# Valerie M. Thomas
# Anderson-Interface Chair of Natural Systems and Professor
# H. Milton Stewart School of Industrial and Systems Engineering, and School of Public Policy

## I. Earned Degrees

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|---|---|
| 9/81-9/86 | Cornell University, Ithaca, NY: Ph.D. in Theoretical High Energy Physics. Advisor Tung-Mow Yan |
| 9/77-5/81 | Swarthmore College, Swarthmore, PA: B.A. in Physics, Mathematics minor. |

## II. Employment History

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| 8/05 - present | School of Industrial and Systems Engineering and School of Public Policy, Georgia Institute of Technology. Anderson-Interface Chair of Natural Systems and Professor, 2021 – present. Anderson-Interface Professor of Natural Systems, 2015-2021. Anderson Interface Associate Professor 2005-2015 (tenure in 2011); |
| 9/04 – 8/05 | Congressional Science Fellow, funded by the American Physical Society. Science Fellow in Legislative Office of Representative Rush Holt. |
| 6/88 – 8/04 | Princeton University. Research Scientist (from 12/97), Princeton Environmental Institute. Lecturer, Woodrow Wilson School of Public and International Affairs. Member of the Research Staff (7/91 to 12/97); Research Associate (5/88 to 6/91). Advisors: Frank von Hippel and Robert Socolow. |
| 10/86-5/88 | Research Fellow, Dept. Engineering and Public Policy, Carnegie Mellon Univ. Advisor: Granger Morgan. |
| 9/81-9/86 | Research Assistant, Theoretical High Energy Physics; Teaching Assistant (TA), graduate and undergraduate physics, Cornell University. |
| 6/79-8/79 | Bell Laboratories, Murray Hill, NJ. Summer research program for women and minorities. |

## III. Honors and Awards

### A. International or National Awards

MSOM Society Best Operations Management Paper in Management Science: V. Agrawal, M. Ferguson, B. Toktay, and V. Thomas, "Is Leasing Greener than Selling?" *Management Science*, **58**(3): 523-533, 2012.
Fellow of the American Association for the Advancement of Science, elected 2010.
Fellow of the American Physical Society, elected 1999.
AT&T Industrial Ecology Fellow, 1997-99, 1993-95.
Excellence in Review Award, *Environmental Science and Technology*, 2005.
Phi Beta Kappa, 1981.
Sigma Xi, 1981.

### B. Institute or School Awards

Professor of the Year, 2023, Public Policy Graduate Student Association.
Class of 1934 Outstanding Interdisciplinary Award, Georgia Tech, April 2018.
Swarthmore College, High Honors, 1981.

# IV. Research, Scholarship, and Creative Activities

## A. Published Books

1. *Energy Technology and Policy Innovation.* Marilyn A. Brown and Valerie M. Thomas. Springer Nature. Publication expected February 2026. https://www.amazon.com/Energy-Technology-Policy-Innovation-Marilyn/dp/3032070759
2. *Industrial Ecology and Global Change*, R. Socolow, C. Andrews, F. Berkhout and V. Thomas, eds. Cambridge Univ. Press, 1994. Paperback edition 1996. http://www.amazon.com/Industrial-Ecology-Global-Change-Socolow/dp/0521577837

## B. Recent Refereed Publications and Submitted Articles

1. Stathatou P. Thomas V. M. Realff M. J. The Push and Pull of Policy on Life Cycle Assessment of Low-Carbon Systems. *RSC Sustainability,* 2026. http://doi.org/10.1039/D5SU00464K
2. **Banboukian**, A., Chen, Y., Thomas, V. M. The challenges of controlled environment hydroponic farming: A life cycle assessment of lettuce. *Int. J. Life Cycle Assessment* **30**:1691-1704, 2025. https://doi.org/10.1007/s11367-025-02463-6
3. **Banboukian** A**.,** Thomas V. M., Brown M., Reeves D. C., Husbands Fealing, K. Internal determinants or external drivers? The case of U.S. water reuse policy adoption. *Resources, Conservation, and Recycling* 215, 108072, 2025. https://doi.org/10.1016/j.resconrec.2024.108072
4. **Azuero-Pedraza**, C., Thomas, V. M. Incorporating biodiversity impacts in land use optimization models. *Ecological Modeling* **497**, 110852, 2024. https://doi.org/10.1016/j.ecolmodel.2024.110852
5. **D'Souza, S., Johnston J.,** Thomas, V. M., Harris K., Tan E. C. D., Chance R. R., Yuan Y. Integrating Direct Air Capture with Algal Biofuel Production to Reduce Cost, Energy, and GHG Emissions. *J. CO2 Utilization* **86**, 102911, 2024. https://doi.org/10.1016/j.jcou.2024.102911
6. **Broesicke**, O.A., Thomas, V. M., Grubert, E., Crittenden, J. C. Water consumption from absorption chillers is not negligible: water-for-cooling consumption of chiller systems for commercial buildings in the United States. *Sustainable Energy Technologies and Assessments* **67**, 103827, 2024. https://doi.org/10.1016/j.seta.2024.103827
7. **Azuero-Pedraza**, C., Lauri, P., A. Lessa Derci Augustynczik, Thomas, V. M. Managing forests for biodiversity conservation and climate change mitigation. *Envir. Sci. Technol*. 58, 21, 9175–9186, 2024. https://doi.org/10.1021/acs.est.3c07163
8. **Chen**, Y., Basciftci, B., Thomas, V. M. Chance-constrained multi-stage stochastic energy system expansion planning with demand satisfaction flexibility. *International Journal of Electrical Power and Energy Systems,* **155**, Part A, Jan 2024, 109499. https://doi.org/10.1016/j.ijepes.2023.109499
9. Angrand, R.C., Collins, G. Landrigan, P.J., Thomas, V.M. Relation of Blood Lead Levels and Lead from Gasoline: An Updated Systematic Review. *Environmental Health* **21**: 138, 2022. https://doi.org/10.1186/s12940-022-00936-x
10. ***Sekanabo**, D.; Nyandwi, E.; Hakizimana J.K.; Thomas, V. M. The relationship between GDP and biomass energy per capita in Sub-Saharan Africa. *International J. Energy Economics and Policy*, 12 (4): 528-541, 2022. http://doi.org/10.32479/ijeep.12550
11. ***Azuero-Pedraza**, C.G., Thomas, V.M., Ingwersen, W.W. Incorporating New Technologies in EEIO Models. *Appl. Sci.* 2022, ***12***(14), 7016; https://doi.org/10.3390/app12147016.

12. ***Musselman, A.**, Thomas, V. M., Nazzal, D., Papageorgiou, D. J., Venkatesh, A., Mallapragada, D. S. The Impact of Development Priorities on Power System Expansion Planning in Sub-Saharan Africa. *Energy Systems* **3**: 461–492, 2022. https://doi.org/10.1007/s12667-021-00433-z
13. ***Muza**, O., Thomas, V. M. Cultural norms to support gender equity in energy development: Grounding the productive use agenda in Rwanda. *Energy Research and Social Science*. 89, 102543, 2022. https://doi.org/10.1016/j.erss.2022.102543
14. ***Sekanabo**, D; Nyandwi, E.; Hakizimana J.K.; Thomas, V. M. The statistical relationship between economic growth and total energy use: Evidence from panel co-integration and Granger-causality investigation of SSA countries. *International J. Energy Economics and Policy*, **12** (3): 151–160, 2022. https://doi.org/10.32479/ijeep.11472
15. *Arora, P.; Chance, R.R.; Hendrix, H.; Realff, M.J.; Thomas, V.M.; Yuan, Y. Greenhouse gas impact of algal bio-crude production for a range of $CO_2$ supply scenarios. *Appl. Sci.* **2021**, *11*(24), 11931; https://doi.org/10.3390/app112411931
16. *Can Şener, S.; Thomas, V. M.; Hogan, D.; Maier, R.; Carbajales-Dale, M.; Barton, M.; Karanfil, T.; Crittenden, J.; Amy, G. Recovery Potential of Critical Minerals and Metals from Aqueous Sources. *ACS Sustainable Chemistry & Engineering* **9** (35): 11616–11634, 2021. https://doi.org/10.1021/acssuschemeng.1c03005
17. ***Broesicke**, O.; Yan, J.; Thomas, V.M.; Grubert, E. A.; Derrible, S.; Crittenden, J. Combined Heat and Power May Conflict with Decarbonization Goals – Air Emissions of Natural Gas Combined Cycle Power versus Combined Heat and Power Systems for Commercial Buildings. *Envir. Sci. Technol.* **55**(15): 10645–10653, 2021. https://doi.org/10.1021/acs.est.1c00980
18. ***Imasiku**, K. and Thomas, V. M. The Mining and Technology Industries as Catalysts for Sustainable Energy Development. *Sustainability* **24** (12) 10410, 2020. https://doi.org/10.3390/su122410410
19. *Li, M. Pu, Y., Thomas, V. M., Yoo, C. G., Ozcan S., Deng, Y., Nelson K., Ragauskas, A. J. Recent Advancements of Plant-based Natural Fiber-Reinforced Composites and Their Applications. *Composites Part B* **200** (1): 108254, 2020. https://doi.org/10.1016/j.compositesb.2020.108254
20. *Arora, P.; Chance, R.; Fishbeck, T.; Hendrix, H.; Realff, M.; Thomas, V. M.; Yuan, Y. Lifecycle Greenhouse Gas Emissions for an Ethanol Production Process Based on Genetically Modified Cyanobacteria: $CO_2$ Sourcing Options. *Biofuels, Bioproducts & Bioprocesses* **14**: 1323-1334, 2020. http://doi.org/10.1002/bbb.2132

## C. Other Scholarly and Creative Products

C1. Provisional Patents, Applications, and Invention Disclosures

Invention Disclosure: "Wood-derived Hard Carbon Anodes for High Performance Batteries." Sankar Nair, Valerie Thomas, Matthew McDowell, Quyen Xuan Tran, Talia A. Thomas. April 27, 2025. Georgia Tech Office of Technology Licensing, 2025-298.

Intellectual Property Disclosure: "Electric Tag for Product Life Cycle Management," V. Thomas, S. Saar, M. Stutz. 8/13/2003. *IP.com Prior Art Database*. http://ip.com/pubView/IPCOM000018813D

# V. Service

## A. Professional Contributions

### A1. Editorial Board Memberships

Member of the Editorial Board, *Resources, Conservation and Recycling*, 2009-present
Member of the Editorial Board, *Sustainability Analytics and Modeling*, 2021-present.
Associate Editor, *Journal of Industrial Ecology*, 2010-2019.

### A2. Society Offices, Activities, and Membership

Institute of Industrial and Systems Engineers (IISE). Sustainable Development Division.
Conference Track Co-Chair 2020. ESD Outstanding Young Investigator Award (OYIA) Review Committee, 2023. 2024: Lifetime Achievement Award Committee Chair.
American Physical Society:
Nominating Committee: Group on Energy Research and Applications (GERA), 2014; appointed by APS Executive Director.
Chair, Forum on Physics and Society (FPS). 6000 members. April 2013-March 2014. (elected). Past-chair April 2014-2015. Chair-elect April 2012-Mach 2013, Vice-chair, April 2011-March 2012.
Member, APS Physics Policy Committee, 2006.
Member, APS Panel on Public Affairs, 2007.
Vice-chair, Forum on Physics and Society awards committee, 2007 and chair, 2008.
Member, APS Congressional Science Fellow Selection Committee, 2008.
International Society for Industrial Ecology, Elected: Treasurer, 2019-2022. Councilor, 2006-2009, 2011-2014.

## B. Public and Community Service

Chair of *Current Methods for Life Cycle Analysis for Low Carbon Transportation Fuels in the United States*, an ad hoc committee of the National Academies of Sciences, Engineering and Medicine. April 2021 – August 2022.
Member, Georgia Sustainable Building Technical Advisory Committee. 2021-2022. This Committee was mandated by a law amending the current Georgia Carbon Registry passed by the Georgia General Assembly and Governor Kemp, to consider Mass Timber applications.
Member, US DOE and USDA Biomass R&D Technical Advisory Committee. Appointed. 2014-2019.
Congressional Science Fellow, Legislative Office of Representative Rush Holt, 2004-2005. Funded by the American Physical Society. Managed R&D Caucus and Biomedical Research Caucus for Holt. Supported legislative activities related to U.S. Office of Technology Assessment, 2005 Energy Bill, NSF appropriations, and energy research.
US EPA Science Advisory Board: http://www.epa.gov/sab/
Chartered Board Member 2003-2009.
Environmental Engineering Committee Member, 2000-2003.
Panel on Valuing Protection of Ecological Systems and Services, 2003-2004.
Chair, Metals Action Plan Review Panel, 2002.
Subcommittee on Industrial Ecology. Co-chair, 2001.

Dioxin Reassessment Panel, 2000.
Review of Residual Risk Case Study (for Clean Air Act residual risk assessments), 2000.
Integrated Risk Project. Human Exposure and Health, and Steering Committee, 1996-99.
Review of EPA's Report to Congress on Mercury. Chair, sources working group, 1997.
Review of EPA Dioxin Reassessment: Exposure Panel, 1995.
Chair of US EPA Dioxin Inventory External Peer Review. May 1998.
Technical Expert to US Delegation, OECD Workshop on Lead Products, Toronto, Sept. 1994.
Invited by US EPA.