, 2011, Chicago, Illinois.
11. Landis, A.E., Bilec, M.M., Rajagopalan, N.R. (2009). "Life Cycle Assessment for Evaluating Green Products and Materials." US-Japan Workshop on Life Cycle Assessment of Sustainable Infrastructure Materials, October 21-22, 2009, Sapporo, Japan.
10. Torick, D., Bilec, M.M., Marriott, J., and Landis, A.E. (2009). "Development and Outcomes of a Design for the Environment Course." Proceedings of the 116<sup>th</sup> American Society for Engineering Education Annual Conference and Exposition. June 16, 2009, Austin, Texas.
9. Rajagopalan, N., Landis, A.E., Bilec, M.M. (2009). "Environmental Impacts of Insulating Concrete Forms." Proceedings of the 2009 IEEE International Symposium on Sustainable Systems and Technology. June 2009, Phoenix, Arizona.
8. Landis, A.E. and Bilec, M.M. (2008). "Analysis, Heuristics, and Uncertainty of Hybrid Life Cycle Assessment: Agriculture and Construction Case Studies." First International Symposium on Life-Cycle Engineering, June 11-14, 2008, Lake Como, Italy.
7. Needy, K., Gokham, N.M., Bilec, M.M., Ries, R., Horman, M., Phelps, A., Pommer, E.E. (2008). "The Use of Process Mapping to Compare Green Children's Hospital Designs." Industrial Engineering Research Conference Proceedings, May 2008, Vancouver, B.C.

6. Bilec, M.M. and Ries, R. (2007). "Preliminary Study of Green Design and Project Delivery Methods in the Public Sector." 2007 ASCE Construction Research Congress Proceedings, May 6-8, 2007, Grand Bahamas Island.
5. Ries, R., Bilec M.M., Needy, K. L., and Gokhan, N. M. (2007). "Green Building Construction: Cost/Benefit Analysis of a Precast Concrete Manufacturing Plant." 2007 ASCE Construction Research Congress Proceedings, May 6-8, 2007, Grand Bahamas Island – *Received Best Paper Award*
4. Sharrard, A.L., Nikithser, A., Matthews, H.S., Bilec, M.M. (2007). "The Challenge of Correlating Local Air Monitor Data with Construction Site Activity: A Pittsburgh Case Study." 2007 ASCE Construction Research Congress Proceedings, May 6-8, 2007, Grand Bahamas Island.
3. Needy, K. L., Gokhan, N. M., Ries, R., and Bilec M.M. (2007). "Green Building Metrics: Research Methodology, Results, and Future Directions." Industrial Engineering Research Conference Proceedings. May 19-23, 2007, Nashville, Tennessee.
2. Needy, K.L., Ries, R., Gokhan, N.M., Bilec, M.M., Rettura, B. (2005). "A Research Protocol for Analyzing the Benefits of Green Building Construction." Industrial Engineering Research Congress Proceedings, May, 2005, Atlanta, Georgia.
1. Needy, K.L., Ries, R., Gokhan, N.M., Bilec, M.M., and Rettura, B. (2004). "Creating a Framework to Examine Benefits of Green Building Construction." Proceedings of American Society for Engineering Management, 25<sup>th</sup> National Conference, October 20-23, 2004, Alexandria, Virginia.

## INVITED PRESENTATIONS

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- Bilec, M.M. (2017). "The Pittsburgh 2030 District IEQ Pilot Measure." Invited presentation, Green Building Alliance, Evolving Workplace: Designing and Operation Office Building for Health and Productivity. May 2, 2017, Pittsburgh, Pennsylvania.
- Bilec, M.M. (2017). "Are We Using Buildings to Inspire and Motivate Health and Sustainability?" Invited Seminar, Clemson University, February 17, 2017, Clemson, South Carolina.
- Bilec, M.M. (2016). "IAQ and Green Building Alliance (GBA)/Pittsburgh 2030 District." Webinar presentation to the Federal Interagency Committee on Indoor Air. June 8, 2016. U.S. Environmental Protection Agency, Washington, D.C.
- Bilec, M.M. (2016). "Are We Using Buildings to Inspire and Motivate Health and Sustainability?" Keynote Presentation, International Conference on Sustainable Design, Engineering, and Construction, May 18-20, 2016, Tempe, Arizona.
- Bilec, M.M. (2016). "Occupant Behavior, Citizen Science, and ROCIS." Invited Presentation, Reducing Outdoor Contaminants in Indoor Spaces Stakeholder Meeting. February 26, 2016, Pittsburgh, Pennsylvania.
- Bilec, M.M. and Thiel, C.L. (2016). "Efficiency and Material Optimization Research for UPMC Surgeons." Surgical Team Workgroup Greening Meeting. January 19, 2016, Pittsburgh, Pennsylvania.

- Bilec, M.M. (2015). "What is Happening with Indoor Air Quality?" Invited Presentation, Pittsburgh 2030 District Partner Meeting in Oakland, December 15, 2015, Pittsburgh, Pennsylvania.
- Bilec, M.M. (2015). "What is Happening with Indoor Air Quality?" Invited Presentation, Pittsburgh 2030 District Partner Meeting Downtown, November 9, 2015, Pittsburgh, Pennsylvania.
- Bilec, M.M. (2015). "Dynamic Life Cycle Assessment, Indoor Air Quality, and 2030 Districts." NSF Research Coordination Network-SEES: Predictive Modeling Network for Sustainable Invited Presentation, Human-Building Ecosystems Workshop, October 6 to 7, 2015, Pittsburgh, Pennsylvania.
- Bilec, M.M. and Collinge, W.O. (2015). "2030 District and Indoor Air Quality?" Green Workplace Challenge, Air Quality, August 27, 2015, Pittsburgh, Pennsylvania.
- Bilec, M.M. (2015). "Sustainable Healthcare?" Bioengineering Day, April 16, 2015, Pittsburgh, Pennsylvania.
- Bilec, M.M. (2015). "2030 District and Indoor Air Quality?" Innovation and Performance Speakers Series, Inaugural, Indoor Air Quality, April 8, 2015, Pittsburgh, Pennsylvania.
- Bilec, M.M. (2014). "Indoor Air Quality and 2030 District." Creating Healthy Places: Protecting Indoor Spaces from Outdoor Pollution, Reducing Outdoor Contaminants in Indoor Spaces (ROCIS) Forum. December 3-4, 2014, Pittsburgh, Pennsylvania.
- Bilec, M.M. (2014). Invitation from National Academy of Engineers to present at Frontiers of Engineering Education Symposium, *Writing Successful NSF Proposals*. October 29, 2014, Irvine, California.
- Bilec, M.M. (2014). "Sustainable Healthcare – A Paradox or a Possibility?" Swanson School of Engineering, Board of Visitors, October, 18, 2014, Pittsburgh, Pennsylvania.
- Bilec, M.M. (2014). "Sustainable Healthcare – A Paradox or a Possibility?" Science 2014, Sustain It! October 1-3, 2014, Pittsburgh, Pennsylvania.
- Bilec, M.M. (2014). "Incorporating Big Data into Life Cycle Assessment of Buildings and Green Building Rating Systems." North America-East Asia Workshop on Big Data Analytics for Infrastructure and Building Sustainability and Resilience, September 19-22, 2014, Beijing, China.
- Bilec, M.M. (2013). "Waste – Focus on Greening the Operating Room, an 'Affordability' Hotspot." Kaiser Permanente 3<sup>rd</sup> Environmental Summit, October 4, 2013, Oakland, California.
- Bilec, M.M. (2013). "Improving Environmental Performance of the Operating Room." Greening the OR workshop, July 30, 2013, Magee Women's Hospital, Pittsburgh, PA.
- Bilec, M.M. (2013). "Editor's Roundtable Panel Discussion." International Symposium on Sustainable Systems and Technology, May 15-17, 2013, Cincinnati, Ohio.
- Bilec, M.M. (2013). "Life Cycle Thinking and the Built Environment." Invited speaker at University of Massachusetts – Amherst, Environmental Conservation Symposium, April 12, 2013, Amherst, Massachusetts.
- Landis, A.E. and Bilec, M.M. (2012). "Life Cycle Thinking in Healthcare and Supply Chain." Invited speaker at Mayo's Sustainability Symposium. Arizona State University, November, 8, 2012, Tempe, Arizona.

- Bilec, M.M. and Landis, A.E. (2012). "Going Green: Life Cycle Thinking in Healthcare." Invited speaker at Sustainability Grand Rounds. University of Washington, Harborview Medical Center, Environmental Sustainability Steering Committee, September 24, 2012, Seattle, Washington.
- Bilec, M.M. (2012). "Life Cycle Assessment of Street Lighting." Invited speaker at Pennsylvania Society of Professional Engineers." September 13, 2012, Cranberry Pennsylvania.
- Bilec, M.M. and Copley, N.C. (2012). "Life Cycle Analysis of Delivering an Infant in the US." Invited seminar at CleanMed. May 3, 2012. Denver, Colorado.
- Bilec, M.M. (2012). "From Buildings to Healthcare – Understanding and Improving the Complex Systems Using Environmental Life Cycle Assessment." Invited seminar at Arizona State University, March 6, 2012, Tempe, Arizona.
- Bilec, M.M. (2012). "Sustainable Healthcare?" Invited seminar for Green Design Institute at Carnegie Mellon University. February 28, 2012, Pittsburgh, Pennsylvania.
- Bilec, M.M. (2012). "Green Buildings: Investment and Payback." Invited Panel Session. Building Sustainable Neighborhoods: Powering Sustainable Development in Allegheny County. February 13, 2012, Pittsburgh, Pennsylvania.
- Bilec, M.M. (2011). "A Life-Cycle Approach to Environmental Impacts of Marcellus Shale Gas." Wesley Eckenfelder Foundation Lecture Series on Mitigating Environmental Effects from Marcellus Shale Gas Drilling Operations. November 7, 2011, Pittsburgh, Pennsylvania.
- Bilec, M.M. (2011). "Our Sustainable Future – Life Cycle Thinking and Quantification." Invited seminar at Chatham University, May 12, 2011, Pittsburgh, Pennsylvania.
- Bilec, M. (2010). "Sustainability: Systems, Buildings, and Materials." American Concrete Institute National Convention. October, 25, 2010. Pittsburgh, Pennsylvania.
- Bilec, M., Aktas, C. (2010). "Case Study: University of Pittsburgh's Inventory and Action Plan." Higher Education Climate Consortium, July 21, 2010. Pittsburgh, Pennsylvania.
- Bilec, M., Landis, A.E., Matthews, H.S., Hendrickson, C.T. (2010) "Sustainability in Education and Research." National Civil Engineering Department Heads Conference, May 26-27, 2010, Pittsburgh, Pennsylvania.
- Bilec, M. (2010). "University of Pittsburgh's Greenhouse Gas Inventory." Urban Campuses: Leadership for Energy and Sustainability, Presentation and Panel Discussion, Duquesne University, May 12, 2010, Pittsburgh, Pennsylvania.
- Bilec, M.M. (2008). "Beyond Bricks and Mortar – Using Life Cycle Assessment." Green Buildings and Landscape Symposium- Sustainability-Centered Operations, Presentation, Phipps Conservatory and Botanical Gardens, November 6-7, 2008, Pittsburgh, Pennsylvania.
- Bilec, M. and Cook, R. (2007). "Hot Metal Bridge Tour." International Bridge Conference, June 2007, Pittsburgh, Pennsylvania.
- Bilec, M. (2006). "A Tale of Two Tunnels and One Bridge – The Hot Metal Pedestrian Bridge." Presentation, Western Pennsylvania Trail Symposium, October 2006, Cranberry, Pennsylvania.

## **ADDITIONAL PUBLICATIONS, REPORTS, AND PRESS**

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- Bilec, M.M. (2016). Developed P4 Air Measure for P4 Performance Measure Document.  
<http://p4pittsburgh.org/pages/p4-performance-measures>

- Bilec, M.M. and Hasik, V. (2016). "Greenhouse Gas Inventory of the University of Pittsburgh, 2015." Completed 2016.
- Pittsburgh Engineer, Quarterly Publication of the Engineers' Society of Western Pennsylvania, Women in Engineering Issue, Spring 2015. *A Sustainable Future in Engineering*. Press.
- Bilec, M.M. and Ketchman, K.J. (2013). "Greenhouse Gas Inventory of the University of Pittsburgh, 2013." Completed 2013.
- Shrake, S., Thiel, C., Landis, A., Bilec, M.M. (2012). "Life Cycle Assessment as a Tool for Improving Service Industry Sustainability." *IEEE, Potentials*. 30:1, 10-15.
- Aktas, C.B., Bilec, M.M. (2010). "Greenhouse Gas Inventory of the University of Pittsburgh, 2012." Completed June 2, 2010.
- Bilec, M.M., Marriott, J., Padilla, M.F., Snyder, M. (2010). Market Analysis of Construction Materials with Recommendations for the Future of the Industry. FHWA Report No.: FHWA-PA-2010-004-PIT016. Prepared for Pennsylvania Department of Transportation. pp. 134.
- Landis, A.E., Bilec, M.M. Shrake, S.O., Collinge, W., Xiaobo, X. (2010). Biodiesel Fuel Feasibility Study. FHWA Report No.: FHWA-PA-2010-008-PIT017. pp. 246.
- Marriott, J.M., Bilec, M., Harries, K.A., Aktas, C.B. (2009). "Pultruded Green Composites." Completed December 2009, presented to the Green Building Alliance and Bedford Reinforced Plastics.
- Sharrard, A., Bilec, M.M., Ries, R.J. (2005). "Editorial: Green Building Rating Systems and LCA." *Journal of Contemporary Wood Engineering*, 15(3), 11-13.

## PRESENTATIONS AND POSTERS

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- Hasik, V., Chhabra, J. P. S., Warn, G. P., Bilec, M.M. (2017). "Considering Energy, Water, and Structural Resilience of Buildings in a Life Cycle Assessment Framework." Presentation, 2017 Joint Conference International Society for Industrial Ecology and International Symposium on Sustainable Systems and Technologies Conference, June 25-29, 2017, Chicago, Illinois.
- Rickenbacker, H.J., Collinge, W.O., Hasik, V., Bilec, M.M. (2017). "A Comparative Analysis of Conventional Buildings and Green Buildings: Energy Conservation Strategies and their Impact on Indoor and Ambient Air Quality." Presentation, 2017 Joint Conference International Society for Industrial Ecology and International Symposium on Sustainable Systems and Technologies Conference, June 25-29, 2017, Chicago, Illinois.
- Ketchman, K.J., Khanna, V., Bilec, M.M. (2017). "Small Commercial's Big Problem: Disaggregating whole building energy bills." Poster, 2017 Joint Conference International Society for Industrial Ecology and International Symposium on Sustainable Systems and Technologies Conference, June 25-29, 2017, Chicago, Illinois.
- Hasik, V., Chhabra, J. P. S., Warn, G. P., Bilec, M.M. (2017). "Investigation of the Sustainability and Resilience Characteristics of Buildings Including Existing and Potential Assessment



- Metrics." Architectural Engineering Institute Conference, April 11-13, 2017, Oklahoma City, Oklahoma
- Rickenbacker, H.J., Brown, F., Bilec, M.M. (2017). "Creating Environmental Consciousness in an At-Risk Community through Civic Engagement Strategies and Resident-Inclusive Mobile Air Quality Monitoring." Presentation, Engineering Sustainability 2017, April 9-11, 2017, Pittsburgh, Pennsylvania.
- Collinge, W.O., Landis, A.E., Bilec, M.M. (2017). "Comparison of two "green" buildings using real-time data in a dynamic LCA framework." Poster, Engineering Sustainability 2017, April 9-11, 2017, Pittsburgh, Pennsylvania.
- Bilec, M.M. Rickenbacker, H.J., Collinge, W.O., Hasik, V., Olinzock, M. (2017). "Indoor Air Quality Monitoring and Multiple Pittsburgh Buildings." Presentation, Engineering Sustainability 2017, April 9-11, 2017, Pittsburgh, Pennsylvania.
- Ketchman, K.J., Bilec, M.M. (2017). "Disaggregating Small Commercial End-Use Energy Using a Novel Bottom-Up Approach." Presentation, Engineering Sustainability 2017, April 9-11, 2017, Pittsburgh, Pennsylvania.
- Hasik, V., Chhabra, J.P.S., Warn, G.P., Bilec, M.M. (2017). "Models, Methods, and Metrics for Design of Sustainable and Resilient Buildings." Poster, Engineering Sustainability 2017, April 9-11, 2017, Pittsburgh, Pennsylvania.
- Rickenbacker, H.J., Collinge, W.O., Hasik, V., Bilec, M.M. (2016). "Indoor Air Quality Assessments of Diverse Buildings in an Energy Conservation District from a Life Cycle Assessment Lens." November 15-17, 2016, Stanford, California
- Hasik, V., Chhabra, J.P.S., Warn, G.P., Bilec, M.M. (2016). "Sustainable and Resilient Buildings: Exploring Missing Phases in Whole Building Life Cycle Assessment." Poster, American Center for Life Cycle Assessment LCA XVI, September 27-29, 2016, Charleston, South Carolina.
- Hasik, V., Anderson, N.E., Collinge, W.O., Thiel, C.L., Khanna, V., Wirick, J., Piacentini, R., Landis, A.E., Bilec, M.M. (2016). "Comparative life cycle assessment of decentralized and centralized water systems on a building level." Presentation, American Center for Life Cycle Assessment LCA XVI, September 27-29, 2016, Charleston, South Carolina.
- Thiel, C.L., Tighe, J., Baratz, M., Bilec, M.M. (2016). "Medicine and the Environment: Using Environmental Life Cycle Assessment to Inform Changes in Surgical Practices." Presentation, American Center for Life Cycle Assessment LCA XVI, September 27-29, 2016, Charleston, South Carolina.
- Rickenbacker, H., Collinge, W.O., Hasik, V., Bilec, M.M. (2016). "Indoor Air Quality Assessments of Diverse Buildings in an Energy Conservation District." Poster, American Center for Life Cycle Assessment LCA XVI, September 27-29, 2016, Charleston, South Carolina.
- Antaya-Dancz, C.L., Ketchman, K.J., Burke, R.A., Mahmud, R., Bilec, M.M., Adams, E.A., Parrish, K., Allenby, B., Khanna, V., Landis, A.E. (2016). "Integrating Sustainability Grand Challenges and Experiential Learning into Engineering Curricula: Years 1 through 3." Poster, American Society for Engineering Education, June 26-29, 2016 New Orleans, LA.

- Ketchman, K.J., Riley, D., Khanna, V., Bilec, M.M. (2016). "Evaluation of Holistic Energy Assessment Program." Presentation, International Conference on Sustainable Design, Engineering, and Construction, May 18-20, 2016, Tempe, Arizona.
- Rickenbacker, H., Collinge, W.O., Hasik, V., Bilec, M.M. (2016). "Indoor Air Quality testing of Diverse Buildings in an Energy Conservation District." Presentation, International Conference on Sustainable Design, Engineering, and Construction, May 18-20, 2016, Tempe, Arizona.
- Yang, X., Magalotti, M., Bilec, M.M. (2016). "A Service Life Analysis of Roundabouts Retrofits." Presentation, International Conference on Sustainable Design, Engineering, and Construction, May 18-20, 2016, Tempe, Arizona.
- Hasik, V., Chabra, J.P., Warn, G.P., Bilec, M.M. (2016). "Assessing the Life-Cycle Environmental Performance of Building Designs Accounting for Natural Hazards." Presentation, International Conference on Sustainable Design, Engineering, and Construction, May 18-20, 2016, Tempe, Arizona.
- Bilec, M.M., Landis, A.E., Parrish, K.P., Antaya-Dancz, C.L., Ketchman, K.J., Burke, R. D. (2016) "Assessment of Sustainability Grand Challenges in Engineering Curricula." Poster, Envisioning the Future of Undergraduate STEM Education: Research and Practice Symposium, April 27-29, 2016, Washington, D.C.
- Ketchman, K.J., Khanna, V., Riley, D., Bilec, M.M. (2016). "Improving the Energy Audit: Findings of the NELC Holistic Approach on Real Homes' Energy Consumption." Residential Building Design and Construction Conference. March 3, 2016, Penn State, Pennsylvania.
- Dancz, C.L.A., Ketchman, K.J., Bilec, M.M., Adams, E., Allenby, B., Chester, M., Khanna, V., Parrish, K., Seager, T., Landis, A.E. (2016). "Integrating Sustainability into Engineering and Construction Curricula through Modular and Course-based Methods" On Sustainability Conference, Portland, OR, January 21-23, 2016.
- DeBlois, J., Collinge, W.O., Bilec, M.M., Schaefer, L.A. (2015). "Calibration and Modeling for a Dashboard that Provides Real-Time Feedback on Energy Saving Strategies." Presentation, Building Simulation Conference 2015, December 12-15, 2015, Hyderabad, India.
- Collinge, W.O., Anderson, N.E., Thiel, C.L., Hasik, V., Landis, A.E., Bilec, M.M. (2015). "Dynamic LCA of a Zero Energy and Water Building and Implications at the Community Scale." International Society of Industrial Ecology 2015, July 7- 10, 2015, Surrey, Guilford, United Kingdom.
- Antayta, C., Ketchman, K.J., Bilec, M.M., Landis, A.E. (2015). "Redesign of a Sustainability Experiential Learning Module for Transferability and Portability." Presentation, American Society of Engineering Educators, June 14-17, 2015, Seattle, Washington.
- Antaya, C.L., Bilec, M.M., Adams, E.A., Chester, M., Parrish, K., Seager, T.P., Landis, A.E. (2015). "Integrating Sustainability Grand Challenges and Experiential Learning into Engineering Curricula: Years 1 and 2." Poster, American Society of Engineering Educators, June 14-17, 2015, Seattle, Washington.
- Campion, N.A., Mokashi, M., Wylie, A., Bilec, M.M. (2015). "Integrating Environmental and Cost Assessments for Data Driven Decision-Making: A Roof Retrofit Case Study."

- Presentation, International Symposium on Sustainable Systems and Technology, May 18-20, 2015, Dearborn, Michigan.
- Al-Ghamdi, S. and Bilec, M.M. (2015). "Whole-Building LCA and Green Building Rating Systems: Exploratory Review of the Available Tools." Presentation, International Symposium on Sustainable Systems and Technology, May 18-20, 2015, Dearborn, Michigan.
- Collinge, W.O., Thiel, C.L., Campion, N.A., Al-Ghamdi, S.G., Woloschin, C.L., Soratana, K., Landis, A.E., Bilec, M.M. (2015). "Integrating life cycle assessment with green building and product rating systems: North American perspective." Presentation, International Conference on Sustainable Design, Engineering and Construction, May 10-13, 2015, Chicago, Illinois.
- Bilec, M.M., Collinge, W.O. (2015). "Indoor air quality impacts in a regional energy conservation district: Life cycle model and baseline data collection." Presentation, International Conference on Sustainable Design, Engineering and Construction, May 10-13, 2015, Chicago, Illinois.
- Bilec, M.M., Collinge, W.O. (2015). "Indoor air quality impacts in a regional energy conservation district: Life cycle model and baseline data collection." Platform Presentation, Society of Environmental Toxicology and Chemistry Europe, May 3-7, 2015, Barcelona, Spain.
- Whiston, M., Collinge, W.O., Bilec, M.M., Schaefer, L.A. (2015). "Carbon Dioxide Emissions and Primary Energy Consumption from Operation of a Solid Oxide Fuel Cell Microturbine Systems." Presentation, Engineering Sustainability 2015, April 19-21, 2015, Pittsburgh, Pennsylvania.
- Ketchman, K.J., Bilec, M.M. (2015). "Energy Improvements and Small Commercial Buildings: The Overlooked Opportunity." Presentation, Engineering Sustainability 2015, April 19-21, 2015, Pittsburgh, Pennsylvania.
- Thiel, C.L., Eckelman, M., Landis, A.E., Sherman, J., Woods, N., Bilec, M.M. (2015). "Life Cycle Assessment in Hospital Operating Rooms: Environmental Impacts from Four Types of Hysterectomy." Poster, Engineering Sustainability 2015, April 19-21, 2015, Pittsburgh, Pennsylvania.
- Wu, F., Riley, D., Ketchman, K.J., Bilec, M.M. (2015). "Student Centered Home Energy Engagement Curriculum: the National Energy Leadership Corps (NELC)." Presentation, Engineering Sustainability 2015, April 19-21, 2015, Pittsburgh, Pennsylvania.
- Campion, N., Focareta, J., Thiel, C.L., Bilec, M.M. (2015). "An Evidence-Based Design Analysis: Understanding the Benefits of Green Design on a Women's Oncology Unit." Poster, Engineering Sustainability 2015, April 19-21, 2015, Pittsburgh, Pennsylvania.
- Bilec, M.M., Lam, K.P. (2015). "BUILD: Barriers, Understanding, Integration - Life-cycle Development Update." EFRI-SEED Workshop, April 10, 2015.
- Al-Ghamdi, S. and Bilec, M. (2014). "Green Building Rating Systems and Environmental Impacts of Energy Consumption from an International Perspective." Poster, 2014 International Conference on Sustainable Infrastructure, November 6-8, 2014, Long Beach, California.

- Hottle, T.A., Bilec, M.M., Meeks, D.L., Landis, A.E. (2014). "Biopolymer Wastes: Assessing the Shift to Compost-based Waste Management." Presentation, LCA XIV, October 6-9, 2014, San Francisco, California.
- Thiel, C.L., Campion, N., Eckelman, M.E., Landis, A.E., Sherman, J., Woods, N.C., Bilec, M.M. (2014). "Integrating Environmentally Preferred Solutions into the Healthcare Industry: A Closer Look at Supply Chain and Anesthetic Gases." Presentation, LCA XIV, October 6-9, 2014, San Francisco, California.
- Marks, J., Ketchman, K.J., Riley, D.R., Brown, L.R., Bilec, M.M. (2014). "Understanding the Benefits of the Flipped Classroom in the Context of Sustainable Engineering." Presentation, American Society of Engineering Educators, June 15-18, 2014, Indianapolis, Indiana.
- Antaya, C.L., Bilec, M.M., Adams, E.A., Chester, M., Parrish, K., Seager, T.P., Landis, A.E. (2014). "Integrating Sustainability Grand Challenges and Experiential Learning into Engineering Curricula: A TUES2 Collaborative Research Project." Poster, American Society of Engineering Educators, June 15-18, 2014, Indianapolis, Indiana.
- Bilec, M.M., Mosse, D., Smith, M.S., Cartier, J.L. (2014). "University of Pittsburgh Developing Highly Qualified Middle Grades Teachers With Expertise in STEM Disciplines via SUSTAINS." Poster, American Society of Engineering Educators, June 15-18, 2014, Indianapolis, Indiana.
- Al-Ghamdi, S., and Bilec, M.M. (2014). "Environmental & Economic Impacts of On-site Renewable Energy for Buildings." Presentation, International Symposium on Sustainable Systems and Technology, May 18-21, 2014, Oakland, California.
- Collinge, W.O., Thiel, C.L., Campion, N., Landis, A.E., Bilec, M.M. (2014). "Evaluation of Living Building Challenge Using Dynamic LCA." Presentation, International Symposium on Sustainable Systems and Technology, May 18-21, 2014, Oakland, California.
- Antaya, C., Bilec, M.M., Adams, E., Landis, A.E. (2014). "Impact on Learning Outcomes Case Study: Introduction to Engineering course exposed to an Active and Experiential Sustainability Learning Module versus Introduction to Engineering Control Group." Presentation, International Symposium on Sustainable Systems and Technology, May 18-21, 2014, Oakland, California.
- Campion, N., Copley-Woods, N., Landis, A.E., Swanzy, L., Thiel, C.L., Landis, Bilec, M.M. (2014). "The Life Cycle Environmental Impacts of Disposable Custom Packs." Poster, International Symposium on Sustainable Systems and Technology, May 18-21, 2014, Oakland, California.
- DeBlois, J.C., Collinge, W.O., Bilec, M.M., Jones, A.K., Schaefer, L.A. (2014). "Stochastic gains and occupancy studies for modeling a multi-purpose public building. Presentation, ASHRAE Winter Conference, January 18-22, 2014, New York, NY.
- Olinzock, M.O., Saunders, C.L., Landis, A.E., Schaefer, L.A., Jones, A.K., Bilec, M.M. (2013). "Understanding the Perception and Use of Whole Building Life Cycle Assessments." Presentation, LCA XIII, September 30-October 3, 2013, Orlando, Florida.
- Shen, T., Khanna, V., Landis, A.E., Bilec, M.M. (2013). "Comparison of Life Cycle Impact Assessment Methods: MDI as an Example." Poster, LCA XIII, September 30-October 3, 2013, Orlando, Florida.

- Thiel, C., Shrake, S., Woods, N., Landis, A., Bilec, M.M. (2013). "Analyzing surgical techniques using LCA to inform environmentally sustainable changes in hospital operating rooms." International Congress on Sustainability Science and Engineering (ICOSSE), August 11-15, 2013, Cincinnati, Ohio,
- Dale, A.T., Bilec, M.M. (2013). "A Model for Assessing Regional Life-Cycle Environmental Impacts of Future Energy and Water Supply Scenarios." Presentation, International Symposium on Sustainable Systems and Technology, May 15-17, 2013, Cincinnati, Ohio.
- Saunders, C., Landis, A.E., Schaefer, L.A., Jones, A.K., Bilec, M.M. (2013). "Understanding Energy Models Results in the Context of a Building's Lifetime: Focus on a High Performance Building." Presentation, International Symposium on Sustainable Systems and Technology, May 15-17, 2013, Cincinnati, Ohio.
- Olinzock, M., Saunders, C.L., Landis, A.E., Schaefer, L.A., Jones, A.K., Bilec, M.M. (2013). "Results of a National Survey Regarding Whole-Building Life Cycle Assessments Among the Architecture, Engineering, and Construction Community." Presentation, International Symposium on Sustainable Systems and Technology, May 15-17, 2013, Cincinnati, Ohio.
- Collinge, W.O., Landis, A.E., Jones, A.K., Schaefer, L.A., Bilec, M.M. (2013). "Synergistic Scenarios for Indoor Health and Productivity in Whole-Building Life Cycle Assessment." Presentation, International Symposium on Sustainable Systems and Technology, May 15-17, 2013, Cincinnati, Ohio.
- Ketchman, K., Bilec, M.M. (2013). "Quantification of PM10 from Construction Activities Using a Life Cycle Approach." Poster, International Symposium on Sustainable Systems and Technology, May 15-17, 2013, Cincinnati, Ohio.
- Thiel, C.L., Shrake, S.O., Huddleston, M., Landis, A.E., Woods, N., Bilec, M.M. (2013). "Environmental Impacts of Minimally Invasive Surgery." Poster, International Symposium on Sustainable Systems and Technology, May 15-17, 2013, Cincinnati, Ohio.
- Woods, N., Bilec, M.M., Landis, A.E., Campion, N., Thiel, C. (2013). Presentation, "Improving Environmental Performance of the Operating Room." CleanMed, April 24-26, 2013, Boston, Massachusetts.
- Thiel, C.L., Bilec, M.M., Needy, K.L., Ries, R.J. (2013). "Green Building Design and Construction: Greening the Indoor Environment." Presentation, Engineering Sustainability 2013, April 7-9, 2013, Pittsburgh, Pennsylvania.
- Banawi, A.A., Bilec, M.M. (2013). "Applying Lean, Green, and Six- Sigma Framework to Improve Exterior Construction Processes in Saudi-Arabia." Poster, Engineering Sustainability 2013, April 7-9, 2013, Pittsburgh, Pennsylvania.
- Collinge, W., A. Landis, A. Jones, L. Schaefer and M. Bilec (2013). Indoor Environmental Quality in a Dynamic Life Cycle Assessment Framework for Buildings: Case Study of the Mascaro Center for Sustainable Innovation. Engineering Sustainability 2013, Pittsburgh, PA, April 2013.
- Thiel, C.L., Campion, N., Landis, A.E., Bilec, M.M. (2013). "Net-Zero Energy Building Material Perspective: A Life Cycle Assessment." Poster, Engineering Sustainability 2013, April 7-9, 2013, Pittsburgh, Pennsylvania.

- Dale, A.T., Bilec, M.M. (2013). "Rapid Assessment of Environmental Impacts of Regional Energy & Water Supply Scenarios." Poster, Engineering Sustainability 2013, April 7-9, 2013, Pittsburgh, Pennsylvania.
- Bilec, M.M., Landis, A.E., Shrake, S.O., Thiel, C.L., Woods, N.C. (2012). "Life Cycle Assessment in Healthcare: Focus on Hysterectomies." Presentation, American Center for Life Cycle Assessment LCA XII, September 27-29, 2012, Tacoma, Washington.
- Landis, A.E., Shrake, S.O., Bilec, M.M. (2012). "Life Cycle Assessment to assess and improve small service business operations." Presentation, American Center for Life Cycle Assessment LCA XII, September 27-29, 2012, Tacoma, Washington.
- Dale, A.T., Bilec, M.M. (2012). "Using Life-Cycle Data to Assess Regional Variation in Future Energy & Water Supply Scenarios." Presentation, Western Energy Policy Conference. August 30-31, 2012, Boise, Idaho.
- Collinge, W.O., DeBlois, J., Sweriduk, M., Landis, A.E., Jones, A.K., Schaefer, L.A., Bilec, M.M. (2012). "Measuring Whole-Building Performance with Dynamic Life-Cycle Assessment: A Case Study of a Green University Building." Presentation, International Symposium on LCA and Construction. June 10-12, 2012, Nantes, France.
- Bilec, M.M., Dale, A.T., Vidic R.D. (2012). "A Life-Cycle Approach To Environmental Impacts of Marcellus Shale Gas." Presentation, 2012 IEEE International Symposium on Sustainable Systems and Technology. May 16-18, 2012, Boston, Massachusetts.
- Collinge, W.O., Landis, A.E., Jones, A.K., Schaefer, L.A., Bilec, M.M. (2012). "Integrating Indoor Environmental Quality Metrics in a Dynamic Life Cycle Assessment Framework For Buildings." Presentation, 2012 IEEE International Symposium on Sustainable Systems and Technology. May 16-18, 2012, Boston, Massachusetts.
- Thiel, C.L., Champion, N., DeBlois, J., Woods, N.C., Landis, A.E., Bilec, M.M. (2012). "Life Cycle Assessment of Medical Procedures: Vaginal and Cesarean Section Births." Presentation, 2012 IEEE International Symposium on Sustainable Systems and Technology. May 16-18, 2012, Boston, Massachusetts.
- Saunders, C.L., Landis, A.E., Jones, A.K., Schaefer, L.A., Bilec, M.M. (2012). "Utilizing Measured Energy Usage to Analyze Design Phase Energy Models." Presentation, 2012 IEEE International Symposium on Sustainable Systems and Technology. May 16-18, 2012, Boston, Massachusetts.
- Aktas, C. and Bilec, M.M. (2012). "Strategies to Reduce Disparity between Design and Service Lifetimes of Building Products." Presentation, 4th International Conference on Sustainable Enterprises of the Future, April 18-19, 2012, Pittsburgh, Pennsylvania.
- Kabala, S., Whitney, M., Kviz, B., Bilec, M.M. (2011). "The Pittsburgh Higher Education Climate Consortium: A Partner in Community Climate Action." Presentation, American Association of Sustainability in Higher Education Conference and Expo, October 9-12, 2011, Pittsburgh, Pennsylvania.
- Collinge, W.O., Bilec, M.M., Landis, A.E., Jones, A.K., Schaefer, L.A. (2011). "Scenario Modeling for Dynamic Life Cycle Assessment of Commercial and Institutional Building." Presentation, American Center for Life Cycle Assessment, Proceedings of LCA XI, October 4 -6, 2011, Chicago, Illinois.



- Shrake, S.O., Landis, A.E., Bilec, M.M. Gomes Da Silva, M. (2011). "The Development and Implementation of Life Cycle Assessment courses in Brazilian Universities." Presentation, American Center for Life Cycle Assessment, Proceedings of LCA XI, October 4 -6, 2011, Chicago, Illinois.
- Thiel, C., Shake, S.O., Champion, N., Bilec, M.M., Landis, A.E., Woods, N. (2011). "Applications of Life Cycle Assessment: Sustainable Healthcare." Presentation, American Center for Life Cycle Assessment, Proceedings of LCA XI, October 4 -6, 2011, Chicago, Illinois.
- Stamataki, N., Osterwood, K., Bilec, M.M., Landis, A.E. (2011). "Consumers and Composting: Assessing Willingness to Pay for Composting in a Commercial Setting using Contingent Valuation." Presentation, American Center for Life Cycle Assessment, Proceedings of LCA XI, October 4 -6, 2011, Chicago, Illinois.
- Bilec, M.M., Hendrickson, C., Landis, A.E., Matthews, H.S. (2011). "Updating the Benchmark Sustainable Engineering Education Report – Trends from 2005 to 2010." Presentation, American Society for Engineering Education Annual Conference and Exposition, June 26 - 29, 2011 Vancouver, BC, Canada.
- Landis, A.E., Bilec, M.M., Klotz, L., Pearce, A.R. (2011). "Lessons learned from a Distance Learning Research Methods Course co-taught by Clemson, University of Pittsburgh, and Virginia Tech. Presentation, American Society for Engineering Education Annual Conference and Exposition, June 26 - 29, 2011 Vancouver, BC, Canada.
- Aktas, C.B., Bilec, M. (2011). "Addressing Uncertainty Associated with Lifetime in Building LCA." 2011 The Symposium on Industrial Ecology for Young Professionals (SIEYP II). June 11, 2011, Berkeley, California.
- Dale, A., Green, O., Shatzer, K., Bilec, M., Brigham, J., Landis, A.E. (2011). "Preliminary Methods in Optimal Design for Minimal Life-Cycle Impacts of Gasoline Blends." Poster, 2011 The Symposium on Industrial Ecology for Young Professionals (SIEYP II). June 11, 2011, Berkeley, California.
- Shrake, S., Landis, A.E., Bilec, M.M. (2011). "Greening the Service Industries: A Case Study Hybrid-Based Life Cycle Assessment of a United States Engineering Consulting Firm." Presentation, 6<sup>th</sup> International Conference on Industrial Ecology, International Society of Industrial Engineering 2011 Conference. June 7-10, 2011, Berkeley, California.
- Dale, A., Bilec, M., Vidic, R. (2011). "Discussions on the Environmental Impacts from the Marcellus Shale." Presentation, 6<sup>th</sup> International Conference on Industrial Ecology, International Society of Industrial Engineering 2011 Conference. June 7-10, 2011, Berkeley, California.
- Collinge, W., Bilec, M., Landis, A.E. (2011). "Spatial Distribution of US Industries and Implications for LCA." Presentation, 6<sup>th</sup> International Conference on Industrial Ecology, International Society of Industrial Engineering 2011 Conference. June 7-10, 2011, Berkeley, California.
- Aktas, C.B., Bilec, M. (2011). "Impact of Lifetime Data on Life Cycle Assessment Results: Focus on Residential Buildings and Building Products." Poster, 6<sup>th</sup> International Conference on Industrial Ecology, International Society of Industrial Engineering 2011 Conference. June 7-10, 2011, Berkeley, California.

- Osterwood, K., Stamatakis, N., Bilec, M., Landis, A.E. (2011). "Investigating the Challenges and Potential Solutions for the Implementation of a Compostable Waste Stream for Compostable Biopolymers." Poster, 6<sup>th</sup> International Conference on Industrial Ecology, International Society of Industrial Engineering 2011 Conference. June 7-10, 2011, Berkeley, California.
- Shrake, S., Landis, A.E., Bilec, M.M., (2011). "Greening the Service Industries: A Case Study of the United States Engineering Consulting Firm." Presentation, 2011 IEEE International Symposium on Sustainable Systems and Technology. May 16-18, 2011, Chicago, Illinois. *Received 2<sup>nd</sup> place award for best student conference paper.*
- Collinge, W.O., Liao, L., Xu, H., Saunders, C.L. Bilec, M.M., Landis, A.E., Jones, A.K., Schaefer, L.A. (2011). "Enabling Dynamic Life Cycle Assessment of Buildings with Wireless Sensor Networks" Presentation, 2011 IEEE International Symposium on Sustainable Systems and Technology. May 16-18, 2011, Chicago, Illinois.
- Rajagopalan, N., Bilec, M., Landis, A.E. (2011). "Using an LCA Approach to Evaluate Green Labels." Presentation, 2011 IEEE International Symposium on Sustainable Systems and Technology. May 16-18, 2011, Chicago, Illinois.
- Thiel, C.L., Champion, N., Bilec, M., Landis, A.E., Copley-Woods, N. (2011). "Use of Life Cycle Assessment in Healthcare: A Preliminary Cesarean Section Case Study." Poster, 2011 IEEE International Symposium on Sustainable Systems and Technology. May 16-18, 2011, Chicago, Illinois.
- Thiel, C., Champion, N., Bilec, M., Landis, A.E., Copley-Woods, N. (2011). "Creating Sustainable Surgery: A Trashy Operation." Presentation, CleanMed 2011 Conference. April 6-8, 2011. Phoenix, Arizona.
- Aktas, C., Bilec, M. (2011). "Evaluating the Lifetime of Building Products and Life Cycle Assessment Results." Presentation, Engineering Sustainability 2011, April 10-12, 2011, Pittsburgh, Pennsylvania.
- Collinge, W.C., Saunders, C., Bilec, M., Landis, A.E., Jones, A. (2011). "Framework and Data Acquisition for an Automated, Dynamic Building Life Cycle Assessment." Poster presentation, Engineering Sustainability 2011, April 10-12, 2011, Pittsburgh, Pennsylvania.
- Dale, A., Bilec, M., Vidic, R.D. (2011). "Preliminary Life Cycle Impacts of Treatment of Marcellus Shale Waters." Poster Presentation, Engineering Sustainability 2011, April 10-12, 2011, Pittsburgh, Pennsylvania.
- Rajagopalan, N., Bilec, M.M., Landis, A.E. (2011). "Evaluation of Green Product Labeling Systems with Life Cycle Assessment." Poster Presentation, Engineering Sustainability 2011, April 10-12, 2011, Pittsburgh, Pennsylvania.
- Thiel, C., Champion, N., Bilec, M.M., Landis, A.E., Copley-Woods, N. (2011). "Sustainable Healthcare: Environmental Improvements for the Operating Room through Life Cycle Assessment of Birthing Kits." Poster, Engineering Sustainability 2011, April 10-12, 2011, Pittsburgh, Pennsylvania.
- Thiel, C., Bilec, M., Landis, A. (2011). "Net-Zero Energy Building: A Materials Life Cycle Assessment." Poster Presentation. NSF CMMI Research and Innovation Conference, January 4-7, 2011, Atlanta, GA.

- Rajagopalan, N., Bilec, M.M., Landis, A.E. (2010). "Green Product Labeling: Is Life Cycle Assessment a Viable Solution?" Presentation, Life Cycle Assessment X, November 2-4, 2010, Portland, Oregon.
- Aktas, C., Bilec, M.M. (2010). "Impact of Product Lifetime on Life Cycle Assessment Results." Presentation, Life Cycle Assessment X, November 2-4, 2010, Portland, Oregon.
- Dale, A., Bilec, M.M., (2010). "Life Cycle Environmental Impacts of a LEED Platinum House in New Orleans." Poster, Life Cycle Assessment X, November 2-4, 2010, Portland, Oregon.
- Thiel, C., Bilec, M.M., Landis, A.E. (2010). "Life Cycle Assessment of Net-Zero Energy Building: Focus on Materials." Poster, Life Cycle Assessment X, November 2-4, 2010, Portland, Oregon.
- Xue, X., Collinge, W., Landis, A.E., Bilec, M.M., Shrake, S. (2010). "Regional Life Cycle Assessment of Soybean Derived Biodiesel for Transportation Fleet." Poster, Life Cycle Assessment X, November 2-4, 2010, Portland, Oregon.
- Collinge, W., Bilec, M.M., Landis, A.E. (2010). "Regional LCA Profiles for US Industries." Poster, Life Cycle Assessment X, November 2-4, 2010, Portland, Oregon.
- Aktas, C., Bilec, M.M. (2010). "Collaboration among higher education institutions for increased sustainability in Pittsburgh." Presentation, Association for the Advancement for the Advancement of Sustainability in Higher Education. October 10 - 12, 2010, Denver, Colorado.
- Bilec, M.M., Aktas, C., Marriott, J., Padilla, F., Snyder, M. (2010). "Market and Environmental Analyses of Key Construction Commodities." Proceedings of the Western Pennsylvania Transportation Research Forum of the International Bridge Conference, June 2010, Pittsburgh, Pennsylvania.
- Collinge, W., Bilec, M.M., Landis, A.E., Shrake, S., Xiaobo, X. (2010). "Biodiesel Fuel Feasibility Study." Proceedings of the Western Pennsylvania Transportation Research Forum of the International Bridge Conference, June 2010, Pittsburgh, Pennsylvania.
- Aktas, C.B., Bilec, M.M., Marriott, J., Landis, A.E., Mutnuri, B. (2010). "Life Cycle Energy Consumption of Pultruded Flax Fiber Composites." Poster, Proceedings of the 2010 IEEE International Symposium on Sustainable Systems and Technology. May 17-19, 2010, Washington, DC. *Received award for poster competition.*
- Aktas, C.B., Bilec, M. (2010). "Greenhouse Gas Inventory for the University of Pittsburgh." Presentation, Blue, Gold, and Green Sustainability Festival. April 8-9, 2010, Pittsburgh, Pennsylvania.
- Allen-Sandoz, M., Bilec, M. (2010). "Kingsley Repurposing Station Design." Presentation, Blue, Gold, and Green Sustainability Festival. April 8-9, 2010, Pittsburgh, Pennsylvania.
- Landis, A.E., Bilec, M.M., Rajagopalan, N.R. (2009). "Life Cycle Assessment for Evaluating Green Products and Materials." Presentation, US-Japan Workshop on Life Cycle Assessment of Sustainable Infrastructure Materials, October 21-22, 2009, Sapporo, Japan.
- Rajagopalan, N.R., Bilec, M., Landis, A.E. (2009). "A Comparative Life Cycle Assessment of Insulating Concrete Forms with Traditional Residential Wall Sections." Presentation, Life Cycle Assessment IX, September 28 - Oct 2, 2009, Boston, Massachusetts.

- Bilec, M.M., Rajagopalan, N.R., Landis, A.E. (2009). "Building Product Labeling: A Comparative Case Study of Insulating Concrete Form versus Traditional Building Materials." Presentation, First International Congress on Sustainability and Science and Engineering, August 10 – 13, 2009, Cincinnati, Ohio.
- Torick, D., Bilec, M.M., Marriott, J., and Landis, A.E. (2009). "Development and Outcomes of a Design for the Environment Course." Presentation, 116<sup>th</sup> American Society for Engineering Education Annual Conference and Exposition. June 16, 2009, Austin, Texas.
- Rajagopalan, N., Landis, A.E., Bilec, M.M. (2009). "Environmental Impacts of Insulating Concrete Forms." Presentation, 2009 IEEE International Symposium on Sustainable Systems and Technology. June 2009, Phoenix, Arizona.
- Landis, A.E., Bilec, M., Shrake, S., Collinge, W. (2009). "PennDOT Biodiesel Fuel Implementation Study." Proceedings of the Western Pennsylvania Transportation Research Forum of the International Bridge Conference, June 2009, Pittsburgh, Pennsylvania.
- Padilla, M.F., Marriott, J., Bilec, M.M. (2009). "Market Analysis of Construction Materials with Recommendations for the Future of the Industry." Proceedings of the Western Pennsylvania Transportation Research Forum of the International Bridge Conference, June 2009, Pittsburgh, Pennsylvania.
- Rajagopalan, N.R., Bilec, M., Landis, A.E. (2009). "Preliminary Life Cycle Assessment of Residential Homes: Focus on Insulating Concrete Forms with Traditional Residential Wall Sections." Presentation, Engineering Sustainability 2009: Innovations that Span Borders, April 2009, Pittsburgh, Pennsylvania.
- Padilla, M.F., Marriott, J., Bilec, M. (2009). "Economic Forecasts and Environmental Impacts of Highway Construction Commodities." Presentation, Engineering Sustainability 2009: Innovations that Span Borders, April 2009, Pittsburgh, Pennsylvania.
- Shrake, S.O., Landis, A.E., Bilec, M.M. (2009). "Impacts Associated with Biodiesel Use in Fleets." Poster Presentation, Engineering Sustainability 2009: Innovations that Span Borders, April 2009, Pittsburgh, Pennsylvania.
- Torick, D., Bilec, M., Landis, A.E., Marriott, J. (2009). "Engineering students learn and apply the triple bottom line through a multi-faceted educational experience: Design for the Environment Course." Poster Presentation, Engineering Sustainability 2009: Innovations that Span Borders, April 2009, Pittsburgh, Pennsylvania.
- Landis, A.E., Bilec, M., Shrake, S., Collinge, W. (2008). "Biodiesel Impacts During Fleet Implementation." Presentation, LCA8, September 2008, Seattle, Washington.
- Rajagopalan, N., Bilec, M., Landis, A.E. (2008). "Preliminary Life Cycle Assessment of Wall Sections: Focus on Insulating Concrete Forms with Traditional Wall Sections." Poster Presentation, Pennsylvania Green Growth Partnership, September 15-16, 2008, Hershey, PA.
- Landis, A.E. and Bilec, M.M. (2008). "Analysis, Heuristics, and Uncertainty of Hybrid Life Cycle Assessment: Agriculture and Construction Case Studies." Presentation, First International Symposium on Life-Cycle Engineering, June 11-14, 2008, Lake Como, Italy.

- Landis, A.E., Bilec, M., Shrake, S., Collinge, W. (2008). "PennDOT District 8 Biodiesel Fuel Feasibility Study." Proceedings of the Western Pennsylvania Transportation Research Forum of the International Bridge Conference, June 2008, Pittsburgh, Pennsylvania.
- Needy, K., Gokham, N.M., Bilec, M.M., Ries, R., Horman, M., Phelps, A., Pommer, E.E. (2008). "The Use of Process Mapping to Compare Green Children's Hospital Designs." Industrial Engineering Research Conference. May 19-23, 2008, Nashville, Tennessee. May 2008, Vancouver, B.C.
- Needy, K. L., Gokhan, N. M., Ries, R., and Bilec M.M. (2007). "Green Building Metrics: Research Methodology, Results, and Future Directions." Presentation, Industrial Engineering Research Conference. May 19-23, 2007, Nashville, Tennessee.
- Bilec, M.M. and Ries, R. (2007). "Preliminary Study of Green Design and Project Delivery Methods in the Public Sector." Presentation, 2007 ASCE Construction Research Congress Proceedings, May 6-8, 2007, Grand Bahamas Island.
- Ries, R., Bilec M.M., Needy, K. L., and Gokhan, N. M. (2007). "Green Building Construction: Cost/Benefit Analysis of a Precast Concrete Manufacturing Plant." Presentation, 2007 ASCE Construction Research Congress Proceedings, May 6-8, 2007, Grand Bahamas Island – *Received Best Paper Award*
- Sharrard, A.L., Nikithser, A., Matthews, H.S., Bilec, M.M. (2007). "The Challenge of Correlating Local Air Monitor Data with Construction Site Activity: A Pittsburgh Case Study." Presentation, 2007 ASCE Construction Research Congress Proceedings, May 6-8, 2007, Grand Bahamas Island.
- Needy, K.L., Ries, R., Gokhan, N.M., Bilec, M. (2007). "The Economic Benefits of Green Buildings: A Comprehensive Case Study." Presentation, Engineering Sustainability Conference, April 2007, Pittsburgh, Pennsylvania.
- Needy, K.L., Ries, R., Horman, M., Riley, D., Gokhan, N.M., Bilec, M., Phelps, A.F., Manning, R., Pommer, E.E. (2007). "High Performance Healthcare Facility Lessons for Designing Green Children's Hospitals." Poster Session, Engineering Sustainability Conference, April 2007, Pittsburgh, Pennsylvania.
- Bilec, M., Sharrard, A.L., Matthews, H.S., Ries, R. (2006) "Two Hybrid Life Cycle Assessments for Construction." Presentation, InLCA Conference, October 2006, Washington, D.C.
- Bilec, M., Sharrard, A.L., Matthews, H.S., Ries, R. (2006). "A Hybrid Life Cycle Assessment for Construction Processes." Presentation, United States Green Building Conference, Greenbuild, November 2005, Atlanta, Georgia.
- Bilec, M., Sharrard, A., Ries, R., Matthews, H.S. (2005). "A Hybrid Life Cycle Assessment for Construction Processes." Presentation, Society of Environmental Toxicology and Chemistry Conference, November 2005, Baltimore, Maryland.
- Bilec, M., Sharrard, A.L., Ries, R., and Matthews, H.S. (2005). "A Hybrid Life Cycle Discussion of Environmental Impacts of the Construction Process." Poster Session, International Society of Industrial Ecology Conference, July 2005, Stockholm, Sweden.
- Needy, K.L., Ries, R., Gokhan, N.M., Bilec, M.M., Rettura, B. (2005). "A Research Protocol for Analyzing the Benefits of Green Building Construction." Industrial Engineering Research Congress Proceedings, May, 2005, Atlanta, Georgia.

Matthews, H. S., Roth, M., Sharrard, A.L., Bilec, M.M. (2005). "Economic and Environmental Implications of Construction Energy Use and Generation under New EPA Emission Standards." ASCE 2005 Construction Research Congress Proceedings, April 2005, San Diego, California.

Sharrard, A.L., Bilec, M., Roth, M., Matthews, H.S., and Ries, R.(2005). "Economic and Environmental Impacts of Construction Sites: On-Site Energy and Electricity Consumption." Poster Session, Engineering Sustainability 2005, April 10 - 12, 2005, Pittsburgh, Pennsylvania.

Bilec, M., Sharrard, A., Ries, R., and Matthews, H.S. (2005). "A Hybrid Life Cycle Discussion of Environmental Impacts of the Construction Process." Presentation, Engineering Sustainability 2005, April 10 - 12, 2005, Pittsburgh, Pennsylvania.

Ries, R., Needy, K.L., Bilec, M., Gokhan, N.M., Rettura, B. (2005). "Benefits of Green Construction." Poster Session, Engineering Sustainability 2005, April 10 - 12, 2005, Pittsburgh, Pennsylvania.

Ries, R., Needy, K.L., Bilec, M., Gokhan, N.M., Rettura, B.(2004). "Creating a Framework to Examine Benefits of Green Building Features." Poster Session, Greenbuild Conference, November 2004, Portland, Oregon.

Needy, K.L., Ries, R., Gokhan, N.M., Bilec, M.M., and Rettura, B. (2004). "Creating a Framework to Examine Benefits of Green Building Construction." Proceedings of American Society for Engineering Management, 25<sup>th</sup> National Conference, October 20-23, 2004, Alexandria, Virginia.

## FUNDED RESEARCH

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### Current

National Science Foundation, Supplement EFRI-SEED: BUILD - Barriers, Understanding, Integration - Life Cycle Development

Total Award: \$52,981

**PI: Melissa Bilec**

May 2016 to October 2017

National Science Foundation, Collaborative Research: Developing a Framework to better engage students in STEM via Game Design

Total Award \$220,299

PI, Kristen Parrish; ASU, Co-PI, Amy Landis, Clemson

Total award at ASU: \$176,183

PI from UPitt, **Melissa Bilec**

Total award at UPitt: \$44,116

October 2015 to September 2017

Heinz Foundation, Creating Environmental Awareness in an At-Risk Community through Real Time Air Monitors and a Resident Driven Air Quality Monitoring Bike Campaign

Total Award \$25,000

**PI: Melissa Bilec**

October 2015 to September 2018



National Science Foundation, Collaborative Research RSB: A Sequential Decision Framework to Support Trade Space Exploration of Multi-Hazard Resilient and Sustainable Building Designs

Total Award \$1,260,000

PI, Gordon Warn; PSU, Co-PI, Lisa Iulo, PSU; Timothy Simpson, PSU

Total award at ASU: \$849,189

PI from UPitt, **Melissa Bilec (\$202,005)**; Co-PI, Louise Comfort, UPitt

Total award at UPitt: \$410,811

March 1, 2015 to February 28, 2018

Magee Volunteer Group (gift)

Total Award: \$6,000

**PI Melissa Bilec (\$6,000)**

National Science Foundation, Collaborative Research: Integrating Sustainability Grand Challenges and Systems Thinking into Engineering Curriculum.

Total award: \$750,000

PI, Amy Landis, ASU; Co-PI, Brad Allenby, ASU; Co-PI, Mikhail Chester, ASU; Co-PI, Kristen Parrish, ASU

Total award at ASU: \$535,005

**PI at Pitt, Melissa Bilec (\$105,000)**; Co-PI, Vikas Khanna, UPitt

Total award at UPitt: \$214,995

September 1, 2013 to August 31, 2017

**Completed**

National Science Foundation, EFRI-SEED: BUILD - Barriers, Understanding, Integration - Life cycle Development.

Total award: \$2,000,000

**PI, Melissa Bilec (\$1,030,000)**; Co-PI, Laura Schaefer, UPitt; Co-PI, Alex Jones, UPitt; Co-PI, Amy Landis (transferred ~\$65,000) to ASU.

Total award at UPitt: \$1,569,771

Co-PI, Steve Lee, CMU; Co-PI, Khee Poh Lam

Total award at CMU: \$430,229

August 2010 to August 2016

Mascaro Center for Sustainable Innovation, University of Pittsburgh, Indoor Air Impacts and Pittsburgh's 2030 Energy District

Total Award: \$50,0000

**PI, Melissa Bilec (\$50,000)**; Co-PI, Bill Collinge

July 2015 to June 2016

Facility Management and Mascaro Center for Sustainable Innovation, University of Pittsburgh, Greenhouse Gas Inventory

Total Award: \$17,000

**PI, Melissa Bilec (\$17,000)**

May 2014 to April 2016

Mascaro Center for Sustainable Innovation, University of Pittsburgh, "Indoor Air Impacts in an Energy Conservation District – Pilot Study"

Total Award: \$25,0000

**PI, Melissa Bilec (\$25,000)**

January 2015 to June 2015

Department of Energy, Energy Efficient Building Hub – Life Cycle Assessment modeling subtasks.

Total Award: \$103,485

**PI from UPitt, Melissa Bilec (\$103,485)**

February 2013 to January 2014

National Science Foundation, Developing Highly Qualified Middle Grades Teachers with Expertise in STEM Discipline.

Total award all at UPitt: \$300,000.

PI, Jen Cartier, UPitt School of Education; **Co-PI, Melissa Bilec (\$19,734)**, Co-PI, Mark Collins, UPitt Environmental Studies; Co-PI, Danielle Mosse, UPitt, Computer Science Department; Co-PI, Margaret Smith, UPitt, School of Education.

September 1, 2012 to August 31, 2014

National Science Foundation, Evaluating Sustainable Disposal Options for Compostable Biopolymers.

Total award: \$300,000 (transfer from UPitt to ASU due to Amy Landis move)

PI, Amy Landis, ASU

Total award transferred to ASU: \$274,454

**PI at UPitt, Melissa Bilec (\$25,546)** (subcontracts with ASU are on annual basis due to NSF funding allocation for this grant, increase expected).

August 2011 to August 2014

Mascaro Center for Sustainable Innovation, Energy Models on Campus.

Total Award: \$21,150

**PI, Melissa Bilec (\$21,150)**

May 2013 to April 2014

Department of Energy, Greater Philadelphia Innovation Cluster – Life Cycle Assessment modeling subtasks.

Total award was distributed through UPitt with Laura Schaefer as Pitt PI.

**Co-PI at UPitt, Melissa Bilec (\$35,000)**

January 2012 to February 2013

National Institute of Health, Clinical and Translational Science Institute, Engineering to Clinical Collaborative Research Pilot Program, Transforming Healthcare with an Environmental Life Cycle Perspective.

Total award at UPitt: \$25,000

PI from clinician-side, Noe Copley Woods (\$7,448)

**PI from engineering, Melissa Bilec (\$17,552);** Co-PI, Amy Landis; Co-PI, Richard Guido, UPMC/UPITT OBGYN.

July 1, 2011 to June 30, 2012

National Science Foundation, International Research Experience for Students: An Integrative Undergraduate Research Experience with Brazil research experience.

Total award at UPitt: \$149,658 (100% to students)

PI, Larry Shuman; **Co-PI, Melissa Bilec**; Co-PI, Eric Beckman; Co-PI, Kent Harries; Co-PI, Laura Schaefer.

September 10, 2010 to September 9, 2013

National Science Foundation, CCLI Type 1: Integrating Sustainability into the Civil Engineering Curriculum Through Three Courses

Total award: \$199,982 (transfer from UPitt to ASU due to Amy Landis move)

PI, Amy Landis, ASU; **Co-PI, Melissa Bilec (\$50,000)**; Co-PI, Piero Rizzo, UPitt

June 30, 2010 to June 29, 2013

Mascaro Center for Sustainable Innovation, Dynamic Life Cycle Assessment and Building Automation.

Total award at UPitt: \$133,508

**PI, Melissa Bilec (\$44,502)**; Co-PI, Amy Landis; Co-PI, Alex Jones

July 1, 2010 to June 30, 2012

Mascaro Center for Sustainable Innovation, Greenhouse Gas Inventory for the University of Pittsburgh

Total award at UPitt: \$17,000

**PI, Melissa Bilec (\$17,000)**

September 2009 to July 1 2010

University of Pittsburgh Innovation in Educational Excellence Award, Enhancing Cross-cutting Sustainability Education in Civil Engineering.

Total Award at UPitt: \$25,000

PI, Amy Landis; **Co-PI, Melisa Bilec (\$8,333)**; Co-PI, Piero Rizzo

July 2009 to June 2010

Green Building Alliance, Pultruded Green Composites.

Total Award: \$100,000

PI from Bedford Plastics, Bhyrav Mutnuri

Total Award Bedford Plastics: \$68,500

**PI from UPitt, transfer, Melisa Bilec (\$31,500)**; Co-PI, Joe Marriott; Co-PI, Kent Harries

Total Award at UPitt: \$31,500

January 2009 to January 2010

Green Building Alliance, Investigating the Environmental Life-Cycle Assessment, Performance, and Life-Cycle Costing of Expanded Polystyrene for Construction Materials and Supplies: Focus on Insulating Concrete Forms.

Total Award at UPitt: \$220,000 with cost share, \$120,000 without cost share

**PI, Melisa Bilec (\$45,000)**; Co-PI, Amy Landis; Co-PI, Kim Needy

January 2008 to December 2009

Pennsylvania Department of Transportation, Biodiesel Implementation.

Total Award at UPitt: \$275,761  
PI, Amy Landis; **Co-PI, Melisa Bilec (\$137,880)**  
June 2008 to May 2010

Pennsylvania Department of Transportation, *Market Analysis of Construction Materials with Recommendations for the Future of the Industry.*

Total Award at UPitt: \$170,924  
**PI, Melisa Bilec (\$85,462)**; Co-PI, Joe Marriott  
July 2008 to January 2010

National Collegiate Inventors and Innovators Alliance, *Curriculum Development: Beyond Design for the Environment – Improving Products, Processes, and Actions.*

Total Award at UPitt: \$36,130  
PI, Amy Landis; **Co-PI, Melisa Bilec (\$12,000)**; Co-PI, Joe Marriott  
July 2008 to June 2011

Mascaro Center for Sustainable Innovation, *Developing a Portable Model for Hands-On Learning in Sustainability* (transfer)  
\$50,000, Spring 2008 to Fall 2008

## **TEACHING EXPERIENCE**

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*Developed five new courses and curriculum.*

*Taught synchronous distance learning classes for CEE 1218 (2012 and 2013), CEE 2203, and CEE 3218.*

### **CEE 1218/2218: Design for the Environment: Spring 2009 to 2015, enrollment 20 to 30**

Developed new course that was funded by the NCIIA for three years to teach concepts of Design for Environment to both undergraduate and graduate students. The course is a project-based course where students develop innovative sustainable solutions with partners. Co-taught with Drs. Marriott (2009) and Landis (2009-2011). The last two years (2012 and 2013), this course focused on residential energy assessments and leadership. The flipped classroom method was used in 2013. Students completed the assessments in low-income communities.

Recent student quote from flipped classroom: "I think this class is phenomenal...None of Dr. Bilec's classes are the typical 'I'm going to stand in front of the class teach you this you're going to regurgitate something for homework and then we're going to move on.' They are all very progressive and the amount of inclusion that is expected of all the students is very good. The more the students are expected and welcome to be involved with the class the more they will be involved with the class. I learn more this way. Excellent class."

### **CEE 1610/2610 (previously 1210/2210): Engineering and Sustainable Development: Fall 2010-2015, Spring 2017 enrollment 50-70**

Redesigned course teaching concepts of sustainable engineering and industrial ecology. This course uses a mix of innovative teaching approaches, including project-based learning. The general modular framework is (1) a mix of lecture, reading and videos; (2) experiment, game, in-class assignment; (3) in-class debate and writing assignment.

### **CEE 1617/2217 (previously 12107/2217): Green Building Design and Construction: Spring 2008-2016, enrollment 55-70**

Developed new course with modules supported by NSF CCLI project. This course teaches all of the major aspects of green building design and construction, including sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation, and design process. Understanding the entire life cycle of green buildings is a crucial element in green and sustainable engineering.

**CEE 2620: Advanced Green Building Design and Construction: Spring 2016, Fall 2016 enrollment 6-10**

This course first provides an overview of all the major aspects of green building design and construction, including sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation and the design process. The course then focuses on green materials, energy modeling, indoor environmental quality monitoring, and post-occupancy evaluations. For the delivery of this course, we use a combination of seminars, experiential learning, and green building tours.

**CEE 3218: Research Methods for Sustainability: Fall 2010, enrollment ~15**

Developed new course to teach basic concepts in research methods for graduate students. Co-taught with Dr. Landis (2010), and included distance learning with Clemson and Virginia Tech.

**CEE 3609: Advance Life Cycle Assessment: Spring 2016, enrollment 9**

Life cycle assessment (LCA) is a tool for evaluating the environmental impacts of a product or process by documenting energy and material flows from inception to ultimate disposal. Topics include the principles of life cycle assessment, case studies of applications of life cycle assessment, methods for life cycle inventory, and methods for life cycle impact assessment. The course aims to encourage systems thinking and to facilitate life cycle applications to graduate students' individual research topics. Students can expect to develop a project and paper applying LCA to their research topic. In most cases, students will produce a publishable journal article at the end of the semester.

**Additional courses taught**

- CEE 2201: Construction Cost Estimating
  - Fall 2008, Fall 2009 (with distance learning section)
- ENGR, Engineering Sustainability Capstone (Fall 2011) for IGERT students
- ENGR 1610: Product Realization for Global Opportunities with *travel to Brazil* (Spring 2008)
- Lecturer, University of Pittsburgh's Learning Solutions, College of General Studies, Osher's Life Long Learning Institute for Introduction to Green and Sustainable Building Design class

**STUDENT ADVISING**

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**Doctoral Students**

**Completed**

1. Neethi Rajagopalan, Graduated Spring 2011 (Researcher, North Carolina State University)
2. Can Aktas, Graduated Spring 2011 (Assistant Professor University of New Haven)
3. William Collinge, Graduated Spring 2013 (Post-Doc at Upitt, Consultant for PPG)

4. Alexander Dale, Graduated, Spring 2013 (National Executive Director, Engineers for a Sustainable World, AAAS Fellow, Community Relations Senior Officer, Solve @ MIT)
5. Abdulaziz Banawi, Graduated May 2013, (Faculty position at UAE, Department Chair at King Abdulaziz University, Jeddah, Saudi Arabi)
6. Cassandra Thiel, Graduated August 2013 (Post-Doc at Upitt, Fulbright Scholar, Assistant Professor at New York University)
7. Nicole Campion, Graduated May 2015 (Associate engineer, Delaware River Port Authority)
8. Sami Al Ghamdi, Graduated December 2016 (Assistant Professor of Architectural Engineering, HBKA)

### **Current**

1. Kevin Ketchman Expected graduation – Spring 2017
2. H. Rickenbacker Expected graduation – Spring 2018
3. Vaclav Hasik Expected graduation – Spring 2018
4. Shen Tian Expected graduation – Spring 2017

### **Post-Doctoral Associates**

William Collinge, May 2013 to June 2017

Cassandra Thiel, August 2013 to December 2014; September 2015 to August 2016

Michael Whiston, January 2016 to May 2016

### **Visiting Professors**

Lan Chen, 2014-2015

H. Scott Matthews, CMU, 2013 to 2014

### **Masters Students**

1. Christi Saunders, Graduated April 2012, Thesis option
2. Katelyn Ryan, Graduated April 2012, MS/MBA
3. Nicole Campion, MS, Graduated August 2011, professional option
4. Maureen Olinzock, Graduated, December 2013, professional option

### **Visiting Scholar**

Ariana Leidy – Spring 2012

### **Undergraduate Students**

- |                                |                                |                               |
|--------------------------------|--------------------------------|-------------------------------|
| 1. Kyra Davis (2008)           | 11. Jonathan Bumstead (2009)   | 20. Jennifer Zettl (2011)     |
| 2. Matt Kaminski (2009)        | 12. Maddie Allen-Sandoz (2010) | 21. Preston Macready (2011)   |
| 3. Abigayle Sterle (2009)      | 13. Oliver Green (2010)        | 22. Oren Lawitt (2011)        |
| 4. Kate Kessler (2009)         | 14. Kyle Shatzer (2010)        | 23. Marianne Choi (2011)      |
| 5. Matthew Geary (2009)        | 15. Nicholas Stamatkis (2010)  | 24. Ahra Kwan (2011)          |
| 6. Cassie Jurgens (2009, 2012) | 16. Nicole Ostrowski (2010)    | 25. Charles Ringel (2011)     |
| 7. Eric Zatcoff (2009)         | 17. Katelyn Ryan (2010)        | 26. Sarah Wood (2012)         |
| 8. Douglas Hartley (2009)      | 18. Michael Sweriduk (2010-11) | 27. Matt Huddleston (2012,13) |
| 9. Eric Rowand (2009)          | 19. Ryan Carmichael (2010)     | 28. Jayne Marks (2013)        |
| 10. Brad Harken (2009)         |                                | 29. Corey Woloschin (2013)    |
|                                |                                | 30. Ben Kueth (2013)          |



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|----------------------------|-----------------------------|------------------------------|
| 31. Yuan Tao (2013)        | 35. Naomi Anderson (2014,   | 39. Rebeca Nogueira (2016)   |
| 32. Allan Smith (2013)     | 2015)                       | 40. Kim Dinh (2016)          |
| 33. Delia Scoville (2014)  | 36. Brent Oliveros (2014)   | 41. Abra Spisso (2016, 2017) |
| 34. Hannah Edelmann (2014) | 37. Adam Bertonaschi (2014) | 42. Julissa Garcia (2017)    |
|                            | 38. Rafaela Carvalho (2016) | 43. Elyssa Messzar (2107)    |

## STUDENT COMMITTEES

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### Doctoral Committees:

#### Completed

Xiaobo Xu, CEE, April 2011  
 Kullapa Soratana, CEE, 2012  
 Jarret Kasan, CEE, 2012  
 Scott Shrake, CEE, 2012  
 Briana Niblick, CEE, 2012  
 Michelle Najera, ChemE, 2013  
 Michael Richard, CEE, 2013  
 Justin Deblois, MEMS, 2013  
 Antti Säynäjoki, Aalto Univ, April 2015  
 Michael Whiston, MEMS, May 2015

Haifeng Xu, ECE, May 2015  
 Shauhrat Chopra, CEE, May 2015  
 Claire Antaya, ASU SEBE, May 2015  
 Troy Hottle, ASU SEBE, Dec. 2015  
 Scott Unger, ASU SEBE, Dec. 2015  
 Kaiyuan Li, CEE, 2016  
 Greg Zaimes, CEE, 2016

#### In progress

Jorge Vendries, CEE, expected graduation, 2017  
 Sakineh Tavoli, CEE, expected graduation 2018

### Masters Committees:

Viral Shah, CEE, graduated, 2007  
 Phoebe Cuevas, CEE, graduated, 2010  
 Monica Rothermel, CEE, graduated, 2011  
 Haifeng Xu, ECE, graduated, 2012  
 Jennifer Gottron, CEE, graduated, December 2013  
 Michelle Basque, GSPH, graduated, April 2014

### BPhil Committees:

Lin Huo, Spring 2017

## AWARDS AND HONORS

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Invited to serve as Member of International Expert Selection Committee - Target GHG Collaborative R&D Program, Natural Sciences and Engineering Research Council of Canada / Ontario Centres of Excellence, Start April 2017

White House Frontiers Conference, Local Track Lead, October 13, 2016

Invited to attend the National Academy of Engineers Grand Challenge Scholar Summit at the White House, Washington, DC, October 7, 2017

Roberta A. Luxbacher Faculty Fellow

Best Mentor- Mentee Team Award (3<sup>rd</sup> place), Mentor AGEP-TDAE, August 2016

Outstanding Mentor Award, University of Pittsburgh Postdoctoral Association Award, 2016

Invitation from National Academy of Engineers to present at Frontiers of Engineering Education Symposium, *Writing Successful NSF Proposals*. October 29, 2014, Irvine, California.

Carnegie Science Award in the University/Post-Secondary Category, Winner, 2012

National Academy of Engineering: Nominated and selected to attend Frontiers of Engineering Education Symposium in Irvine CA (2011)

Carnegie Science Award in the University/Post-Secondary Category, Honorable Mention, 2011

Lisa Weiland and Melissa Bilec: Upon completion of the "JC Penny" project in Vandergrift it received a "Top Ten Preservation Opportunities Award" for 2010 from the Young Preservationist Association of Pittsburgh (YPA), and was selected as a feature project by ESW national - 2010

Innovation in Educational Excellence Award, University of Pittsburgh (2009)

Best Conference Paper in Sustainability Track. Ries, R., Bilec M., Needy, K. L., and Gokhan, N. M. (2007). "Green Building Construction: Cost/Benefit Analysis of a Precast Concrete Manufacturing Plant." 2007 ASCE Construction Research Congress Proceedings, May 6-8, 2007, Grand Bahamas Island – *Received Best Paper Award*

Performance Award Urban Redevelopment Authority of Pittsburgh (2000 and 2001)

Teaching Assistant of the Year, University of Pittsburgh, 1999

President's Scholarship (1998)

Honors Scholarship (1998)

Tau Beta Pi, Chi Epsilon

## **SERVICE**

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### **Deputy Director, Mascaro Center for Sustainable Innovation, 2015 to Present**

-Co-PI in MCSI's NSF NRT proposal in 2017.

-Local Track Lead for White House Frontiers Conference, October 13, 2016.

-Primary lead of P4 Air Measure, convened by the Heinz Foundation, Summer 2016

-Attended Grand Challenge Scholar Program (GCSP) at the National Academy of Engineers and the White House in October 2016. Working to develop GCSP at UPitt.

-Co-PI 2016 NSF National Research Traineeship Program, MEntoring through understanding Nitrogen in Urban food system (MENU)

-2014 to 2017, Leading efforts to create an M.S. degree in Sustainability – M.S. Degree in Sustainable Engineering approved in January 2017.

### **Assistant Director, Education and Outreach, Mascaro Center for Sustainable Innovation, 2007 to 2014**

Since 2007, my work with MCSI has evolved as my research enterprise became more prolific. During my tenure at MCSI, major contributions included:

- Coordinated/managed MCSI's Summer Undergraduate Research Program in 2008, 2009, and 2010, including NSF REU site and NSF IRES program. This work included recruitment, application review and acceptance, housing coordination, summer long lecture series, service activities, and book clubs. This also included organizing international travel, Portuguese language training, Brazilian culture training, and research experiences for the IRES program.
- Related to Pitt's first NSF IGERT and GAANN programs from 2007 to ~2011, recruited students, developed international travel coordination (met bi-weekly with students prior to cohort departure), application review, strategic planning meetings, coordinated required classes, budget reviews, annual and NSF and DOE reports.
- Related to Pitt's FIPSE-CAPES, worked closely with both Brazilian students at Pitt (meeting weekly) and with Pitt students traveling to Brazil (meeting monthly) to ensure assimilation and educational requirements.
- Engineering for Humanity Certificate
- Revision to the Sustainable Engineering Certificate
- Worked on many collaborative MCSI proposals including:
  - 2009 ERC proposal, **IN**novating Sustainable Practices through Inter-disciplinary Research and Education: INSPIRE;
  - 2010 Doris Duke, Dynamic LCA;
  - 2010 IGERT, Sustainable Community Oriented Research & Education (SCORE;
  - 2010, 2011, 2012 REU site proposals;
  - 2011 RET proposal;
  - 2011 SRN, Sustainable Consumer Innovations Network (SCINet)
  - 2011 SRN proposal with ASU, A Collaborative Open Innovation Network (COIN) for Sustainable, Healthy Buildings;
  - 2013 Drk12 proposal;
  - 2014 NSF Sustainable Research Network, Re-envisioning Urban Sustainability and Health (RUSH);

**Outreach/co-curricular activities to support MCSI's overall outreach work:**

- Teach the Teacher Workshop, June 2016, Presented lecture
- Teach the Teacher Workshop, June 2015, Assisted in organizing and presented lecture
- Teach the Teacher Workshop, June 2014, Assisted in organizing and presented lecture
- Green building and indoor environmental quality learning module, Crossroads Foundation and UPitt CS department, July 30, 2013.
- Worked with Rebuilding Together Pittsburgh, Penn State Center, Kingsley Association. Completed energy retrofits (1 per month in 2012-2013) in low-income homes – outcome from student energy assessments developed in CEE1218/2218, Spring 2012.
- Special session at international One Young World Event in collaboration with CMU, Phipps, and MCSI. October 20, 2012.
- Outreach activity with Manchester Academic Charter School. Presentation and activity on Energy. October 18, 2012.

- Presentation to Pittsburgh Public School, SCITECH about Sustainable Engineering, April 18, 2012.
- Outreach activity with Manchester Academic Charter School. Presentation and activity on Energy Supply and Demand. October 18, 2011.
- Outreach activity with Manchester Academic Charter School. Presentation and activity on Sustainability and Limited Resources. September 20, 2011.
- Outreach activity with Carmalt Academy. Seminar presentation and tour of Phipps Botanical Gardens, November 10, 2011.
- Collaboration with Kingsley Association (a comprehensive, culturally relevant, educational, recreational, and social programming that positively impacts the lives of youth, their families and the East End communities) and advised a collaborative CEE and MEMS senior design project, Fall 2009 to 2015.
- Faculty advisor - Carnegie Science Center's Connect to Excellence Program with Shaler High School - Focus on Green Buildings and Indoor Environmental Quality (2009, 2010).
- Faculty advisor for the Greening the Greenhouse community project - received \$5000 in funding to support efforts, lead by funded graduate students, Spring 2010.
- Engineering/Science/Trade Fair for approximately 400 students who have identified an interest in engineering career cluster. Students participating in the program were from Bethel Park, Canon-McMillan, Chartiers Valley, South Park, Mt. Lebanon, Upper St. Clair, South Fayette and Peters Township. Fall 2009

#### **Co-director, Center for Sustainable Transportation Infrastructure, 2007 to 2010**

As the founding co-director of the Center for Sustainable Transportation Infrastructure in 2007, I worked with co-director, Radisav Vidic, to establish the overall vision and initial research program. The research program was largely supported by the Pennsylvania Department of Transportation (PennDOT), and during this time I worked to secure \$4.5 million with over 20 research projects. During my tenure as co-director major contributions included:

- University liaison with PennDOT to coordinate existing and new research projects
- Project management of all projects from budgets, to schedules, and project deliverables
- Development of the all marketing materials, including launching new website
- Annual University and PennDOT research symposiums
- Participation in the Transportation Research Board
- Workshop Co-Chair for Western Pennsylvania Transportation Research Forum at the International Bridge Conference -2008, 2009, 2010

#### **Director, Construction Management and Green Construction Program, 2010 to 2013**

I also served as the Director of the Construction Management and Green Construction program. In this role, I primarily facilitated collaboration and coordination with the adjunct and advisory board members, aligned course offerings and instructors, strengthened relationship with local construction community, and developed new curriculum ideas to enhance the CM curriculum.

#### **Service (Journal)**

International Journal of Life Cycle Assessment – Subject Editor, Healthcare (August 2014 to present)

**Service (University)**

Sustainability Task Force (2013-present)

University-wide Sustainability Committee (2016-present)

**Service (University-SSOE)**

Internal Advisory Board (IAB) of the AGE PITT STRIVE Program (December 2016-present)

Member of the Engineering Diversity Advisory Committee (EDAC) (December 2016-present)

PITT STRIVE Faculty Mentor in the University of Pittsburgh's Swanson School of Engineering AGE P-KAT TDAE program. TDAE activities are focused on *Adopting Evidence-Based Strategies to Improve Academic Climate and the Success of Underrepresented Doctoral Students in Engineering* (August 2016- present)

Center for Energy Faculty Search Committee (2015 to present)

M.S. in Sustainable Engineering Chair (2015 to present)

SSOE Global Engineering Preparedness Scholarship Program Mentor (March 2015 to present)

SSOE Office of Diversity Pre-Phd Summer Program (May 2014 – August 2014)

National Engineering Forum committee (August 2014 – present)

Engineering for Humanity Certificate academic committee (2009-present)

Sustainable Engineering Certificate (2009-present)

Engineering Education Research Center Advisory Member (2012-present)

**Service (University- Departmental)**

Ad-hoc Faculty Performance Review Committee (2016)

Chair, Non-Tenure Stream Faculty Search (2014-2015)

Ad-hoc Committee CEE International Initiatives (2014-present)

Departmental Program Leader for Sustainability Engineering group (2012-present)

Departmental CEE Undergraduate Committee (Fall 2011 to present)

Departmental Student Recruitment Committee (2011-2012)

Departmental Faculty Search Committee (2010, 2012, 2013, 2014, 2015, **2016**)

**Service (Professional)**

-International Living Futures, Living Product Hub Advisory Council (2017 to present)

-P4 Metrics Committee Lead, Air Metric (2016)

-Committee on Health, Convened by Green Building Alliance (2016 to present)

-Reducing Outdoor Contaminants in Indoor Spaces Initiative, Leadership Committee (August 2014 to 2017)

-Board Member, Green Building Alliance (January 2011 to present)

-National Institute of Health, Health in Buildings Roundtable (2013 to 2016)

- Board of Trustee, Phipps Conservatory and Botanical Gardens (2013 to 2015)
- International Symposium of Sustainable Systems and Technology, Planning Committee (2013, 2014)
- Session Moderator, ASCE Structures Conference, Pittsburgh's Green Building Legacy and Future, 2013
- Co-Chair of the Higher Education Climate Consortium – Fall 2009 to January 2011
- Served as EnergyCorp/Americorp Host, August 2011 to 2012
- Phipps Conservatory Living Building Challenge Advisory Committee (2007-present)
- Phipps Center for Sustainable Landscapes Planning Committee (2008-2009)
- Committee Member, Structural Engineering Institute of the American Society for Civil Engineers, Sustainability Committee (2010)

### **Workshop and Conference Organizing**

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**Technical Committee**, 2017 Joint Conference International Society for Industrial Ecology and International Symposium on Sustainable Systems and Technologies Conference, June 25-29, 2017, Chicago, Illinois.

**Session Chair**, Sustainable Built Environment, 2017 Joint Conference International Society for Industrial Ecology and International Symposium on Sustainable Systems and Technologies Conference, June 25-29, 2017, Chicago, Illinois.

**P4 Measure Session Facilitator for Air**. October 18-19, 2016.

**International Conference on Sustainable Design, Engineering, and Construction**. Leadership Committee, Sustainability/Resilience Track. May 18-20, 2016, Tempe, Arizona.

**Hosted 2030 Stakeholder Event – February 16, 2016**

**Urban Transition Cities Workshop**, January 22 to 23, 2016, Pittsburgh, Pennsylvania.

**Engineering Sustainability 2015 and 2017**, assisted with conference organizing, including abstract review.

**Michael Horman Sustainability Workshop**, Co-founder and Faculty advisor - collaboration with Virginia Tech University (Annie Pearce and Denise Simmons), Clemson University (Leidy Klotz), Arizona State University (Amy Landis and Kristen Parrish), Rodolfo Vasquez (CSU), and David Riley (PennState), 2010, 2011, 2013, 2015, **2017**

**International Conference on Sustainable Design, Engineering, and Construction**. Leadership Committee. May 10-13, 2015, Chicago, Illinois. <http://www.icsdec.com/>

**Energy implications for emerging technologies and the Affordable Care Act in the healthcare industry**. Workshop at International Symposium on Sustainable Systems and Technology Conference. May 18, 2014. Oakland, California.

**International Symposium on Sustainable Systems and Technology Conference**, Conference Proceeding Co-editor and planning committee, 2012-2013; 2013-2014. Proceedings of the

International Symposium on Sustainable Systems and Technologies (ISSN 2329-9169) is published annually by the Sustainable Conoscente Network. Melissa Bilec and Jun-ki Choi, co-editors. [ISSSTNetwork@gmail.com](mailto:ISSSTNetwork@gmail.com). [http://figshare.com/authors/Proc\\_ISSST/428830](http://figshare.com/authors/Proc_ISSST/428830)

*Engineering Sustainability 2013*, assisted with conference organizing, including abstract review. *International symposium on LCA and construction (civil engineering and buildings)*, technical committee, July 11-13<sup>th</sup> 2012 in the city of Nantes (France).

*Higher Education Climate Consortium's Campus Emissions Inventory & Climate Action Plan Workshop*, Hosted as Co-Chair, 2011

*2010 ASCE Department Heads Conference*. Workshop on Sustainability in Civil Engineering. (May 2010) held in Pittsburgh, PA. In collaboration with GDI faculty from CMU and Dr. Landis, organized a ½ day seminar on sustainability activities at Pitt.

*American Society of Civil Engineers National Conference's preconference workshop*, Sustainability Primer (2009).

## OUTREACH/CO-CURRICULAR

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- Attend Pitt STRIVE Retreat 2016, 2017
- Presentation, Prepping PhD Students, March 2016, 2017
- Citizen Science/Bike Campaign in Larimer Community to collect ambient air quality data, July 27, 2016.
- Presentation, So You Want to be an Engineer, July 8, 2016
- Reducing Outdoor Contaminants in Indoor Spaces, Low Cost Monitoring Program, Round 8, May 27, 2016 to June 20, 2016.
- Presentation, Building Energy Use and Indoor Environmental Quality in the Mascaro Center for Sustainable Innovation Building, 2030 Stakeholder Meeting, February 16, 2016
- Reducing Outdoor Contaminants in Indoor Spaces, Low Cost Monitoring Program, Round 2, December 2015.
- Presentation, Urban Transition Cities Movement Workshop (UTCM), Rickenbacker, H.J., Bilec, M.M., (2016). "Environmental Consciousness: The Importance of Air Quality." 4<sup>th</sup> UTCM 2016, January 23, 2016, Pittsburgh, Pennsylvania.
- Environmental Justice Community Alert Matrix Community Action Team (CAT) Training Workshop. Presentation, Rickenbacker, H.J., Bilec, M.M., (2015). "Mitigating Air Quality Risk in Underrepresented Communities", CAT 2015, September 19, 2015, Pittsburgh, Pennsylvania
- Citizen Science/Bike Campaign in Larimer Community to collect ambient air quality data, July 16, 2015.
- Presentation, So You Want to be an Engineer, July 10, 2015
- Expert Panel Member, Carnegie Science Center's Student Energy Summit, October 9, 2014.
- Presentation, Day of Admitted Students, March 1, 2014
- Presentation to undergraduate students on undergraduate research, November 8, 2013.
- Organizer of *Healthy Homes Fair: Energy Efficiency at Work*, September 26, 2013.

- Presentation to Governor's students in Pittsburgh Health Career Scholars Academy, June 29, 2012.
- Presentation to prospective students during Pitt Engineering Day, April 13, 2012.
- Presentation to National Society of Black Engineers to provide information about CEE department and graduate research opportunities. March 29, 2012.
- Faculty Advisor for University of Pittsburgh Medical Center (UPMC) 2011 Sustainable Health Care Innovation Competition Winner, Student Division, 2011
- Faculty advisor for the Mascaro Center for Sustainable Innovation's Energy Efficient Building Technologies Competition – received 2<sup>nd</sup> place for Green Space Heater, 2011
- Faculty advisor for Vandergrift Improvement Program's Renovation project – Fall 2009 to Spring 2010
- Faculty mentor for the United States Green Building Council's Natural Talent Design Competition, Spring 2010
- Presentation at Mt. Lebanon's Library's Green Series – "Green Buildings, Green Building Product Labeling and Life Cycle Analysis." November 4, 2009.
- Faculty judge - NSF RET (Spring 2009).

## **PEER REVIEW SERVICE**

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National Science Foundation proposal review (2009 to present)  
 Environmental Protection Agency (2009 to present)  
 CDC, National Institute of Occupational Health and Safety (2013 to present)

*ASCE Journal of Construction Engineering and Management*  
*ASCE Journal of Engineering Education and Profession Practice*  
*ASCE Journal of Infrastructure Systems*  
*ASCE Journal of Energy Engineering*  
*Building and Environment*  
*Buildings*  
*Energy Policy*  
*Energies*  
*Energy and Buildings*  
*Environmental Science & Technology*  
*Environmental Research Letters*  
*Journal of Cleaner Production*  
*Journal of Green Buildings*  
*Journal of Industrial Ecology*  
*Journal of Transportation Engineering*  
*IEEE International Symposium on Sustainable Systems and Technology*  
*Risk Analysis*

## **PROFESSIONAL AFFILIATIONS**

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AEESP  
 American Society for Engineering Education  
 American Center for Life Cycle Assessment  
 American Society of Civil Engineers



International Society for Industrial Ecology  
Society of Women Engineers

#### **Recent Conferences Attended (since October 2013)**

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2016 – ICSDEC, Tempe, AZ, May 2016  
2015 – ICSDEC, Chicago, IL, May 2015  
2015 – SETAC, Barcelona, Spain, May 2015  
2015 – Engineering Sustainability 2015, April 2015  
2014 – ASEE, June 2014  
2014 – Gordon Research Congress, June 2014, Lucca, Italy  
2014 – ISSST, May 15-18, 2014, Oakland, California  
2013 – Let's Move Pittsburgh, November 7, 2013, Pittsburgh, Pennsylvania  
2013 – inLCAXII in Orlando, Florida

#### **PROFESSIONAL EXPERIENCE**

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##### **1999: Structural Engineer, SAI Consulting Engineers, Pittsburgh, PA**

Contributed to the design of new and rehabilitated highway bridges including substructure and superstructure elements  
Worked on hydrologic and hydraulic studies  
Prepared cost estimates, construction plans, details, and specifications

##### **1999 to 2007: Senior Project Engineer, Urban Redevelopment Authority, Pittsburgh, PA**

Managed design and construction contracts including budgeting, scheduling, quality control, and risk analyses

Managed environmental concerns on brownfield sites such as remediation, waste disposal regulations, testing requirements, and site specific health standards

*Developed sustainability and green design policy*

*Example infrastructure project: Hot Metal Pedestrian Bridge*

Rehabilitation and extension of 100-year old historic railroad bridge with a new truss bridge structure and several new ramping components with a total project cost of \$11,500,000

Responsible for development of funding program

Procured and managed design, construction inspection, and construction contracts

*Example building project: Four Precast Parking Garages*

*Four precast parking garage structures with 2,300 spaces totaling approximately \$33,000,000 to support a mixed-use development on a brownfield site*

Responsible for managing the design and construction management contracts including developing design consensus from internal staff, community groups, planning commission, and private developer.