



Energy and Water 2013: Integrated Solutions for Advancing Technology and Management



This conference is organized by the Water Environment Federation in cooperation with the Kentucky-Tennessee Water Environment Association, Water Environment Research Foundation, Alliance to Save Energy, American Council for an Energy-Efficient Economy, Imagine H₂O, and the Alliance for Water Efficiency.

OPENING GENERAL SESSION

Monday, May 6, 2013
1:30pm – 5:00pm

The Energy and Water 2013 Conference Opening General Session will be held on the afternoon of Monday May 6 beginning at 1:30pm. Further details will be provided in the coming weeks.

TECHNICAL PROGRAM

Session 1: Treatment

Tuesday, May 7
8:30am – 11:45am

- 01A 8:30am Energy Evaluation of Combination Processes for Secondary Effluent Treatment**
H. Y. Wang¹, D. Im¹, A. Ito¹, N. Wada¹, N. Nakada¹, M. Aoki², Y. Kato², H. Tanaka¹; ¹Research Center for Environmental Quality Management, Kyoto University, ²Metawater Co., Ltd..
- 01B 9:00am Nexus of Energy and Virus Reduction of UF Membrane Filtration Process with Coagulation/UV Irradiation for Wastewater Reclamation**
S. Lee¹, N. Yamashita¹, M. Ihara¹, H. Tanaka¹, K. Kobayashi², H. Tanaka², H. Takabatake², Y. Tanaka²; ¹Kyoto University, ²Toray Industries.
- 01C 9:30am Overview and Challenges of Anaerobic Wastewater Treatment: Is there a Place for It in Our Future?**
J. A. Jimenez¹, C. Bott²; ¹Brown and Caldwell, ²HRSD.
- 10:00am Networking Break**
- 01D 10:45am Achieving Positive Net Energy While Maximizing Use of Existing Assets: The Ejby Molle WWTP Story**
J. Sandino¹, P. H. Nielsen², D. Whitlock¹, T. Johnson¹, M. Leth², M. Nielsen³; ¹CH2M HILL, ²VandCenter Syd (VCS) Denmark, ³Ramboll Denmark.
- 01E 11:15am NEW (Nutrient, Energy, Water) Sustainability Principles Drive Technology Selection in Advanced Water Reclamation Application**
R. Boe¹, S. Jalla¹, C. Crandall¹, J. Sandino¹, J. Kraemer¹, T. Cleaver², T. Richards², H. Elmendorf²; ¹CH2M HILL, ²Gwinnett County, GA Department of Water Resources.

TECHNICAL PROGRAM

Session 2: Alternative Energy

Tuesday, May 7
8:30am – 11:45am

- 02A 8:30am High Efficiency Bio-Diesel Production from a Municipal FOG Facility**
M. D. Curtis; Simplified Energy Solutions.
- 02B 9:00am Results of the State of Rhode Island's Wastewater Treatment Facility Energy Focused Environmental Management Systems Project**
J. C. McCaughey; Environmental Safety, Narragansett Bay Commission.
- 02C 9:30am Evortex: A Novel Energy Harvesting Mechanism For Waste And Storm Water Conveyance Systems**
M. Chuslip, A. Jaganathan, E. Allouche; Civil Engineering, Louisiana Tech University.
- 10:00am Networking Break**
- 02D 10:45am Use of Alternative Water Sources for a Trigeneration System: A Case Study**
P. Grace, D. Myers, S. Zhang, E. LopezCalva, P. Mehta; CDM Smith.
- 02E 11:15am Demonstrating the Business Case for Biogas-fueled Stationary Fuel Cell Power Systems at Wastewater Treatment Plants Using Dynamic Modeling**
G. D. Moreland¹, P. Devlin²; ¹Contract Support to U.S. Department of Energy, SRA International, ²Fuel Cell Technologies Program, EERE, U.S. Department of Energy.
- Alternate 1 Comparing Thermal Hydrolysis Processes (cambi™ And Exelys™) For Energy Recovery From Anaerobic Digestion - An Update**
M. M. Abu-Orf, T. Goss; Water, AECOM.

TECHNICAL PROGRAM

Session 3: Greenhouse Gases

Tuesday, May 7
1:30pm – 4:45pm

- 03A 1:30pm Carbon Free Water - A Successful Case Study in Sonoma County, California**
A. Bolten, C. Stillman; Energy Resources Group, Sonoma County Water Agency.
- 03B 2:00pm Estimating Carbon Emissions in Water Supply Portfolio Evaluations Including Greywater**
E. J. Lopez Calva, S. Zhang, D. R. Myers, P. Grace; CDM Smith.
- 03C 2:30pm Climate Ready Water Utilities: Helping the Water Sector Adapt to a Changing Hydrologic Cycle**
C. Baranowski; Water Security, U.S. Environmental Protection Agency.
- 3:00pm Networking Break**
- 03D 3:45pm Quantifying Fugitive CH₄ Emissions From Facultative Sludge Lagoons**
A. G. Shah¹, L. Fillmore², J. Willis³, B. Bebout⁴, A. Detweiler⁴; ¹Brown & Caldwell, ²Water Environment Research Foundation, ³Brown and Caldwell, ⁴NASA-AMES Research Center.
- 03E 4:15pm Peak Amplification of Energy Demand, Energy Cost, and Carbon Emission in Water Reclamation Processes During Diurnal Cycles**
R. Sobhani¹, D. Rosso¹, L. Larson²; ¹Civil and Environmental Engineering, University of California, Irvine, ²Southern California Edison.

TECHNICAL PROGRAM

Session 4: Lessons Learned

Tuesday, May 7
1:30pm – 4:45pm

- 04A 1:30pm Energy Consumption Trends in BNR Mixing Technologies**
L. Badr¹, J. Rohrbacher², P. Stiegel², D. Howard³, L. Cooper³; ¹Hazen and Sawyer, P.C., ²Hazen and Sawyer, ³City of Greensboro.
- 04B 2:00pm Making Energy Efficiency Happen - Experience and Lessons Learned in the EPA Region 4 - TN Department of Environment & Conservation Energy Management Initiative**
R. J. Freeman¹, J. Dodd²; ¹Water Protection Division, US EPA Region 4 Atlanta, ²Tennessee Department of Environment & Conservation.
- 04C 2:30pm Energy Efficient, Sustainable Improvements and Technologies Implemented at Wastewater Treatment Plants**
B. Sibiga; Civil Engineering, Wendel.
- 3:00pm Networking Break**
- 04D 3:45pm Minimizing Energy Consumption in Decentralized Wastewater Collection and Treatment Systems**
K. S. Naik, M. K. Stenstrom; Civil and Environmental Engineering, University of California, Los Angeles.
- 04E 4:15pm Ten Years and Counting in the Wastewater Process Energy Efficiency Industry: Northern California's CalPOP Program**
E. C. Myers¹, J. Bidwell²; ¹Lescure Engineers, ²Quantum Energy Services and Technologies (QuEST) Inc..
- Alternate Aspects of Aeration Efficiency in Municipal Secondary Treatment and Oxidation Ditches**
J. Lindam; Xylem Water Solutions AB.

TECHNICAL PROGRAM

Session 5: Water Quantity

Wednesday, May 8

8:30am – 10:00am

- 05A 8:30am The Water Implications of Generating Electricity: Water Use Across the United States Based on Different Electricity Pathways Through 2050**
J. Macknick¹, S. Sattler², K. Averyt³, S. Clemmer², J. Rogers²; ¹National Renewable Energy Laboratory, ²Union of Concerned Scientists, ³Cooperative Institute for Research in Environmental Sciences.
- 05B 9:00am A Global Investigation into the Electricity-Water Nexus and its Implications for the Power Sector**
A. Rao¹, P. Faeth², B. Sovacool³; ¹Regulatory Assistance Project, ²CNA, ³Vermont Law School
- 05C 9:30am The Importance of Water for Power Generation.**
M. C. Preston; Energy - Chemical Engineering Section, Black & Veatch.
- Alternate Water and Power Utilities: Can We Talk?**
C. Dyballa; Dyballa consulting.

TECHNICAL PROGRAM

Session 6: Control Strategies

Wednesday, May 8

8:30am – 11:45am

- 06A 8:30am Watergy in the U.S.: Energy Management, Policy Mechanisms and Technologies to Optimize Energy Use in Pumping and Aeration Systems**
B. Lung¹, J. Master², R. Graf³, L. Tryson⁴; ¹Alliance to Save Energy, ²VLT Drives -Water & Wastewater, Danfoss, ³Policy Navigation Group, ⁴Danfoss.
- 06B 9:00am Energy Savings From Advanced Process Control: Two Case Studies**
S. M. Kestel¹, M. Gray², W. Shi³, J. Yan⁴; ¹BioChem Technology, ²BioChem Technology, Inc, ³BioChem Technology (Shanghai), ⁴Jiyeuan Draining Co..
- 06C 9:30am Dynamic Energy Footprint Monitoring and Reduction in Energy Demand from Wastewater Aeration Systems via Full-Scale Deployment of Real-Time Off-Gas Analyzers**
M. K. Jeung¹, L. E. Larson², M. K. Stenstrom³, D. Rosso¹; ¹University of California, Irvine, ²Southern California Edison, ³UCLA.
- 10:00am Networking Break**
- 06D 10:45am Advanced Controls Maximizes Energy Efficiency of a Large Effluent Pump Station**
C. Wendt; Automation, CDM Smith Inc.
- 06E 11:15am Advanced Water Reclamation Minimizes the Energy Footprint: The Riverfront Water Reclamation Facility**
B. W. Newbry¹, K. Knickerbocker², D. Lueder³; ¹Water Technology Group, ²Wood, Patel and Assoc. Consulting Engineers, ³Director of Public Utilities, City of Cottonwood, Arizona

TECHNICAL PROGRAM

Session 7: Water Quality

Wednesday, May 8
10:45am – 11:45am

- 07A 10:45am Reclaimed Water Quality Requirements for Electric Utilities**
D. Vandertulip; CDM Smith.
- 07B 11:15am Maintaining NPDES Permit Compliance at Power Plants while using Municipal Treatment Plant Effluent with Variable Ammonia and Nitrate Levels.**
R. M. Kim¹, C. Varnon¹, J. Bergin²; 1CDM Smith, 2Calpine Corporation.

TECHNICAL PROGRAM

Session 8: Energy Savings

Wednesday, May 8

1:30pm – 3:00pm

- 08A 1:30pm Get It Done! - Using Performance Contracting To Implement Energy-Related Improvements**
R. Atoulikian¹, M. Yonkin², C. Wiedetz², T. Kochaba¹, R. Huffmyer³;
¹Water and Wastewater Engineering, HDR Engineering, ²Siemens,
³Water/Wastewater, HDR Constructors.
- 08B 2:00pm Demand Management Strategies Resulting In “Zero and Low Cost” Energy Saving Opportunities for Water and Wastewater Treatment Facilities**
B. R. Lisk; Hazen and Sawyer
- 08C 2:30pm Alternative Delivery of Alternate Energy at the South Hadley MA WWTP**
M. D. Curtis¹, J. Lanzoni²; ¹Simplified Energy Solutions, ²Siemens Building Technologies.

TECHNICAL PROGRAM

Session 9: Biogas

Wednesday, May 8

1:30pm – 3:00pm

- 09A 1:30pm The Effect of Bioaugmentation on Gas Production and Volatile Solid Reduction**
R. Schroeder, J. Isaac, E. Gelder, D. Chon, M. Foster; Environmental Business Specialists, LLC.
- 09B 2:00pm CHP System Implementation and Operations Optimization at F. Wayne Hill Water Resources Center**
S. Jalla¹, R. Schoeck², R. Porter²; ¹CH2M HILL, ²Gwinnett County Department of Water Resources.
- 09C 2:30pm Enhancing Methane Production from Municipal Waste Sludge by Co-digestion with Grease Trap Waste**
Q. He, Z. Zhu; Civil and Environmental Engineering, University of Tennessee.

TECHNICAL PROGRAM

Session 10: Global Perspectives

Wednesday, May 8

3:45pm – 5:15pm

- 10A 3:45pm Water Use Through The Life Cycle Of Electricity Generation Technologies**
J. Meldrum, S. Nettles-Anderson, J. Macknick, G. Heath; National Renewable Energy Laboratory.
- 10B 4:15pm Water and Energy Efficiency through Steam Systems**
A. Liubinas; City West Water, Melbourne, AUSTRALIA.
- 10C 4:45pm Creating New Revenue with Existing Processes: Evaluating Grid Balance with Demand-Side Loads at Wastewater Treatment Plants Using Dynamic Modeling**
D. Letto¹, S. Snowling², R. George¹, C. Morrissey¹, H. Andres², C. Fox¹;
¹ENBALA Power Networks, ²Hydromantis Environmental Software Solutions.

TECHNICAL PROGRAM

Session 11: Exemplary Programs That Save Both Energy and Water

Wednesday, May 8

3:45pm – 5:15pm

This session addresses a topic at the heart of the conference: how to design programs that achieve both water and energy savings. The case studies to be presented and the speakers to be featured will provide information on best practices in designing and implementing these programs as well as lessons learned through their experience.

TECHNICAL PROGRAM

Session 12: Research

Thursday, May 9

8:30am – 10:00am

- 12A 8:30am Looking at the Future: How Metropolitan Sewer District of Greater Cincinnati (MSDGC) is Turning Waste into Resources and Energy**
T. Lu¹, B. George², J. Lee³, M. Lu³; ¹MSD of Greater Cincinnati, ²MSDGC, ³University of Cincinnati.
- 12B 9:00am Energy Consumption of MBR for Municipal Wastewater Treatment: Current Situation and Potential**
P. Cote¹, T. Young², S. Smoot², J. Peeters³; ¹COTE Membrane Separation Ltd, ²GHD, ³GE Water & Process Technologies.
- 12C 9:30am The Analysis of Carbon Capture, Nutrient Reuse and Energy Production of a Novel Wastewater Treatment System that Maximizes Large Scale Algal Biofuel Production**
Y. Zhou¹, L. Schideman², Y. Zhang²; ¹University of Illinois, Urbana, IL, ²University of Illinois.

TECHNICAL PROGRAM

Session 13: Water, MSW, and Integrated Planning

Thursday, May 9
8:30am – 11:45am

- 13A 8:30am Sustainable Solutions for the 21st Century - Integration of Water Treatment Systems with Energy Derived from Municipal Wastes**
P. Hauck, D. Strobridge; CDM Smith.
- 13B 9:00am Integrating Major Components of a New Landfill Gas System - Coordination of Multiple Contracts for Gas Treatment, Pipeline Transmission and Turbine Energy Generation**
R. B. Schroedel, Jr.¹, M. Martin², C. Solberg², W. Krill²; ¹Brown & Caldwell, ²Milwaukee Metropolitan Sewerage District.
- 13C 9:30am Invited – Army – TBD**
- 10:00am Networking Break**
- 13D 10:15am Santa Rosa Case Study - Water, Electric, And Gas Utility Collaboration**
D. Guhin¹, A. Ross²; ¹Subregional Operations, City of Santa Rosa, ²Mechanical/Energy, Brown and Caldwell.
- 13E 10:45am Integrating Liquid and Solid Waste Planning to Make Green Infrastructure Pay**
S. J. Salter; Farallon Consultants Limited.
- 13F 11:15am A Benefit-Cost Analysis for Energy Costs and Non-Revenue Water for Drinking Water Systems**
A. Roberson, C. Aubuchon; AWWA

TECHNICAL PROGRAM

Session 14: Net Zero

Thursday, May 9

10:15 – 11:45am

- 14A 10:15am The Most Energy Efficient Pump is the One That's Not Running: A Case Study of Energy Savings Resulting from an I&I Reduction Program**
K. Colvett¹, B. Freeman², T. Spangler³; ¹CH2M Hill, ²Metro Water Services, ³City of Brentwood, TN.
- 14B 10:45am Small Wastewater Treatment Facilities Can Be Energy Producers**
J. C. Cantwell; Science Applications Intl Corp.
- 14C 11:15am The Treatment Plant Of The Future Itegrated CO2 Capture For Enhanced Plant Growth**
J. W. Schettler; Energy Services, Brown & Caldwell.