



**WEF Residuals and Biosolids Conference**  
**Engaging Public and Private Sectors for Integrated Resource Recovery**

**Draft Technical Program**  
(Updated: December 11, 2017)

**May 15-18, 2018**  
**Phoenix Convention Center**  
**Phoenix, Arizona**

## **Pre-Conference Workshop**

**Tuesday, May 15th**

(Separate registration fees apply)

### **Workshop A**

**8:30 AM – 5:00 PM**

On Main Street: A Reflection and Review of Driving Net Zero from Operating Facilities

There are those that feel our industry often spends more time during conferences evaluating what something will do and not how it has done. So it is time to reflect with some new voices. This workshop will focus on open discussions by industry experts which showcase innovation with respect to driving net zero. We welcome you to a truly fun and interactive day, with the hope of transforming communication and idea sharing to help push the boundaries of technologies with a pinch of reality.

### **Workshop B**

**8:30 AM – 5:00 PM**

High Quality Biosolids: Using Odor Predictors and Making Resilient Biosolids Products to Expand and Sustain Customers

This workshop is based on nearly complete WE&RF research on high quality biosolids (HQB) from wastewater. Included in the research are four (4) tasks associated with defining HQB, developing HQB products and demonstrating their use in urban settings, developing criteria to market HQB into high value markets, and using social media to communicate with HQB community, customers, and the public.

### **Workshop C**

**1:30 PM – 5:00 PM**

Renewable Identification Numbers: Risk Management in an Uncertain Future of the Renewable Fuel Standard

Renewable NG from wastewater residuals is valued at over \$30/Million BTU via the Renewable Fuel Standard (RFS) incentives; however, if the RFS fundamentally changes, the cost to produce the RNG could be greater than the wholesale value of NG. This leaves public entities in the precarious position of developing capital plans in the face of significant uncertainty. The intent of this workshop is to educate attendees about the RFS program so they can make informed decisions about biogas use.

## **Opening General Session**

**Wed, 5/16 8:30 AM – 10:00 AM**

Full details on the Opening General Session agenda will be provided in the coming weeks.

### **Session 01:**

#### **Product Development**

**Wed, 5/16 10:45 AM – 11:45 AM**

##### **10:45 AM**

Developing products with thermally-hydrolyzed biosolids at DC Water

William Brower, Chris Peot, DC Water & Sewer Authority; Adrian Romero, CH2M

##### **11:15 AM**

Biosolids Market Analysis for a Strategic Long-term Biosolids Management Program

Irene Okioga, Jackie Jarrell, Jean Creech, Charlotte Water; Jonathan Lapsley, Richard Tsang, CDM Smith

##### **Alternate**

Urban Biocycle Concept: From Wastewater Treatment to Resource Recovery

Joerg Blischke, Black & Veatch

**Session 02:**  
**Codigestion**  
**Wed, 5/16 1:30 PM – 4:45 PM**

**1:30 PM**

Anaerobic Co-Digestion of Condensate from Biosolids Pyrolysis  
Seyedehfatemeh Seyedi, Marquette University; Daniel Zitomer, Marquette University Haggerty Eng Hall

**2:00 PM**

Getting to Zero with Co-Digestion: Defining the Road to Energy Neutrality  
Becky Gherini, Katherine Eve, Carollo Engineers, Inc.; Curtis Bosick, Union Sanitary District; Rashi Gupta, Carollo Engineers

**2:30 PM**

Mesophilic Anaerobic Co-digestion of Manure and Thickened Waste Activated Sludge at Different Mixing Ratios  
Anahita Rabii, Ryerson University

**3:45 PM**

Leveraging Codigestion for Municipal Biogas Sludge Drying; Sustainable Goals - Proven Technology  
Rob Mangrum, Mangrum Consulting & Design; Sharon Foley, Harrisonburg Rockingham Regional Sewer Authority

**4:15 PM**

Do You Really Want that FOG? Some Considerations for Starting a FOG Codigestion Program  
Scott Carr, Edmund Kobylinski, Jorj Long, Black & Veatch; Douglas Nolkemper, Johnson County Wastewater; Rachel Swezy, Black & Veatch

**Alternate**

They are Doing What???? A comprehensive summary of co-digestion facilities across the US  
Robert Wimmer, ESG; Christopher Muller, Brown and Caldwell

**Alternate**

Preparing for a Class A Future – San Francisco's New Biosolids Initiatives  
Natalie Sierra, Brown and Caldwell; Manon Fisher, San Francisco Public Utilities Commission; Karri Ving, City and County of San Francisco

**Session 03:**  
**Dewatering Mechanisms and Methods**  
**Wed, 5/16 1:30 PM – 4:45 PM**

**1:30 PM**

Comparison of Four Laboratory Scale Dewaterability Testing Methods from a Pilot-Scale Evaluation of WAS Pre-Treatment Prior to Anaerobic Digestion

Quintin Schermerhorn, Metro Wastewater Reclamation District; Julia Kopp, Kläranlagen Beratung Kopp; Mario Benisch, HDR Engineering Inc; Matthew Higgins, Bucknell University; Isaac Avila, Blair Wisdom, Caleb Frandsen, Anna Schroeder, Metro Wastewater Reclamation District

**2:00 PM**

Evaluating the Impacts WAS Release on Anaerobic Digestion and Dewatering

Kristen Wisdom, Isaac Avila, Elisabeth Werth, Liam Cavanaugh, Metro Wastewater Reclamation District; Wendell Khunjar, Hazen and Sawyer; Nathan Brown, Frchetti Engineering Inc.

**2:30 PM**

Sludge Characteristics that Impact Dewatering of Anaerobically Digested Biosolids at Multiple Facilities

Jose Bicudo, Regional of Waterloo Water Services Div; Jordan Gerber, Carleton University; Samantha Morris, Region of Waterloo Water Services Div; Brett Crowley; Dominika Celmer-Repin, Region of Waterloo Water Svcs Div; Wayne Parker, University of Waterloo; Matthew Higgins, Bucknell University

**3:45 PM**

WE&RF: A Survey of WRRF Biosolids Identifying the Parameters Affecting Dewatering and the Effect of THP

Jeffrey Nicholson, Virginia Tech/ HRSD; Steven Beightol, Matthew Higgins, Bucknell University; Christopher Wilson, HRSD

**4:15 PM**

Effect of Potassium and Sodium on The Dewatering of Mesophilic Anaerobic Digestate

Zwelani Ngwenya, CH2M Hill; Matthew Higgins, Steven Beightol, Bucknell University

**Alternate**

Geobag for sludge drying The Good, The Bad and The Messy

James Huchel, City of Flagstaff

**Alternate**

Debunking the myth of centrifuges: Centrifuges as an energy hog

Nathaniel Nowicki, Peiyu Tan, Hiroko Yoshida, Centrisys Corporation

**Session 04:**  
**Emerging Contaminants**  
**Wed, 5/16 1:30 PM – 3:00 PM**

**1:30 PM**

The Fate of Microplastic in Wastewater Solids Treatment: Degradation of PE and PHB Microbeads in Aerobic and Anaerobic Digestion

Teigan Gulliver, HDR, Inc.; Junko Munakata-Marr, Linda Figueroa, Colorado School Of Mines;  
Allison Pieja, Molly Morse, Mango Materials

**2:00 PM**

Fate of ammonia, solids and recalcitrant micropollutants in anaerobic digestion and intermittent aeration of mixed sludge

Muneer Ahmad, Cigdem Eskicioglu, University of British Columbia

**2:30 PM**

A Reduction in Triclosan and Triclocarban in Water Reclamation Plant Influent, Outfall, and Biosolids Following the U.S. FDA's 2013 Proposed Rulemaking on Antibacterial Products

Dominic Brose, Metropolitan Water Reclamation District Chicago; Kuldip Kumar, MWRD of Greater Chicago At Cicero Stickney WTP; Anna Liao, M&R, MWRDC

**Session 05:**  
**Sidestream Management**  
**Wed, 5/16 1:30 PM – 3:00 PM**

**1:30 PM**

Vivianite Occurrence and Remediation Techniques in Biosolids Pre-treatment Process

Bipin Pathak, Ahmed Al-Omari, Christine Debarbadillo, DC Water; Scott Smith, Wilfrid Laurier University

**2:00 PM**

Wards Island WWTP Advanced Biosolids Handling and Sidestream Treatment Enhancements

Eric Auerbach, Arcadis; Mauro Orpianesi; Allen Deur, NYCDEP; Dimitrios Katehis

**2:30 PM**

Calcite Precipitate in Biosolids Handling Processes: A Case Study

Micah Blate, Mohammad Abu-Orf, Wendell Khunjar, Hazen and Sawyer; Jose Bicudo, Nathan Morris, Regional of Waterloo Water Services Div

**Alternate**

Lost Crystals– Investigating when Nutrient Recovery isn't meeting low-P expectations

Thomas Johnson, Leon Downing, William Leaf, Colin Fitzgerald, CH2M

**Session 06:**  
**THP Technology**  
**Wed, 5/16 3:45 PM – 4:45 PM**

**3:45 PM**

Finding The Best Solution For Cooling On Thermal Hydrolysis Projects

Greg Knight, Black & Veatch; Erika Bailey, City of Raleigh; Michael Bullard, Hazen and Sawyer;  
Dave Long, Black & Veatch; TJ Lynch, City of Raleigh; Amy Hanna, Hazen and Sawyer

**4:15 PM**

Thermal Hydrolysis Full Scale System Performance

Todd Williams, Marialena Hatzigeorgiou, Peter Burrowes, CH2M

**Alternate**

Optimized Sludge Thickening Process Control

Houssam El Jerdi, Pima County RWRD; Michael Hernandez, Hach

**Session 07:**  
**Master Planning I**  
**Wed, 5/16 3:45 PM – 4:45 PM**

**3:45 PM**

Ultimate Combination of Sustainable Biosolids Treatment Technologies

Dale Gabel, Peter Burrowes, CH2M; Rajkumar Rath, City and County of Honolulu; Leighton Lum, RM Towill Corporation; Bruce Johnson, David Oerke, CH2M

**4:15 PM**

A Streamlined Approach to Multi Facility Master Planning with Triple Bottom Line Optimization

Paul Knowles, Hazen and Sawyer; Vera Gouchev, Electric Pump Inc; Emanuel Psaltakis, Hazen and Sawyer

Robert Sharp, Manhattan College; Matthew VanHorne, Hazen and Sawyer; Thomas Lauro, Westchester County DEF

**Alternate**

Fundamental Improvements to Anaerobic Digestion Systems at Water Resource Recovery Facilities

David Parry, Cameron Clark, Corey Klibert, Paul Steele, CH2M

**Session 08:**  
**THP Master Planning**  
**Thu, 5/17 8:30 AM – 11:45 AM**

**8:30 AM**

Centralized Biosolids Processing with Thermal Hydrolysis and Anaerobic Digestion

Chris Moline, HDR; Matthew Higgins, Bucknell University; Kevin Selock, WSSC; Dale Belschner  
Piscataway WWTP; Lawrence Hentz, Brian Balchunas, Atkins

**9:00 AM**

Model Development to Compare the Impacts of Thermal Pretreatment on Waste Activated Sludge

Wayne Parker, University of Waterloo; Brian Jo, CH2M; Peiman Kianmehr, American University  
in Dubai

**9:30 AM**

Optimizing THP – 2nd Generation THP and techno-economical model for full scale implementation.

Ester Rus, Nick Mills, Aurelien Perrault, Thames Water; Paal Yahre Nilsen, CAMBI; Inigo  
Esparza Zuraire, AD Technologies

**10:45 AM**

Evaluation of Thermal Hydrolysis and Incineration of Sludge for Energy Recovery at an Advanced  
Water Reclamation Facility

Peter Burrowes, Julian Sandino, CH2M; Per Nielsen, VCS Denmark

**11:15 AM**

Combining thermal hydrolysis with incineration and downstream thermal processes to optimize energy  
recovery from sewage sludge

William Barber, Cambi Inc; Paul Christy, RDP Technologies

**Alternate**

Trinity River Authority of Texas Starts Move from Lime Stabilization to Thermal Hydrolysis and  
Anaerobic Digestion

Samir Mathur, CDM Smith Inc; Tom Jacobs, Trinity River Authority

**Alternate**

Re-Feeding of Hydrolyzed Biosolids to Anaerobic Digestion for Enhanced Biogas Generation; Case  
Study at Fairfield-Suisun Sewer District

James Dunbar, Rick Mosher, Lystek International Inc.; Gregory Baatrup, Fairfield Suisun Sewer  
District; Ajay Singh, Lystek International Inc.



**Session 09:**  
**Regulatory Changes and Impact to Biosolids Management**  
**Thu, 5/17 8:30 AM – 10:00 AM**

**8:30 AM**

The Anatomy of an 'objective' legislative research study on biosolids  
Robert Crockett, Virginia Biosolids Council

**9:00 AM**

Protecting Beneficial Use – Current Legal Issues Regarding Land Application  
James Slaughter, Beveridge & Diamond, P.C.; Layne Baroldi, Synagro

**9:30 AM**

Regulatory Reaction to PFAS Disrupts Residuals Recycling  
Ned Beecher, NEBRA

**Alternate**

Fresh Look at County-wide Biosolids Management  
Prabhushankar Chandrasekeran, Ken Eyre, Greeley & Hansen; Chris Saunders, Anne Arundel  
County Bureau of Utility Operations; Trung Le, Greeley and Hansen LLC

**Session 10:**  
**P3 Partnerships in Biosolids: Why P3 Makes Sense to Balance Risks and Costs in Biosolids Management**  
**Thu, 5/17 8:30 AM – 10:00 AM**

The session will present alternative project delivery from 3 biosolids related projects. The presenters will focus on why the alternative delivery was selected and the benefits for the delivery of the project.

**8:30 AM**

Resource Recovery at the Source: Tempe's P3 for Municipal FOG Recovery  
David McNeil, City of Tempe

**9:00 AM**

Ameresco's P3 Approach for Biogas Recovery at Phoenix's 91<sup>st</sup> Avenue WWTP  
Jim Bier, Ameresco

**9:30 AM**

Key Ingredients of a Successful Biosolids P3  
Layne Baroldi, Synagro

**Session 11:**  
**Biofuels and Bioproducts from Wet and Gaseous Waste Feedstocks**  
**Thu, 5/17 8:30 AM – 10:00 AM**

This session will include a sample of DOE's recent waste-to-energy awards. Information about DOE's Small Business Innovation Research (SBIR) program, and examples of cutting edge research in producing biofuels and bioproducts from residuals and biosolids.

Speakers:

Mark Philbrick, Department of Energy

Jeff Moeller, WERF  
James Oyler, Genifuel Corporation  
Yaniv Scherson, Stanford  
Deepak Dugar, Visolis  
Michael Guarnieri, National Renewable Energy Laboratory

**Session 12:**  
**Resource Recovery**  
**Thu, 5/17 10:45 AM – 11:45 AM**

**10:45 AM**

Primary sludge to valuable chemicals, hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), in microbial electrochemical cells: H<sub>2</sub>O<sub>2</sub> production and in-situ sludge treatment

Dongwon Ki, Rick Kupferer, César Torres, Arizona State University

**11:15 AM**

Biologically Enhanced Primary Treatment: A Summary of Experience From Pilot, Demonstration, And Full-Scale Systems

Nathan Antonneau, Michael Doyle, Evoqua Water Technologies LLC; Bruce Johnson, CH2M; Houssam El Jerdi, Pima County RWRD; Roger Babcock, U H Civil Engineering Dept; Tiow Wong, Rm Towill Corp

**Alternate**

Turning Summer Heat Into Savings - Maximizing Energy Recovery From Combustion Turbine Exhaust  
Anna Munson, Black & Veatch

**Session 13:**  
**Odors**  
**Thu, 5/17 10:45 AM – 11:45 AM**

**10:45 AM**

Impact of biosolids treatment and storage conditions on odor production: Thermal Hydrolysis-Anaerobic Digestion vs Alkaline Stabilization

Adrian Romero, CH2M; Mark Ramirez, DC Water; Alba Torrents, University of Maryland, College Park

**11:15 AM**

Characteristics of Nuisance Odor Emissions from the Sludge Drying Process

Mel Suffet, Yuge Bian, Fuqiang Liu, UCLA

**Alternate**

Automated Dosing of Hydrogen Peroxide Based on Real-Time Hydrogen Sulfide Measurements in an Aerated Sludge Holding Tank and Belt Filter Presses at the Norfolk, Nebraska Water Pollution Control Plant

Michael Nelson, USP Technologies; Todd Boling, City of Norfolk WPC

**Session 14:**  
**Beneficial Use of Biogas: Treatment**  
**Thu, 5/17 10:45 AM – 11:45 AM**

**10:45 AM**

A Simple and Energy Efficient Approach To Cleaning Biogas

Lindsey Busch, Carollo Engineers; Sidharta Arora; Sean Snyder, Unison Solutions, Inc.; Donald Miller, Sanitary District of Decatur

**11:15 AM**

Ammonia Laden Digester Gas: The Next Frontier in NOx Emissions Control

Jason Wiser, Jim Schettler, Nate Luong, Brown and Caldwell

**Alternate**

Understanding Design Standards and Codes for Biogas Systems

Regina Hanson, Varec Biogas; Shayla Allen; Jim Groman, Varec Biogas

**Session 15:**  
**Master Planning II**  
**Thu, 5/17 1:30 PM – 4:45 PM**

**1:30 PM**

Developing a Biosolids Strategy with the Community – A Modified Approach to Long-term Biosolids Planning at the Region of Waterloo

Kaoru Yajima, Regional Of Waterloo Water Services Div

**2:00 PM**

Tale of Two Florida Cities - Competition and Innovation Drive Biosolids Management toward the Private Sector

Robert Forbes, Gregory Brubaker, Juan Aceituno P.E., CH2M; Manuel Moncholi, Brian Roche, JEA

**2:30 PM**

Weighing the Options: A Comprehensive Approach to Long-Term Biosolids Management

Matthew VanHorne, Hazen and Sawyer; Joshua Palombo, Cape May County MUA; Micah Blate, Julian Chianelli, Hazen and Sawyer

**3:45 PM**

Regulations Drive Nutrient Recovery and Reuse at Winnipeg's Largest Treatment Facility: The Winnipeg North End Sewage Plant Design-Build Upgrade Project

Damian Kruk, AECOM Canada; Charles Goss, James Marx, Keith Sears, Simon Baker, AECOM

**4:15 PM**

When Does It Make Sense to Put All Your Eggs in One Basket and When Does It Not: A Case Study of Biosolids Process Centralization

Sebastian Smoot, HDR; Mike Gallagher, City of Baltimore; Maia Tatinclaux; Lawrence Hentz, Atkins; Thomas Kochaba, HDR Engineering

**Alternate**

Selecting an Advanced Anaerobic Digestion Configuration and Biogas Management Strategy for the City of Tampa

Kurt Pfeffer, Jacob Porter, Bryan Lisk, Hazen and Sawyer; Charles Bullard, Hazen and Sawyer; Karloren Guzman, City of Tampa Wastewater Department; Mitchel Chiavaroli, McKim & Creed Inc

**Alternate**

Biosolids Management – The Perfect Storm

Majid Khan, Dan Alford, Great Lakes Water Authority; Ed Hogan, Wade Trim

**Session 16:**  
**Anaerobic Digestion**  
**Thu, 5/17 1:30 PM – 4:45 PM**

**1:30 PM**

Using Struvite Precipitation to Remove Colloidal Material from Acid-Phase Digestion and the Effect on Downstream Gas-Phase Digestion

Marco Dennee, AECOM; Cigdem Eskicioglu, University of British Columbia

**2:00 PM**

Energy Production Requires Energy Input to Digesters - A Review of Digester Mixing and Development of Improved Digester Mixing Design Methodologies

Steve Krugel, Brown and Caldwell

**2:30 PM**

Microbial electrochemical cells as an alternative to biochemical methane potential tests for analyzing batch anaerobic digestion kinetics

Collette Wilson, Steven Hart, Sarah Brown, Michelle Young, Dongwon Ki, Arizona State University; Prathap Parameswaran, Dept of Civil Engineering Kansas State University; César Torres, Arizona State University

**3:45 PM**

The Effect of Free Nitrous Acid Pretreatment on The Anaerobic Digestibility of Thickened Waste Activated Sludge

Frances Okoye, Ryerson University; Dang Ho, Western University; Siva Sarathy, Trojan UV; Wayne Parker, University of Waterloo; Elsayed Elbeshbishy, University of Ontario Mississauga

**4:15 PM**

Improved characterization of anaerobic digestion kinetics of mixed sludges with and without thermally pretreated WAS.

Steven Hart, Michelle Young, Dongwon Ki, Sarah Brown, Collette Wilson, Arizona State University; Prathap Parameswaran, Dept of Civil Engineering Kansas State University; César Torres, Arizona State University

**Alternate**

~~Optimizing Solid Waste Biomethanation using Hydrogen produced via MnO Oxidation~~

~~Mark Reynolds, Debbie Chang, Jacqueline Winston, Rosy Krajmalnik-Brown, Hinsby Cadillo-Quiroz, Arizona State University~~

**Alternate**

Taking a Bite Out of Digester Cleaning Costs

Jesus Rodriguez, JWC Environmental

**Session 17:**  
**Charting New Research in Residuals and Biosolids**  
**Thu, 5/17 1:30 PM – 3:00 PM**

Interactive session for residuals and biosolids professionals to inform WE&RF of research needs. Includes an overview of WE&RF's major projects in this field.

Speakers:

Christine Radke, Water Environment & Reuse Foundation  
Amit Pramanik, Water Environment & Reuse Foundation

Session Breakdown:

**1:30 PM**

Welcome and session overview

**1:35 PM**

Overview of WE&RF's Residuals & Biosolids research portfolio

**2:00 PM**

Open mic discussion on research needs

**2:30 PM**

Voting of research priorities

**2:45 PM**

Recap and next steps

**Session 18:**  
**Dewatering Practice and Planning**  
**Thu, 5/17 1:30 PM – 3:00 PM**

**1:30 PM**

Impact of Iron Salt Addition on Solids Production and Operations  
Perry Schafer, Henryk Melcer, Brown and Caldwell

**2:00 PM**

State-of-the-Practice for Dewatering of Thermally Hydrolyzed Digested Biosolids  
David Oerke, CH2M; Matthew Higgins, Bucknell University; Sudhir Murthy, Salil Kharkar, Christine Debarbadillo, DC Water & Sewer Authority; Carolyn Chiu, San Francisco Public Utilities Commission; Rosanna Tse, SFPUC; Humphrey Ho, San Francisco Public Utilities Commission; Keith Panter, Ebcor Ltd, Brett Reistad; Heidi Bauer, CH2M

**2:30 PM**

Giving a New Life to a 20-Year Old Facility: Fountain Hills WWTP Solids Handling System Improvement Project

Jun Wang, Carollo Engineers; Dana Trompke, Fountain Hills Sanitary District; Kirk Gardiner, Andrew Gilmore, Carollo Engineers; Clark Moskop, Fountain Hills Sanitary District

**Alternate**

Overcoming Challenges with a Difficult to Handle Sludge - Centrifuge Piloting at Miami's Central District WWTP

Manuel Moncholi; Charles Goss, AECOM; Brian Stitt, AECOM; Ismael Diaz, Gannett Fleming

## **Session 19:**

### **Creating a Brand and a Following: Branding Biosolids for a Long Term Sustainable Practice**

**Thu, 5/17 3:45 PM – 4:45 PM**

The session will present the experience from 3-4 utilities that have gone beyond producing biosolids and have developed a brand and a quality controlled product. The presenters will focus on the efforts to develop the brand and the benefits from having a material differentiated from generic biosolids.

Speaker information coming soon.

## **Session 20:**

### **Land Application**

**Thu, 5/17 3:45 PM – 4:45 PM**

#### **3:45 PM**

Soil microbiome response to land application of wastewater treatment biosolids

Kevin Lambirth, UNCC; Jean Creech, Charlotte Water; Cynthia Gibas, UNCC

#### **4:15 PM**

Conifer Seedling Establishment on A Rock Disposal Site at The Mount Polley Mine to Assess

Competitive Effects of Various Herbaceous Groundcovers When Using Biosolids As a Soil Amendment

Janelle Hunt, Metro Vancouver; Katie McMahan; Gabriel Holmes, Mount Polley Mining Corporation

#### **Alternate**

Agronomic Rate Analysis of Biosolids Application in Arid Geographical Regions Located near Deer Trail, Colorado

Alicia Gilley, James Johnson, Troy Gottschalk, Metro Wastewater Reclamation District



**Session 21:**  
**Codigestion: Food Waste**  
**Fri, 5/18 8:30 AM – 11:45 AM**

**8:30 AM**

Addressing operational side effect of co-digestion of organic wastes

Alan Appleton, Tanja Rauch-Williams, Rashi Gupta, Carollo Engineers; Mark Greene, O'Brien & Gere Engineers Inc; Stefan Grimberg, Clarkson University

**9:00 AM**

Industrial waste stream co-digestion capacity evaluation and optimization using biodegradability test assays

Spyros Pavlostathis, Georgia Institute Of Technology; Rodolfo Kilian, Toshio Shimada, Carollo Engineers; Walter Collins, Little Rock Wastewater

**9:30 AM**

Managing an Ever Changing Stream of Organic Materials for Co-Digestion at the Hermitage Municipal Authority - From Impounded Honey and Rotten Vegetables to Biogas Success.

Jason Wert, RETTTEW; Thomas Darby, City of Hermitage

**10:15 AM**

Food Waste Digestion at Inland BioEnergy in Chino, CA- Processing of Pre-Consumer and Industrial Food Waste and Biogas Yields

Christian Tasser, Carollo Engineers; Alfredo Ferrin

**10:45 AM**

City of Atlanta Bench Scale Evaluation for Co-Digestion of High-Strength Wastes with Municipal Sludge  
Jody Barksdale Gresham Smith and Partners

Nolton Johnson, City of Atlanta; Spyros Pavlostathis, Georgia Institute of Technology; Daniel Shaw, Black and Veatch; Giny Jacob, Gresham Smith and Partners

**11:15 AM**

In-situ tools for municipal anaerobic digestion optimization in response to complex input stream blend ratios of food wastes and other unconventional organic streams

Prathap Parameswaran, Dept of Civil Engineering Kansas State University; Sandeep Sathyamoorthy, Black & Veatch

**Alternate**

Tipping the Balance in Favor of Class A – Integration of Economics, Community Reuse Potential, Program Risk, and Good Neighbor Ethics Drive the Shift to Thermal Drying.

Steve Wilson, Brown and Caldwell; John Peterson, Clark Regional Wastewater District; Frank Dick, City of Vancouver Engineering

**Alternate**

Two Birds, One Stone: High-rate Residuals and Food Co-digestion

Michael Curtis, Quantum Biopower; Jay Sheehan, Woodard & Curran

**Session 22:**  
**Beneficial Use of Biogas: Planning and Use**  
**Fri, 5/18 8:30 AM – 11:45 AM**

**8:30 AM**

Should I Use My Digester Gas or Not?  
Rusty Schroedel, AECOM

**9:00 AM**

A Clean Start and a Closed Loop: Roseville's Organics-to-Vehicle-Fuel Story  
Alison Nojima, Adam Ross, Brown and Caldwell; Kenneth Glotzbach, Todd Jordan, George Hanson, City of Roseville

**9:30 AM**

"Looking Forward" - Maximizing the Value of Biogas Through Consideration of Alternative Uses  
Bryan Lisk, Hazen and Sawyer; Warren Huang, Eastern Municipal Water District

**10:15 AM**

Turning Gas Into Green - Beneficial Use of the Energy Content of WWTP Digester Gas from Smaller Facilities  
Garth Bowers, Paul Stout, Cornerstone Environmental Group, A Tetra Tech Company

**10:45 AM**

Road Trip: Arriving at a New Vehicle Fuel Production System for Biogas Use  
Daniel Hull, Brown & Caldwell; Robert Taylor, Washington Suburban Sanitary Commission; John Willis, Brown and Caldwell; Jeremy Holland, HDR Engineering Inc

**11:15 AM**

Lessons Learned from Planning, Designing, Constructing, and Commissioning Biogas-Fueled Cogeneration Systems  
David Parry, Cameron Clark, Timothy Bauer, Brett Reistad, CH2M

**Alternate**

Application to use Anaerobic Digestion (AD) sludge for Enriching a Methanotrophic Mixed Culture with High Polyhydroxyalkanoates (PHAs) production capability  
Ahmed Fergala, Ahmed Alsayed, York University; Saif Khattab, Reyerson University; Megan Rameriz, Universidad International; Ahmed Eldyasti, York University

**Session 23:**  
**Thermal Processes**  
**Fri, 5/18 8:30 AM – 10:00 AM**

**8:30 AM**

Synergistic Thermal Processing of Dry Sludge Chaff and Incinerator Ash for Energy and Resource Recovery

Zhongzhe Liu, Marquette University; Daniel Zitomer, Marquette University Haggerty Eng Hall; Patrick McNamara, Marquette University

**9:00 AM**

Adopting Innovative Technology - Challenges and Lessons Learned from A Utility's Perspective

Kwok-Wai Tsang, CDM Smith; Thomas Hartye, Hunter Carson, Peter Weed, MSD of Buncombe County

**9:30 AM**

Seizing the Opportunity for Improved Energy Efficiency of an Existing Fluid Bed Incinerator

Webster Hoener, Chris Dormier, Black & Veatch; Felicia Bergeron, Sewerage and Water Board of New Orleans

**Session 24:**  
**Greenhouse Gas Management**  
**Fri, 5/18 8:30 AM – 10:00 AM**

**8:30 AM**

Sidestream Management as part of an Energy Optimization Roadmap for an Advance BNR Facility

Soeren Eriksen, Ib Pedersen, Per Nielsen, VCS Denmark; Julian Sandino, CH2M

**9:00 AM**

Quantifying the GHG-Emission Reductions from DC Water's Digestion/Cambi/CHP Upgrades

John Willis, Brown and Caldwell; William Brower, Chris Peot, DC Water & Sewer Authority

**9:30 AM**

Curbing Greenhouse Gas Emissions Through Codigestion - A Blueprint for Combating Climate Change

Michael Theodoulou, GE Water & Process Technologies; Indra Maharjan, Ontario Clean Water Agency; Ed Dujlovic, Stratford

**Alternate**

Stack Emission Tests Results from Eight Existing and One New High Temperature Fluid Bed Municipal Sludge Incinerators Operating in The Us

Levent Takmaz, Ky Dangtran, SUEZ

**Session 25:**  
**Class A Technologies**  
**Fri, 5/18 10:15 AM – 11:45 AM**

**10:15 AM**

Pilot Scale Evaluation of a Two-Stage, Low-Cost Low-Tech Class A Biosolids Treatment Process  
Karina Eyre, Tanner Keyzers, Christa Meingast, Jennifer Becker, Eric Seagren, Michigan  
Technological University

**10:30 AM**

Low-cost, low-tech biosolids treatment via long-term storage: A comparison of two pilot scale studies  
Jennifer Becker, Karina Eyre, Tanner Keyzers, Christa Meingast, Eric Seagren, Michigan  
Technological University

**10:45 AM**

Simple, Cost Effective Class A Biosolids Generation: City of Nampa Class A Biosolids Pilot Study  
Shelby Smith, Brown and Caldwell; Andy Zimmerman, City of Nampa WWTP

**11:15 AM**

Solar Heated Thermal Floor Enhanced Solar Greenhouse Biosolids Drying  
Patrick Goodfellow, Ric Traeger, Brown and Caldwell; Warren Dancer, Suneel Garg, City of  
Surprise; Philip Wolstenholme, Brown and Caldwell

**Alternate**

Product Development Research with Lystek Class A Liquid Biosolids  
Ronald Alexander, R Alexander Associates Inc; Michael Dougherty, Lystek International