

# Curriculum Vitae for Michael E. Webber

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## Contents

<b>Academic Positions, Professional Experience and Education</b>	<b>2</b>
<b>Peer-Reviewed Journal Articles</b>	<b>3</b>
<b>Peer-Reviewed Conference Proceedings</b>	<b>11</b>
<b>Non-Refereed Conference Papers, Posters &amp; Presentations</b>	<b>20</b>
<b>Books and Book Chapters</b>	<b>26</b>
<b>Select Technical Reports and White Papers</b>	<b>28</b>
<b>Technical Commentary, Op-Eds, Columns</b>	<b>29</b>
<b>Keynote and Plenary Lectures</b>	<b>36</b>
<b>Invited Talks, Seminars, Speeches and Presentations</b>	<b>41</b>
<b>Government Testimony and Briefings</b>	<b>51</b>
<b>Sponsors: September 2007–August 2015</b>	<b>54</b>
<b>Teaching</b>	<b>56</b>
<b>Student and Post-Doctoral Supervision</b>	<b>59</b>
<b>Service to the Profession</b>	<b>68</b>
<b>Honors, Awards, and Fellowships</b>	<b>69</b>
<b>Patents</b>	<b>71</b>
<b>Consulting and Business Partnerships</b>	<b>72</b>
<b>Media Appearances</b>	<b>73</b>

### **Academic Positions And Professional Experience:**

- *Professor*, Mechanical Engineering, UT Austin, 2016–present
- *Deputy Director*, Energy Institute, UT Austin, 2013–present
- *Co-Director*, Clean Energy Incubator, UT Austin, 2009–present
- *Associate Professor*, Mechanical Engineering, UT Austin, 2012–2016
- *Assistant Professor*, Mechanical Engineering, UT Austin, 2007–2012
- *Assoc. Director*, Center for Internat'l Energy & Environmental Policy, UT Austin, 2006–2012
- *Associate Engineer*, RAND Corporation, Santa Monica, CA, 2004–2006
- *Senior Scientist*, Pranalytica, Inc., Santa Monica, CA, 2000–2004
- *Graduate Research Assistant*, Mechanical Engineering, Stanford University, 1995–2000

### **Education:**

- Ph.D., Mechanical Engineering (Ph.D. Minor, Electrical Engineering), 2001, Stanford University (Advisor: Professor Ron K. Hanson, NAE)
- M.S., Mechanical Engineering, 1996, Stanford University
- B.S. with High Honors, Aerospace Engineering, 1995, The University of Texas at Austin
- B.A. with High Honors & Special Honors, Plan II Liberal Arts, 1995, The University of Texas at Austin

## Peer-Reviewed Journal Articles

These articles are listed in reverse chronological order. Papers in review, in press, or in preparation are noted as such (with italicized parenthetical text). Webber’s publication record has an *h-index* of 35 and *i-10* index of 81 (noting the number of publications that have been cited at least 10 times). His highest cited article has more than 224 citations (# 18, published in 2008).

99. E. Mocanu, D.C. Mocanu, P.H. Nguyen, A. Liotta, **M.E. Webber**, M. Gibescu, and J.G. Sloatweg, “On-line Building Energy Optimization Using Deep Reinforcement Learning,” *IEEE Transactions (In Press)*.
98. E.L. Belmont, F.T. Davidson, Y.R. Glazer, E.A. Beagle, and **M.E. Webber**, “Accounting for Water Formation from Hydrocarbon Fuel Combustion in Life Cycle Analyses,” *Environmental Research Letters (In Press)*.
97. C.I. Birney, K. Franklin, F.T. Davidson, and **M.E. Webber**, “An assessment of individual foodprints attributed to diets and food waste in the United States,” *Environmental Research Letters (In Press)*.
96. A.S. Stillwell, A.M. Mroue, J.D. Rhodes, M.A. Cook, J.B. Sperling, T. Hussey, D. Burnett, and **M.E. Webber**, “Water for Energy: Systems Integration and Analysis to Address Resource Challenges,” *Current Sustainable Renewable Energy Reports (In Press)*.
95. C. Galdeano, M.A. Cook and **M.E. Webber**, “Multilayer geospatial analysis of water availability for shale resources development in Mexico,” *Environmental Research Letters* **12** (2017).
94. L.A. Hurtado, J.D. Rhodes, P.H. Nguyen, I.G. Kamphuis, and **M.E. Webber**, “Quantifying demand flexibility based on structural thermal storage and comfort management of non-residential buildings: A comparison between hot and cold climate zones,” *Applied Energy* **195** (2017) 1047–1054.
93. T.A. Deetjen, J.D. Rhodes and **M.E. Webber**, “The impacts of wind and solar on grid flexibility requirements in the Electric Reliability Council of Texas,” *Energy* (2017).
92. B.C. Roberts, A.R. Jones, O.A. Ezekoye, C.J. Ellison, and **M.E. Webber**, “Development of kinetic parameters for polyurethane thermal degradation modeling featuring a bioinspired catecholic flame retardant,” *Combustion and Flame* (2017) .
91. J.D. Rhodes, C.W. King, G. Gulen, S. Olmstead, J. Dyer, R.E. Hebner, F.C. Beach, T.F. Edgar, and **M.E. Webber**, “A geographically-resolved method to estimate leveled power plant costs with environmental externalities,” *Energy Policy*, Volume 102, March 2017, Pages 491–499.
90. R.L. Fares and **M.E. Webber**, “The impacts of storing solar energy in the home to reduce reliance on the utility,” *Nature Energy* **2** Article Number: 17001 (2017).
89. A.S. Stillwell and **M.E. Webber**, “Predicting the Specific Energy Consumption of Reverse Osmosis Desalination,” *Water* **8**(12) (2016).

88. B.C. Roberts, **M.E. Webber** and O.A. Ezekoye, “Why and How the Sustainable Building Community Should Embrace Fire Safety,” *Current Sustainable Renewable Energy Reports* (2017).
87. E.A. Grubert and **M.E. Webber**, “Synthetic flows for engineered systems with nonstationary parameters: A case study of Maui’s Wailoa Ditch,” *Journal of Hydrologic Engineering* (2016).
86. C.M. Beal, F.T. Davidson, **M.E. Webber** and J.C. Quinn, “Flare Gas Recovery for Algal Protein Production,” *Algal Research* **20** (2016) 142–152.
85. T.A. Deetjen, J.B. Garrison, J.D. Rhodes and **M.E. Webber**, “Solar PV integration cost variation due to array orientation and geographic location in the Electric Reliability Council of Texas,” *Applied Energy*, Volume 180, 607–616 (2016).
84. J.D. Rhodes, N-E.I. Bouhou, C.R. Upshaw, M.F. Blackhurst and **M.E. Webber**, “Residential energy retrofits in a cooling climate,” *Journal of Building Engineering*, Volume **16**, 112–118 (2016).
83. N.H. Putnam, K.J. Kinnevan, **M.E. Webber**, and C.C. Seepersad, “Trucks Off the Road: A Method for Assessing Economical Reductions of Logistical Requirements at Contingency Base Camps,” *Engineering Management Journal*, Volume 28, Issue 2 (2016).
82. C.R. Upshaw, J.D. Rhodes, and **M.E. Webber**, “Modeling Electric Load and Water Consumption Impacts from an Integrated Thermal Energy and Rainwater Storage System for Residential Buildings in Texas,” *Applied Energy* (2016).
81. M.A. Cook and **M.E. Webber**, “Food, Fracking, and Freshwater: The Potential for Markets and Cross-Sectoral Investments to Enable Water Conservation,” *Water*, 8(2), 45 (2016).
80. J.R. Fyffe, A.C. Breckel, A.K. Townsend, and **M.E. Webber**, “Use of MRF residue as alternative fuel in cement production,” *Waste Management* 47, pp. 276–284 (2016).
79. M.A. Cook, C.W. King, F.T. Davidson, and **M.E. Webber**, “Assessing the Impacts of Droughts and Heat Waves at Thermoelectric Power Plants in the United States Using Integrated Regression, Thermodynamic, and Climate Models,” *Energy Reports* Volume 1, November 2015, Pages 193–203.
78. C. Telenko, J.M. O’Rourke, **M.E. Webber** and C.C. Seepersad, “A Compilation of Design for Environment Guidelines,” *Journal of Mechanical Design* (2015).
77. B.C. Roberts, **M.E. Webber** and O.A. Ezekoye, “Development of a Multi-Objective Optimization Tool for Selecting Thermal Insulation Materials in Sustainable Designs,” *Energy and Buildings* (2015).
76. P.C. Frumhoff, V. Burkett, R.B. Jackson, R. Newmark, J. Overpeck and **M.E. Webber**, “Vulnerabilities and Opportunities at the Nexus of Electricity, Water and Climate,” *Environmental Research Letters* (2015).
75. J.B. Kjellsson and **M.E. Webber**, “The Energy-Water Nexus: Spatially-resolved analysis of the potential for desalinating brackish groundwater by use of solar energy,” *Resources: Special Issue on Groundwater Quantity and Quality*, pp. 1–13 (13 pp)(2015).

74. E.A. Grubert and **M.E. Webber**, “Energy for Water and Water for Energy on Maui Island, Hawaii,” *Environmental Research Letters* (2015).
73. G.M. Gold and **M.E. Webber**, “The Energy-Water Nexus: An Analysis and Comparison of Various Configurations Integrating Desalination with Renewable Power,” *Resources: Special Issue on Groundwater Quantity and Quality*, pp. 227–276 (50 pp) (2015).
72. M.A. Cook, K. Huber, and **M.E. Webber**, “Who Regulates It? Water Policy and Hydraulic Fracturing in Texas,” *Texas Water Journal*, Vol. 6, No. 1, pp. 45–63 (19 pp) (2015).
71. C.R. Upshaw, J.D. Rhodes and **M.E. Webber**, “Modeling Peak Load Reduction and Energy Consumption Enabled by an Integrated Thermal Energy and Water Storage System for Residential Air Conditioning Systems in Austin, Texas,” *Energy and Buildings*, pp. 21–32 (12 pp)(2015).
70. K.T. Sanders and **M.E. Webber**, “Evaluating the Energy and CO<sub>2</sub> Emissions Impacts of Shifts in Residential Water Heating in the United States,” *Energy*, pp. 317-327 (11pp) (2015).
69. J.D. Rhodes, W.H. Gorman, C.R. Upshaw, and **M.E. Webber**, “Using BEopt (Energy-Plus) with energy audits and surveys to predict actual residential energy usage,” *Energy and Buildings* **86** pp. 808–816 (2015).
68. R.L. Fares and **M.E. Webber**, “Combining a dynamic battery model with high-resolution smart grid data to assess microgrid islanding lifetime,” *Applied Energy* **138** p. 482–489 (2015).
67. R.L. Fares and **M.E. Webber**, “A flexible model for economic operational management of grid battery energy storage,” *Energy*, pp. 768–776 (9pp) (2014).
66. J.D. Rhodes, W.J. Cole, C.R. Upshaw, T.F. Edgar and **M.E. Webber**, “Clustering analysis of residential electricity demand profiles,” *Applied Energy* **135** pp. 461–471 (2014).
65. A.P. Pacsi, K.T. Sanders, **M.E. Webber**, and D.T. Allen, “Spatial and temporal impacts on water consumption in Texas from shale gas development and use,” *ACS Sustainable Chemistry and Engineering*, pp. 2028–2035 (8pp) (2014).
64. K.X. Perez, W.J. Cole, J.D. Rhodes, A. Ondeck, **M.E. Webber**, M. Baldea, and T.F. Edgar, “Nonintrusive Disaggregation of Residential Air-Conditioning Loads from Sub-hourly Smart Meter Data,” *Energy and Buildings* **81** pp. 316–325 (2014).
63. J.D. Rhodes, C.R. Upshaw, W.J. Cole, C.L. Holcomb, and **M.E. Webber**, “A multi-objective assessment of the effect of solar PV array orientation and tilt on energy production and system economics,” *Solar Energy* **108** pp. 28–40, (2014).
62. W.J. Cole, J.D. Rhodes, W.H. Gorman, K.X. Perez, **M.E. Webber** and T.F. Edgar, “Community-scale residential air conditioning control for effective grid management,” *Applied Energy* **130** pp. 428–436 (2014).
61. Y.R. Glazer, J.B. Kjellsson, K.T. Sanders, and **M.E. Webber**, “The Potential for Using Energy from Flared Gas for On-Site Hydraulic Fracturing Wastewater Treatment in Texas,” *Environmental Science and Technology Letters*, pp. 300-304 (5 pp) (2014).

60. K.T. Sanders, M. Blackhurst, C.W. King and **M.E. Webber**, “The Impact of Water Use Fees on Dispatching and Water Requirements for Water-Cooled Power Plants in Texas,” *Environmental Science and Technology*, pp. 7128–7135 (7pp) (2014).
59. C.B. Harris and **M.E. Webber**, “An empirically-validated methodology to simulate electricity demand for electric vehicle charging,” *Applied Energy*, **126**, pp. 172–181 (2014).
58. K.T. Sanders and **M.E. Webber**, “A comparative analysis of the greenhouse gas emissions intensity of wheat and beef in the United States,” *Environmental Research Letters*, **9** 044011 (2014).
57. A.S. Stillwell and **M.E. Webber**, “Geographic, technologic, and economic analysis of using reclaimed water for thermoelectric power plant cooling,” *Environmental Science and Technology*, **48** (8), pp 4588–4595 (2014).
56. E.A. Grubert, A.S. Stillwell and **M.E. Webber**, “Where Does Solar-Aided Seawater Desalination Make Sense? A Method For Identifying Sustainable Sites,” *Desalination* **339** pp. 10–17 (2014).
55. M.E. Clayton, A.S. Stillwell, and **M.E. Webber**, “Implementation of brackish groundwater desalination using wind-generated electricity: A case study of the energy-water nexus in Texas,” *Sustainability (special issue The Energy Sustainability Nexus)* **6**, pp. 758–778 (2014).
54. J.D. Rhodes, C.R. Upshaw, C.B. Harris, C.M. Meehan, D.A. Walling, P.A. Navratil, A.L. Beck, K. Nagasawa, R.L. Fares, W.J. Cole, H. Kumar, R.D. Duncan, C.L. Holcomb, T.F. Edgar, A. Kwasinski, and **M.E. Webber**, “Experimental and Data Collection Methods for a Large-Scale Smart Grid Deployment: Methods and First Results,” *Energy* **65** pp. 462–471 (2014).
53. R.L. Fares, J.P. Meyers, and **M.E. Webber**, “A Dynamic Model-Based Estimate of the Value of a Vanadium Redox Flow Battery for Frequency Regulation in Texas,” *Applied Energy* **113**, Pages 189–198 (10pp) (2014).
52. A.P. Pacsi, N.S. Alhajeri, M.D. Webster, **M.E. Webber**, and D.T. Allen, “Changing the spatial location of electricity generation to increase water availability in areas with drought: A feasibility study and quantification of air quality impacts in Texas,” *Environmental Research Letters* **8** 035029 (7pp) (2013).
51. A.S. Stillwell and **M.E. Webber**, “Evaluating power generation operations in response to changes in surface water reservoir storage,” *Environmental Research Letters* **8** 025014 (15pp) (2013).
50. C.W. King, A.S. Stillwell, K.T. Sanders and **M.E. Webber**, “Coherence between water and energy policies,” *Natural Resources Journal* (98pp) (2013).
49. K.T. Sanders, C.W. King, A.S. Stillwell, and **M.E. Webber**, “Clean Energy and Water: Assessment of Mexico for Improved Water Services and Renewable Energy,” *Environment, Development and Sustainability* (19pp) (2013).

48. A.S. Stillwell and **M.E. Webber**, “A Novel Methodology for Evaluating Economic Feasibility of Low-Water Cooling Technology Retrofits at Power Plants,” *Water Policy* **15** (18pp) (2013).
47. E.A. Grubert, F.C. Beach and **M.E. Webber**, “Can switching fuels save water? A life cycle quantification of freshwater consumption for Texas coal- and natural gas-fired electricity,” *Environmental Research Letters* **7** 045801 (11pp) (2012).
46. K.T. Sanders and **M.E. Webber**, “Evaluating the energy consumed for water use in the United States,” *Environmental Research Letters* **7** 034034 (11pp) (2012).
45. C.B. Harris and **M.E. Webber**, “A temporal assessment of vehicle use patterns and their impact on the provision of vehicle-to-grid services,” *Environmental Research Letters* **7** 034033 (9pp) (2012).
44. C.M. Beal, A.S. Stillwell, C.W. King, S.M. Cohen, H. Berberoglu, R.P. Bhattarai, R. Connelly, **M.E. Webber**, R.E. Hebner, “Energy Return on Investment for Algal Biofuel Production Coupled with Wastewater Treatment,” *Water Environment Research*, Volume **84**, Number 9 (19pp) (2012).
43. C.M. Beal, R.E. Hebner, **M.E. Webber**, R.S. Ruoff, F. Seibert, and C.W. King, “Comprehensive Evaluation of Algal Biofuel Production: Experimental and Target Results,” *Energies (Special Issue: Algal Fuel)* **5**(6) (39pp) (2012).
42. C.M. Beal, R.E. Hebner, **M.E. Webber**, “Thermodynamic Analysis of Algal Biocrude Production,” *Energy*, Volume **44**, Issue 1 (19pp) (2012).
41. C.B. Harris, J.P. Meyers, and **M.E. Webber**, “A unit commitment study of the application of energy storage toward the integration of renewable generation,” *Journal of Renewable and Sustainable Energy*, Volume **4**, Issue 1 (20pp) (2012).
40. A.K. Townsend and **M.E. Webber**, “An Integrated Analytical Framework for Quantifying the LCOE of Waste-to-Energy Facilities for a Range of Greenhouse Gas Emissions Policy and Technical Factors,” *Waste Management* (12pp) (2012).
39. S.M. Cohen, G.T. Rochelle, and **M.E. Webber**, “Optimizing post-combustion CO<sub>2</sub> capture in response to volatile electricity prices,” *International Journal of Greenhouse Gas Control Technologies*, **8** (16pp) (2012).
38. A.S. Stillwell, K.M. Twomey, R. Osborne, D.M. Greene, D.W. Pedersen, and **M.E. Webber**, “An Integrated Energy, Carbon, Water and Economic Analysis of Reclaimed Water Use In Urban Settings: A Case Study of Austin, Texas,” *Journal of Water Reuse and Desalination*, **Vol 1 No 4**, pp. 208–223 (15pp) (2011).
37. N.S. Alhajeri, P. Donohoo, A.S. Stillwell, C.W. King, M.D. Webster, **M.E. Webber**, and D.T. Allen, “Using Market-Based Dispatching With Environmental Price Signals to Reduce Emissions and Water Use at Power Plants in the Texas Grid,” *Environmental Research Letters* **6** 044018 (9pp) (2011).
36. J.D. Rhodes, B. Stephens, and **M.E. Webber**, “Using energy audits to investigate the impacts of common air-conditioning design and installation issues on peak power and energy consumption in Austin, Texas,” *Energy and Buildings*, **43** 3271–3278 (8pp) (2011).

35. A.S. Stillwell, M.E. Clayton, and **M.E. Webber**, “Technical analysis of a river basin-based model of advanced power plant cooling technologies for mitigating water management challenges,” *Environmental Research Letters* **6** 034015 (11pp) (2011).
34. C.M. Beal, R.E. Hebner, **M.E. Webber**, R.S. Ruoff, and F. Seibert, “The Energy Return on Investment for Algal Biocrude: Results for a Research Production Facility,” *Bioenergy Research* (**5**)2:341–362 (22pp) (2012).
33. J.B. Garrison and **M.E. Webber**, “An Integrated Energy Storage Scheme for a Dispatchable Solar and Wind Powered Energy System,” *Journal of Renewable and Sustainable Energy* **3** 043101 (12pp) (2011).
32. T.M. Thompson, C.W. King, D.T. Allen, and **M.E. Webber**, “Air Quality Impacts of Plug-in Hybrid Electric Vehicles in Texas: Evaluating Three Battery Charging Scenarios,” *Environmental Research Letters* **6** 024004 (11pp) (2011).
31. S.M. Cohen, H.L. Chalmers, **M.E. Webber**, and C.W. King, “Comparing post-combustion CO<sub>2</sub> capture operation at retrofitted coal-fired power plants in the Texas and Great Britain electric grids,” *Environmental Research Letters* **6** 024001 (14pp) (2011).
30. S.M. Cohen, **M.E. Webber**, and G.T. Rochelle, “Utilizing Solar Thermal Energy for Post-Combustion CO<sub>2</sub> Capture,” *Journal of Energy and Power Engineering* (14pp) (2011).
29. A.S. Stillwell, C.W. King, **M.E. Webber**, I. J. Duncan and A. Hardberger, “The Energy-Water Nexus in Texas,” *Ecology and Society (Special Feature: The Energy-Water Nexus: Managing the Links between Energy and Water for a Sustainable Future)* **16** (1): 2 (20pp) (2011).
28. D.M. Wogan, **M.E. Webber**, and A.K. da Silva, “A Framework and Methodology for Reporting Geographically- and Temporally-Resolved Solar Data: A Case Study of Texas,” *Journal of Renewable and Sustainable Energy* (22pp) (2010).
27. C.M. Beal, C.H. Smith, **M.E. Webber**, R.S. Ruoff, and R.E. Hebner, “A Framework to Report the Production of Renewable Diesel from Algae,” *Bioenergy Research*, Vol 4, Issue 1, p. 36 (25pp) (2011).
26. A.S. Stillwell, C.W. King, and **M.E. Webber**, “Desalination And Long-Haul Water Transfer as a Water Supply for Dallas, Texas: A Case Study Of The Energy-Water Nexus In Texas,” *Texas Water Journal*, Volume 1, Number 1, Pages 33-41 (8pp) September 2010.
25. A.D. Cuellar and **M.E. Webber**, “Wasted Food, Wasted Energy: The Embedded Energy in Food Waste in the United States,” *Environmental Science and Technology*, **44**(16) (6pp) July 21, 2010.
24. S.M. Cohen, G.T. Rochelle, and **M.E. Webber**, “Turning CO<sub>2</sub> Capture On & Off In Response To Electric Grid Demand: A Baseline Analysis Of Emissions And Economics,” *ASME Journal of Energy Resources Technology*, Vol.132, Iss.2 (8pp) May 17, 2010.
23. A.S. Stillwell, D.C. Hoppock, and **M.E. Webber**, “Energy Recovery from Wastewater Treatment Plants in the United States: A Case Study of the Energy-Water Nexus,” *Sustainability (special issue Energy Policy and Sustainability)* **2**(4) (18pp) (2010).



22. C.M. Beal, **M.E. Webber**, R.S. Ruoff and R.E. Hebner, "Lipid Analysis of *Neochloris oleoabundans* by Liquid State NMR," *Biotechnology and Bioengineering* (11pp) (2010).
21. C.W. King, **M.E. Webber** and I. J. Duncan, "The Water Needs for LDV Transportation in the United States," *Energy Policy*, Vol. 38 (2), pp 1157-1167 (11pp) (2010).
20. K.M. Twomey, A.S. Stillwell, and **M.E. Webber**, "The Unintended Energy Impacts of Increased Nitrate Contamination from Biofuels Production," *Journal of Environmental Monitoring* **12** (7pp) (2010).
19. T.M. Thompson, **M.E. Webber**, and D.T. Allen, "Air Quality Impacts of Using Overnight Electricity Generation to Charge PHEVs for Daytime Use," *Environmental Research Letters* **4** 014002 (12pp) January 2009.
18. C.W. King and **M.E. Webber**, "Water Intensity of Transportation," *Environmental Science and Technology*, 42(21), pp 7866-7872 (7pp) (September 24, 2008).
17. A.D. Cuellar and **M.E. Webber**, "Cow Power: The Energy and Emissions Benefits of Converting Manure to Biogas," *Environmental Research Letters*, **3** 034002 (8pp) July 2008.
16. C.W. King and **M.E. Webber**, "The Water Intensity of the Plugged-in Automotive Economy," *Environmental Science and Technology, Special Edition: World's Water*, **42**, 4305–4311 (7pp) 20 Feb 2008.
15. **M.E. Webber**, "The Water Intensity of the Transitional Hydrogen Economy," *Environmental Research Letters* **2** 034007 (7pp) (2007).
14. S.L. Pfleeger, M. Libicki, and **M.E. Webber**, "Ill Buy That! Cybersecurity in the Internet Marketplace," *IEEE Security and Privacy, special issue on Managing Organizational Security*, May/June 2007.
13. M.B. Pushkarsky, **M.E. Webber**, T. MacDonald, and C.K.N. Patel, "High Sensitivity, High-Selectivity Detection of Chemical Warfare Agents," *Applied Physics Letters*, January 27, 2006.
12. **M.E. Webber**, T. MacDonald, M.B. Pushkarsky, C.K.N. Patel, Y. Zhao, N. Marcillac and F.M. Mitloehner, "Agricultural ammonia sensor using diode lasers and photoacoustic spectroscopy," *Meas. Sci. Technol.* 16, pp. 15471553, 2005. **(Outstanding Paper award as MS&T's best paper for 2005, measurement science category.)**
11. **M.E. Webber**, M.B. Pushkarsky and C.K.N. Patel, "Optical Detection of Chemical Warfare Agents and Toxic Industrial Chemicals: Simulation," *Journal of Applied Physics* 97(11), 2005.
10. M.B. Pushkarsky, **M.E. Webber** and C.K.N. Patel, "Ultra-sensitive ambient ammonia detection using CO<sub>2</sub>-laser-based photoacoustic spectroscopy," *Appl. Phys. B* 77(4), pp. 381385, 2003.
9. **M.E. Webber**, M.B. Pushkarsky, and C.K.N. Patel, "Fiber-amplifier enhanced photoacoustic spectroscopy using near-infrared tunable diode lasers," *Applied Optics, LACEA Feature Issue*, 42(12), 2003.

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7. **M.E. Webber**, R. Claps, F.V. Englich, F.K. Tittel, J.B. Jeffries and R.K. Hanson, "Measurements of NH<sub>3</sub> and CO<sub>2</sub> with distributed-feedback diode lasers Near 2  $\mu$ m in bioreactor vent gases," *Applied Optics*, 40(24), 2001.
6. **M.E. Webber**, D.S. Baer, and R.K. Hanson, "Ammonia Monitoring Near 1.5  $\mu$ m with Diode Laser Absorption Sensors," *Applied Optics*, 40(12), pp. 2031- 2042, 2001.
5. **M.E. Webber**, S. Kim, S.T. Sanders, D.S. Baer, R.K. Hanson and Y. Ikeda, "In Situ Combustion Measurements of CO<sub>2</sub> by Use of a Distributed-Feedback Diode Laser Sensor Near 2.0  $\mu$ m," *Applied Optics*, Vol. 40(6), 2001.
4. **M.E. Webber**, J. Wang, S.T. Sanders, D.S. Baer and R.K. Hanson, "In Situ Combustion Measurements of CO, CO<sub>2</sub>, H<sub>2</sub>O and Temperature Using Diode Laser Absorption Sensors," *Proceedings of the Combustion Institute*, 28, pp. 407-413, 2000.
3. E.R. Furlong, R.M. Mihalcea, **M.E. Webber**, D.S. Baer and R.K. Hanson, "Diode-laser sensors for real-time control of pulsed combustion systems," *AIAA Journal* 37(6), pp. 732–737, 1999.
2. **M.E. Webber**, R.M. Mihalcea, D.S. Baer, R.K. Hanson, J. Segall, P.A. DeBarber, "Diode Laser Absorption Measurement of Hydrazine and Monomethylhydrazine," *J. Quant. Spectrosc. Radiative Transfer*, 62(4), pp. 511-522 (1999).
1. R.M. Mihalcea, **M.E. Webber**, D.S. Baer, R.K. Hanson, G.S. Feller, and W.B. Chapman, "Diode-Laser Absorption Measurements of CO<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>O and NH<sub>3</sub> near 2.0  $\mu$ m," *Applied Physics B* 67(3), 1998

## Peer-Reviewed Conference Proceedings

Webber has authored or co-authored more than 90 articles for peer-reviewed conference proceedings. These articles are listed in reverse chronological order here.

94. T.A. Deetjen, J.S. Vitter and **M.E. Webber**, “Improving solar-induced grid-level flexibility requirements using residential central utility plants,” *PowerTech*, 2017 IEEE Manchester, June 18-22, 2017.
93. C.R. Upshaw, J.D. Rhodes and **M.E. Webber**, “Modeling Peak Electric Load Reduction and Change in Energy Consumption for an Integrated Thermal Energy and Rainwater Storage System Coupled With a Hydronic Residential Air Conditioning System in Texas,” *The 3rd Sustainable Thermal Energy Management International Conference (SusTEM 2015)*, July 7–8, 2015, Newcastle upon Tyne, UK.
92. C.R. Upshaw, J.D. Rhodes and **M.E. Webber**, “Estimating Water Savings from an Auxiliary Water Collection System, as Part of an Integrated Thermal Energy and Water Storage System for Residential Buildings,” *2015 ASHRAE Winter Conference*, Chicago, IL, January 24–28, 2015.
91. M.A. Cook, **M.E. Webber** and C.W. King, “Impacts of Temperature Thresholds on Power Generation in the Upper Mississippi River Basin under Different Climate Scenarios,” *ASME 2014 International Mechanical Engineering Congress & Exposition*, November 14–20, 2014. Montreal, Quebec, Canada.
90. B.C. Roberts, **M.E. Webber** and O.A. Ezekoye, “A Multi-objective Fire Safety and Sustainability Screening Tool for Specifying Insulation Materials,” *ASME 2014 International Mechanical Engineering Congress & Exposition*, November 14–20, 2014. Montreal, Quebec, Canada.
89. C.B. Harris and **M.E. Webber**, “The Sensitivity of Vehicle-To-Grid Revenues to Plug-In Electric Vehicle Battery Size and EVSE Power Rating,” *Proceedings of the IEEE Power and Energy Society (PES) General Meeting*, National Harbor, MD, July 27-31, 2014.
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87. E.M. Keys and **M.E. Webber**, “Variable Speed Drives for Power Factor Correction in the Water Sector,” *The 5th International Symposium on Power Electronics for Distributed Generation (PEDG) Systems*, IEEE, June 24–27, 2014, Galway, Ireland.
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85. C.B. Harris and **M.E. Webber**, “The impact of vehicle charging loads on frequency regulation procurements in ERCOT,” *Proceedings of the 2014 IEEE Power & Energy Society (PES) Innovative Smart Grid Technologies Conference (ISGT)*, Washington, DC, February 19–22, 2014.
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83. C.B. Harris and **M.E. Webber**, “Quantifying the Effect of Plug-In Electric Vehicles on Future Grid Operations and Ancillary Service Procurement Requirements,” *ASME 2013 International Mechanical Engineering Congress & Exposition*, November 13–21, 2013, San Diego, CA, USA.
82. J.B. Kjellsson, David Greene, Raj Bhattarai, and **M.E. Webber**, “Energy Benchmarking of Water and Wastewater Treatment, Distribution and Collection: Case Study of Austin Water Utility,” *ASME 2013 International Mechanical Engineering Congress & Exposition*, November 13–21, 2013, San Diego, CA, USA
81. M.A. Cook, C.W. King and **M.E. Webber**, “Implications of Thermal Discharge Limits on Future Power Generation in Texas,” *ASME 2013 International Mechanical Engineering Congress & Exposition*, November 13–21, 2013, San Diego, CA, USA.
80. K.T. Sanders, M. Blackhurst, and **M.E. Webber**, “Evaluating the feasibility of reducing water use in the power sector: A case study of ERCOT,” World Environmental and Water Resources Congress 2013, American Society of Civil Engineers, Cincinnati, OH, May 20–22, 2013.
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76. M.E. Clayton and **M.E. Webber**, “Assessment of Embedded Water Needs at a Mixed-Use Facility in Palo Alto, CA,” *ASME 2012 International Mechanical Engineering Congress & Exposition*, November 9–15, 2012, Houston, TX, USA.
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71. K. Nagasawa, C.R. Upshaw, J.D. Rhodes, C. Holcomb and **M.E. Webber**, “Data Management for a Large-Scale Smart Grid Demonstration Project in Austin, Texas,” *Proceedings of the ASME 6th International Conference on Energy Sustainability*, July 23–26, 2012, San Diego, CA, USA.
70. K.M. Twomey, S. Conover, and **M.E. Webber**, “Reducing Residential and Commercial Energy Consumption in the US: The Role of Water Heaters,” *Proceedings of the ASME 6th International Conference on Energy Sustainability*, July 23–26, 2012, San Diego, CA, USA.
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68. J.D. Rhodes, K. Nagasawa, C.R. Upshaw, and **M.E. Webber**, “The Role of Small Distributed Natural Gas Fuel Cell Technologies in the Smart Energy Grid,” *Proceedings of the ASME 6th International Conference on Energy Sustainability*, July 23–26, 2012, San Diego, CA, USA.
67. J.D. Rhodes, B. Stephens, and **M.E. Webber**, “Energy Audit Analysis of Residential Air-Conditioning Systems In Austin, Texas,” *ASHRAE 2012 Winter Conference*, January 21-25, 2012, Chicago, IL, USA.
66. A.K. Townsend and **M.E. Webber**, “Energetic and Economic Performance of a Compressed Air Energy Storage Facility in Texas as a Function of Technical and Cost Parameters,” *ASME 2011 International Mechanical Engineering Congress & Exposition*, November 11–17, 2011, Denver, CO, USA.
65. J.R. Fyffe, M.E. Clayton, C.E. Grosvenor, and **M.E. Webber**, “Analysis of Large-Scale Ground Source Heat Pump Systems for Residential Heating and Cooling in Austin, TX,” *ASME 2011 International Mechanical Engineering Congress & Exposition*, November 11–17, 2011, Denver, CO, USA.
64. J.R. Fyffe, A.K. Townsend, and **M.E. Webber**, “Thermodynamic Analysis of End-of-Life Pathways for Recycling Residue,” *ASME 2011 International Mechanical Engineering Congress & Exposition*, November 11–17, 2011, Denver, CO, USA.

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62. M.E. Clayton, A.S. Stillwell, and **M.E. Webber**, “Implementation of Brackish Groundwater Desalination using Wind-Generated Electricity as a Proxy for Energy Storage: A Case Study of the Energy-Water Nexus in Texas,” *ASME 2011 International Mechanical Engineering Congress & Exposition*, November 11–17, 2011, Denver, CO, USA.
61. B.H. Gully, **M.E. Webber**, C.C. Seepersad, “Shaft Motor-Generator Design Assessment for Increased Operational Efficiency in Container Ships,” *Proceedings of the ASME 5th International Conference on Energy Sustainability*, August 7–10, 2011, Washington, DC, USA.
60. C.R. Upshaw and **M.E. Webber**, “Integrated Thermal-Fluids System Modeling of an Ocean Thermal Energy Conversion Power Plant for Analysis and Optimization,” *Proceedings of the ASME 5th International Conference on Energy Sustainability*, August 7–10, 2011, Washington, DC, USA.
59. C.E. Grosvenor, M.C. Lott, and **M.E. Webber**, “A Methodology for Evaluating the Environmental Trade-Offs for Different Travel and Information Communication Technologies (ICT),” *Proceedings of the ASME 5th International Conference on Energy Sustainability*, August 7–10, 2011, Washington, DC, USA.
58. E.A. Grubert and **M.E. Webber**, “Water, Energy, And Land Use Planning On Maui Island, Hawaii: Estimating Surface Water Supply,” *Proceedings of the ASME 5th International Conference on Energy Sustainability*, August 7–10, 2011, Washington, DC, USA.
57. J.B. Garrison and **M.E. Webber**, “An Integrated Energy Storage Scheme For A Dispatchable Solar And Wind Powered Energy System And Analysis Of Dynamic Parameters,” *Proceedings of the ASME 5th International Conference on Energy Sustainability*, August 7–10, 2011, Washington, DC, USA.
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53. N.H. Putnam, **M.E. Webber**, C.C. Seepersad, “Trucks Off The Road: A Volumetric Framework For Evaluating Energy Technologies For Forward Operating Military Base Camps,” *Proceedings of the ASME 5th International Conference on Energy Sustainability*, August 7–10, 2011, Washington, DC, USA.

52. A. Lozano and **M.E. Webber**, “Thermodynamic Analysis of a Novel Thermoelectric Generator in the Built Environment,” 47th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, 9th Annual International Energy Conversion Engineering Conference, San Diego, CA, July 2011.
51. E.A. Grubert and **M.E. Webber**, “Modeling Maui’s Freshwater System to Inform Water Resource Management,” World Environmental and Water Resources Congress 2011, American Society of Civil Engineers, Palm Springs, CA, May 22-26, 2011.
50. A.S. Stillwell, K.M. Twomey, **M.E. Webber**, R. Osborne, D.M. Greene, D.W. Pedersen, “An Integrated Energy, Carbon, and Economic Analysis of Reclaimed Water Use in Austin, Texas,” World Environmental and Water Resources Congress 2011, American Society of Civil Engineers, Palm Springs, CA, May 22-26, 2011.
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48. B.H. Gully, **M.E. Webber** and C.C. Seepersad, “A Comparative Analysis Of Wind Propulsion Systems For Ocean-Going Vessels,” *ASME 2010 International Mechanical Engineering Congress & Exposition*, November 12–18, 2010, Vancouver, British Columbia, Canada.
47. C.M. Beal, R.E. Hebner, **M.E. Webber**, R.S. Ruoff, and A.F. Seibert, “The Energy Return On Investment For Algal Biocrude: Results For A Research Production Facility,” *ASME 2010 International Mechanical Engineering Congress & Exposition*, November 12–18, 2010, Vancouver, British Columbia, Canada.
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45. S.M. Cohen, G.T. Rochelle and **M.E. Webber**, “The Value of Flexible Post-Combustion CO<sub>2</sub> Capture in Response to Volatile Electricity Prices,” *Energy Procedia* (2011), *Proceedings of the 10th International Conference on Greenhouse Gas Technologies (GHGT-10)*, Amsterdam, The Netherlands (2010).
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42. M.C. Lott and **M.E. Webber**, “Evaluation of H.R. 2454s Potential Impacts on Texas Electricity Profile Using the Rosenfeld Effect as a Basis for Evaluation,” *Proceedings of the ASME 4th International Conference on Energy Sustainability*, May 17–22, 2010, Phoenix, AZ, US.

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39. B.H. Gully, **M.E. Webber**, C.C. Seepersad and R.C. Thompson, “Integrating Renewable Energy Technologies to Reduce Large Ship Fuel Consumption,” *Proceedings of the ASME 4th International Conference on Energy Sustainability*, May 17–22, 2010, Phoenix, AZ, US.
38. C.B. Harris, **M.E. Webber** and J.P. Meyers, “Electric Utility Operational Cost and Emissions Management with Grid-Scale Energy Storage,” *Proceedings of the ASME 4th International Conference on Energy Sustainability*, May 17–22, 2010, Phoenix, AZ, US.
37. D.M. Wogan, **M.E. Webber**, and A.K. da Silva, “A Resource-Limited Approach to Estimating Algal Biomass Production with Geographical Fidelity,” *Proceedings of the ASME 4th International Conference on Energy Sustainability*, May 17–22, 2010, Phoenix, AZ, US.
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32. S.M. Cohen, **M.E. Webber** and G.T. Rochelle, “Using Solar Thermal energy for Post-Combustion CO<sub>2</sub> Capture,” *Proceedings of the ASME 4th International Conference on Energy Sustainability*, May 17–22, 2010, Phoenix, AZ, US.
31. A.S. Stillwell and **M.E. Webber**, “Water Conservation and Reuse: A Case Study of the Energy-Water Nexus in Texas,” World Environmental and Water Resources Congress 2010, Providence, Rhode Island, USA.
30. C. Telenko, C.C. Seepersad, and **M.E. Webber**, “A Method for Developing Design for Environment Guidelines for Future Product Design,” Proceedings of ASME IDETC/CIE 2009, August 30-September 2, 2009, San Diego, CA.



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28. C.M. Beal, C.H. Smith, **M.E. Webber** and R.S. Ruoff, A Framework to Report the Production of Biodiesel from Algae,” *Proceedings of the ASME 3rd International Conference on Energy Sustainability*, July 19–23, 2009, San Francisco, CA, USA.
27. C.W. King and **M.E. Webber**, “Methodology for Calculating the Ability of Renewable Energy Systems to Manufacture Themselves,” *Proceedings of the ASME 3rd International Conference on Energy Sustainability*, July 19–23, 2009, San Francisco, CA, USA.
26. J.B. Garrison, M. Kapner and **M.E. Webber**, “A First Order Thermodynamic And Economic Analysis For Integrating Thermal And Compressed Air Energy Storage For A Dispatchable Wind And Solar Powered System,” *Proceedings of the ASME 3rd International Conference on Energy Sustainability*, July 19–23, 2009, San Francisco, CA, USA.
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24. A.D. Cuellar and **M.E. Webber**, “Policy Incentives, Barriers and Recommendations for Biogas Production,” *Proceedings of the ASME 3rd International Conference on Energy Sustainability*, July 19–23, 2009, San Francisco, CA, USA.
23. D.M. Wogan, A.K. da Silva, and **M.E. Webber**, “Assessing the Potential for Algal Biofuels Production in Texas,” *Proceedings of the ASME 3rd International Conference on Energy Sustainability*, July 19–23, 2009, San Francisco, CA, USA.
22. A.S. Stillwell, C.W. King, and **M.E. Webber**, “Desalination And Long-Haul Water Transfer A Case Study Of The Energy-Water Nexus In Texas,” *Proceedings of the ASME 3rd International Conference on Energy Sustainability*, July 19–23, 2009, San Francisco, CA, USA.
21. K.M. Twomey, A.S. Stillwell, and **M.E. Webber**, “The Water Quality and Energy Impacts of Biofuels,” *Proceedings of the ASME 3rd International Conference on Energy Sustainability*, July 19–23, 2009, San Francisco, CA, USA.
20. M.C. Lott, C.W. King, and **M.E. Webber**, “Analyzing Tradeoffs in Electricity Choices Using the Texas Interactive Power Simulator (TIPS),” *Proceedings of the ASME 3rd International Conference on Energy Sustainability*, July 19–23, 2009, San Francisco, CA, USA.
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18. A.S. Stillwell and **M.E. Webber**, “Energy and Water: Integration for Sustainable Policy,” APSA, *Proceedings of the International Sustainability Conference*, Villanova University, April 22-25, 2009.
17. M.C. Lott, C.W. King, **M.E. Webber** and K. Schmidt, “The Texas Interactive Power Simulator — An Analytical Tool for Direct Instruction & Informing the Public,” *ASEE GSW Conference 2009*, Waco, TX, March 2009.

16. S. Ziaii, S.M. Cohen, G.T. Rochelle, T.F. Edgar and **M.E. Webber**, “Dynamic operation of amine scrubbing in response to electricity demand and pricing,” *Energy Procedia*, Volume 1, Issue 1, February 2009, Pages 4047-4053, *Proceedings of the 9th International Conference on Greenhouse Gas Control Technologies (GHGT-9)*, Washington DC, USA (2008).
15. A.D. Cuellar and **M.E. Webber**, “Cow Power: The Energy And Air Quality Benefits Of Converting Manure To Biogas,” International Mechanical Engineering Congress & Exposition 2008, ASME: Boston, MA
14. E.M. Keys and M.E. Webber, An Assessment and Comparison of Installed Solar and Wind Capacity in Texas,” *Proceedings of the ASME 2nd International Conference on Energy Sustainability*, August 10–14, 2008, Jacksonville, FL, USA.
13. S.M. Cohen, G.T. Rochelle and **M.E. Webber**, “Turning CO<sub>2</sub> Capture On & Off in Response to Electric Grid Demand in Texas: A Baseline Analysis of Emissions and Economics,” *Proceedings of the ASME 2nd International Conference on Energy Sustainability*, August 10–14, 2008, Jacksonville, FL, USA.
12. C.W. King, **M.E. Webber**, and I.J. Duncan, “Water Intensity Of Transportation Fuels: Water Projections For Fuel Adoption Rates Of Light Duty Vehicles,” *Proceedings of the ASME 2nd International Conference on Energy Sustainability*, August 10–14, 2008, Jacksonville, FL, USA.
11. C.H. Smith, D.M. Leahey, L.E. Miller, J.L. Ellzey and **M.E. Webber**, “Conversion of Wet Ethanol to Syngas and Hydrogen,” *Proceedings of the ASME 2nd International Conference on Energy Sustainability*, August 10–14, 2008, Jacksonville, FL, USA. [**Best Student Paper Award**]
10. C. Telenko, C.C. Seepersad and **M.E. Webber**, “A Compilation Of Design For Environment Principles And Guidelines,” Proceedings of ASME IDETC/CIE 2008, August 3-6, 2008, New York, NY.
9. M.B. Pushkarsky, **M.E. Webber**, and C.K.N. Patel, “High-sensitivity high-selectivity detection of CWAs and TICs using tunable laser photoacoustic spectroscopy,” Proceedings of SPIE – Volume 5732, Quantum Sensing and Nanophotonic Devices II, Manijeh Razeghi, Gail J. Brown, Editors, March 2005, pp. 93-107.
8. **M.E. Webber**, M.B. Pushkarsky, and C.K.N. Patel, “Optical detection of chemical warfare agents and toxic industrial chemicals,” Proceedings of SPIE Vol. 5617, Optically Based Biological and Chemical Sensing for Defence, edited by John C. Carrano, Arturas Zukauskas (SPIE, Bellingham, WA, 2004).
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6. **M.E. Webber**, M.B. Pushkarsky and C.K.N. Patel, “Agricultural ammonia sensor using diode lasers and photoacoustic spectroscopy,” Proceedings of the Laser Applications for

Chemical and Environmental Analysis (LACEA) Topical Meeting, Optical Society of America, Annapolis, MD, February 9-11, 2004.

5. M.B. Pushkarsky, **M.E. Webber** and C.K.N. Patel, "Ultra-sensitive ambient trace-gas sensor using CO<sub>2</sub> lasers and photoacoustic spectroscopy," Proceedings of the Laser Applications for Chemical and Environmental Analysis (LACEA) Topical Meeting, Optical Society of America, Annapolis, MD, February 9-11, 2004.
4. **M.E. Webber**, M.B. Pushkarsky, and C.K.N. Patel, "Ultra-Sensitive Gas Detection Using Diode Lasers and Resonant Photoacoustic Spectroscopy," Proc. Of SPIE, vol. 4817 (2002), pp. 111122, SPIE's International Symposium on Optical Science and Technology, Seattle, WA.
3. **M.E. Webber**, M.B. Pushkarsky, O. Baghdassarian, L.R. Narasimhan, and C.K.N. Patel, "Ultra-sensitive ammonia detection for industrial applications using photoacoustic spectroscopy," Proceedings of the Laser Applications for Chemical and Environmental Analysis (LACEA) Topical Meeting, Optical Society of America, Boulder, CO, February 9-11, 2002.
2. **M.E. Webber**, S. Kim, D.S. Baer, and R.K. Hanson, "In Situ Combustion Diagnostics using Diode Laser Absorption Sensors," Laser Applications to Chemical and Environmental Analysis (LACEA), Santa Fe, NM, Feb., 2000.
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## Non-Refereed Conference Papers, Posters & Presentations

Webber has authored or co-authored dozens of non-refereed papers, posters or presentations for conferences. These papers are listed in reverse chronological order here.

69. C.M. James, T.F. Edgar, and **M.E. Webber**, “Reducing Flushing Waste in Municipal Water Systems: A Data-Driven Modeling and Optimization Study,” 2015 AIChE Annual Meeting, November 12, 2015, Salt Lake City, UT.
68. M.A. Cook, Y.R. Glazer, and **M.E. Webber**, “A Techno-economic Analysis of Water Use and Recycling for Shale Production: Lessons Learned in Texas,” The Third European Conference on Sustainability, Energy & the Environment, July 9–12, 2015, Brighton, England, UK. (2015).
67. Y.R. Glazer and **M.E. Webber**, “Using Flared Gas as the Energy Source for Treating Hydraulic Fracturing Wastewater,” *ASME Power and Energy*, June 28–July 2, 2015 San Diego, CA, USA.
66. M.A. Cook, K. Jones, and **M.E. Webber**, “Quantifying the relationship between power plant efficiency and thermal pollution of a cooling pond: a case study in Texas,” *ASME Power and Energy*, June 28–July 2, 2015 San Diego, CA, USA.
65. M.A. Cook, and **M.E. Webber**, “Mitigating the Impacts of Droughts and Heat Waves at Thermoelectric Power Plants in the United States,” *ASME Power and Energy*, June 28–July 2, 2015 San Diego, CA, USA.
64. B. Ólafsson and **M.E. Webber**, “Technical Potential of Renewable Natural Gas (RNG) in the United States,” *ASME Power and Energy*, June 28–July 2, 2015 San Diego, CA, USA.
63. R.L. Fares and **M.E. Webber**, “Life cycle greenhouse gas emissions from lithium-ion grid energy storage,” *ASME Power and Energy*, June 28–July 2, 2015 San Diego, CA, USA.
62. K. Nagasawa and **M.E. Webber**, “Quantifying the energetic, environmental, and economic tradeoffs of the all-gas home,” *ASME Power and Energy*, June 28–July 2, 2015 San Diego, CA, USA.
61. C.R. Upshaw and **M.E. Webber**, “NexusHaus: Addressing the Energy, Water, Food, and Population Growth Nexus Through Integrated Building Systems,” *ASME Power and Energy*, June 28–July 2, 2015 San Diego, CA, USA.
60. B.C. Roberts, O.A. Ezekoye, and **M.E. Webber**, “Improvements Upon a Multi-objective Fire Safety and Sustainability Screening Tool for Specifying Insulation Materials,” *ASME Power and Energy*, June 28–July 2, 2015 San Diego, CA, USA.
59. M.A. Cook and **M.E. Webber**, “A Techno-economic Analysis of Water Recycling for Shale Production in Texas,” World Environmental and Water Resources Congress 2015, American Society of Civil Engineers, Austin, TX, May 17–21, 2015.

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82. **M.E. Webber**, “Include agriculture in emissions policy,” *Corpus Christi Caller Times*, March 5, 2015.
81. **M.E. Webber**, “Solving Energy, Water and Food,” *Scientific American*, February 2015.
80. **M.E. Webber**, “From Love Affair to Open Relationship,” *Tech Buzz/Energy, Mechanical Engineering*, February 2015.
79. **M.E. Webber**, “It’s time for Republicans to pass carbon tax,” *Houston Chronicle*, January 6, 2015.
78. **M.E. Webber**, “Crystal Ball Science: In the Energy Sector, Follow The Money in 2015,” *Earth Magazine*, December 2014.
77. K. Hayhoe and **M.E. Webber**, “The Next 60: Cutting Carbon and Reinventing the Economy,” *Texas Observer*, December 11, 2014.
76. **M.E. Webber**, “The risks and rewards of Keystone XL,” *Texas Tribune*, November 23, 2014.
75. I. Barchas and **M.E. Webber**, “UT energy experts: A cold war brews between Saudi Arabia and Texas,” *Dallas Morning News*, November 6, 2014.
74. **M.E. Webber**, “Wasting an Opportunity,” *Tech Buzz/Energy, Mechanical Engineering*, November 2014.
73. M.E. Clayton, J.B. Kjellsson, and **M.E. Webber**, “Wind-Solar-Desalination: How Integrated Systems Can Solve Our Water and Energy Issues,” *Earth Magazine*, November 2014.
72. **M.E. Webber**, “The Progression of Progress,” *Tech Buzz/Energy, Mechanical Engineering*, July 2014.
71. **M.E. Webber**, “Boomtown,” *The Alcalde*, July 2014.
70. **M.E. Webber**, “What’s The World To Do About Water?,” *Popular Science*, June 2014.
69. **M.E. Webber**, “Better Tools for Energy Literacy,” *Tech Buzz/Energy, Mechanical Engineering*, April 2014.
68. I. Barchas, M. Jacobson, and **M.E. Webber**, “The Cost of Water vs. The Cost of Energy: Which is Getting Much Cheaper & Which is Getting More Expensive?,” *Texas CEO Magazine*, March/April 2014.
67. **M.E. Webber**, “The Ocean Under Our Feet,” *Tech Buzz/Energy, Mechanical Engineering*, January 2014.
66. **M.E. Webber**, “How to Overhaul the Gas Tax,” *New York Times*, December 24, 2013.

65. **M.E. Webber**, “World War G: Zombies, energy and the geosciences,” *Earth Magazine*, December 2013.
64. S.R. Kirshenbaum and **M.E. Webber**, “Liberation Power: What do women need? Better energy.” *Slate*, November 4, 2013.
63. **M.E. Webber**, “Lessons From The Shale Revolution,” *Tech Buzz/Energy, Mechanical Engineering*, October 2013.
62. **M.E. Webber**, “Fracking: The Whole Truth,” *Oil Magazine: Water and Oil*, Number 23, September 2013.
61. J.D. Rhodes, T.F. Edgar, R.D. Duncan and **M.E. Webber**, “The Unattractive Side of the Smart Grid,” *Global Energy Affairs*, September 2013.
60. E.A. Grubert, C.W. King and **M.E. Webber**, “Maui’s Complicated Relationship With Water,” *Earth Magazine*, August 2013.
59. K.T. Sanders and **M.E. Webber**, “The Energy-Water Nexus: Managing Water in an Energy Constrained World,” *Earth Magazine*, July 2013.
58. **M.E. Webber**, “Energy Tech That’s Made in America,” *Tech Buzz/Energy, Mechanical Engineering*, April 2013.
57. P. Schmandt, **M.E. Webber**, S. Smaha, L. Shaw and B. Bernfield, “Electric Utility commissioners: Austin Energy needs fixing,” *Austin American-Statesman*, March 24, 2013.
56. **M.E. Webber**, R.D. Duncan, and M.S. Gonzalez, “Four Fuels and Four Technologies: A Cautionary Tale About the Slow Pace of Energy Innovation,” *Issues in Science and Technology*, Winter 2013.
55. K.T. Sanders and **M.E. Webber**, “Quantifying the energy embedded in the US water system,” *Global Water Forum*, UNESCO, January 8, 2013.
54. **M.E. Webber**, “Moving Beyond Gridlock to Solve Our Energy Problems,” *Tech Buzz/Energy, Mechanical Engineering*, January 2013.
53. **M.E. Webber**, “The Bright Future for Natural Gas in the United States,” *Earth Magazine*, December 2012.
52. **M.E. Webber**, “Pricing Out Natural Gas: Given its complex relationships, can natural gas really be the fuel of the near future?,” *Earth Magazine*, December 2012.
51. **M.E. Webber**, “Garbage Could Be Sustainable Energy Source,” *Roll Call*, September 12, 2012.
50. A.C. Breckel, J.R. Fyffe, and **M.E. Webber**, “Trash to Treasure,” *Earth Magazine*, August, 2012.
49. **M.E. Webber**, “Will Drought Cause the Next Blackout?,” *New York Times*, July 23, 2012.



48. M. Strama and **M.E. Webber**, “Praying for rain not a water plan,” *Austin American-Statesman*, May 20, 2012.
47. S.R. Kirshenbaum and **M.E. Webber**, “The Giving Sea,” *Earth Magazine*, April 2012.
46. S.R. Kirshenbaum and **M.E. Webber**, “Time For Another Giant Leap For Mankind,” *Issues in Science and Technology*, Spring 2012.
45. K.M. Twomey, C.M. Beal, C.W. King, and **M.E. Webber**, “Biofuels: An Energy and Water Conundrum,” *World Energy Monitor*, Volume 3, Number 3, March 2012.
44. **M.E. Webber** and S.R. Kirshenbaum, “It’s Time to Shine the Spotlight on Energy Education,” *The Chronicle of Higher Education*, January 22, 2012.
43. **M.E. Webber**, “More Food, Less Energy,” *Scientific American*, January 2012.
42. C.M. Kennedy and **M.E. Webber**, “Where the Rubber Meets the Road: Lessons Learned From Taking a Natural Gas Vehicle for a Cross-Country Tour,” *Earth Magazine*, November 2011.
41. **M.E. Webber**, “Obama Deserves Credit for Strong Growth in Energy Industry,” *Houston Chronicle*, October 28, 2011.
40. S.R. Kirshenbaum and **M.E. Webber**, “Degree courses: Energy should form its own discipline,” *Nature*, October 6, 2011.
39. **M.E. Webber**, “Let’s back a clean version of Keystone XL pipeline,” *Houston Chronicle*, October 5, 2011.
38. **M.E. Webber**, “Both energy security, environment important in Keystone pipeline debate,” *Austin American-Statesman*, October 3, 2011.
37. S.R. Kirshenbaum and **M.E. Webber**, “Texas Must Stay True to Science,” *Austin American-Statesman*, May 8, 2011.
36. F.C. Beach and **M.E. Webber**, “How Oil and Water Helped Win World War II,” *Earth Magazine*, March 2011.
35. **M.E. Webber**, “A Dirty Secret—China’s Greatest Import: Carbon Emissions,” *Earth Magazine*, January 2011.
34. S.R. Kirshenbaum and **M.E. Webber**, “A Tale of Two States: Offshore Wind in Texas and The Curious Case of Massachusetts,” *Earth Magazine*, December 2010.
33. **M.E. Webber** and S.R. Kirshenbaum, “Energy and Immigration,” *Boston Globe*, November 26, 2010.
32. **M.E. Webber** and D. Kammen, “The obsolescence of oil,” *Scientific American*, September 2010.
31. S.R. Kirshenbaum and **M.E. Webber**, “Waste not, want less,” *New Scientist*, August 14, 2010.

30. P. Powers and **M.E. Webber**, “Austin Energy should be hub of burgeoning global clean energy economy,” *Austin American-Statesman* July 15, 2010.
29. G. Groves and **M.E. Webber**, “Greening the GDP,” *Earth Magazine*, April 2010.
28. **M.E. Webber**, “Solar on the horizon,” *Austin American-Statesman*, March 21, 2010.
27. **M.E. Webber**, “Redefining Humanity Through Energy Use,” *Earth Magazine*, March 2010.
26. P. Schmandt, C. Herbert and **M.E. Webber**, “Why the Proposed Generation Plan is the Right Path Forward for Austin,” *Austin American-Statesman*, February 10, 2010.
25. C.W. King and **M.E. Webber**, “Water versus Energy: How Solar Power Can Help,” *Solar Today* (January/February 2010).
24. **M.E. Webber**, “A Fool’s Look Into the Future,” *Earth Magazine*, December 2009.
23. **M.E. Webber**, “Breaking the Energy Barrier,” *Earth Magazine*, September 2009.
22. **M.E. Webber**, “Don’t Dumb Down Texas,” *Austin American-Statesman*, Sept 15, 2009.
21. **M.E. Webber**, “Three cheers for peak oil,” *Earth Magazine*, June 2009.
20. **M.E. Webber**, “Green Star State,” *Texas Monthly*, May 2009.
19. **M.E. Webber**, “Coal-to-liquids: The Good, Bad & Ugly,” *Earth Magazine*, April 2009.
18. A.R. Broadfoot and **M.E. Webber**, “Oil Barrel Politics,” *Earth Magazine*, January 2009.
17. **M.E. Webber**, “More energy research and development needed,” *Austin American-Statesman*, November 2, 2008.
16. L. Bartlett and **M.E. Webber**, “The Thirsty Dragon And The Wealthy Bear: How China, Russia and High Oil Prices Influence Global Dynamics (Part 2)”, *Earth Magazine*, November 2008.
15. L. Bartlett and **M.E. Webber**, “The Thirsty Dragon And The Wealthy Bear: How China, Russia And High Oil Prices Threaten To Erode U.S. Foreign Influence (Part 1)”, *Earth Magazine*, October 2008.
14. **M.E. Webber**, “Catch-22: Water vs. Energy,” *Scientific American*, October 22, 2008.
13. **M.E. Webber**, “Conflict between Russia and Georgia adds new twist to the energy war,” *Austin American-Statesman*, 17 Aug 2008.
12. B.A. Eisterhold and **M.E. Webber**, “Resource Nationalization: A Smaller Piece of the Pie,” *Geotimes*, May 2008.
11. C.W. King, A.S. Holman, and **M.E. Webber**, “Thirst for Energy,” *Nature Geoscience*, May 2008.
10. **M.E. Webber**, “When it comes to energy policy, beggars can’t be choosers,” *Austin American-Statesman*, May 28, 2008.

9. B.A. Eisterhold and **M.E. Webber**, "Oil: Is Now the Time to Fill the Strategic Petroleum Reserve?" *Geotimes*, March 2008.
8. **M.E. Webber**, "Texas has what it takes to combat climate change," *Austin American-Statesman*, October 26, 2007.
7. **M.E. Webber**, "Don't blame China for high energy prices," *Geotimes*, September 10, 2007.
6. **M.E. Webber**, "If Texas leads in going green, rest of world will follow," *Houston Chronicle*, Sunday Edition, August 19, 2007.
5. **M.E. Webber**, "China and the Oil Syndrome," *Fort Worth Star-Telegram*, June 26, 2007.
4. **M.E. Webber**, "Webber: The U.S. lacks direction in climate change fight," *Austin American-Statesman*, June 6, 2007.
3. **M.E. Webber**, "Scare tactics clouding Texas debate on coal: Campaigns on both sides appeal to our basest fears," *Houston Chronicle*, Sunday Edition, February 11, 2007.
2. **M.E. Webber**, "Conservation can be America's oil weapon," *San Antonio Express-News*, January 11, 2007.
1. **M.E. Webber**, "We have a new opportunity for sensible energy policy: Here's how Republicans and Democrats can come together," *Dallas Morning News*, November 27, 2006.

## Keynote and Plenary Lectures

75. "Interactive Tools to Enhance Environmental and STEM Education," Texas Children in Nature Summit, San Antonio, TX, November 7, 2017.
74. "Optics, Energy and Light," Optical Society of America Annual Meeting, Denver, CO, November 6, 2017.
73. "Thirst for Power: Energy, Water and Human Survival," Midland, TX, October 17, 2017.
72. "Thirst for Power: Energy, Water and Human Survival," 2017 ASUG Southwest Regional Utilities Days, Houston, TX, July 28, 2017.
71. "Thirst for Power: Energy, Water and Human Survival," DoE Workshop on Desalination, Dallas, TX, July 10, 2017.
70. "Thirst for Power: Energy, Water and Human Survival," Precocity Annual Investors Summit, New York, NY, June 1, 2017.
69. "Thirst for Power: Energy, Water and Human Survival," 9th Annual LinCP Forum, Lakeway, TX, April 7, 2017.
68. "Thirst for Power: Energy, Water and Human Survival," Texas Economic Development Council, Austin, TX, February 23, 2017.
67. "Thirst for Power: Energy, Water and Human Survival," Building a Resilient, Smart and Sustainable City: The Energy-Water Nexus, Pittsburgh, PA, February 16, 2017.
66. "Thirst for Power: Energy, Water and Human Survival," American Water Summit, Miami, FL, December 6, 2016.
65. "Thirst for Power: Energy, Water and Human Survival," GoldPoint Partners Investor Forum, New York, NY, November 30, 2016.
64. "Thirst for Power: Energy, Water and Human Survival," Energy Summit, Houston, TX, October 13, 2016.
63. "Thirst for Power: Energy, Water and Human Survival," SXSW ECO, Austin, TX, October 12, 2016.
62. "Thirst for Power: Energy, Water and Human Survival," Midwest Energy Policy Conference, St. Louis, MO, October 5, 2016.
61. "Thirst for Power: Energy, Water and Human Survival," US Green Building Council, Water-Build, Los Angeles, CA, October 4, 2016.
60. "Thirst for Power: Energy, Water and Human Survival," National Association of Water Companies, Water Summit, San Diego, CA, October 3, 2016.
59. "Thirst for Power: Energy, Water and Human Survival," Texas Groundwater Summit, San Marcos, TX, August 24, 2016.

58. "Thirst for Power: Energy, Water and Human Survival," Oskar von Miller Forum, Munich, Germany, June 23, 2016.
57. "Thirst for Power: Energy, Water and Human Survival," Austin Electricity Conference, UT Austin, Austin, TX, April 21, 2016.
56. "Thirst for Power: Energy, Water and Human Survival," Energy Thought Summit, Austin, TX, March 29, 2016.
55. "Thirst for Power: The Nexus of Energy and Water," Strategic Issues Conference, Northern California Power Agency, Sacramento, CA, January 20, 2016.
54. "Global Energy Trends," Edison Electric Institute, 50<sup>th</sup> EEI Financial Conference, Hollywood, FL, November 9, 2015.
53. "Thirst for Power: The Nexus of Energy and Water," Annual Meeting, Southern Minnesota Municipal Power Agency (SMMPA), Minneapolis, MN, October 15, 2015.
52. "Thirst for Power: The Nexus of Energy and Water," GCPA (Gulf Coast Power Association) Fall Conference, Austin, TX, October 1, 2015.
51. "Global Energy Trends," Independent Energy Human Resource Association (IEHRA), San Antonio, TX, September 24, 2015.
50. "Global Energy Trends," Canyon Partners Research Summit, Beverly Hills, CA, September 9, 2015.
49. "Global Energy Trends," Real Estate Finance and Investment Center, McCombs School of Business, May 7, 2015.
48. "Global Energy Trends," 2015 American Public Power Association (APPA) CEO Roundtable, Phoenix, AZ, March 3, 2015.
47. "The Nexus of Food, Energy, and Water," WP Global Partners Private Markets 2014 Annual Meeting, Scottsdale, AZ, February 24, 2015.
46. "Power Trip: The Story of Energy," Environmental Science Institute's Outreach Lecture Series: Hot Science, Cool Talks, The University of Texas at Austin, February 20, 2015.
45. "LNG: Opportunities and Challenges," Sit Investment Associates' 33<sup>rd</sup> Annual Client Workshop, Dana Point, CA, February 13, 2015.
44. "Next Generation Energy Education," National Energy Education Summit, Washington, DC, January 26, 2015.
43. "Changing the Way Business Thinks About Energy," Siemens Retail Energy Management Conference 2014, Austin, TX, October 28, 2014.
42. "Hunger for Power: The Nexus of Food and Energy," Produce Marketing Association, Tech Knowledge Event, San Diego, CA, May 22, 2014.
41. "Global Energy Trends," U.S. Military Academy, West Point, NY, April 9, 2014.

40. "Changing the Way Business Thinks About Energy," CleaResult Engineering Summit, Austin, TX, April 1, 2014.
39. "The Energy Revolution and what this means for America," Annual Global Meeting, Partners Group, Miami, FL, March 19, 2014.
38. "A Thirst for Power: The Global Nexus of Energy and Water," Washington & Jefferson College, Washington, PA, February 27, 2014.
37. "Energy at the Movies," Annual Meeting, Parallel Resource Partners, Dallas, TX, October 23, 2013.
36. "The Convergence of Energy, Water and Information," Itron Utility Week, Orlando, Florida October 7, 2013.
35. "Thirst For Power: The Nexus of Energy and Water," New Jersey Utilities Association, Galloway, NJ, June 5, 2013.
34. "Global Energy Trends," ERDC-CASI/University of Illinois Sustainability Office Speaker Series, Urbana-Champaign, IL, April 26, 2013.
33. "Global Energy Trends," U.S. Military Academy, West Point, NY, April 24, 2013.
32. "Energy Evolution," Teijin Aramid USA Annual Meeting, San Destin, FL, April 11, 2013.
31. "Fracking: Fact, Future and Fiction," Sit Investment Associates' 31<sup>st</sup> Annual Client Workshop, Scottsdale, Arizona from February 14–17, 2013.
30. "The Nexus of Food and Energy," Produce Manufacturer's Association Quarterly Meeting, Austin, TX, January 28, 2013.
29. "Global Energy Trends," Rockland Capital Annual Meeting, The Woodlands, TX, November 5, 2012.
28. "Digital Energy: The Convergence of Energy and Information," Energy Technology Summit, NI Week, Austin, TX, August 8, 2012.
27. "Consistency in Policy Making," Universities Council on Water Resources Annual Meeting, Santa Fe, NM, July 18, 2012.
26. "The Future of Energy," Tecnologico de Costa Rica, Cartago, Costa Rica, June 6, 2012.
25. "Global Energy Trends" U.S. Military Academy, West Point, NY, May 10, 2012.
24. "The Nexus of Food and Energy: How Society Has Evolved and What the Next 50 Years Will Hold," PIC Symposium, Nashville, TN, May 8, 2012.
23. "From Fracking to the Forty Acres: Energy Challenges for UT, Texas, and the World," Environmental Science Institute's Outreach Lecture Series: Hot Science, Cool Talks, The University of Texas at Austin, February 24, 2012.

22. "The Climate, Energy, Water Nexus," Center for Aquatic and Watershed Sciences, Miami University, Ohio, February 9, 2012.
21. "Energy in Texas," Western States Land Commissioners Association, Austin, TX, January 10, 2012.
20. "The Nexus of Energy and Water," Keynote Panel, ASME 2011 International Mechanical Engineering Congress & Exposition, Denver, CO, November 14, 2011.
19. "The Nexus of Energy and Water," Plenary Panel, CATEE 2011 (Clean Air Through Energy Efficiency) Conference, November 9, 2011, Dallas, TX.
18. "Global Energy Trends," Thermoset Resin Formulators Association, Niagara Falls, NY, September 12, 2011.
17. "The Nexus of Energy and Water," USC Energy Institute, Los Angeles, CA, May 18, 2011.
16. "The Nexus of Energy and Water," UC Santa Barbara, Santa Barbara, CA, May 17, 2011.
15. "The Future of Energy," Bearing Specialists Association, Bastrop, TX, May 2, 2011.
14. "Global Energy Trends," *Financial Times Global Investment Series: Focus on Canada*, Houston, TX, February 23, 2011.
13. "Energy in Texas," UT Energy Forum, Austin, TX, February 3, 2011.
12. "The Nexus of Energy & Water," Deloitte Alternative Energy Conference, Dallas, Texas, October 1, 2010.
11. "Green Star State," Keep Texas Beautiful Conference, Austin, TX, June 22, 2010.
10. "The Future of Energy," Five Star Chapter Real Estate Organizations, Austin, TX, May 14, 2010.
9. "The Global Nexus of Energy & Water," Columbus Council on World Affairs, Columbus, OH, February 8, 2010.
8. "The Global Nexus of Energy & Water," Dallas Water Association, Arlington, TX, November 10, 2009.
7. "The Nexus of Energy & Water," National Association of EHS management (NAEM), June 25, 2009, Columbus, OH.
6. "Energy & Water," Deloitte Energy Conference, Washington, DC, April 20, 2009.
5. "The Global Nexus of Energy & Water," Tennessee American Water Resources Association, Nashville, TN, April 15, 2009.
4. "Critical Energy Technologies of the Future," Manitoba Climate Change Conference, Winnipeg, Manitoba, Canada, April 23, 2008.
3. "Brazil and Ethanol," 5th Annual International Education Conference Global Issues: Economy, Energy, Environment, Lone Star College-Tomball, April 18, 2008.

2. "The Future of Energy," Environmental Science Institute's Outreach Lecture Series: Hot Science, Cool Talks, The University of Texas at Austin, February 22, 2008.
1. "College Education And the Journey of the Hero," Commencement Speech, Cockrell School of Engineering, The University of Texas at Austin, May 19, 2006.



## Invited Talks, Seminars, Speeches and Presentations

Webber has given invited presentations, speeches, remarks, lectures, or served as a moderator for panel discussions on more than 150 different instances since joining the faculty of UT Austin. A select list of those invited talks is included here.

162. “Panel: Energy,” USAEE Annual Meeting, Houston, TX, November 15, 2017.
161. “Thirst for Power: Energy, Water and Human Survival,” Colorado School of Mines, Golden, CO, September 6, 2017.
160. “Thirst for Power: Energy, Water and Human Survival,” Norwegian Consulate, Houston, TX, July 28, 2017.
159. “Panel: Austin Roadshow — Smart Cities Powered by Smart Grids”, Austin, TX, March 30, 2017.
158. “Thirst for Power: Energy, Water and Human Survival,” UT Law Renewable Energy Law Conference, Austin, TX, January 31, 2017.
157. “Panel: Sustainable Water Panel: Meeting Texas’ Future Water Needs,” TAMEST Annual Meeting, San Antonio, TX, January 11, 2017.
156. “Thirst for Power: Energy, Water and Human Survival,” University of Arizona, Tucson, AZ, November 15, 2016.
155. “Thirst for Power: Energy, Water and Human Survival,” Department of Civil & Environmental Engineering, Specialty Seminar, Rice University, Houston, TX, November 11, 2016.
154. “Thirst for Power: Energy, Water and Human Survival,” Texas Enterprise Speaker Series, The University of Texas at Austin, Austin, TX, November 10, 2016.
153. “Thirst for Power: Energy, Water and Human Survival,” Columbia University, New York, NY, November 2, 2016.
152. “Panel: What We’ve Learned About Renewables (Moderator),” Texas Tribune Festival, Austin, TX, September 24, 2016.
151. “Thirst for Power: Energy, Water and Human Survival,” U.S. Green Building Council, Washington, DC, September 23, 2016.
150. “Thirst for Power: Energy, Water and Human Survival,” Purdue University, West Lafayette, IN, September 1, 2016.
149. “Thirst for Power: Energy, Water and Human Survival,” Idaho National Laboratory, Idaho Falls, ID, July 13, 2016.
148. “Thirst for Power: Energy, Water and Human Survival,” NASCENT Pre-College Seminar, UT Austin, Austin, TX, June 7, 2016.
147. “Thirst for Power: Energy, Water and Human Survival,” Houston Advanced Research Center, The Woodlands, TX, May 24, 2016.

146. “Thirst for Power: Energy, Water and Human Survival,” WSU STEM, Spokane, WA, May 19, 2016.
145. “Thirst for Power: Energy, Water and Human Survival,” Produce Marketing Association Tech Knowledge, Santa Clara, CA, May 18, 2016.
144. “Thirst for Power: Energy, Water and Human Survival,” Energy Foundation, San Francisco, CA, May 17, 2016.
143. “Thirst for Power: Energy, Water and Human Survival,” City Hall, Seattle, WA, May 16, 2016.
142. “Thirst for Power: Energy, Water and Human Survival,” Boston University, Boston, MA, April 28, 2016.
141. “Thirst for Power: Energy, Water and Human Survival,” American University, Washington, DC, April 28, 2016.
140. “Thirst for Power: Energy, Water and Human Survival,” University Club, New York, NY, April 26, 2016.
139. “Thirst for Power: Energy, Water and Human Survival,” Stateside at the Paramount, Austin, TX, April 11, 2016.
138. “Panel: EPA CPP Scenarios—What Texas Is Likely to Do, and the Impacts on ERCOT,” 4<sup>th</sup> Annual ERCOT Market Pre-Summit Briefing, February 29, 2016 in Austin, TX.
137. “Panel: Energy/Food Nexus,” UT Energy Week, The University of Texas at Austin, February 17, 2016.
136. “Panel (Moderator): Cleantech Across the Rio Grande,” CleanTX Forum, Austin, TX, February 16, 2016.
135. “Global Energy Trends,” Energy Journalism Workshop, The University of Texas at Austin, Austin, TX, January 11, 2016.
134. “Global Energy Trends,” Employee Retirement System of Texas, Austin, TX, December 3, 2015.
133. “From Fracking to the 40 Acres: Energy Challenges for UT, Texas, and the World,” Forty Acres Society, Dallas, TX, December 1, 2015.
132. “Panel: The State of the Grid (Moderator),” Texas Tribune Festival, Austin, TX, October 17, 2015.
131. “Panel: Solving Food, Energy and Water . . . at the Same Time!,” SXSW ECO Austin, TX, October 5–7, 2015.
130. “Panel: The Big Picture—The Relative Price of Energy,” Aspen Institute Clean Energy Innovation Forum, Aspen, CO, July 20, 2015.

129. "Panel: Pathways to Change—the Future of the Electric Mix," Aspen Institute Energy Policy Forum, Aspen, CO, July 17, 2015.
128. "Energy Water Nexus," UT Forum, UT Austin, Austin, TX, May 1, 2015.
127. "Panel: Opportunity Crudes in a Changing Market and Process Safety Considerations," AIChE Spring Meeting, Austin, TX, April 27, 2015.
126. "Panel: The Future Is Energy Efficiency," Boston College Conference, Austin, TX, April 20, 2015.
125. "Thirst for Power: The Nexus of Energy and Water," 10th Annual Alumni Business Conference, UT Austin, Austin, TX, March 6, 2015.
124. "Changing the Way Business Thinks About Energy in a World Facing Climate Change," SAGE Seminar, UT Austin, Austin, TX, March 2, 2015.
123. "Panel: Energy Communications," UT Energy Week, UT Austin, Austin, TX, February 17, 2015.
122. "Energy Water Nexus," 4<sup>th</sup> Annual Water Conservation Symposium, Central Texas Water Efficiency Network. Austin, TX, February 11, 2015.
121. "Panel: A Need for Improved Data on Water Use," Addressing the Energy-Water Nexus: Need for Improved Data and Decision Support Tools, National Research Council's Roundtable on Science and Technology for Sustainability, Washington DC, December 10, 2014.
120. "Panel: Natural Gas and Renewable Energy Synergies: Challenges and Opportunities," Synergies of Natural Gas and Renewable Energy: 360 Degrees of Opportunity, San Antonio, November 6, 2014.
119. "Panel (Moderator): Here Comes the Boom," Texas Book Festival, Austin, TX, October 25, 2014.
118. "Panel: Smart Water: Beating Drought and Waste" SXSW ECO, Austin, TX, October 6, 2014.
117. "Panel (Moderator): Lessons from the Negev" SXSW ECO, Austin, TX, October 6, 2014.
116. "Global Energy Trends," NOVA, Austin, TX, October 1, 2014.
115. "Facts, Fiction and Future of Fracking," QUEST, Austin, TX, September 23, 2014.
114. "Panel: The Fracas Over Fracking," Texas Tribune Festival, Austin, TX, September 20, 2014.
113. "Panel (Moderator): Climate Change, Drought, and the Energy-Water Nexus," Sustainability Symposium, UT Austin, Austin, TX, September 19, 2014.
112. "Thirst for Power: The Energy Water Nexus," Austin Area Research Organization (AARO), Austin, TX, September 3, 2014.

111. “Texas and Germany: Energy Twins?”, Symposium with German Policymakers, Austin, TX, September 2, 2014.
110. “Global Energy Trends,” Metropolitan Breakfast Club, Austin, TX, July 23, 2014.
109. “The Facts, Fiction and Future of Fracking: The Shale boom and what it means for Texas and the World,” TexasExes, Longhorn Village, Austin, TX, June 9, 2014.
108. “The Nexus of Energy and Water,” EPA Region 6 Seminar Series, Dallas, TX, June 4, 2014.
107. “Webinar: The Nexus of Energy and Water,” AIChE, May 28, 2014.
106. “Panel: Thirst for Power: The Energy Water Nexus,” Donald D. Harrington Fellows Program, Palo Duro Canyon, TX, April 2, 2014.
105. “Webinar: Energy and Food,” National Science Foundation and Oak Ridge National Laboratory, March 27, 2014.
104. “Water Aspects of Shale Production,” Unconventional Energy Forum UT Austin, Austin, TX, March 24, 2014.
103. “Panel: Energy at the Movies,” SXSW EDU, Austin, TX, March 4, 2014.
102. “Panel: Energy Water Nexus,” Barstow Speaker Series, Colorado River Alliance, Austin, TX, February 25, 2014.
101. “Panel: Economic Implications of the Coal to Gas Transition,” UT Energy Forum, Austin, TX, February 20, 2014.
100. “Water Aspects of Shale Production,” *Panel: Hydraulic Fracturing: Science, Technology, Myths, and Challenges*, AAAS Annual Meeting, Chicago, IL, February 14, 2014.
99. “Panel: The Energy Water Nexus—Water Challenges in Energy Production, Generation and Use,” NASEO 2014 Energy Policy Outlook Conference, Washington, DC, February 5, 2014.
98. “Panel: Energy, Water and Food,” Moderated by Evan Smith, Hosted by the Mitchell Foundation and the Texas Tribune, Austin, TX, December 8, 2013.
97. “Competing Demands for Scarce Water,” Commission Staff Water Policy Forum, National Association of Water Companies, Austin, TX, December 4, 2013.
96. “Panel: On-Base Power Projects & Finance Models,” Defense Energy Summit, Austin, TX, November 12, 2013.
95. “Panel: NetZero Installations: Islanding of Energy, Water and Waste,” Defense Energy Summit, Austin, TX, November 12, 2013.
94. “Panel: Infrastructure & Cities,” Energy Exchange Conference, UT Austin, Austin, TX, October 2, 2013.
93. “Panel (Moderator): The Fight Over Electricity,” Texas Tribune Festival, Austin, TX, September 28, 2013.

92. "A Century of Mechanical Engineering at UT Austin: Then and Now," Mechanical Engineering Department Centennial Celebration, UT Austin, Austin, TX, September 20, 2013.
91. "Webinar: Energy Water Nexus," Cynthia and George Mitchell Foundation, September 19, 2013.
90. "Solutions at the Energy-Water Nexus," 3<sup>rd</sup> International Congress on Sustainability Science & Engineering (ICOSSE '13 ), AIChE, Cincinnati, OH, August 13, 2013.
89. "A Thirst for Power: The Global Nexus of Energy and Water," The Austin Forum on Science, Technology & Society, UT Austin, Austin, TX, August 6, 2013.
88. "Water Effects of Energy," Forum on Global Energy, Economy, and Security, Aspen Institute, Aspen, CO, June 25, 2013.
87. "Panel: Building a Comprehensive Strategy for Addressing the Energy-Water Nexus," National Research Council's Roundtable on Science and Technology for Sustainability, Washington DC, June 6, 2013.
86. "Panel (Moderator): Leveraging Natural Gas to Reduce Greenhouse Gas Emissions," C2ES, Washington DC, June 4, 2013.
85. "Panel: The Future of Energy," U.S. State Department, Austin, TX, May 14, 2013.
84. "Changing the Way Business Thinks About Energy," for Texas Enterprise Speaker Series, The University of Texas at Austin, Austin, TX, April 16, 2013.
83. "The Nexus of Energy and Water," ENI, Milan, Italy, March 26, 2013.
82. "Webinar: Critical Energy Technologies of the Future," Knowledge to Go, McCombs School of Business, The University of Texas at Austin, Austin, TX, March 19, 2013.
81. "Global Energy Trends—Impacts for Texas," State of Texas Comptroller's Investment Advisory Board, Austin, TX, March 5, 2013.
80. "Energy Water Nexus in Texas, Texas Economic Development Council Legislative Conference, Austin, TX, March 1, 2013.
79. "Entrepreneurship In The Clean Energy Space," UT Energy Forum, The University of Texas at Austin, Austin, TX, February 21, 2013.
78. "Energy Research at UT Austin," UT El Paso, El Paso, TX, February 8, 2013.
77. "Panel: Food," Food, City and Innovation Conference, The University of Texas at Austin, Austin, TX, February 1, 2013.
76. "Changing The Way The World Thinks About Energy," for Chancellor's Council Meeting, The University of Texas System, Austin, TX, January 24, 2013.
75. "Global Energy Trends," Investor's Roundtable, Susquehanna Investment Group, New York City, NY, December 7, 2012.

74. "Sustainable and Resilient Energy Systems: Data and Technology Issues," Roundtable on Science and Technology for Sustainability, National Academy of Sciences and Engineering, Washington, DC, December 6, 2012.
73. "Energy Water Nexus," C2ES (Center Climate and Energy Solutions), Washington, DC, November 13, 2012.
72. "Panel: Solutions to the Texas Water Crisis," SXSW ECO, Austin, TX, October 5, 2012.
71. "Panel: Putting "Able" into Sustainable: What Works," SXSW ECO, Austin, TX, October 4, 2012.
70. "Panel: Can We Solve Our Electricity Problem," Texas Tribune Festival, Austin, TX, September 22, 2012.
69. "Panel: A Vision for UT Austin: Integrating Sustainability into Higher Education," 3<sup>rd</sup> Annual Sustainability Symposium, UT Austin, Austin, TX, September 21, 2012.
68. "Panel: Power Generation," NI Week, Austin, TX, August 8, 2012.
67. "The Energy-Water Nexus," Energy Policy Forum, Aspen Institute, Aspen, CO, July 5, 2012.
66. "Global Energy Trends," for *Subiendo: The Academy for Rising Leaders*, McCombs School of Business, The University of Texas at Austin, Austin, TX, June 18, 2012.
65. "Panel: The New Energy Picture in Texas: Can Texas Move Beyond Oil & Coal?" Hosted by the Texas Observer, LBJ School of Public Affairs, The University of Texas at Austin, Austin, TX, June 14, 2012.
64. "Impact of Natural Gas Supply on US Energy Markets," PREA Institute, McCombs School of Business, The University of Texas at Austin, Austin, TX, June 13, 2012.
63. "Waste to Energy," Tecnologico de Costa Rica, Cartago, Costa Rica, June 7, 2012.
62. "Panel: Technological, Economic and Legal Challenges to Realizing the Potential of New Water Sources," 2012 Texas Water Summit, The Academy of Medicine, Engineering and Science of Texas (TAMEST), Austin, TX, May 21, 2012.
61. "Energy at the Movies," Live Pre-Screening at *KLRU*, Austin, TX, May 24, 2012.
60. "The Natural Gas Transition," Leveraging Natural Gas to Reduce GHG Emissions (hosted by C2ES), Houston, TX, May 17, 2012
59. "The Nexus of Energy and Water," Southwest Foundations, Dallas, TX, May 15, 2012.
58. "Enabling Energy Solutions in a Changing World," The Marshall Forum on Transatlantic Affairs, German Marshall Fund, Dallas, Texas April 28, 2012.
57. "The Nexus of Energy and Water in the Power, Water and Transportation Sectors," Nicholas School of the Environment, Duke University, April 26, 2012.

56. "The Nexus of Energy and Water," Center for Aquatic and Watershed Sciences, Miami University, Ohio, February 10, 2012.
55. "A National Energy Policy: The Search Continues..." Panelist, UT Energy Forum, UT Austin, TX, February 3, 2012.
54. "Thirst for Power: The Nexus of Energy and Water," ASME Central Texas Chapter, Austin, TX, January 19, 2012.
53. "Integrated Air Quality, Energy Markets and Water for Dispatching in the Texas grid," NSF EFRI Grantees Conference, The University of Illinois Urbana-Champaign, November 17, 2011.
52. "Recap of the Energy-Water Nexus Track at the ASME IMECE 2011 Meeting," ASME Webinar, December 6, 2011.
51. "Texas and China: Non-Obvious Energy and Environmental Bedfellows," SXSW ECO, Austin, TX, October 4, 2011.
50. "The Nexus of Energy and Water," Los Alamos National Laboratory, Los Alamos, NM, September 26, 2011.
49. "Is Clean Energy an Oxymoron?" Panel, Texas Tribune Festival, Austin, TX, September 24, 2011.
48. Plenary Panel, "The Low-Carbon Future," ASME Summer Annual Meeting, Dallas, TX, June 13, 2011 (Moderator).
47. "The Nexus of Energy and Water," Australian Academy of Sciences, Melbourne, Australia, June 2, 2011.
46. "The Nexus of Energy and Water," Australian National University, Canberra, Australia, May 31, 2011
45. "Energy and the Environment in Texas," KUT Leadership Luncheon, Austin, TX, April 21, 2011.
44. "The Nexus of Energy and Water," Physics of Sustainable Energy II: Using Energy Efficiently and Producing It Renewably, American Physical Society, UC Berkeley, March 5, 2011.
43. "Food, Energy and Water," MIT Energy Conference, Boston, MA, March 4, 2011.
42. "The Nexus of Energy and Water," National Renewable Energy Laboratory, Golden, CO, November 5, 2010.
41. "Future Trends for the Energy-Water Nexus," Groundwater Protection Council Annual Meeting, Pittsburgh, PA, September 27, 2010.
40. "Global Energy Needs and Assessment," World Energy Forum, **United Nations**, September 17, 2010.
39. "Energy-water Nexus," OECD, Paris, France, June 8, 2010.

38. "American Energy Policy and Other Funny Stories," Forum on Science Ethics and Policy, University of Washington, Seattle, WA, April 26, 2010.
37. "Green Star State," Texas Economic Development Council (TEDC) Spring Conference, Arlington, TX, April 23, 2010.
36. "Water Implications of Energy Policies," Technology Leadership Panel, SAE Annual Meeting, Detroit, MI, April 14, 2010.
35. "Smart Grid, Smart Water," Consequences of an Emerging U.S. Energy and Climate Policy on the Global Energy Market, Baker Institute, Abu Dhabi, United Arab Emirates, March 2, 2010.
34. "A Technoeconomic and Policy Framework for Algal Biofuels," UC San Diego, February 17, 2010.
33. "The Smart Grid in Austin, Texas," Baker Institute, Rice University, January 26, 2010.
32. "The Nexus of Energy & Water," Sierra Club Lone Star Chapter, Living Waters Project, Houston, TX January 16, 2010.
31. "Impacts of Carbon Legislation on Texas," Young Professionals of Energy, Houston, TX, November 10, 2009.
30. "The Smart Grid in Austin, Texas," World Energy Engineering Congress, Washington, DC, November 4, 2009.
29. "Carbon Policy & The impact on Business and Consumers," Women's Global Leadership Conference in Energy & Technology, Houston, TX, November 3, 2009.
28. "Energy and Sustainability," Meeting of the Minds Panel with the CEO of Wal-Mart, UT Austin, October 12, 2009.
27. "The Nexus of Energy & Water," Penn State University, September 29, 2009.
26. "Global Energy Needs and Assessment," World Energy Forum, **United Nations**, New York City, August 13, 2009.
25. "The Nexus of energy & water," Hewlett Packard Labs, Palo Alto, CA, July 24, 2009.
24. "Sustainable Energy Education," ASME 3rd International Conference on Energy Sustainability, San Francisco, CA, July 19, 2009 .
23. "The Nexus of Energy & Water," American Solar Energy Society, Buffalo, NY, May 15, 2009.
22. "The Nexus of Energy and Water," UC Santa Barbara, April 10, 2009.
21. "Thirst for Power: The nexus of energy & water", ExxonMobil Corporate Strategic Research, New Jersey, March 13, 2009.
20. "Green Jobs," Clean Power Forum, Texas State Capitol, February 18, 2009.



19. "Thirst for Power: The nexus of energy & water," University of Michigan, Ann Arbor, MI, February 2, 2009.
18. Master of Ceremonies, Clean Energy Venture Summit, Austin, TX, December 3–4, 2008.
17. "Coal-to-liquids: the good, the bad and the ugly," ASPO-USA, Sacramento, CA, September 23, 2008.
16. "Sustainable Biofuels", 1<sup>er</sup> Congreso Internacional de Biocombustibles, Guadalajara, Jalisco, Mexico, May 08, 2008.
15. "Incorporating Environmental Activities into Your Bottom Line Case studies from companies that have integrated the environment into their processes," TCEQ Environmental Trade Fair, Austin, TX, April 30, 2008.
14. "International Perspectives on Alternative Energy: The Hype and the Hope," ConocoPhillips, Corporate Briefing, Houston, TX, April 18, 2008.
13. "Dont look now, but Texas Can Lead the Green Energy Transition," USC, March 11, 2008.
12. "A Critical Look at Green Transportation," Johns Hopkins University, March 6, 2008
11. Moderator: "What is the State of Clean Air and Energy Efficiency in Texas Today?" (with Senator Averitt, Representative Strauss), Clean Air Through Energy Efficiency (CATEE) 2007, San Antonio, Texas, December 18, 2007.
10. "Opportunities for Texas-Serbian Collaboration on Biodiesel," Energy Roundtable, Jefferson Institute, Belgrade, Serbia, October 29, 2007.
9. "Energy Security in America," ETH, Zurich, Switzerland, October 26, 2007.
8. "Freedom from Oil," (with David Sandalow), The University of Texas at Austin, October 22, 2007
7. "A Close Look at Climate Change," German Marshall Fund, Forum on Transatlantic Affairs, Atlanta, GA, September 27-29, 2007.
6. "A Critical Look at Green Vehicles," Honda R&D Americas, Detroit, MI, August 2, 2007.
5. "American Energy and Environmental Policy: The View from Texas and Other Funny Perspectives," National Center for Atmospheric Research, June 20, 2007.
4. "Water, Power and Transportation: Our Next Great Heat Transfer Challenge," NSF Workshop on Frontiers in Transport Phenomena Research and Education, University of Connecticut, May 17, 2007.
3. "American Energy Policy: The View from Texas and Other Funny Perspectives," Imperial College, London, England, April 3, 2007.
2. "American Energy Policy: The View from Texas and Other Funny Perspectives," British Consulate, Houston, Texas, February 20, 2007.

1. "Perspectives on American Energy Policy," Panel with CEO of Shell USA, LBJ School of Public Affairs, September 20, 2006.

## Government Testimony and Briefings

### Testimony by Dr. Webber for U.S. Congress

4. “How Climate Change Affects Texas,” **M.E. Webber**, U.S. House of Representatives Committee on Science, Space, and Technology, Field Hearing, Dallas, TX, March 31, 2014.
3. “Effect of Drought on the Energy Sector,” **M.E. Webber**, Senate Energy & Natural Resources Committee Hearing, U.S. Congress, April 25, 2013.
2. “Trends and Policy Issues For The Nexus of Energy and Water,” **M.E. Webber**, Senate Energy & Natural Resources Committee Hearing, U.S. Congress, March 31, 2011.
1. “Trends and Policy Issues For The Nexus of Energy and Water,” **M.E. Webber**, Senate Energy & Natural Resources Committee Hearing, U.S. Congress, March 10, 2009.

### Briefings by Dr. Webber for U.S. Congress and Federal Agencies

12. “The Full Cost of Electricity,” **M.E. Webber** and C.W. King, Senator Cornyn’s field office with other members of the Texas delegation, Austin, TX, May 12, 2017.
11. “Thirst for Power: Energy, Water and Human Survival,” **M.E. Webber**, Aspen Institute Congressional Breakfast Briefing, Washington, DC, April 28, 2016.
10. “Global Energy Trends,” **M.E. Webber**, U.S. Department of State Foreign Correspondents Visit, Austin, TX, April 7, 2014.
9. “Challenges and Opportunities at the Energy-Water Nexus,” **M.E. Webber**, U.S. Department of Energy, Office of Fossil Energy, Washington, DC, December 12, 2013.
8. “Challenges and Opportunities at the Energy-Water Nexus,” **M.E. Webber**, U.S. Department of Energy, Office of Energy Policy and Systems Analysis, Washington, DC, November 8, 2013.
7. “An Energy-Water Nexus Research Agenda,” **M.E. Webber**, Opening Remarks for a Workshop on Developing a Research Agenda for the Energy Water Nexus, National Science Foundation, Arlington, VA, June 10, 2013.
6. “Energy Water Nexus,” U.S. Department of Energy, Washington, DC, Office of Policy and International Affairs, November 13, 2012.
5. “From Chemistry to Energy,” **M.E. Webber**, American Chemistry Council Briefing for Congress, Washington, DC, June 28, 2012.
4. “The Nexus of Energy and Water,” Congressional Briefing, House Science and Technology Committee, Washington, DC, December 16, 2009.
3. “The Nexus of Energy and Water,” **M.E. Webber**, ACS Briefings for Congress (House Science and Technology Committee), Washington, DC, December 8, 2009.

2. "Trends and Policy Issues For The Nexus of Energy and Water," **M.E. Webber**, Senate Energy & Natural Resources Committee staffer briefing, U.S. Congress, March 6, 2009.
1. "Energy & National Security," **M.E. Webber**, Asst. to the Secretary of Defense, June 2006.

#### **Testimony by Dr. Webber for Texas Legislature**

8. "Integrating Renewables for Brackish Groundwater Desalination," **M.E. Webber**, Committee on Agriculture, Water & Rural Affairs, Texas Senate, April 13, 2015.
7. "The Role of Massive Open Online Courses (MOOCs) In Higher Education," **M.E. Webber**, Committee on Higher Education, Texas House of Representatives, September 9, 2014.
6. "Some Thoughts On Texas Economic Impacts From Drought and Economic Opportunities In A Carbon-Constrained World," **M.E. Webber**, Committee on International Trade and Intergovernmental Affairs, Texas House of Representatives, April 22, 2013.
5. "Drought Impacts on Electricity Generation in Texas: Challenges and Opportunities," **M.E. Webber**, Senate Business & Commerce Committee Hearing, Texas Senate, January 10, 2012.
4. "The Good News and Bad News about Electric Vehicles in Texas," **M.E. Webber**, Business and Commerce Committee, Texas Senate, August 24, 2010
3. "The Impacts of Carbon Legislation on Texas," **M.E. Webber**, Carbon Summit (A Joint Hearing of the Public Utilities Commission, Railroad Commission, and Commission on Environmental Quality), Texas State Capitol, September 22, 2009.
2. "High Performance Buildings," **M.E. Webber**, Senate Committee on Government Organization, Texas Legislature, Austin, TX, April 24, 2008.
1. "The Nexus of Energy and Water in Texas," **M.E. Webber**, Joint Interim Hearing Senate Committee on Business and Commerce and Senate Committee on Natural Resources, Texas Legislature, April 15, 2008.

#### **Testimony by Dr. Webber's Staff and Students for State and Local Government**

5. "Some Comments on Using Renewable Power to Desalinate Brackish Groundwater on State Lands," F.T. Davidson, Committee on Agriculture, Water & Rural Affairs, Texas Senate, April 24, 2017.
4. "The Energy-Water Nexus in Texas," Dr. Carey King, House Natural Resources Committee Hearing, Texas Legislature, June 28, 2012.
3. "The Energy-Water Nexus," Ashlynn Stillwell, Senate Natural Resources Committee Hearing, Texas Legislature, September 30, 2008.
2. "Water and Nuclear Power," Ashlynn (Holman) Stillwell, Brazos River Authority Public Meeting, June 4, 2008.

1. “An Assessment and Comparison of Installed Solar and Wind Capacity in Texas: A Regional Case Study,” Erin Keys, Senate Committee on Government Organization, Texas Legislature, Austin, TX, April 24, 2008.

### **Briefings by Dr. Webber for State and Local Government**

9. “Thirst for Power: Energy, Water and Human Survival,” **M.E. Webber**, Texas Legislative Briefing, Austin, TX, August 16, 2016.
8. “Energy Water Nexus,” **M.E. Webber**, Texas House and Senate Energy Caucus Briefing, August 28, 2014.
7. “Renewables and Brackish Groundwater Desalination in Texas,” Texas Water Development Board Roundtable, Austin, TX, February 28, 2013.
6. “The Energy Water Nexus in Texas,” Texas Water Day at the Capitol, Texas Legislature, Austin, TX, April 27, 2011.
5. “The Energy-Water Nexus,” Metropolitan Planning Council, Chicago, IL, August, 3, 2010
4. “The Nexus of Energy & Water,” **M.E. Webber**, LCRA Board of Directors, Austin, TX, February 16, 2010.
3. “The Nexus of Energy & Water,” **M.E. Webber**, Hearing of the Great Lakes Commission, Erie, PA, September 30, 2009.
2. “Energy Tradeoffs for Texas,” **M.E. Webber**, Texas Legislative Energy Staffers, Fall 2008
1. “Energy Policy,” **M.E. Webber**, Texas Legislative Energy Staffers, Spring 2008

## Sponsors: September 2007–August 2015

Between September 2007 and December 2015, Dr. Webber has helped develop nearly \$20 million of support for nearly 75 different projects. Of that amount, approximately \$10.5 million is for projects that Webber supervises. That support came from different categories of sponsors as noted in the table. Each institutional sponsor is listed below.

<b>Funder Category</b>	<b>Amount (Rounded to the nearest \$1000s)</b>
Foundations and Non-Profits	\$3,424,000
State Government	\$2,954,000
Federal Government	\$2,671,000
Industry (Contracts and Gifts)	\$1,165,000
Local Government	\$140,000
Gifts from Individuals	\$146,000
<b>Total</b>	<b>\$10,500,000</b>

### **Federal Government Sponsors:**

- U.S. Department of Energy (DoE)
- National Science Foundation (NSF)
- U.S. Environmental Protection Agency (EPA)

### **State Government Sponsors:**

- ERCOT (Electric Reliability Council of Texas)
- Texas State Energy Conservation Office
- Texas Air Research Center
- Texas Commission on Environmental Quality
- Texas Water Development Board
- Texas Emerging Technology Fund
- Texas General Land Office
- The University of Texas at Austin
- Harrington Fellows Program at UT Austin

### **Local Government Sponsors:**

- Austin Energy
- Austin Water Utility
- Lower Colorado River Authority
- Tarrant Regional Water District

### **Foundations and Non-Profits:**

- Alfred P. Sloan Foundation
- American Clean Skies Foundation
- Aspen Institute
- Center for Climate and Energy Solutions
- CleanTX Foundation
- Cynthia and George Mitchell Foundation
- Doris Duke Foundation (via Pecan Street, Inc.)
- Education Foundation of America
- Energy Foundation
- Environmental Defense Fund
- Kuwait Foundation for the Advancement of Science
- Markle Foundation
- Pecan Street, Inc.
- Power Across Texas
- Sloan Foundation
- Texas Environmental Grantmakers Group
- Ulopono Initiative
- Webber Family Foundation

### **Industry:**

- 27 Ventures
- Aethon Energy

- Air Liquide
- AMD
- American Chemistry Council
- Apache
- APEX
- AT&T
- BP
- CB&I
- Centerpoint
- Chesapeake Energy
- Chevron
- Deloitte
- El Paso
- ExxonMobil
- First Republic Private Wealth Management
- First Solar
- GDS Associates
- Hewlett Packard Labs
- InnerHarbor Advisors
- Invenergy
- Itron
- Johnson Controls
- Luminant
- National Instruments
- Northern Star Generation
- OpenAlgae
- Pedernales Electric Cooperative
- Proctor and Gamble
- Quicksilver
- Shell
- Southwestern
- Spears Abacus Advisors
- Specific Energy
- Statoil
- Texas Gas Service
- Total Petrochemical
- TPS Power Holdings LLC
- WoodGroup Mustang
- YarCom

## Teaching

Webber has created 1 new online course and 8 new in-person courses for a range of technical and non-technical students from freshmen to Ph.D. candidates. These are in addition to teaching duties for core engineering classes (described below).

### Online Courses

Webber's MOOC (Massive Online Open Course) titled "Energy 101" was launched in Fall 2013 to an enrolled student body of more than 44,000 students globally. The class was issued over 10 weeks, with three modules released each week. Each module was comprised of 1) a filmed lecture that was given before a live audience and subsequently edited with animations and custom graphics, 2) interactive web-based exercises, and 3) quizzes. Approximately 13% of the students completed the course.

### Electives Taught at UT Austin

1. **ENERGY TECHNOLOGY & POLICY:** a graduate level multidisciplinary, survey course for 66–113 students (about 1–2 dozen slots are set aside for undergraduate engineers) that covers a wide range of technical, economic, policy, diplomatic, and cultural perspectives of energy. Topics include energy production (by fuel and technology), energy use (by sector and application), and the intersection of energy with water, food, waste, the environment, the economy, domestic policy, and international affairs. Each student is required to blog regularly, write a research paper, and create a multimedia video. Videos from this course were featured in the "Educational Technology" section of *ITunes* and a few select papers from this course have since been published.
2. **ENERGY & INFRASTRUCTURE SYSTEMS FIELD LABORATORY:** a multidisciplinary freshman signature course in seminar style, with 15–18 students that introduces non-engineers and engineers to the world of energy and infrastructure from a hands-on and engineering perspective. Rather than relying exclusively on lectures, this class conducts a weekly field lab that includes site visits to relevant energy and infrastructure sites such as: water and wastewater treatment plants; power plants (natural gas and coal); dam; solar panel manufacturing factory; coal mine; steel mill; nuclear reactor; UT algae library and experimental growth ponds; cement quarry and rotary kiln; semiconductor fab; wind turbine factory; large-scale data center; and recycling facility. Because of the small-format, the class is very discussion-oriented and interactive. Assignments include written field reports and presentations, field trip videos, blogging, group composition (for a class handbook), and an exam.
3. **ENTREPRENEURSHIP:** a multidisciplinary freshman signature course in seminar style, with 15–19 students that introduces students to the concepts of entrepreneurship while giving them the skills to create their own company. This course includes guest lectures from dozens of entrepreneurs and will give the students a chance to actually create a company. Assignments include creating a pitch deck for their company and writing a case study of an entrepreneur whom they will interview.
4. **ENERGY AND SOCIETY (AKA ENERGY AT THE MOVIES):** a discussion-oriented Tutorial Course in seminar-format for 15 upper-division Plan II Honors students. Topics focus on



critically examining how energy is portrayed in popular culture, and students were each assigned a long individual research paper.

5. **WATER AND SOCIETY:** a discussion-oriented Tutorial Course in seminar-format for 15 upper-division Plan II Honors students and others admitted by permission. Topics focus on critically examining the role of water in society, including religion, popular culture, war, foreign policy, the economy and local government. Students each write a long individual research paper.
6. **THE ENGINEERED WORLD: ENERGY:** a multidisciplinary freshman signature course in seminar style, with 15–18 students in an interactive, discussion-oriented format that includes project-oriented assignments, individual research papers and regular blogging. Topics cover the basics of energy production, use and impacts.
7. **ENERGY, ENVIRONMENT AND SOCIETY:** a multidisciplinary freshman signature course in large-format lecture style with 70–100 students and weekly discussion sections led by TAs. Topics cover the basics of energy production, use and impacts, and assignments include writing research papers and op-eds.
8. **HOW THINGS WORK:** a multidisciplinary freshman signature course in large-format lecture style with 102 students and weekly discussion sections led by TAs. This course is intended to serve as an introduction to mechanical engineering principles and concepts while also revealing how engineering fits into a modern, globalized society. The course covers five main sections: 1) The language of engineering: *how things are described*; 2) Machines: *how things work*; 3) Manufacturing: *how things are made*; 4) Energy: *how things are powered*; and 5) Transportation: *how things move*. Lectures include an introduction to quantitative concepts in engineering, along with societal aspects such as culture, economics, and policy. The class includes a semester-long project to build a catapult-based water balloon launcher.

### **Core Engineering Courses Taught at UT Austin**

In addition to the new courses Webber developed, he has also taught core engineering classes: undergraduate thermodynamics for sophomore engineers and thermal fluids systems for juniors. These are described below:

1. **THERMODYNAMICS:** An introduction to the fundamentals of thermodynamics with an emphasis on engineering applications for sophomore mechanical engineering students. Typical class size is 75–90 students, though it is sometimes offered in double-section up to 160 students. Topics include properties, first law, second law, and cycles.
2. **THERMAL FLUIDS SYSTEMS:** This course integrates thermodynamics, fluid mechanics and heat transfer with an emphasis on engineering applications for junior mechanical engineering students. It is a project-based course. Typical class size is 30–40 students.

## Course Summary and Evaluations

<i>Course Title</i>	<i>Enrollment</i>	<i>Course Listing</i>	<i>Semester</i>	<i>Overall Course Rating</i>	<i>Overall Instructor Rating</i>
Thermodynamics	92	ME326	F07	4.0	4.0
Thermodynamics	97	ME326	F08	4.2	4.3
Thermodynamics	81	ME326	F09	4.0	4.2
Thermodynamics (double section)	155	ME326	F10	3.9	4.0
Thermodynamics	76	ME326	F15	4.2	4.2
Thermal Fluid Systems	33	ME343	S12	3.9	4.2
The Engineered World—Energy	16	FS301	F07	4.1	4.6
The Engineered World—Energy	17	UGS302	F08	4.0	4.6
The Engineered World—Energy	15	UGS302	F09	4.4	4.7
The Engineered World—Energy	18	UGS302	F10	4.5	4.8
Energy & Infrastructure Systems Field Laboratory	19	UGS302	S13	4.5	4.7
Energy, Environment & Society	76	UGS303	S09	3.9	4.2
Energy, Environment & Society	91	UGS303	S10	3.9	4.3
Entrepreneurship	19	UGS302	S15	3.9	3.9
Entrepreneurship	18	UGS302	S16	4.3	4.5
How Things Work	102	UGS303	F13	3.8	4.4
Energy Technology & Policy	66	ME397, CHE, EER, PA, MAN	S08	4.4	4.6
Energy Technology & Policy	85	ME397, CHE, EER, PA, MAN	S09	4.6	4.7
Energy Technology & Policy	113	ME397, CHE, EER, PA, MAN	S10	4.2	4.4
Energy Technology & Policy	86	ME397, CHE, EER, PA, MAN	S12	4.4	4.6
Energy Technology & Policy	90	ME382Q, CHE, EER, PA, MAN	S13	4.6	4.8
Energy Technology & Policy	85	ME382Q, CHE, EER, PA, MAN	S15	4.6	4.8
Energy Technology & Policy	77	ME382Q, CHE, EER, PA, MAN	S16	4.7	4.6
Energy & Society	12	TC 357	S10	4.6	4.7
Energy & Society	15	TC 357	S11	4.2	4.5
Water & Society	14	TC 357	S12	4.6	4.7
	~1500	<b>Total Enrollment</b>	<b>Average</b>	4.2	4.5

## Student and Post-Doctoral Supervision

Webber has advised or co-advised dozens of undergraduate and graduate students since joining the faculty of UT Austin. These students are organized by those who have completed their degree and those who are in progress.

### Doctoral Placements

PhD students under Dr. Webber's supervision have found jobs in academia, national laboratories, government, and industry.

15. Dr. Corey M. James, Chemical Engineering, May 2017
  - Academy Professor, U.S. Military Academy, West Point, NY
14. Dr. Bonnie C. Roberts, Mechanical Engineering, May 2017
  - Lecturer, UT Austin
13. Dr. Michael E. Legatt, Electrical and Computer Engineering, December 2016
  - CEO and Founder, ResilientGrid
12. Dr. Charles R. Upshaw, Mechanical Engineering, May 2016
  - Post-Doctoral Fellow, UT Austin
11. Dr. Robert L. Fares, Mechanical Engineering, August 2015
  - AAAS S&TP Fellow, U.S. Department of Energy, Washington, D.C.
10. Dr. Jared B. Garrison, Mechanical Engineering, December 2014
  - Post-Doctoral Fellow, ETH, Zurich, Switzerland
9. Dr. Joshua D. Rhodes, Civil, Architectural and Environmental Engineering, April 2014
  - Post-Doctoral Fellow, UT Austin
8. Dr. Chioke B. Harris, Mechanical Engineering, October 2013
  - AAAS S&TP Fellow, U.S. Department of Energy, Washington, D.C.
7. Dr. Kelly Twomey Sanders, Civil, Architectural and Environmental Engineering, Oct 2013
  - Assistant Professor, Civil Engineering, University of Southern California
6. Dr. Ashlynn S. Stillwell, Civil, Architectural and Environmental Engineering, May 2013
  - Assistant Professor, Civil and Environmental Engineering, University of Illinois, Urbana-Champaign, IL
5. Dr. Aaron K. Townsend, Mechanical Engineering, January 2013.
  - ERCOT, Taylor, TX

4. Dr. Ben H. Gully, Mechanical Engineering, August 2012,
  - Research Engineer, Det Norske Veritas (DNV), Norway
3. Dr. Stuart M. Cohen, Mechanical Engineering, August 2012
  - National Renewable Energy Laboratory, Golden, CO
2. Dr. Nathan H. Putnam, Mechanical Engineering, August 2012
  - Research Industrial Engineer, Army Corps of Engineers, Urbana-Champaign, IL
1. Dr. Colin M. Beal, Mechanical Engineering, May 2011
  - Post-Doctoral Fellow, Cornell University

### **Ph.D. Supervisions Completed**

- Advisor/Co-Advisor:
  1. Corey James, Chemical Engineering, May 2017, “Reducing the Cost of Operational Water on Military Bases Through Modeling, Optimization, and Control” (Co-Advisor: Tom Edgar)
  2. Bonnie Roberts, Mechanical Engineering, May 2017, “Fire Safety in Sustainable Buildings: Status, Options, Alternatives” (Co-Advisor: DK Ezekoye)
  3. Michael E. Legatt, Electrical and Computer Engineering, December 2016, “An Experimental and Analytical Method for Assessing the Integration of Electric Vehicles into the Bulk Power System”
  4. Charles R. Upshaw, Mechanical Engineering, May 2016, “Peak Load Reduction and Water Savings Potential of Integrated Thermal Energy and Auxiliary Water Storage Systems for Residential Buildings in Austin, Texas”
  5. Robert L. Fares, Mechanical Engineering, August 2015, “A Framework to Model and Optimize the Operation of Lithium-Ion Energy Storage in Electricity Markets, and an Assessment of Lithium-Ion Energy Storage in Texas”
  6. Jared B. Garrison, Mechanical Engineering, December 2014, “A Grid-Level Unit Commitment Assessment of High Wind Penetration and Utilization of Compressed Air Energy Storage in ERCOT”
  7. Joshua D. Rhodes, Civil, Architectural and Environmental Engineering, April 2014, “Impacts of Big Data on Optimal Residential Energy Consumption Prediction and Analysis”
  8. Kelly Twomey Sanders, Civil, Architectural and Environmental Engineering, October 2013, “Analytical methods and strategies for using the energy-water nexus to achieve cross-cutting efficiency gains”
  9. Chioke B. Harris, Mechanical Engineering, October 2013, “An Assessment of the System Costs and Operational Benefits of Vehicle-to-Grid Schemes”
  10. Ashlynn S. Stillwell, Civil, Architectural and Environmental Engineering, April 2013, “Water Impacts on Thermoelectric Generation”

11. Aaron K. Townsend, Mechanical Engineering, January 2013, “A Grid-Level Assessment of Compressed Air Energy Storage in ERCOT”
  12. Stuart M. Cohen, Mechanical Engineering, August 2012, “A Techno-economic Plant- and Grid-Level Assessment of Flexible CO<sub>2</sub> Capture” (Co-Advisor: Gary Rochelle)
  13. Nathan Putnam, Mechanical Engineering, August 2012, “Computer Tools for Designing Self-Sufficient Military Base Camps” (Co-Advisor: Carolyn Conner Seepersad)
  14. Ben Gully, Mechanical Engineering, August 2012, “Hybrid Powertrain Design for Naval and Commercial Ocean-Going Vessels” (Co-Advisor: Carolyn Conner Seepersad)
  15. Colin M. Beal, Mechanical Engineering, May 2011, “Constraints on algal biofuel production” (Co-Advisors: Dr. Rod Ruoff, Dr. Bob Hebner)
- Committee Member:
    1. Austin Anderson, Mechanical Engineering, Spring 2017
    2. Amanda Cuellar, Civil, Architectural and Environmental Engineering, Spring 2016
    3. Krystian Perez, Chemical Engineering, Spring 2016
    4. Kyle Chavez, Mechanical Engineering, Spring 2016
    5. Sean DeRosa, Chemical Engineering, Spring 2016
    6. Jeremy Mayo, Education, Spring 2015
    7. Brady Stoll, Mechanical Engineering, Spring 2015
    8. Kristen Cetin, Civil, Architectural and Environmental Engineering, Spring 2015
    9. Duehee Lee, Electrical and Computer Engineering, Spring 2015
    10. Daniel Zavala, Chemical Engineering, August 2014.
    11. Elena Nirlo, Civil, Architectural and Environmental Engineering, April 2014
    12. Felix Gutierrez, Electrical and Computer Engineering, Fall 2013
    13. Jakub Felkl, Mechanical Engineering, Fall 2013
    14. Marwa Zataari, Civil, Architectural and Environmental Engineering, Fall 2013
    15. Robert Crawford, Mechanical Engineering, Spring 2013
    16. Cassandra Telenko, Mechanical Engineering, Fall 2012
    17. Ian Partridge, LBJ School of Public Affairs, Fall 2012
    18. Nawaf Alhajeri, Civil Engineering, Summer 2012
    19. Todd Davidson, Mechanical Engineering, Spring 2012
    20. Meryl Stoller, Mechanical Engineering, Fall 2011
    21. Jason Albert, Mechanical Engineering, Spring 2011
    22. Mariana Dionisio, Chemical Engineering, Spring 2010
    23. Ross Dugas, Chemical Engineering, Fall 2009
    24. Tammy Thompson, Chemical Engineering, Fall 2008
    25. Taylor Green, Mechanical Engineering, Spring 2008

## M.S./M.A./M.P.Aff/M.G.P.S./M.B.A. Supervisions Completed

- Advisor/Co-Advisor:

1. Faith S. Martinez Smith, Energy & Earth Resources and LBJ School of Public Affairs, May 2016, “Does Coal Mining in West Virginia Produce or Consume Water? A net water balance of seven coal mines in Logan County, West Virginia, an aquifer assessment, and the policies determining water quantities”
2. Andrew S. Reimers, Mechanical Engineering, August 2015, “Low Temperature Heat and Water Recovery from Super-critical Coal Plant Flue Gas”
3. Gary M. Gold, Environmental Water and Resource Engineering, May 2015, “The Energy-Water Nexus: An Analysis and Comparison of Various Configurations Integrating Desalination with Renewable Power”
4. Brynjólfur V. Ólafsson, Mechanical Engineering, December 2014, “The Technical Potential of Renewable Natural Gas (RNG) in the United States, and the Economic Potential of Methanation-derived RNG in Texas”
5. Margaret A. Cook, Environmental Water and Resource Engineering and LBJ School of Public Affairs, December 2014, “Mitigating the Impacts of Droughts and Heat Waves at Thermoelectric Power Plants in the United States”
6. Jill B. Kjellsson, Environmental Water and Resource Engineering and LBJ School of Public Affairs, August 2014, “The Energy-Water Nexus: Energetic Analysis of Water and Wastewater Treatment, Distribution and Collection”
7. Erin Keys, Mechanical Engineering, August 2014, “Variable Speed Drives for Power Factor Correction in the Water Sector”
8. Jeremy R. Zaborowski, Energy & Earth Resources, August 2014, “Valuation of an Advanced Combined Cycle Power Plant and its Cost of New Entry (CONE) Into the ERCOT Market”
9. Yael R. Glazer, Environmental Water and Resource Engineering, May 2014, “The Potential for Using Energy from Flared Gas or Renewable Resources for On-Site Hydraulic Fracturing Wastewater Treatment”
10. Elizabeth Waite, Energy & Earth Resources, December 2013, “Decision Support for Project Selection in Texas Water Planning”
11. Colin M. Meehan, Energy & Earth Resources, December 2013, “Estimating Emissions Impacts to the Bulk Power System of Increased Electric Vehicle and Renewable Energy Usage”
12. Mary Clayton, Mechanical Engineering, August 2013, “The Energy Water Nexus: Increasing Water Supply By Desalination Integrated With Renewable Power and Reducing Water Demand By Corporate Water Footprinting”
13. Alisa Schackmann, LBJ School of Public Affairs, May 2013, Topic: Underground Transmission
14. Charlie Upshaw, Mechanical Engineering, May 2012, “Thermodynamic and Economic Feasibility Analysis of a 20 MW Ocean Thermal Energy Conversion (OTEC) Power Plant”

15. Adolfo Lozano, Mechanical Engineering, August 2011, "Analysis of a Novel Thermoelectric Generator in the Built Environment"
  16. Castlen Kennedy, Energy & Earth Resources and LBJ School of Public Affairs, August 2011, "Assessing the Viability of Compressed Natural Gas as a Transportation Fuel for Light-Duty Vehicles in the United States"
  17. Emily Grubert, Environmental Water Resource Engineering, May 2011, "Freshwater on the Island of Maui: System Interactions, Supply, and Demand"
  18. Melissa Lott, Mechanical Engineering and LBJ School of Public Affairs, December 2010, "Quantifying the Economic and Environmental Tradeoffs of Electricity Mixes in Texas, Including Energy Efficiency Potential Using the Rosenfeld Effect as a Basis for Evaluation"
  19. David Wogan, Mechanical Engineering and LBJ School of Public Affairs, December 2010, "An Integrated Resource and Biological Growth Model for Estimating Algal Biomass Production With Geographic Resolution" (Co-Advisor: Dr. Alex da Silva)
  20. Chioke Harris, Mechanical Engineering, August 2010, "A Mixed-Integer Model for Optimal Grid-Scale Energy Storage Allocation" (Co-Advisor: Dr. Jeremy Meyers)
  21. Emily Grubert, Energy and Earth Resources, August 2010, "Maui's Freshwater Status, Allocation, and Management for Sustainability"
  22. Kelly Twomey, Mechanical Engineering, May 2010, "The Energy-Water Nexus: An Examination of the Water Quality Impacts of Biofuels"
  23. Ashlynn Stillwell, Environmental & Water Resource Engineering and LBJ School of Public Affairs, May 2010, "The Energy-Water Nexus in Texas" [**Winner of the American Water Works Association's (AWWA's) Second Place Academic Achievement Award for the best Master's Thesis**]
  24. Michael O'Donnell, Mechanical Engineering, December 2009, "Barriers to a Biofuels Transition in the U.S. Liquid Fuels Sector"
  25. Jared Garrison, Mechanical Engineering, December 2009, "An Integrated Energy Storage Scheme for a Dispatchable Wind and Solar Powered Energy System"
  26. Cassandra Telenko, Mechanical Engineering, December 2009, "Developing Green Design Guidelines: A Formal Method and Case Study" (Co-Advisor: Dr. Carolyn Conner Seepersad)
  27. Stuart Cohen, Mechanical Engineering, May 2009, "The Implications of Flexible CO<sub>2</sub> Capture on the ERCOT Electric Grid" (Co-Advisor: Dr. Gary Rochelle)
  28. Colin Smith, Mechanical Engineering, May 2009, "Conversion of Wet Ethanol to Syngas via Filtration Combustion" (Co-Advisor: Dr. Janet Ellzey)
  29. Ben Eisterhold, Energy & Earth Resources, May 2008, "The Geotechnical and Economic Constraints of the U.S. Strategic Petroleum Reserve"
- Committee Member or 2nd Reader:
    1. Hector Arreola, Energy & Earth Resources, May 2017
    2. Kayla Fenton, Energy & Earth Resources and McCombs School of Business, May 2017

3. Jose D. Beceiro, Energy & Earth Resources, May 2015
4. Guillermo Hernandez, Electrical Engineering, May 2014
5. Julia O'Rourke, Mechanical Engineering and LBJ School of Public Affairs, May 2013
6. Robert Fares, Mechanical Engineering, August 2012
7. Constance McDaniel Wyman, Energy & Earth Resources, May 2011
8. Claire Follete, Mechanical Engineering, May 2010
9. Nate Lapierre, Energy & Earth Resources, May 2010
10. Morayo Noibi, Chemical Engineering, August 2009
11. Andrew Durkee, Energy & Earth Resources, May 2009
12. Christopher Smith, LBJ School of Public Affairs, May 2009
13. Susan Peterson, LBJ School of Public Affairs, May 2009
14. Maura Nippert, Mechanical Engineering, December 2008
15. Ross Johnson, Mechanical Engineering, August 2008
16. Federico Pozo, Energy & Earth Resources, May 2008
17. John Losinger, LBJ School of Public Affairs, May 2008
18. Arash Nazhad, Energy & Earth Resources, May 2008
19. In-Hul Chwang, Energy & Earth Resources, May 2008
20. Cyrus Tashakorri, McCombs School of Business and LBJ School of Public Affairs, May 2008

**Research Professionals and Staff Supervisions:**

1. Dr. Charles Upshaw, Post-Doctoral Fellow, June 2016 – present
2. Dr. Todd Davidson, Post-Doctoral Fellow, September 2014 – present
3. Dr. Joshua Rhodes, Post-Doctoral Fellow, May 2014 – present
4. Mr. Jeff Phillips, Technical Illustrator, November 2012 – present
5. Dr. Robert Fares, Post-Doctoral Fellow, August 2015 – August 2016
6. Ms. Marianne Shivers Gonzalez, Special Projects Coordinator, January 2011 – January 2016
7. Ms. Griffin Gardner, Media Coordinator, August 2011 – August 2016
8. Mr. Juan Garcia, Media Producer, November 2012 – July 2015
9. Dr. Chioke Harris, Post-Doctoral Fellow, January 2014 – August 2014
10. Dr. Colin M. Beal, Post-Doctoral Fellow, December 2012 – August 2013
11. Mr. Roger Duncan, Research Analyst, September 2011 – August 2013
12. Dr. Carey W. King, Research Associate & Post-Doctoral Fellow, Feb 2007 – Aug 2013



13. Dr. Fred C. Beach, Research Associate & Post-Doctoral Fellow, Sep 2010 – July 2013
14. Dr. Ben H. Gully, Post-Doctoral Fellow, September 2012 – December 2012
15. Mr. Alex Breckel, Research Engineer, January 2012 – August 2012
16. Ms. Sheril R. Kirshenbaum, Research Scientist, January 2010 – February 2012
17. Ms. Melissa C. Lott, Research Scientist, January 2011 – October 2011
18. Ms. Amanda C. Cuellar, Research Engineer, May 2009 – August 2010

**Ph.D./M.S. Supervisions In Progress:**

- Advisor:

1. Kazunori Nagasawa, Mechanical Engineering, Topic: Smart Grid and Smart Gas in the Residential Sector
2. Yael R. Glazer, Civil, Architectural and Environmental Engineering, Topic: Wastewater Treatment at Shale Sites Using Flared Gas
3. Margaret A. Cook, Civil, Architectural and Environmental Engineering, Topic: Energy-Water Nexus in Texas
4. Andrew Reimers, Mechanical Engineering, Topic: Water and waste heat recovery from power plants
5. Carlos Galdeano, Civil, Architectural and Environmental Engineering, Topic: Water for power plants and energy production in Texas and Mexico
6. Thomas Deetjen, Mechanical Engineering, Topic; Integration of renewables into the grid
7. Scott Vitter, Mechanical Engineering, Topic: Energy embedded in Municipal and Residential Water
8. Catherine Birney, Environmental, Water, and Resource Engineering, Topic: Nexus of food and energy
9. Sam Aminfard, Mechanical Engineering, Topic: Integration of renewable energy with desalination
10. Bruk Berhanu, Civil, Architectural and Environmental Engineering, Topic: Commercial water operations
11. Arkasama Bandyopadhyay, Mechanical Engineering, Topic: Integration of Solar Energy Into the Grid
12. Sam Johnson, Mechanical Engineering, Topic: Integration of wind, solar and storage into the grid
13. Philip White, Mechanical Engineering, Topic: Residential end-use of electricity
14. Isabella Gee, Environmental, Water, and Resource Engineering, Topic: Nexus of food and energy

- Committee Member:

1. Julia O'Rourke, Mechanical Engineering
2. Kristina Tjachman, Architecture
3. Christina Wirsching, Architecture

### **Undergraduate Research Supervision:**

#### 1. Plan II Thesis Supervision

##### (a) Advisor on Undergraduate/Plan II Thesis:

- i. Coleman Tharpe, May 2015
- ii. Will Gorman, May 2014 [**Winner of the Model Plan II Thesis Award**]
- iii. Kevin Clegg, May 2013
- iv. Austin Shires, May 2012
- v. Zach Ullah, May 2012
- vi. James Newman, May 2012
- vii. Rob Taylor, May 2012
- viii. Brad Parro, May 2011
- ix. Will Johnson, May 2011
- x. Amanda Cuellar, May 2009
- xi. Paolo Puccini, May 2009
- xii. Avi Wolfson, May 2008
- xiii. Nick Padon, December 2007
- xiv. Ben Branstetter, December 2007

##### (b) Second Reader on Plan II Thesis:

- i. Megan Stephens, May 2011
- ii. Ashley Powell, May 2011
- iii. Jim Coutre, May 2008

#### 2. Undergraduate Assistants

##### (a) Current

- i. Gordon Tsai, Summer 2016 – present
- ii. Heather Rose, Summer 2016 – present
- iii. Laura Rivera Gomez, Fall 2016 – present
- iv. Brittany Speetles, Fall 2016 – present
- v. Gregory Ross, Summer 2016 – present

##### (b) Former

- i. Yuval Edrey, Summer 2015 – Spring 2017
- ii. Jamie Lee, Spring 2015 – Spring 2016
- iii. Betsy Martinez, Spring 2015 – Spring 2016
- iv. Marisa Ballard, Spring 2015 – Spring 2016

- v. Breanna Granzow, Spring 2013 – Summer 2015
- vi. Coleman Tharpe, Spring 2013 – Summer 2015
- vii. Kody Jones, Mechanical Engineering, Spring 2014 – Fall 2014
- viii. Robert Kennedy, Mechanical Engineering, Spring 2014
- ix. Will Gorman, Chemical Engineering and Plan II, Spring 2012 – Spring 2014
- x. Zach Wilhoit, Mechanical Engineering, Fall 2012 – Summer 2013
- xi. Blake Sandoval, Mechanical Engineering, Fall 2012 – Spring 2013
- xii. Vineet Raman, Electrical Engineering, Fall 2012 – Spring 2013
- xiii. Isaac Sanchez, Mechanical Engineering, Summer 2012 – Spring 2013
- xiv. Richard North, Mechanical Engineering, Fall 2011 – Fall 2012
- xv. Susan Conover, Mechanical Engineering, Fall 2011 – Spring 2012
- xvi. Neil Barbaria, Electrical and Computer Engineering, Fall 2011
- xvii. James Newman, Mechanical Engineering and Plan II, Fall 2010 – May 2012
- xviii. John Fyffe, Mechanical Engineering, Fall 2008 – Summer 2011
- xix. Mary Clayton, Mechanical Engineering, Fall 2009 – May 2011
- xx. Courtney Grosvenor, Mechanical Engineering, Summer 2010 – May 2011
- xxi. Veronica Pulido, Mechanical Engineering, Fall 2009 – Fall 2010
- xxii. Lauren Ayers, Liberal Arts, Spring 2010 – August 2010
- xxiii. Charlie Upshaw, Mechanical Engineering, Fall 2009 – Spring 2010
- xxiv. Christopher Mayer, Mechanical Engineering, Summer 2010 – Fall 2010
- xxv. Royce Chang, Mechanical Engineering and Plan II, Fall 2009
- xxvi. Adam Petri, Mechanical Engineering, Fall 2009
- xxvii. Alix Broadfoot, Civil Engineering, Spring 2007 – Spring 2009
- xxviii. Amanda Cuellar, Chemical Engineering and Plan II, Spring 2007 – Spring 2009
- xxix. Alex Levy, Mechanical Engineering, Spring 2009
- xxx. Tommy Browder, Mechanical Engineering, Summer 2008 – Fall 2008
- xxxi. Scott McNally, Chemical Engineering, Summer 2008–Fall 2008
- xxxii. Andrew King, Mechanical Engineering, Spring 2008–Summer 2008
- xxxiii. Alison Whitt, Mechanical Engineering, Spring 2008
- xxxiv. Erin Keys, Mechanical Engineering, Fall 2007–Spring 2008
- xxxv. Afolabi Ogunnaike, Chemical Engineering, Fall 2007–Spring 2008
- xxxvi. Avi Wolfson, Mechanical Engineering and Plan II, Fall 2007–Spring 2008
- xxxvii. Henri Kjellberg, Aerospace Engineering, Spring 2007 – Summer 2007
- xxxviii. Andrea Pearlman, Mechanical Engineering, Spring 2007

## Service to the Profession

### Professional, Industrial and Governmental Committee Participation:

- National Academy Committees
  - Member, Roundtable on Science and Technology for Sustainability, The National Academies (2012–2018)
  - Member, Committee on Transitions to Alternative Vehicles and Fuels, National Research Council, National Academies of Sciences & Engineering (2011–2012)
- Editorial Positions
  - Board of Advisers, *Scientific American* (2009–present)
  - Editor in Chief, *Current Sustainable/Renewable Energy Reports*, Springer (2013–2018)
  - Editorial Board, *Environmental Research Letters*, Institute of Physics (2008–present)
  - Contributing Editor, *Earth Magazine* (2007–present)
- Board Positions and Other Committees
  - Board Member, Houston Advanced Research Center (HARC), (2013–present)
  - Board Member (Treasurer), Sustainable America (2013–present)
  - Board of Advisors, Fuel Freedom Foundation (2014–present)
  - Judge, Platt’s Energy Industry Awards (2010–2011, 2013)
  - Vice-Chair, Energy-Water Nexus Interdisciplinary Council, American Society of Mechanical Engineers (ASME) (2010–2013)
  - Member, Electric Utility Commission, City of Austin (2008–2013)
  - Member, AT&T Sustainability Advisory Council (2009–2012)
  - Founding Board Member, CleanTX Foundation, Austin, Texas (2008–2012)
  - Scientific Advisory Committee, Energy & Water in a Warming World, Union of Concerned Scientists (2011–2013)
  - Steering Committee Member, Power Across Texas, a 501(c)3 non-profit (2007–2012)
  - Executive Committee, Clean Energy Venture Summit (2008–2011), Austin, Texas
  - Member of the Renewable & Sustainable Energy Team with the Texas Workforce Commission as a part of Gov. Perry’s Industry Cluster Initiative (2006–2007)
  - Board Member, Hope Street Group, a national 501(c)3 non-profit (2004–2006)

# Honors, Awards, and Fellowships

## Individual Awards and Recognition

15. Frank Kreith Energy Award, American Society of Mechanical Engineers (2015)
14. Josey Centennial Professor in Energy Resources (endowed position), UT Austin (2012–present)
13. Fellow of ASME (2014)
12. Bronze Winner, 35<sup>th</sup> Annual Telly Awards for educational PBS television program *Energy at the Movies* (2014)
11. “Best of Austin” (*Best Way to Plug In Without Frying Your Brain*), *Austin Chronicle* (2014)
10. Harrington Fellowship, UT Austin (2014).
9. Inaugural recipient of the *John S. Butler Distinguished Alumni Award*, Austin Technology Incubator, UT Austin (2014).
8. Senior Fellow, Energy and Climate Partnership of the Americas, Science & Technology Advisers Office, US State Department (2011–2013) (1 of 5 people selected nationally)
7. Environmental Forum Scholar, Aspen Institute (2010)
6. APEX Award for Publication Excellence in the Green Writing category (2010)
5. Finalist, White House Fellowship (2009)
4. AT&T Industrial Ecology Fellow (2009)
3. Marshall Memorial Fellow, German Marshall Fund (2007)
2. Outstanding Young Engineering Graduate, UT-Austin (2005)
1. National Science Foundation Graduate Research Fellowship (1995–1998)

## Teaching Awards

6. Member, Academy of Distinguished Teachers, The University of Texas System (2014–present)
5. Provost Teaching “Senior” Fellow, The University of Texas at Austin (2015–2016)
4. Signature Course Essential Elements Award for Excellence in Teaching Interdisciplinary Approaches, School of Undergraduate Studies, UT Austin (2014).
3. Regents’ Outstanding Teaching Award, UT System (2011–2012)
2. Cockrell School of Engineering Award, Outstanding Teaching by an Asst. Prof. (2011–2012)
1. Dad’s Association Centennial Teaching Fellowship, UT Austin (2010–2011)

## Paper Awards and Recognition

6. Exceptional Plan II Thesis Award (for Will Gorman's undergraduate thesis at UT Austin) (2014).
5. American Water Works Association's (AWWA's) Second Place Academic Achievement Award for the best Master's Thesis (for supervising Ashlynn Stillwell's EWRE thesis) (2011)
4. Honorable Mention, *Transformative Research Along Multi-Disciplinary Boundaries* poster session, ASME 2011 International Mechanical Engineering Congress & Exposition (2011) (Garrison & Webber, "A Dynamic Model of an Energy Storage Scheme for Solar & Wind")
3. Best Student Paper Award, ASME 4th International Conference on Energy Sustainability (2010) (Twomey & Webber, "The Cost of Food in a Carbon Constrained Economy")
2. Best Student Paper Award, ASME 2nd International Conference on Energy Sustainability (2008) (Smith, *et al.*, "Conversion of Wet Ethanol to Syngas and Hydrogen")
1. Outstanding Paper Award for the best paper of the year (measurement science category) in *Measurement Science & Technology* (2005) (Webber, *et al.*, "Agricultural ammonia sensor using diode lasers and photoacoustic spectroscopy")

## Patents

6. Algorithm For Optimal Solar Placement, (Patent Pending, Disclosures Filed 2014) (J.D. Rhodes, C.R. Upshaw, and **M.E. Webber**)
5. Reducing Peak Electrical Demand By Air Conditioning Systems And Reducing Water Consumption By Implementing An Integrated Thermal Energy And Rainwater Storage System, (Patent Pending, Disclosures Filed 2013) (C.R. Upshaw, J.D. Rhodes, and **M.E. Webber**)
4. System and Method for High Sensitivity Optical Detection of Gases, #7,502,115 (2009)
3. Method of Analyzing Components of Alveolar Breath, #7,473,229 (2009)
2. Amplifier-Enhanced Optical Analysis System and Method, #7,064,329 (2006)
1. Gas Sensor for Ammonia, Carbon Dioxide and Water, Patent #6,787,776 (2004)

## Consulting and Business Partnerships

Webber is a founding partner of the following companies, whose clients are reported separately:

- Founding Partner, IdeaSmiths LLC, July 2013–present
- Co-Founder, DISCO Learning Media, Inc, February 2015–present
- Founding Partner, East Texas Integrated Land Management, October 2016–present

Webber has conducted independent consulting projects for the following entities:

- UNESCO, United Nations, Colombella, Perugia, Italy, October 2012–May 2013
- 27 Ventures, Aspen, CO, February–July 2012
- UNESCO, United Nations, Colombella, Perugia, Italy, July–December 2011
- International Research and Development Centre, Ottawa, Canada, February–December 2011
- Power Across Texas, Austin, Texas, September – December 2010
- Organization for Economic Cooperation and Development (OECD), Paris, France, May–December 2010
- Northwest Hydrogen Alliance, Seattle, Washington, February–May 2010
- ExxonMobil Corporate Strategic Research, Clinton, NJ, March–June 2010
- Tikkun Investing, Chattanooga, TN, June–December 2005
- Ferrazzi Greenlight, Los Angeles, CA, March–September 2004

In addition, Webber has taught short-courses for the following companies and organizations through executive education programs at the University of Texas at Austin:

- ExxonMobil
- Petrobras
- CNOOC
- Sinopec



## Media Appearances

Webber has made hundreds of media appearances featuring his research, analysis, expertise, or perspective since joining UT Austin in outlets such as the *Wall Street Journal*, *New York Times*, *San Francisco Chronicle*, *USA Today*, *NPR* (including local affiliates and Science Friday), *PBS* (including local affiliates and the weekly newsmagazine *NOW*), *The Daily Telegraph*, *BBC*, *ABC*, *CBS*, *Discovery*, *Popular Mechanics*, *New Scientist*, *MSNBC*, *History Channel*, *Austin American-Statesman*, and the *Houston Chronicle*. Those outlets span most major media, including print, TV, radio, and web.

### Webber's Television Shows and Appearances

Webber has regular television appearances through a variety of media outlets. In addition, he has created a television special (syndicated on PBS), has a documentary series in development, and given televised lectures, one of which is highlighted below.

- *Power Trip: The Story of Energy*, a six-part documentary series about energy is under development for national distribution on PBS with seed funding from the Alfred P. Sloan Foundation.
- *Energy at the Movies*, a television special syndicated nationally on PBS via NETA (National Educational Telecommunications Association) (2013–2015). To date it has reached 43+ million households with 110+ million people via 200+ telecasts on 95 channels in 58 markets spanning 27 states.
- “From Fracking to the Forty Acres: Energy Challenges for UT, Texas, and the World,” filmed live at KLRU’s studios in Austin, TX as part of Environmental Science Institute’s Outreach Lecture Series for *Gamechangers* on ESPN’s Longhorn Network, July 9, 2012.

### Webber's Regular Columns

In addition to the other media appearances, Webber is a regular columnist for “TechBuzz: Energy,” in ASME’s *Tech Buzz/Energy, Mechanical Engineering*, 2013 to present, a frequent contributor to other notable outlets such as *New York Times*, *Scientific American*, *Fortune*, and *Earth Magazine*.

### Webber's Educational Videos

Webber’s team at UT Austin also creates three different types of educational videos:

- *Video Abstracts*: For each peer-reviewed journal paper, a video abstract is made for a dedicated YouTube channel available to the general public and scientific community. These abstracts produced by Webber’s team, include narration by the lead author of the paper’s key motivation, methods, and findings. They integrate audio, video, animation, and custom graphics. In total, these video abstracts have garnered tens of thousands of views.
- *The Math of Energy*: For the K-12 audience, Webber and his multimedia team created a series of eight educational videos called *The Math of Energy* for PBS LearningMedia, which is a digital platform that provides educational content for more than 2 million teachers nationwide.
- *Ask Dr. Webber*: Targeting elementary school students and the general public, this series of animated videos are 1–3 minutes in length and answer energy questions posed, narrated, and illustrated by third graders.