

CONSORTIUM PROSPECTUS

Dr. Julie M. Albright

Dr. Donald L. Paul

Viterbi School of Engineering

USC Energy Institute

3710 McClintock Avenue, RTH 301

Los Angeles, CA, 90089

Phone: 213-821-8165

Fax: 213-740-1076

E-Mail: albright@usc.edu /

donaldpa@usc.edu

Web: energy.usc.edu/energyandbehavior



ENERGY BEHAVIOR AND SOCIAL TECHNOLOGIES

Mission Statement



The U.S. is in a cycle of rapidly evolving social, technological and cultural change: We face significant business and economic challenges due to the rise of the Pacific Rim; major demographic and diversity shifts in the population; unprecedented health and social challenges; notions of the environment and the human role in eliciting climate change; changing ideas surrounding both individual expression and group political organizing, and the digital revolution, powered by devices like smart phones which allow anyone to be a broadcaster, from anywhere: a fact which has been one of the most significant drivers of social change since the Industrial Revolution. The energy sector – tasked with providing the backbone upon which these other sectors operate – cannot help but be impacted by these vast and broad-reaching changes. **Three of these trends in particular** are converging to create the “perfect storm” for energy professionals:

- 1) The emergence and widespread adoption of **social technologies** including Facebook, twitter, mobile apps on smart devices, and networked games: What used to be a local or regional issue can now play out and intensify on a national or even global stage, given that information can quickly “go viral” due to social media.
- 2) A large **demographic shift**, where “Baby Boomers” and their traditional values of hard work and integrity are being replaced by “Millennials” – a socially networked, “always-on” generation of digital natives who will become the largest demographic in both the workforce and consumer base by 2015; and
- 3) An increasingly **“smart” energy infrastructure** that can connect to an increasing array of worker’s portable devices which are then linked to social media, as well as creating a more dynamic link between customer and utility.

These three changes have created an atmosphere of uncertainty for energy executives, leaving many questioning how best to react and leverage the opportunities while managing the risks in areas of management process, policy and culture, workforce training and development, cybersecurity, and customer relations in an increasingly customer-centric and socially networked market.



To address these and other related issues, we are forming a new consortium at the University of Southern California on **Energy, Behavior and Social Technologies**. The overarching goal of the Consortium is to provide actionable intelligence for senior management that will serve as a framework for good decision-making regarding in the areas of:

- Corporate governance, compliance and policy development
- Workforce development and transition
- Product and service marketing
- Public affairs and outreach
- Cybersecurity, physical security and environmental risk management

Our aim is to identify key emerging issues related to the complex system of energy, behavior and social technologies, including both the expected and unintended consequences for the energy sector, and outline future directions.

In addition, because of the increasing convergence of the energy and automotive sectors, we want to look at the automobility-energy nexus. We hope to envision the future of “social transportation” where networked automobiles will become just another intelligent device on the Grid. Changing values around automobility, driving and car ownership amongst Millennials, and the intersection with social media may challenge extant Smart Grid and renewable energy programs counting on them as energy storage to stabilize the grid.

Social Technologies, Energy and the Future

The weakest link in any cyber security system is not the technical elements – it's the human element. Social media is an ideal place for hackers to leverage this for “social engineering” – finding out information to help plan their attack, by leveraging the trust inherent in social networks. According to a September 2012 study by IBM, both social media and device proliferation are increasing cybersecurity threats. The two best protections to combat social engineering are clear policies and a trained workforce, yet many utilities and energy companies seem unaware of the risks: A May 2012 Carnegie Mellon study found that – amongst critical infrastructure companies, the energy/utilities sector ranked last in four of the six best practices for cyber governance, including receiving regular information about cybersecurity risks and setting top level cybersecurity policy.

In addition to the threats posed by hacking, businesses in the energy sector face new challenges posed by social media in working with communities to keep their ability to operate, or in launching new products, services or technologies. One example is the protests targeting Smart Meter in the P G & E and other service areas, organized via social media, which ended with the shutdown of several projects via regulators, resulting in huge costs and delayed rollouts. A new social media company just launched which will make such protests even easier to organize: Called Shout About, it allows people reading a news story online to simply click a button – and they'll be immediately connected to social organizations, protest groups or fund raising opportunities for that cause or issue which they read about.



Shout About- and other social technologies sure to follow - quickly closes the loop between concern or anger - and activism. Studies have shown that younger generations increasingly get their news online – so this kind of social media enabled behavior may become significant amongst this group. This will only make it easier to amplify negative responses and organize protests. With the impact and visibility of movements like Occupy Wall Street and the political upheaval in several Middle Eastern nation states – it is important that energy companies recognize this new cultural and technological landscape, in order to get ahead of potential negative blowback from the community – to be proactive rather than reactive in terms of customer education, outreach, products and services. This however will necessitate both awareness and thoughtful changes in culture and policy at utilities and energy companies.

The Consortium at USC

USC is a natural testbed as a “living laboratory” consisting of 30,000 students in an urban environment, able to be used to test new technologies in a controlled setting. Consortium members will also have access to a pipeline of talented new energy professionals with diverse skillsets, through the USC Energy Club and Green Technologies Program. Lastly, Consortium members can leverage USC’s “smart grid” enabled test bed and EV charging stations for common-good research or custom research programs. Potential Applied Research Questions to Be Explored by the

Relevant Strengths at USC

USC is a nationally recognized, leading research institution. Members will also be connected to a constellation of cutting energy research at USC, and the opportunity to leverage USC’s strengths and capabilities for custom social technology solutions and social and behavioral research, including gamification for workforce development, customer interaction and behavioral change.

Customer Behavior	Workforce Development	Human Factors and Organizations	Next Generation Social Technologies
Communication, Education and Outreach	Training and training systems, including gamification	Social engineering aspects of cybersecurity	R & D – Energy Informatics and Next Generation Social Technologies
Behavioral Change	Technology-enhanced process	Corporate Policy	Productivity Apps
Adoption of Smart Technologies and EVs		Corporate Culture	Gamification
Segmentation		Smart Infrastructures: Smart Grid, EVs, Smart Oilfields	Process Training
Sentiment Analysis and Data Mining		Risk Management	Maintenance and Visualization/ Augmented Reality

Potential Applied Research Questions Explored by the Consortium Include:

- In what ways will is the intersection of generational changes and both existing and emerging social technologies bringing about new sorts of behaviors, values and attitudes, and which will be relevant to the energy sector?
- What is the future direction of social media and other social technologies like gaming, and how can the opportunities be leveraged while effectively minimizing the risks?
- How can older energy workers be re-skilled or brought up to speed to understand and perhaps embrace new technologies?
- How might new gaming technologies like serious games or augmented reality be developed for training a new, digital native workforce whose interaction with the physical environment has been largely mediated their entire life?
- What cybersecurity risks are emerging as a result of social networks, and the trust inherent in them, and can be done about them?

Participation in the Consortium will benefit you by providing valuable, timely insights to:

- Develop corporate policies and culture
- Develop risk management strategies
- Provide a framework for good decision making and increased productivity
- Identify through access to objective analysis both vulnerabilities and opportunities
- Aid in work force development
- Identify, demonstrate or develop next generation social technologies for industry and consumer use
- Train the next generation of energy professionals
- Develop bespoke, tailored industry solutions

Consortium Membership Includes:

- Membership on the Consortium Advisory Board to set priorities, allocate resources and set programmatic goals
- Two meetings a year: One to set programmatic goals for the year based on member priorities; the second to report outcomes, plus and regularly scheduled webinars to update Consortium participants.
- Bi-Annual reports
- Linkages to related USC research and educational programs, including:
 - Smart Grid Demonstration Project Test Bed, Including
 - CiSoft- The Center for Interactive Smart Oilfield Technologies
 - Center for Energy Informatics
 - USC Energy Club
 - Institute for Creative Technologies
 - IMSC – Integrated Media Systems Center
 - Green Technologies Program

- EV Charging Stations
- In addition, a broad array of energy related systems and technology related educational programs, including the #1 game development program in the country.

Join Us

Participation in the Consortium is based on company size. To join, members can choose either one or three year affiliations. Please see the table below for specific levels of contribution.

Levels of Participation	One Year Rate	Three Year Rate
Corporate Memberships	\$35,000	\$30,000/year
Non-Profit and Government Agencies	\$7,000	\$5,000/year

For more information on the Consortium or participation, please contact us:

Dr. Donald Paul, Executive Director, USC Energy Institute
donaldpa@usc.edu

Dr. Julie M. Albright, Consortium Director
albright@usc.edu

Energy, Behavior and Social Technologies Consortium

Dr. Julie M. Albright, Consortium Director
USC Energy Institute
Viterbi School of Engineering
3710 McClintock Avenue, RTH 311
Los Angeles, CA, 90089
Phone: 213-740-1076
Fax: 213-740-1077