

## **Chien-fei Chen, Ph.D.**

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### **Current Position**

Director of Education and Diversity Program

Research Professor

NSF-DOE Engineering Research Center, Center for Ultra-wide-area Resilient Electrical Energy Transmission Networks (CURENT), University of Tennessee, Knoxville, UTK

Adjunct Research Professor

Department of Sociology, UTK

### **Education**

Ph.D.	2009	Sociology, Washington State University (WSU) Dissertation: <i>"Mechanism, Transmission and Enforcement of Social Norms: A Study of College Students' Drinking Behavior"</i>
M.A.	1995	Mass Communication (Major: Broadcasting & Intercultural Communication), WSU Thesis: <i>"The Impact of American Media and Interpersonal Communication on the Acculturation Process of Taiwanese Immigrants in the United States"</i>
B.A.	1992	Foreign Language and Literature (Major: English; Minor: Japanese), National Cheng Kung University, Taiwan

### **Previous Academic Appointments**

2009-2010	Research Scientist, Dept. of Electrical Engineering & Computer Science, Virginia Tech
2008-2009	Lecturer, Dept. of Communication Studies, UTK
2002-2003	Lab Manager, Lab for the Study of Cognitive, Emotion and Communication, WSU

### **Media and Public Relations Industry Experience**

1998 - 2001	Producer and Program Planner, Public Television Service (PTS), Taiwan
1998	News Writer & Program Planner, SET Television Station, Taipei, Taiwan

1998	Campaign Manager, Vision Communication Public Relation Company, Taipei, Taiwan
1997	Writer & Producer, Chinese Television Station, Taipei, Taiwan Production Assistant (internship), KCTS-Seattle Public Television, WA
1996	Producer and Director, Seattle Chinese Television Station, WA
1995	Associate Producer (internship), KSPS - Spokane Public Station, WA

### **Research Focus**

Social Psychology, Environmental Sociology, Quantitative Research Methods, Interdisciplinary Research on Energy Behaviors, and Engineering Education

### **Publications Under Revision**

- [1] Xu, X., Maki, A., Chen, C.-F. Dong, B., & Day, J. (Revise and Resubmission). Predicting workplace energy-saving intentions and communication: An application of the attitude-behavior-condition model. Special issue on Energy Consumption in Buildings: interdisciplinary approaches. *Energy Research and Social Science*.
- [2] Cooksey, C., Brandi Upton, B., & Chen, C-F. (Revise and Resubmission). Incorporating energy-efficient technologies throughout the life cycle of buildings: Strategies for overcoming barriers. *Energy Research and Social Science*.
- [3] Chen, C.-F., Xu, X., Arpan, L. & Loveday, A. (Under review). Fuel Poverty: The Role of Social-Psychological Factors Affecting Low-income Households' Acceptance to Demand Response. *American Sociological Association Annual Meeting*, 2017.

### **Journal Publications**

- 1. Chen, C.-F., Xu, X., & Day, J. (In print). Comfort needs or money saving?: Exploring determinants of low-income households' intention to conserve energy. *Energy Research and Social Science*.
- 2. Chen, C.-F., Xu, X., & Arpan, L. (2017). Between the technology acceptance model and sustainable energy technology acceptance model: Investigating smart meter acceptance in the United States. *Energy Research and Social Science*, 25, 93-104.  
<http://dx.doi.org/10.1016/j.erss.2016.12.011>.
- 3. Hong, T., Yan, D., D'Oca, S., & Chen, C.-F. (2016). Ten questions concerning occupant behavior in buildings: The big picture. *Building and Environment*, 1-13.  
<http://dx.doi.org/10.1016/j.buildenv.2016.12.006>.

4. Chen, C.-F. Xu, X. & Frey, R. S. (2016). Who wants solar water heaters and alternative fuel vehicles? Assessing social-psychological predictors of adoption intention and policy support in China. *Energy Research and Social Science*, 15, 1-11.
5. Xu, X., Arpan, L., & Chen, C.-F. (2015). The moderating role of individual differences in responses to benefit and temporal framing of messages promoting residential energy saving. *Journal of Environmental Psychology*, 44, 95-108.
6. Chen, C.-F. & Knight, K. (2014). Energy at work: Social psychological factors affecting energy conservation intentions within Chinese electric power companies. *Energy Research and Social Science*, 4, 23-31.
7. Hu, Q., Li, F., & Chen, C.-F. (2014). A smart home test bed for undergraduate education to bridge the curriculum gap from traditional power systems to modernized smart grids. *IEEE Transactions on Education*, 58(1), 32-38. DOI: 10.1109/TE.2014.2321529.
8. Chen, C.-F., Tomsovic, K., & Aydeniz, M. (2014). Filling the pipeline: Power system curricula for middle school and high school students. *IEEE Transactions on Power Systems*, 29(24), 1874-1879.
9. Li, H., Song, J. B., Chen, C.-F., Lai, L., & Qiu, R. (2014). Behavior propagation in cognitive radio networks: A social network approach. *IEEE Transactions on Wireless Communications*, 13(2), 646-657.
10. Worcester, A. C., Hickox, V. M., Klimaszewski, J. G., Wilches-Bernal, F., Chow, J. H., & Chen, C.-F. (2013). The sky's the limit: Designing wind farms: A hands-on STEM activity for high school students. *IEEE Power & Energy Magazine*, 11(1) 18-29.
11. Tang, L., & Chen, C.-F. (2013). Effectiveness of health messages to change women's thin-ideal and unhealthy weight control intentions: Connecting social norms and social networks approaches. *Asian Journal of Communication*, 23(5), 519-537.
12. Horne, C., Chen, C.-F., Berg, J., & Evermann-Druffel, K. (2009). Metanorm expectations: Determining what to sanction. *Advances in Group Processes*, 26, 199-223.
13. Pinkleton, B., Reagan, J., Aaronson, D., & Chen, C.-F. (1997). The role of individual motivations in information source use and knowledge concerning divergent topics. *Communication Research Reports*, 14(3), 291-301.
14. Reagan, J., Pinkleton, B., Chen, C.-F. & Aaronson, D. (1995). How do technologies relate to the repertoire of information sources? *Telematics & Informatics*, 12(1), 21-27.

## **Conference Publications**

- [1] Roetzel, A., & Chen, C.-F (2016, December). Understanding qualitative and quantitative influences on occupant behavior in offices. International Conference of the Architectural Science Association, Adelaide. Australia.
- [2] Chen, C.-F. (2016, January). Beyond technology: Improving occupants' energy efficiency behaviors through social-psychological analysis. Presented at the Annual American Society of Heating and Air-Conditioning Engineers (ASHRAE) Winter Conference, Orlando, FL.
- [3] Asadinejad, A., Varzaneh, M. G., Tomsovic, K., Chen, C. F., & Sawhney, R. (2016, July). Residential customers elasticity estimation and clustering based on their contribution at incentive based demand response. In *IEEE Power and Energy Society (PES) General Meeting*.
- [4] Chen, C.-F., & Xu, X. (2015, August). Exploring social psychological factors and barriers affecting low-income residents' intentions to reduce energy use. Presented at the Annual Meeting of American Sociological Association (ASA), Chicago, IL.
- [5] Hu, Q., Fang, X., Li, F., Xu, X., Chen, C. F., & Hu, H. (2015, July). An approach to assess the responsive residential demand to financial incentives. In *2015 IEEE Power & Energy Society General Meeting* (pp. 1-5). IEEE.
- [6] Xu, X., & Chen, C.-F. (2014, December). Investigating residents' responses to financial incentives and related customer segmentation for promoting demand responses. Presented at the Annual Meeting of The Behavior, Energy and Climate Change (BECC), Washington, D.C.
- [7] Chen, C.-F., Xu, X., Zhao, W., & Sun, J. (2014, August). Privacy concern, energy concern, or money consciousness? Examination of factors influencing residents' smart meter acceptance. Presented at the Annual Meeting of ASA, San Francisco, CA.
- [8] Foy, J., Chen, C.-F., & Wills, E. (2014, June). Integrating assembly language programming into high school STEM education. Presented at the 121st American Society of Engineering Education Annual Meeting (ASEE), Indianapolis, IN.
- [9] Chen, C.-F., & Xu, X. (2013, November). Do the right thing or stay comfortable? Exploring social-psychological factors affecting electricity saving among employees in Chinese electric power companies. Presented at the Annual Meeting of BECC, Sacramento, CA.
- [10] Xu, X., & Chen, C.-F. (2013, November). Saving energy for different reasons: Exploring the social-psychological drivers for electricity curtailment and recycling behaviors. Presented at the Annual Meeting of BECC, Sacramento, CA.

- [11] Xu, X., Chen, C. F., Gao, W., & Li, H. (2013, August). Beyond classical economics: Exploring the impact of social-psychological factors on preference for speed over price and willingness to pay for a faster wireless service plan. In *2013 IEEE/CIC International Conference on Communications in China (ICCC)* (pp. 55-60). IEEE.
- [12] Chen, C.-F., & Shelton, J. (2013, August). Exploring social-psychological factors of affecting electricity use and support of renewable energy policy. Presented at the Annual Meeting of ASA, New York, NY.
- [13] Chen, C.-F., Li, Y., & Banerjee, D. (2012, August). Exploring social-psychological factors related to energy conservation behavior among Chinese employees. Presented at the Annual Meeting of ASA, Denver, CO.
- [14] Mar, H., Chen, C.-F., & Li, H. (2012, July). Bayesian network structure learning for analyzing the impact of social networks on adolescent heavy drinking. Presented at the *Add Health Users Conference*, NIH Campus, Bethesda, MD.
- [15] Chen, C.-F. & Shen, X. (2012, May). Do fear-appeal media messages work in China? Effects of law enforcement, perceived consequences, and injunctive norms on drinking-and-driving behavior among Chinese students. Presented at the Annual Meeting of International Communication Association (ICA), Denver, CO.
- [16] Li, H., Chen, C. F., & Lai, L. (2011, June). Propagation of spectrum preference in cognitive radio networks: A social network approach. In *2011 IEEE International Conference on Communications (ICC)* (pp. 1-5). IEEE.
- [17] Chen, C.-F., & Shen, X. (2011, October). Social and psychological factors of drinking and driving among Chinese college students. Presented at the Proceedings of International Conference on Public Administration, Dongsan City, China.
- [18] Chen, C.-F., Li, H., & Mar, H. (2011, August). Explaining mechanisms of norms and networks on heavy drinking and alcohol consequences among youth. Presented at the Annual Meeting of ASA, Las Vegas, NV.
- [19] Chen, L., Markham, P., Chen, C. F., & Liu, Y. (2011, July). Analysis of societal event impacts on the power system frequency using FNET measurements. In *2011 IEEE Power and Energy Society General Meeting*(pp. 1-8). IEEE.
- [20] Chen, C.-F. (2010, August). Norm transmission, interpersonal communication and drinking decision. Presented at the Annual Meeting of American Sociological Association, Chicago, IL.
- [21] Tang, L., & Chen, C.-F. (2010, June). Connecting social norms and social networks: A study of unhealthy weight control intentions and internalization of thin ideal in China. Paper presented at the Annual Meeting of ICA, Singapore.

- [22] Chen, C.-F., & Tang, L. (2009, May). Social norms and sanctioning through social networks: A theoretical study of body image. Presented at the Annual Meeting of *ICA*, Chicago, IL.
- [23] Chen, C.-F., Bolls, P., Bemker, V., Schmidt, N., and Harbor, A. (2004, May). The effects of audio-video redundancy and emotional valence on the allocation of attention to audio and visual processing. Presented at the Annual meeting of *ICA*, New Orleans, LA.

### **Grants and Awards**

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| 2015        | Co-PI, "Collaborative Research: CRISP Type 2: Revolution through Evolution: A Controls Approach to Improve How Society Interacts with Electricity " (PI: Andrea Mammoli), National Science Foundation (NSF), CNS 1541117 9/15/15-9/14/18 (\$2,499,801).  |
| 2016        | PI, Research Experiences for Undergraduate Supplement Grant for "Collaborative Research: CRISP Type 2: Revolution through Evolution: A Controls Approach to Improve How Society Interacts with Electricity", NSF, CNS 1541117 8/1/16-7/31/17 (\$15,683). |
| 2013-2016   | Co-PI, Research Experience for Veterans Supplement Grant (PI: Kevin Tomsovic), NSF 08/1/2014-7/31/2018 (\$50,000).   |
| 2012        | Co-PI, "Collaborative Research: Design, Analysis and Implementation of Social Interactions in Cognitive Radio Networks," (PI: Husheng Li), NSF CNS1247834, 09/01/2013-8/31/2016 (\$247,010).   |
| 2011        | PI, "Social-psychological Factors of Energy Saving, Public Acceptance of Smart Meter, Demand Response Programs and Renewable Energy Technology," NSF EEC-1041877, 08/15/2011-08/15/2016 (\$300,000).   |
| 2008        | PI, "Persuasive Power in Norms: Under What Conditions will Norms Work" Alcohol and Drug Abuse Research Program Pilot Grant (\$10,895), 2008-2009, WSU.   |
| 2005 & 2007 | Gordon D. & Izola P. Morgan Graduate Fellowship, Sociology, WSU  |
| 2003        | Graduate and Professional Student Association Travel Grants, WSU   |

### **Teaching Experience**

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| 2008 | Lecturer, Department of Communication Studies, UTK<br>Course: Health Communication Research and Health Campaign |
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2007	Teaching Assistant, Department of Sociology, WSU Course: Introduction to Sociology
2003-2005	Teaching Assistant, Department of Sociology, WSU Course: Introduction to Statistical Analysis
2002-2003	Teaching Assistant, Edward R. Murrow School of Communication, WSU Course: Introduction to Communication Theory
1990-1992	Instructor, Chinese Language Center National Cheng Kung University, Taiwan

### **Invited Talks**

2016	<p>Social-Psychological Factors in the Interdisciplinary Research of Demand Response and Renewable Energy Technology. Presented for GEIRI North America (part of State Grid, China) (July 28<sup>th</sup>).</p> <p>Beyond Technology: Why Social-Psychological Factors are Important in the Interdisciplinary Research of Energy and Technology. Presented for ACROSS Research Center, Waseda University, Japan (April 25<sup>th</sup>), Department of Electrical Engineering at National Sun Yet Sen University, (May 3<sup>rd</sup>), Taiwan, Department of Electrical Engineering at SouthEast University, China (May 13<sup>th</sup>), and NARI, Nanjing, China (May 16<sup>th</sup>).</p> <p>Exploring the Relationship between Social-psychological Factors and Residential Demand Response Programs. Presented for the Center of iNnovation and Synergy for Intelligent Home and living Technology (INSIGHT), Taiwan University (May 5<sup>th</sup>).</p> <p>The Importance of Environmental Sociology and Survey Methodology to Occupant Behavior Research. Department of Building Science, Tsinghua University, China (May 18<sup>th</sup>).</p>
2015	<p>Social Psychological Approaches to Analyze Demand Response and Promote Energy Efficiency. Keynote speaker for the joint workshop of US NSF CURENT and Japan ACROSS on Distributed Energy Management System, Waseda University, Japan (December 10<sup>th</sup>).</p> <p>Social-psychological Analysis of Residential Energy Behaviors and Customer Segmentation. Presented to the Center of iNnovation and Synergy for Intelligent Home and living Technology (INSIGHT), Taiwan University (July 21<sup>st</sup>).</p>

Environmental Psychology and Improving Energy Efficiency through Social-Psychological Approaches. Presented to Department of Electrical Engineering and Computer Science and School of Architecture, Tsinghua University, Beijing (July 6th); and the Department of Mechanical Engineering and Environmental Science, Nanjing Normal University (July 7th), and the Department of Electrical Engineering, SouthEast University, Nanjing, China (July 8th).

Beyond Technology: Enhancing Energy Efficiency through Social Psychological Approaches in Public Domain. Presented to the International Energy Agency (IEA), Energy in Buildings and Communities (EBC) Annex 66, Lawrence Berkeley National Laboratory (March 30th).

2014 Social-psychological Approaches to Energy Saving. Presented to the NSF RCN-SEES: Predictive Modeling Network for Sustainable Human-Building Ecosystems (May 26th).

Presenter at the NSF Division of Engineering Education and Centers, Engineering Directorate, Engineering Education PI Awardees' Meeting (September 29-30th).

2013 Social-psychological Factors Relating to the Acceptance of Smart Meter. Presented to Vanderbilt Institute for Energy & Environment, Vanderbilt University (October 30th).

Collaborative Research: Design, Analysis and Implementation of Social Interactions in Cognitive Radio Networks. Presented to the NSF Enhancing Access to the Radio Spectrum (ERAS) Program Workshop (October 6<sup>th</sup>).

Promoting Engineering Education to Women. Presented to Federal Bureau of Investigation (FBI), Knoxville (April 3rd).

Approaches to University Education Diversity Programs. Presented to the NSF Engineering Research Center Annual Meeting (October 20th).

2010 Social-psychological Factors and Energy Issues. Presented to the Department of Electrical Engineering, Southeast University, Nanjing, China (May 20th).

2009 Mechanism, Transmission and Enforcement of Social Norms in Health Decision-Making. Presented to the Department of Sociology, UTK (October 29th).



## **Service**

- Lead for Sustainability Education Program for the NSF RCN-SEES: Predictive Modeling Network for Sustainable Human-Building Ecosystems (SHBE)
- NSF RCN Workshop Chair for the “Enhancing Interdisciplinary Education and Diversity” for Predictive Modeling Network for Sustainable Human-building Ecosystems (SHBE) funded by NSF Research Coordination Network (RCN) in Science, Engineering and Education for Sustainability (SEES) program September 30<sup>th</sup>-October 1<sup>st</sup>, 2016
- Lead of Social-psychological Modeling Task for the International Energy Agency (IEA), Energy in Buildings and Communities (EBC) Annex 66: Definition and Simulation of Occupant Behavior in Buildings
- Committee member of the interdisciplinary research task of occupant behavior model for the American Society of Heating and Air-Conditioning Engineers (ASHRAE).
- NSF reverse site visit reviewer for the Partnership International Research and Education (PIRE) Program
- Co-moderator for the Education and Diversity Program Orientation, NSF Engineering Research Center Annual Meeting, November 14-16th, 2012
- Search committee for assistant professors from the Department of Teaching and Learning, UTK, 2012
- Led a group of five undergraduate and graduate students from the department of EECS, UTK on research and academic exchange visit to Tsinghua, Southeast, and North Electric Power Universities and several utility companies in China
- Supervisor of CURENT student leadership council
- Responsible for various university and K-12 engineering education and diversity outreach, curriculum design, and proposal writing: including supervising research experience for undergraduate program (REU), designing engineering education assessment strategies, and professional trainings for graduate and undergraduate students; design and supervise middle school engineering programs, girl-only summer STEM program, young scholar program (for high school students), K-8 Family Engineering Night, and STEM education curriculum development at local k-12 schools to encourage community’s broader involvement in STEM education, particularly in the areas schools with economic disadvantages
- Promote diversity in the STEM fields for both universities and K-12 students, including encouraging women, minority, veterans, people with disabilities and lower-social economic background and so on

## **Advising Experience**

- Post-doctoral researcher, serving as a major adviser  
Dr. Xiaojing Xu, research projects relating to energy conservation behaviors, public acceptance of renewable technology, “Social Impact of Power Grip Technology and Energy Conservation Behaviors.” CURENT, UTK

- M.S. and Ph.D. students serving as adviser for NSF-funded research projects for the departments of sociology and psychology, UTK
  1. Wenna Zhao. Energy saving behaviors and environmental impact (2012-2014).
  2. Julie Shelton. Energy conservation behaviors, climate change and public acceptance of renewable energy technology (2013).
  3. Yifan Jiang. Public acceptance of communication and grid technology (2013).
  4. Summer Liu. Assessment for engineering education (2012-2014).
- Ph.D. students serving as committee member for the department of EECS, UTK
  1. Jiahui Guo. (July 2016). Data analytics and application developments based on synchrophasor measurements (Chair: Yilu Liu).
  2. Jidong Chai. (June 2016). Wide-area measurement-based applications for power system monitoring and dynamic modeling (Chair: Yilu Liu).
  3. Yin Lei. (August 2015). Wide-Area synchrophasor measurement applications and power system dynamic modeling (Chair: Yilu Liu).
  4. Qinran Hu. (July 2015). Incentive based residential load aggression (Chair: Fran Li).
  5. Lingwei Zhan. (June 2014). Accuracy and stability improvement of synchrophasor measurements (Chair: Yilu Liu).
- Undergraduate students in social science fields, serving as adviser for NSF-funded research projects
  1. Kayla Stover (sociology). Survey methodology and energy saving behaviors (2012).
  2. Luke Waring (sociology): Power transmission infrastructure and environmental impact at the community level (2013).
  3. Erica Davis (sociology): Energy demand response and social psychological factors (Fall 2015-Summer 2016).
  4. Jackson Lanier (sociology): Energy behaviors, public good and occupant behaviors in commercial buildings (Fall 2015-Fall 2016).
  5. Jacqueline Adams (psychology): Occupant behavior and energy saving in commercial building in multi-country context (Fall 2015- Summer 2016)
  6. Alyssa Loveday (psychology) (August 2016-present): Social-psychological factors affecting smart home management system and demand response, a cross-country comparison.
- Undergraduate students in engineering fields serving as adviser for NSF-funded research projects:
  1. Candice Patton (electrical engineering): incentives and demand response programs (Fall, 2013-Summer, 2014).
  2. Taylor Woodward (industry engineering) and Diane Garcia (electrical engineering): Public acceptance of smart home management system (Spring 2016).
  3. Adam Foshie (electrical engineering): Data acquisition and analysis for residential probabilistic demand response modeling (May-August, 2016).
  4. Faiza Islam (industry engineering): Social-psychological factors and residential demand response programs.

**Peer Reviewer**

*American Sociology Association, Energy Research and Social Science, Energy and Buildings, Energy and Environment, Journal of American Sociology, National Communication Association and International Communication Association*