



Summary and Recommendations of 2014 JST-NSF-DFG Workshop on Distributed Energy Management Systems

**JST-NSF-DFG-RCN Workshop
April 20, 2015
Anthony Kuh**

Workshop details

- **Workshop initiated after discussions between JST and NSF in summer of 2013 to promote more international collaborative discussion & activities**
- **Workshop held at Hilton Waikiki Beach Hotel in Honolulu, Hawai`i on Jan. 11-12, 2014**
- **Site tour to Maui to view the Maui Smart Grid project on Jan. 13, 2014**
- **Participants (total 120), 48 Japan, 8 Germany, 23 mainland US, 35 Hawai`i (10 students)**



Hawai`i Energy Landscape

- **Energy costs: more than 10% of GDP**
- **Energy breakdown: roughly 1/3 electric grid, 1/3 ground transportation, 1/3 air transportation**
- **Most of energy comes from imported oil. For electricity production 71% from oil, 15% from coal**
- **Pay highest electricity prices in country > \$.31 /kWH**
- **Each island has separate isolated grid**



Hawai`i Energy Future

- **Hawai`i Clean Energy Initiative (HCEI): MOU between Hawai`i and Department of Energy: By 2030 40% energy from renewable sources and 30% savings in energy efficiency**
- **Hawai`i currently has highest penetration of residential solar in US (12% for residential households): for many distribution grid circuits solar penetration is greater than daytime minimum loads**
- **In Dec. 2014 NextEra Energy bought Hawaiian Electric Industries**



Workshop Goals and Objectives

- Brought in leading researchers from Japan, US, and Germany to discuss research in distributed energy management systems. Researchers spanned a broad array of disciplines from power systems, system science, control theory, information technologies, communications, and social science.
- Explore and promote opportunities for collaboration.
- Also held an educational panel on smart grids and energy education



Workshop presentations

- Oral presentations from academic, industry, and government leaders in power and energy areas. Also had two poster sessions.
- Examples of presentations:
 - JST-CREST: CREST program on energy management systems: Two phases 2012, 2015 reorganization finding strongest teams (collaboration opportunities)
 - Consortiums: Trustworthy Cyber Infrastructure for the Power Grid (TCIPG), Power Systems Energy Research (PSERC), CURRENT (NSF/DOE ERC) Consortium of Universities for Sustainable Power (CUSP)
 - Demonstration projects: Austria, Japan Smart City, Maui Smart Grid Project
 - Distributed Energy Management Systems perspectives from academia and industry



JST-NSF-DFG Recommendations

- **Workshop was very successful by catalyzing networking and knowledge sharing among researchers in Japan, US, and Germany**
- **It is necessary to promote basic research in Distributed Energy Management Systems**
- **International collaboration could promote basic research above**
- **JST-NSF-DFG should encourage researchers based in corresponding countries to promote international collaborations through existing funding scheme**



JST-NSF-DFG Recommendations

- **2nd workshop should continue discussions for promoting international collaborations**
- **Education issues should be discussed in more depth**
- **Have special sessions for young researchers**



Contact information

- Email: kuh@hawaii.edu
- Website: <http://www.jst-nsf-dfg-distenergyman.org>



Mahalo!!



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