

# Curriculum Vitae for Carey W. King

June 3, 2016

## Carey W. King

*Assistant Director*, Energy Institute  
*Research Scientist*, Jackson School of Geosciences  
*Lecturer*, McCombs School of Business  
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## EDUCATION:

Ph.D., Mechanical Engineering, 2004, University of Texas at Austin, Austin, TX  
B.S. with High Honors, Mechanical Engineering, 1997, University of Texas at Austin, Austin, TX

## PROFESSIONAL EXPERIENCE:

*Assistant Director*, Energy Institute, University of Texas at Austin, 2013-present  
*Research Scientist*, University of Texas at Austin, 2016-present  
*Lecturer*, McCombs School of Business, University of Texas at Austin, 2011-present  
*Research Associate*, Jackson School of Geosciences, University of Texas at Austin, 2008-2016  
*Post-doctoral Fellow*, Bureau of Economic Geology, University of Texas at Austin, 2007-2008  
(Advisors: Ian J. Duncan, Michael E. Webber)  
*Director of Scientific Research*, UniPixel Displays Inc., The Woodlands, TX, 2006  
*Research Scientist*, UniPixel Displays Inc., The Woodlands, TX, 2004-2006  
*Graduate Research Assistant*, University of Texas at Austin, 1998 – 2004  
*Teaching Assistant*, University of Texas at Austin, 2001 and 2003

## Books & Book Chapters

2016:

Sanders, K. T and King, Carey. W. (In press, 2016) Volume I, Chapter 13, "Integration of Water and Energy Sustainability," *CRC Water Sustainability Handbook*, Editor, Daniel H. Chen, Taylor & Francis/CRC Press, Boca Raton, FL.

2014:

**King, Carey W.** (ed.) (2014) *Thermal Power Plant Cooling: Context and Engineering*, New York, NY, ASME Press, ISBN 978-0-7918-6025-0. Purchase and browse table of contents at ASME: [here](#). (19 citations as of December, 2014: Google Scholar)

## Peer-Reviewed Journal Publications


2016:


**King, Carey W.** and Carbajales-Dale, Michael. Food-energy-water metrics across scales: project to system level, *Journal of Environmental Studies and Sciences*, **2016**, 6 (1), 39-49 (article [link](#)).


Xavier, Alexandre C., **King, Carey W.** and Scanlon, Bridget R. Daily gridded meteorological variables in Brazil (1980-2013), *International Journal of Climatology*, **2016**, 36 (6), 2644–2659 (article [online](#)). See [Data Downloads](#) page (<http://careyking.com/data-downloads/>) for access to data and supplementary material.

2015:

Cook, M. A., **King, C. W.**, Davidson, F. T. & Webber, M. E. 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*, **2015**, 1, 193-203 (article [online](#)).

**King, Carey W.**, Maxwell, John P., and Donovan, Alyssa. Comparing world economic and net energy metrics, Part 1: Single Technology and Commodity Perspective, *Energies*, **2015**, 8, 12949-12974 (article [online](#) and as  [PDF](#)). (5 citations as of June, 2016: Google Scholar)

**King, Carey W.**, Maxwell, John P., and Donovan, Alyssa. Comparing world economic and net energy metrics, Part 2: Total Economy Expenditure Perspective, *Energies*, **2015**, 8, 12975-12996 (article [online](#) and as  [PDF](#)). (6 citations as of June, 2016: Google Scholar)

**King, Carey W.** Comparing world economic and net energy metrics, Part 3: Macroeconomic Historical and Future Perspectives, *Energies*, **2015**, 8, 12997-13020 (article [online](#) and as  [PDF](#)). (4 citations as of June, 2016: Google Scholar)

2014:

Wallis, P., Ward, M., Pittock, J., Hussey, K., Bamsey, H., Denis, A., Kenway, S., **King, C.**, Mushtaq, S., Retamal, M. & Spies, B. The water impacts of climate change mitigation measures. *Climatic Change*, 125, 209-220, **2014** ([online](#)). (4 citations as of June, 2016: Google Scholar)

King, C. W. Matrix method for comparing system and individual energy return ratios when considering an energy transition. *Energy*, 72, 254-265. **2014** ([online](#)). (4 citations as of June, 2016: Google Scholar)

Vincent C Tidwell, Barbara D Moreland, Katie M Zemlick, Barry L Roberts, Howard D Passell, Daniel Jensen, Christopher Forsgren, Gerald Sehlke, Margaret A Cook, **Carey W King**, and Sara Larsen. Mapping water availability, projected use and cost in the western United States. *Environmental Research Letters*, 9 064009, **2014**. [Abstract](#), [PDF](#). (7 citations as of June, 2016: Google Scholar)

Sanders, K. T., Blackhurst, M. F., **King, C. W.** and Webber, M. E. The Impact of Water Use Fees on Dispatching and Water Requirements for Water-Cooled Power Plants in Texas. *Environmental Science & Technology*, 48 (12), 7128-7134, **2014** ([online](#)). (6 citations as of June, 2016: Google Scholar)

#### 2013:

**King, Carey W**, Gülen, Gürcan, Cohen, Stuart M, and Nuñez-Lopez, Vanessa, The system-wide economics of a carbon dioxide capture, utilization, and storage network: Texas Gulf Coast w/ pure CO<sub>2</sub>-EOR flood, *Environmental Research Letters*, 8, 034030, **2013**. Available at: <http://stacks.iop.org/1748-9326/8/034030>. (1 citations as of December, 2014: Web of Science; 10 citations as of June, 2016: Google Scholar)

**King, C.W.**, Stillwell, A.S., Twomey, K.M., and Webber, M.E., Coherence between water and energy policies, *Natural Resources Journal*, 53 (1), **2013**, 117-215. (3 citations as of December, 2014: Web of Science; 25 citations as of June, 2016: Google Scholar)

Sanders, Kelly T., **King, Carey W.**, Stillwell, Ashlynn S., and Webber, Michael E., Clean Energy and Water: Assessment of Mexico for Improved Water Services and Renewable Energy, *Environment, Development and Sustainability*, 15 (5), **2013**, 1303-1321. (7 citations as of June, 2016: Google Scholar)

#### 2012:

Beal, Colin M., Stillwell, Ashlynn S., **King, Carey W.**, Cohen, Stuart M., Berberoglu, Halil, Bhattarai, Rajendra P., Connelly, Rhykka, Webber, Michael E., Hebner, Robert E., Energy Return on Investment for Algal Biofuel Production Coupled with Wastewater Treatment, *Water Environment Research*, 84 (9), **2012**, 692-710; doi: 10.2175/106143012X13378023685718. (7 citations as of December, 2014: Web of Science; 32 citations as of June, 2016: Google Scholar)

Beal, Colin M., Hebner, Robert E., Webber, Michael E., Ruoff, Rodney S., Siebert, A. Frank, and **King, Carey W.**, Comprehensive Evaluation of Algal Biofuel Production: Experimental and Target Results, *Energies*, 5 (6), **2012**:1943-1981, doi:10.3390/en5061943, available on June 20, 2012 at: <http://www.mdpi.com/1996-1073/5/6/1943/>. (4 citations as of December, 2014: Web of Science; 25 citations as of June, 2016: Google Scholar)

2011:

**King, C. W.** and Hall, C. A. S. Relating financial and energy return on investment. *Sustainability*, 3 (10) **2011**, 1810-1832; doi:[10.3390/su3101810](https://doi.org/10.3390/su3101810). (14 citations as of December, 2014: Web of Science 49 citations as of June, 2016: Google Scholar)

--- Referenced in *The Economist*, April 21-27, 2012, Buttonwood: "Feeling Peaky" ---  
--- <http://www.economist.com/node/21553034> ---

Henshaw, Philip F., **King, Carey**, and Zarnikau, Jay. System Energy Assessment (SEA), Defining a Standard Measure of EROI for Energy Businesses as Whole Systems. *Sustainability*, 3 (10), **2011**, 1908-1943; doi:[10.3390/su3101908](https://doi.org/10.3390/su3101908). (6 citations as of December, 2014: Web of Science; 12 citations as of June, 2016: Google Scholar)

Alhajeri, N. S., Donohoo, P., Stillwell, A. S., **King, C. W.**, Webster, M. D., Webber, M. E. & Allen, D. T. (2011) 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 doi: [10.1088/1748-9326/6/4/044018](https://doi.org/10.1088/1748-9326/6/4/044018). (4 citations as of December, 2014: Web of Science; 14 citations as of June, 2016: Google Scholar)

Tammy M Thompson, **Carey W. King**, David T. Allen, Michael E Webber. Air quality impacts of plug-in hybrid electric vehicles in Texas: evaluating three battery charging scenarios. *Environ. Res. Lett.* 6, **2011** 024004 doi: [10.1088/1748-9326/6/2/024004](https://doi.org/10.1088/1748-9326/6/2/024004). (2 citations as of December, 2014: Web of Science; 18 citations as of June, 2016: Google Scholar)

Stuart M Cohen, Hannah L Chalmers, Michael E Webber, and **Carey 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. *Environ. Res. Lett.* 6, **2011** 024001 doi: [10.1088/1748-9326/6/2/024001](https://doi.org/10.1088/1748-9326/6/2/024001). (4 citations as of December, 2014: Web of Science; 23 citations as of June, 2016: Google Scholar)

Stillwell, A. S., **C. W. King**, M. E. Webber, I. J. Duncan and A. Hardberger. The Energy-Water Nexus in Texas. *Ecology and Society* 16 (1): 2, **2011**. [online] URL: <http://www.ecologyandsociety.org/vol16/iss1/art2/>. (23 citations as of December, 2014: Web of Science; 125 citations as of June, 2016: Google Scholar)

2010:

**King, C. W.** Energy intensity ratios as net energy measures of United States energy production and expenditures. *Environ. Res. Lett.* 5, **2010** 044006 doi: [10.1088/1748-9326/5/4/044006](https://doi.org/10.1088/1748-9326/5/4/044006), available at: <http://stacks.iop.org/1748-9326/5/044006>. (7 citations as of December, 2014: Web of Science; 26 citations as of June, 2016: Google Scholar)

--- --- Awarded the "Rosenfeld Plaque" by *Environ. Res. Lett.* --- ---  
--- --- Selected as a "Highlight of 2010" for *Environ. Res. Lett.* --- ---

Stillwell, A. S., **King, C. W.**, and Webber, M. E. 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*. **2010**, 1 (1), 33-41. (5 citations as of June, 2016: Google Scholar)

**King, Carey W.**, Webber, Michael E., and Duncan, Ian J. The Water Needs for LDV Transportation in the United States. *Energy Policy*. **2010**, 38 (2), 1157-1167, DOI: 101016/j.enpol.2009.11.004. (5 citations as of December, 2014: Web of Science; 20 citations as of **June, 2016**: Google Scholar)

2008:

**King, Carey W.** and Webber, Michael E. Water Intensity of Transportation. *Environmental Science and Technology*. **2008**, 42 (21), 7866-7872; (Policy Analysis) DOI: [10.1021/es800367m](https://doi.org/10.1021/es800367m). (72 citations as of December, 2014: Web of Science; 189 citations as of June, 2016: Google Scholar)

**King, Carey W.** and Webber, Michael E. The Water Intensity of the Plugged-In Automotive Economy. *Environmental Science and Technology*. **2008**, 42 (12), 4305-4311; (Article) DOI: [10.1021/es0716195](https://doi.org/10.1021/es0716195). (35 citations as of December, 2014: Web of Science; 67 citations as of June, 2016: Google Scholar)

--- --- [Recognized as most downloaded paper in 1<sup>st</sup> Qtr 2008 for ES&T](#) --- ---

2005:

**King, C.W.**, Campbell, M.I., Beaman, J. J., and Sreenivasan, S. V. Synthesis of Multistable Linkage System using an Optimization Approach. *Structural and Multidisciplinary Optimization*. **2005**, 29, No. 6, pp. 477-487. (6 citations as of December, 2014: Google Scholar)

2004:

**King, C.**, Beaman, J. J., Sreenivasan, S. V., and Campbell, M. Multistable Equilibrium System Design Methodology and Demonstration. *Journal of Mechanical Design*, **2004**, 126, No. 6, pp. 1036-1046. (16 citations as of December, 2014: Google Scholar)

## Peer-Reviewed Conference Proceedings

2014:

Cook, Margaret A., **King, Carey**, and Webber, Michael E. “**Impacts of Temperature Thresholds on Power Generation in the Upper Mississippi River Basin under different Climate Scenarios**,” paper IMECE2014-38908 in Proceedings of the ASME 2014 International Mechanical Engineering Congress & Exposition IMECE 2014 November 14-20, **2014**, Montreal, Canada.

2013:

Cook, Margaret A., **King, Carey W.**, and Webber, Michael E. “**Implications of Thermal Discharge Limits on Future Power Generation in Texas**” paper IMECE2013-65110 in Proceedings of the ASME 2013 International Mechanical Engineering Congress & Exposition IMECE 2013 November 15-21, **2013**, San Diego, California USA.

2011:

Dodder, R., Felgenhauer, T., Yelverton, W., and **King, C.** “Water and greenhouse gas tradeoffs associated with a transition to a low carbon transportation system,” Paper IMECE-63991. *Proceedings of the ASME 2011 International Mechanical Engineering Congress and Exposition*, Denver, CO, November 11-17, 2011.

Grubert, E., **King, C. W.**, and Webber, M. E. “Water for biomass-based energy on Maui, Hawaii,” Paper IMECE-63199. *Proceedings of the ASME 2011 International Mechanical Engineering Congress and Exposition*, Denver, CO, November 11-17, 2011.

Hill, D. and **King, C.** "Using the energy intensity ratio as an assessment tool for near term energy strategy in transportation and petrochemicals," Paper ES2011-54349. *Proceedings of the ASME 2011 5<sup>th</sup> International Conference on Energy Sustainability*, Washington, DC, August 7-10, 2011.

2010:

**King, C.**, Zarnikau, J., and Henshaw, P. "Defining a standard measure for whole system EROI combining Economic "top-down" and LCA "bottom-up" accounting." Paper ES2010-90414. *Proceedings of the ASME 2010 4<sup>th</sup> International Conference on Energy Sustainability*, Phoenix, AZ, May 17-22, 2010. (7 citations as of December, 2014: Google Scholar)

--- --- [Awarded "Best Paper" of the ASME Energy Sustainability 2010 Conference](#) --- ---

2009:

**King, C.**, and Webber, M. "Methodology for Calculating the Ability of Renewable Energy Systems to Manufacture Themselves," Paper ES2009-90026, *Proceedings of the ASME 3<sup>rd</sup> International Conference on Energy Sustainability*, San Francisco, CA, July 19-23, 2009.

**King, C.**, Gülen, G., Essandoh-Yeddu, J. and Hovorka, S. "Economic Analysis of an Integrated Anthropogenic Carbon Dioxide Network for Capture and Enhanced Oil Recovery along the Texas Gulf Coast," Paper ES2009-90415, *Proceedings of the ASME 3<sup>rd</sup> International Conference on Energy Sustainability*, San Francisco, CA, July 19-23, 2009. (8 citations as of December, 2014: Google Scholar)

Lott, M., **King, C.**, and Webber, M. "Analyzing Tradeoffs in Electricity Choices using the Texas Interactive Power Simulator (TIPS)," Paper ES2009-90135, *Proceedings of the ASME 3<sup>rd</sup> International Conference on Energy Sustainability*, San Francisco, CA, July 19-23, 2009.

Stillwell, A., **King, C.**, and Webber, M. "Desalination and Long-Haul Water Transfer a Case Study of the Energy-Water Nexus in Texas," Paper ES2009-90237, *Proceedings of the ASME 3<sup>rd</sup> International Conference on Energy Sustainability*, San Francisco, CA, July 19-23, 2009.

Lott, M. C., **C.W. King** and M. E. Webber (2009). Using the Texas Interactive Power Simulator for Direct Instruction, Paper AC2009-525. American Society for Engineering Education Annual Conference, Austin, TX.

2008:

**King, C.**, Webber, M., and Duncan, I. "Water Intensity of Transportation Fuels: Water Projections for Fuel Adoption Rates of Light Duty Vehicles," Paper ES2008-54147, *Proceedings of the ASME 2<sup>nd</sup> International Conference on Energy Sustainability*, Jacksonville, FL, August 10-14, 2008.

2004:

**King, C.**, Campbell, M., Beaman, J. J., "On the Design Synthesis of Multistable Equilibrium Systems," *Technical Proceedings of the ASME International Design Engineering Technical Conference*, Salt Lake City, UT, Sept. 28 – Oct. 2, 2004.


Kollata, E., **King, C.**, and Campbell, M. "Design Synthesis of Multistable Compliant Structures," *Proceedings of the 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference*, Albany, NY, Aug. 30 – Sept. 1, 2004.

2003:

Limaye, A. A.; **King, C. W.**; and Campbell, M. C. "Analysis of Multiple Equilibrium Positions in a Magnetostatic Field," *Technical Proceedings of the 2003 ASME International Design Engineering Technical Conference*, Chicago, IL, Sept. 2-5, 2003. (10 citations as of December, 2014: Google Scholar)

## Non Peer-Reviewed Journal and Magazine Publications

2015:

**King, Carey W.** The Rising Cost of Resources and Global Indicators of Change, *American Scientist*, 103 (6), November/December, 2015 (article [online](#) and as  [PDF](#)).

2013:

Grubert, Emily A., **King, Carey W.**, and Webber, Michael E., "Maui's Complicated Relationship with Water," *Earth Magazine*, August 2013.

2011:

**King, Carey**, Energy and Economics 2011-2012: Long-term Fiscal Issues Need to Consider Energy Possibilities, *Earth Magazine*, December 2011, 45-46. Available:

<http://www.earthmagazine.org/article/highlights-2011-energy-and-economics-2011-2012>.

**King, C.**, Coleman, S., Cohen, S. & Gülen, G. 2011. The economics of an integrated CO2 capture and sequestration system: Texas Gulf Coast case study. *Energy Procedia*, 4, 2588-2595. Available: <http://www.sciencedirect.com/science/article/pii/S1876610211003547>. (8 citations as of December, 2014: Google Scholar)

Moorhead, Scott; Pierce, Suzanne A., and **Carey King**. 2011. Strategies to meet our water and energy needs: Insight from a Texas "Treemap", *Earth*, May 2011. Available:

<http://www.earthmagazine.org/article/strategies-meet-our-water-and-energy-needs-insight-texas-treemap>.

2010:


**King, Carey W.** and Webber, Michael E. 2010. Water Versus Energy: How Solar Power Can Help, *Solar Today*, January/February 2010, 24-27.

2008:

**King, C.**, Holman, A., and Webber, M. 2008. Commentary: Thirst for Energy. *Nature Geoscience*. 1, 283-286. (28 citations as of December, 2014: Web of Science; 75 citations as of June, 2016: Google Scholar)

## Non Peer-Reviewed Conference Proceedings

2014:

**King, Carey W.**, "On Relating US and UK Energy Expenditures (net energy), Debt, and Interest Rates," 37<sup>th</sup> 2014 International Association for Energy Economics Conference, New York, NY, June 15-18, 2014.  [PDF](#)

2012:


Meehan, Colin M., **King, Carey W.**, Garrison, Jared B., and Webber, Michael E. “The Total Impact of Wind Energy Variability on Fossil Fuel Emission Rates in Texas,” 31<sup>st</sup> USAEE/IAEE North American Conference, Austin, TX, November 4-7, 2012.

2010:


**King, C.**, Coleman, S., Cohen, S., Gülen, G. “The economics of an integrated CO<sub>2</sub> capture and sequestration system: Texas Gulf Coast case study.” Proceedings of the 10<sup>th</sup> International Conference on Greenhouse Gas Technologies, Amsterdam, The Netherlands, September 19-23, 2010.


## Conference Posters

2015:

Chaianong, Aksornchan, and **King, Carey W.** “An Analysis for Promoting Residential-scale Solar Photovoltaic (PV) in Bangkok, Thailand.” Poster at the 33<sup>rd</sup> USAEE/IAEE North American Conference, Pittsburgh, PA, October 25-28, 2015.  [PDF](#).

2014:

Libra, Jesse, **King, Carey**; Xavier, Alexandre; and Scanlon, Bridget. “Biofuel Expansion in the Ivinhema Basin: Model Development” Poster at the 2014 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 15-19, 2014.  [PDF](#)

Donovan, A. and **King, C. W.** “Trends in Country and Global Energy Industry Own Use and Production between 1960-2010.” Poster at the 37<sup>th</sup> 2014 International Association for Energy Economics Conference, New York, NY, June 15-18, 2014.  [PDF](#)

2012:


Maxwell, John P. and **King, Carey W.**, “Trends of the Net Energy of Petroleum Products in Different Countries Using Energy Intensity Ratios,” 31<sup>st</sup> USAEE/IAEE North American Conference, Austin, TX, November 4-7, 2012.

## Governmental and Nongovernmental Reports

2014:

**King, C. W.** (2014) **A Systems Approach for Investigating Water, Energy, and Food Scenarios in East-Central Maui**, a report to the Ulupono Initiative. See [Full Report](#), or [Executive Summary](#).

2013:

**King, Carey W.**, “Principles for Protecting Freshwater Resources and Biodiversity during a Low-Carbon Energy Transition,” a report written for [The Nature Conservancy](#), 2013.  [PDF](#)

Yan, Y.E., Tidwell, V.C., **King, C.W.**, and Cook, M.A., 2013, “Impact of future climate variability on ERCOT thermoelectricity power generation”, ANL/EVS/R-13/2, Argonne National Laboratory,



Argonne, IL. This report is available, at no cost, at <http://www.osti.gov/bridge>. (4 citations as of December, 2014: Google Scholar)

2012:

Baldick, Ross; Webber, Michael, and **King, Carey**, 2012, Techno-economic Modeling of the Integration of 20% Wind and Large-Scale Energy Storage in ERCOT by 2030, DE-EE0001385, available May 6, 2013 at: <http://www.osti.gov/bridge/servlets/purl/1068534/1068534.pdf>.

2011:

**C.W. King**, K.M. Twomey, A.S. Stillwell, and M.E. Webber, "Clean Energy and Water: Assessment of Mexico for improved water services with renewable energy," Prepared for the International Development Research Centre, Ottawa, Ontario, Canada, December 2011. Available June 6, 2103: <http://www.idrc.ca/Documents/106298-Energy-exploration-report-Mexico.pdf>.

2010:

**King, Carey W.**, Stillwell, Ashlynn S., Twomey, Kelly M., and Webber, Michael E. *Coherence between energy and water policies*, prepared for the Organization for Economic Co-operation and Development. September 2010. Temporarily available at: <http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/EPOC/GSP%282010%2921&docLanguage=En>.

2009:

Stillwell, Ashlynn S.; **King, Carey W.**; Webber, Michael E.; Duncan, Ian J.; and Hardberger, Amy. *Energy-Water Nexus in Texas*. April 2009. Available at: [http://www.edf.org/documents/9479\\_Energy-WaterNexusinTexasApr2009.pdf](http://www.edf.org/documents/9479_Energy-WaterNexusinTexasApr2009.pdf).

2008:

**King, Carey W.** and Webber, Michael E. Chapter 6: Energy from Water. *Texas Renewable Energy Resources Assessment*. December 2008. Available at: <http://www.seco.cpa.state.tx.us/publications/renewenergy/>.

**King, Carey W.**; Duncan, Ian J.; and Webber, Michael E. *Water Demand Projections for Power Generation in Texas*. Report to the Texas Water Development Board. August 31, 2008. (27 citations as of December, 2014: Google Scholar) Available at: [http://www.twdb.state.tx.us/publications/reports/contracted\\_reports/doc/0704830756ThermoelectricWaterProjection.pdf](http://www.twdb.state.tx.us/publications/reports/contracted_reports/doc/0704830756ThermoelectricWaterProjection.pdf).

Webber, Michael E.; Allen, David T.; Ferland, Kathey; **King, Carey W.**; McGaughey, Gary; Goldman, Steven; and Kimura, Yosuke. *A Clean Energy Plan for Texas*. Prepared for the Texas Commission on Environmental Quality under contract RFGA # 582-8-89236. August 2008.

**King, Carey W.**, Holman, Ashlynn S., and Webber, Michael E. CleanTX Analysis on Water: The Thirst for Power. Primer for the Austin Technology Incubator CleanTX Forum, May 14, 2008.

Reviewer: *The Energy Report 2008*. Report of the Texas Comptroller of Public Accounts. Available at: <http://www.window.state.tx.us/specialrpt/energy/pdf/96-1266EnergyReport.pdf>.

## **Students Advised**

*[EER = Energy and Earth Resources, LBJ = LBJ School of Public Affairs, ME = Mechanical Engineering, CE = Civil Engineering]*

### 2016:

Kristin Abbott (EER, Thesis and Research advisor, 2016 graduation)  
Grecia Chavez (EER, Thesis and Research advisor, 2016 graduation)  
Tess Haegele (EER, Thesis and Research advisor, 2016 graduation)  
Harshit Jayaswal (EER, Thesis and Research advisor, 2017 graduation)

### 2015:

Alan Barraza (EER, Thesis and Research advisor, May 2015 graduation)  
Stephen Bond (EER, Thesis and Research advisor, May 2015 graduation)  
Acksornchan Chaianong (EER, Thesis and Research advisors, December 2015 graduation)  
Alyssa Donovan (EER, Thesis and Research advisor, May 2015 graduation)  
Jesse Libra (EER, LBJ, Thesis and Research advisor, May 2015 graduation)  
Kiran Seshadri (EER, Thesis and Research advisor, December 2015 graduation)  
John Veracruz (EER, Thesis and Research advisor, December 2015 graduation)  
Jason Wible (LBJ, Research advisor, May 2015 graduation)

### 2014:

George McGuirk (EER, Thesis and Research advisor, August 2014 graduation)  
Dr. Jared Garrison (ME, Dissertation Committee member, 2014 graduation)  
Margaret Cook (CE/LBJ, Research advisor, May 2014 graduation date)  
Dr. Joshua Rhodes (ME, Dissertation Committee member, 2014 graduation)

### 2013:

Dr. Kelly T. Sanders (ME, Dissertation Committee member, 2013 graduation)  
John Maxwell (EER/LBJ, Thesis advisor, December 2013 graduation)

### 2012:

Aaron Townsend (ME, Dissertation Committee member, December 2012 graduation)

### 2011:

Dr. Colin Beal (ME, Dissertation Committee member, May 2011 graduation)

### 2010:

Jim Woodward (EER/LBJ, Thesis reader, May 2010 graduation)

## **Classes Taught**

### BGS 370 - Energy Technology and Policy

Fall 2011-2015

Business, Government, and Society Department

McCombs School of Business

The University of Texas at Austin.

## Patents

United States Patent 7,817,332. Electromechanical dynamic force profile articulating mechanism, October 19, 2010. **King; Carey** (Austin, TX). Assignee: Uni-Pixel Displays, Inc. (The Woodlands, TX) Appl. No. 12/050,045.

United States Patent 8,320,036 B2. A Normally Emitting Pixel Architecture for Frustrated Total Internal Reflection Displays. Kevin Derichs, **Carey King**, Daniel van Ostrand, Berry Cox, Reed Killion. Issued February 26, 2010. Also as patents: CN102187263A, EP2326981A1, US20100079843, WO2010022384A1.

United States Patent 7,564,874 B2. Enhanced bandwidth data encoding method, July 21, 2009. **King; Carey** (Austin, TX). Assignee: Uni-Pixel Displays, Inc. (The Woodlands, TX) Appl. No. 11/201,220: Filed: August 10, 2005. Also as patents: CA2578496A1, EP1794741A2, EP1794741A4, US20060061559, WO2006033893A2, WO2006033893A3.

United States Patent 7,486,854 B2. Optical microstructures for light extraction and control, February 3, 2009. Van Ostrand; Dan (The Woodlands, TX), **King; Carey** (Austin, TX), Gobel; Garth (Albuquerque, NM). Assignee: Uni-Pixel Displays, Inc. (The Woodlands, TX) Appl. No.: 11/338,251 Filed: January 24, 2006. Also as patents: CA2637442A1, CN101371177A, CN101371177B, EP1977277A2, US8218920, US8380026, US20070172171, US20090122387, US20090142020, WO2007120949A2, WO2007120949A3.

United States Patent 7,449,759. Electromechanical dynamic force profile articulating mechanism, November 11, 2008. Selbrede; Martin G. (The Woodlands, TX), **King; Carey** (Austin, TX), Van Ostrand; Dan (Round Rock, TX). Assignee: Uni-Pixel Displays, Inc. (The Woodlands, TX) Appl. No.: 11/215,514 Filed: August 30, 2005.

## State Legislature Testimonials

### 2012:

June 28, 2012: Testimony to the Texas State House of Representatives Committee on Natural Resources, House Natural Resources Interim Charge 2: The Interplay of Water and Energy Resources.

## Keynote and Plenary Presentations

### 2013:

"Energy and Water," Water: The Growing Global Thirst, Fall 2013 Conference of the Patterson School of Diplomacy and International Commerce, Lexington, KY, October 17-18, 2013.

"Money---Energy---Economy Nexus: Past, Present And Future," 7<sup>th</sup> Biennial Conference of the United States Society for Ecological Economics, University of Vermont, Burlington, VT, June 9-12, 2013.

## 2011:

Using net energy to understand the role of financing and incentives for renewables”, Plenary Session of the Young Engineers and Scientists Symposium 2011: Alternative Energies – A Global Perspective, January 10-12, 2011, College Station, TX.

## 2010:

“Water and Energy: Strategic Thinking”, Closing Keynote Presentation at 2010 Annual Energy-Water Sustainability Symposium at the 2010 GWPC Annual Forum, Pittsburgh, PA, September 26-29, 2010.

“The trends of world energy: quantity and quality,” Keynote session of the 16<sup>th</sup> International Symposium on Society and Resource Management, Corpus Christi, TX, June 7, 2010.

“Water issues: Will they sink solar in the Southwest?” Keynote session at the American Solar Energy Society Solar 2010 Conference, Phoenix, AZ, May 21, 2010.

“Water and Energy: Strategic Thinking”, Lunch Keynote Presentation at 2010 Annual UIC Conference of the Groundwater Protection Council, Austin, TX, January 25-27, 2010.

## **Invited Presentations and Speaking Engagements**

### 2015:

“The Cost of Energy”, All Energy Forum at the American Nuclear Society Winter Meeting, Washington, DC, November 10, 2015.

“Trends in Energy and Food Expenditures & Net Energy to Contextualize the Future Food-Energy-Water Nexus”, NSF Food-Energy-Water Nexus Workshop: Development and Application of Analytical Tools in Support of Food-Energy-Water Nexus Planning, October 27-28, 2015, Washington, DC.

“Energy and its Relation to Complexity of the Economy”, ASME 2015 9th International Conference on Energy Sustainability, San Diego, CA, June 28-July 2, 2015.

“Energy and its Relation to Complexity of the Economy”, Granada Seminar 2015: Physics Meets the Social Sciences, La Herradura, Spain, June 15, 2015.

“Energy-Water-Food: Maui and the World,” presented at the 2015 Spring meeting of the American Institute of Chemical Engineers (AIChE), Austin, TX, April 27, 2015.

“[Energy, Economy, and Efficiency](#),” presentation for the UT Quest (Opportunities for Learning) program, Austin, TX, April 23, 2015.

“Net Energy in Context of Macroeconomic Trends and Indicators,” presented at the GCEP/Stanford Net Energy Analysis Workshop, March 31-April 1, 2015, Stanford University.

“Water in the Context of Energy and Net Energy,” presented at the GCEP/Stanford Net Energy Analysis Workshop, March 31-April 1, 2015, Stanford University.

[“Long-term Energy and Economic Trends: Pre-Industrial to Today,”](#) Clean TX Power Lunch, February 10, 2015, Austin, TX.

“Long-Term Energy and Economic Trends,” LBJ Austin Forum on Diplomacy and Statecraft, LBJ School of Public Affairs, January 16, 2015, Austin, TX.

“Analysis of GHG emissions from Travis County Landfills from 2010 to 2030: Summary of Report,” presented to Austin Resource Recovery, January 15, 2015, Austin, TX.

#### 2014:

“Energy-Water Nexus,” Texas Water Law Institute Conference, November 19-21, 2014, Austin, TX.

“Implications of Changes in Long-Term Trends of the Energy-Water-Food Nexus,” IEEE Power & Energy Society General Meeting 2014, July 27-31, 2014, National Harbor, MD.

“Perspectives from Considering Water for Power Generation in Texas”, Panel: “Sector Based Use and Conservation” 2014 Texas Water Summit, The Academy of Medicine, Engineering and Science of Texas, Austin, TX, May 19, 2014.

“Water and Energy in Texas”, Public Citizen Forum, Austin, TX, April 5, 2014.

“UT-Austin Grid Modeling Research Summary & Example of Refined CHP Definitions”, KERMIT Research Summit, ERCOT, Austin, TX, March 21, 2014.

“Evolving innovations in technology,” TransForum Texas, San Antonio, TX, January 29-30, 2014.

“Conservation vs Efficiency: Feedbacks and Natural Resources,” UT Forum, Winter 2014 Series of the Osher Lifelong Learning Institute, Austin, TX, January 17, 2014.

#### 2013:

“Energy-Water Nexus: Is Energy Special?” IPIECA Water Group Meeting, Houston, TX, October 23, 2013.

“Defining Whole System Sustainability in Hawai`i,” Water Forum III: Droughts and Other Extreme Weather Events, Conference of the Center for Integrated Earth System Science of The University of Texas at Austin, Austin, TX, October 14-15, 2013.

“Defining Whole System Sustainability in Hawai`i,” SXSW Eco 2013, Austin, TX, October 5-9, 2013.

“The shale revolution and water scarcity in Texas: how will it add up for thermo power generation?”, Water and Energy: Looking Beyond the Shales, Houston, TX, September 25-26, 2013.

“CCS Coal’s Savior? Economic Analysis of Texas CCUS Network,” Coal-GEN 2013, Charlotte, NC, August 14, 2013.

“Energy-Water Nexus: Water needs for energy production,” First Tuesday lunch group of Denver area oil and gas executives, Denver, CO, August 6, 2013.

“Energy and economic trends for assessing the past, present, and future,” World Future 2013, Then Annual Conference of the World Future Society, Chicago, IL, July 19-21, 2013.

“Local renewable & energy efficiency policy in the context of global world long-term trends,” Heart of Texas Green Expo, Bastrop, Texas, June 7, 2013.

“Texas – Drought Impacts on Electricity Generation”, Energy-Water Workshop at the Nevada Public Utilities Commission organized by Western Resource Advocates, January 22, 2013, Las Vegas, NV.

“Practical Solutions – Integrated Decision-Making Tools”, G’Day USA workshop, January 14, 2013, San Francisco, CA.

#### 2012:

“Making sense out of net energy”, Association for the Study of Peak Oil and Gas USA (ASPO-USA) Conference, Austin, TX 78712, November 30-December 1, 2012.

“EROI at different analysis boundaries and Net energy (services) long-term trend of UK,” 4<sup>th</sup> Biophysical Economics Conference, Burlington, Vermont, October 26, 2012.

“Whole Systems and Life Cycle Concepts to Understand Contributions of Different Energy Resources and Technologies,” 2012 American Association of Petroleum Geologists Gulf Coast Section Meeting, Austin, Texas, October 23, 2012.

“What does “Biophysical Economics” mean to engineers? Perspective focusing on oil and net energy”, Centex Chapter meeting of American Society of Mechanical Engineers, Austin, TX, September 20, 2012.

“Getting at the Water-Energy Nexus” session of Water in a World of Seven Billion conference ([www.ww7b.org](http://www.ww7b.org)), Calgary, Alberta, Canada, May 9 - May12, 2012.

“The energy-water nexus: future opportunities and challenges”, talk as part of session “Climate, Energy and Water: A challenge for integrated management of planetary boundaries,” Planet Under Pressure 2012 conference, London, England, March 26-29, 2012.

“Measuring energy as a driver of globalization: trends of prices and net energy.” Presentation (and symposium organizer) for symposium “Globalization Then and Now: Scale, Complexity, and Communication of Sustainability” at the American Association for the Advancement of Science Annual Meeting 2012, Vancouver, British Columbia, February 19, 2012.

“Extreme Weather Preparedness- Preparing for the Unpredictable”. Presentation at the National Association of Regulatory Utility Commissioners (NARUC) 2012 Winter Meeting to the Critical Infrastructure Committee, Washington, DC, February 5, 2012.

“Energy overview: history, tradeoffs, & why there is no consensus for the future,” Introductory lecture for the University of Texas Energy Forum, February 2, 2012, Austin, TX.

“Net energy concepts to envision viability of future energy,” presented at the 2012 Opal Energy Investment Forum, Austin, TX, January 26, 2012.

Session lead speaker: "Tradeoffs Between New Sources of Domestic Energy," at the National Council for Science and the Environment 12th National Conference on Science, Policy, and the Environment: *Environment and Security*, Washington, DC, January 19, 2012.

### 2011:

Presentation to the Keystone Energy Board on the Energy-Water Nexus, November 1, 2011, Washington, DC.

“Challenge #3: Gaining Traction on the Water-Energy Nexus”, Charting New Waters, Colorado Regional Freshwater Forum: Exploring Colorado’s Solutions to a National Challenge, October 18, 2011, Denver CO.

“Nexus of Energy and Water”, Cleanovation 2011, The Annual Clean Technology Event of the Texas-Israel Chamber of Commerce & Israel Economic Mission, September 14, 2011, Houston, TX.

Invited panelist for “Preventing the Next Urban Water Crisis – Impact on Central Texas”: Challenges, opportunities & solutions in Central Texas,” United States Green Building Council - Balcones Chapter Annual Lecture Series, San Antonio, TX, June 14, 2011.

“Biomass and Waste to energy + Tracking energy trends via net energy,” Opal Clean and Green Investment Forum, San Francisco, CA, June 6-7, 2011.

Invited presenter workshop of the Atlantic Council of the United States: “Energy/Water Nexus in Electric Power Production”, May 17, 2011, Washington, DC.

Featured Panel “Water and Energy: The Dilemma of Competing Demands.” 2011 National Ground Water Summit and 2011 Ground Water Protection Council Spring Meeting, May 4, 2011, Baltimore, MD.

Session speaker Water-Energy Nexus as part of session “Examples of Industry Overlap and Unintentional Consequences of Policies” at the Jurisdictional Forum Shopping: Ripples in the Stream conference hosted by the Illinois State University Institute of Regulatory and Policy Studies, Springfield, IL, April 21, 2011.

“Does EROI determine fuel prices?” 3<sup>rd</sup> Biophysical Economics Conference, SUNY College of Environmental Science and Forestry, Syracuse, NY, April 15, 2011.

“Water Energy Nexus” as part of session on “Alternative Energy from a Security Perspective,” at conference *The Energy & Security Nexus: A Strategic Dilemma* at the Triangle Institute for Security Studies, North Carolina State University, Raleigh, NC, March 3-4, 2011.

Texas Renewable Energy Industries Association Texas Energy Independence Day, February 23, 2011, Texas State Capitol Building.

"Energy Resources in 20 Years," The University of Texas Energy Forum, February 3, 2011.

"Tradeoffs in Sustainability in the 21st Century: Energy at the Currency of Water at the Expense of Power", Texas Water Symposium, Witte Museum in San Antonio, TX, January 27, 2011.

#### 2010:

"Water requirements for Transportation", Cross Currents: Water and Energy Challenges in the 21st Century, Stockholm Environment Institute, Tufts University, Somerville, MA, November 4, 2010.

"Envisioning EROI from supply to demand, from old to new energy", Association for the Study of Peak Oil and Gas (USA) 2010 Peak Oil Conference, Washington D.C., October 7, 2010.

"Water-Energy Nexus: Strategic Thinking", 1<sup>st</sup> annual Renewable Energy Stampede, Salado, TX, April 17, 2010.

Conference on "Adapting for Future Resource Challenges: Food, Water, and Energy", Center for Strategic and International Studies, April 15, 2010.

"The Energy-Water Nexus for Transportation in the US", meeting of Carpe Diem Western Water and Climate Change, San Francisco, CA, March 4-5, 2010.

"Water and Energy Nexus: Strategic Thinking", Energy Biosciences Institute, University of California at Berkeley, March 2, 2010.

"Water and Energy Nexus: Strategic Thinking", Understanding, Measuring, and Managing Water Scarcity Risks and Footprints In The Supply Chain, San Francisco, CA, February 26, 2010.

"Texas and the clean energy transition: Can the most energy and CO<sub>2</sub> intensive state lead the way?" Presented at the 2010 10<sup>th</sup> National Conference for the National Council for Science and the Environment, Washington, DC, January 20-22, 2010.

#### 2009:

"Texas Companies and China: Why China? Why Now?", US China Business Forum: Green Texas 2009, Austin, TX, November 12, 2009.

"Brazil and the US: Biofuels, Land, and Water", Brazil Week 2009 hosted by the Brazil Center of the Teresa Lozano Long Institute of Latin American Studies, The University of Texas at Austin, November 10, 2009.

"Water and Energy Nexus: Strategic Thinking", Great Plains Energy Expo, Bismarck, ND, November 9-10, 2009.

"The Water-Energy Nexus: Strategic Thinking from a National and Global Perspective", Liquid Assets: Capitalizing on the Water & Energy Nexus, a Sustainability Shoptalk Series Event presented by the Steven L. Newman Real Estate Institute, Baruch College CUNY, New York, NY, October 28, 2009.



“Texas Water-Energy Nexus & Texas Online Energy Education”, Clean Air Through Energy Efficiency Conference, Houston, TX, October 14-16, 2009.

“World Energy Projections: Past to the Future”. Atlantic Council meeting on U.S.-China Cooperation on Low-Emissions Coal Technologies, June 24-26, 2009, Beijing, China.

“Corpus Christi at the crux of the energy cross ... roads, pipelines, wind & water”, presentation to the Coastal Issues Forum of the Coastal Bend Bays Foundation, April 13, 2009.

Presentation on Texas role as a continuing energy leader for the future. Texas Coalition of Jewish Community Relations Councils. March 24, 2009, Austin, Texas.

2008:

“Biofuels and Latin America”, Brazil Week 2008 hosted by the Brazil Center of the Teresa Lozano Long Institute of Latin American Studies, The University of Texas at Austin, November 10, 2008.

“The Water and Energy Nexus of Texas”, Border Energy Forum XV, Monterrey, Nuevo Leon, Mexico, October 23-24, 2008.

“Upward Price Pressures on Electricity: Environmental”, Gulf Coast Power Association Fall Conference, Austin, Texas, September 30, 2008.

“Carbon Dioxide Capture and Sequestration”, Desk and Derrick – San Antonio, TX. June 24, 2008.

## **Organizations, Memberships and Professional Positions**

Editorial Board member – *Biophysical Economics and Resource Quality* (Springer Journal)  
Sigma Xi  
American Association for the Advancement of Science  
American Society of Mechanical Engineers  
United States Association for Energy Economics  
United States Society for Ecological Economics

## **Honors and Awards**

Rosenfeld Plaque for 2010 paper written for *Environmental Research Letters*  
Best Paper of 2010 ASME Energy Sustainability Conference  
National Science Foundation (NSF) Graduate Fellowship (1998)  
College of Engineering Endowed Presidential Scholarship (2003)  
Thrust 2000 Fellowship  
University Fellow (1998-1999)  
Engineering Graduate Fellowship (College of Engineering, 1998)  
Bruton Fellowship (2001, College of Engineering)  
Engineering Scholar (1995-1997, College of Engineering)  
Cooperative Education Work Program Engineering Scholar (1997)  
Ernest Cockrell Jr. Scholarship (1996, College of Engineering)

## **Commentary**

**Personal blogging site:** <http://careyking.com/blog/>

**Environmental Research Web Blog** – ongoing blog contributor to <http://environmentalresearchweb.org/blog>, the website for Environmental Research Letters, a publication of Institute of Physics. See the following to directly select Dr. King's entries:  
<http://environmentalresearchweb.org/blog/energy-the-nexus-of-everything/>

**King, C.** "What goes down: Stein's Law and the cost of energy," 2013, Burn Energy Journal blog contribution, available April 12, 2013 at:  
<http://burnanenergyjournal.com/what-goes-down-steins-law-and-the-cost-of-energy/>.

**King, C.** "Success is Winding Up with Oil in the Ground". April, 14 2008. Commentary on Worldchanging website, available April 14, 2008 at:  
<http://www.worldchanging.com/archives/007962.html>.

**King, C.** "Can Our Allocation of Energy Represent Our Values?" July 22, 2008. Commentary on Worldchanging website, available July 22, 2008 at:  
<http://www.worldchanging.com/archives//008201.html>.

### **National Conferences, Workshops, and Symposia Organized**

Organizer, moderator, and presenter of the symposium “Globalization Then and Now: Scale, Complexity, and Communication of Sustainability” at the American Association for the Advancement of Science Annual Meeting 2012, Vancouver, British Columbia, February 19, 2012.

Track Manager of the Energy-Water Nexus track of the ASME Interdisciplinary Council on the Energy-Water Nexus, ASME IMECE 2011, Denver, CO.

Track Chair of the Energy Policy track for the ASME Annual International Conference on Energy Sustainability (2009, 2010, 2011).

Organizer and moderator for the symposium “Consequences of Changes in Energy Return on Energy Invested”, at the American Association for the Advancement of Science Annual Meeting 2010, San Diego, CA, February 21, 2010.

### **Interviews**

CurrentCast, “The Water Footprint of Biofuels”, published online January 8, 2015 at: <http://www.currentcast.org/conservation/the-water-footprint-of-biofuels/>.

Extraenvironmentalist (interview April 19, 2012; [extraenvironmentalist.com](http://extraenvironmentalist.com)). Regarding the use of net energy concepts to understand energy prices and future energy use scenarios.

Renewable Energy World.com, Inside Renewable Energy: “The Water-Energy Nexus: Trading One Problem for Another?”. February, 2010. Podcast of interview available March 2010 at: <http://www.renewableenergyworld.com/rea/news/podcast/2010/03/the-water-energy-nexus-trading-one-problem-for-another>.

KUT, National Public Radio, Austin Texas. November 13, 2009. Regarding the drop in CO<sub>2</sub> emissions in Texas since 2000.

PressTV ([www.presstv.ir](http://www.presstv.ir)). March 20, 2008. Regarding water intensity of plug-in hybrid vehicles.