# Workshop for Developing the Structure of a National Energy Positive Water Resource Recovery Facility Test Bed Network

# June 20th -21st , 2016

## *Denver Metro Wastewater Reclamation District*

## *6450 York Street, Denver, CO 80229*

Registration Link: <http://events.energetics.com/structure/>

This workshop focuses on envisioning the structure of a national test bed network and specific action plans. Specifically, the workshop will

* + - 1. *Identify the stakeholders and their needs for the test bed network*
			2. *Develop network pathways, functions, and structures to meet the needs and objectives*
			3. *Develop plans for the formation, operation, and assessment of the testbed network*

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| **Day One** | **Monday, June 20, 2016** |
| Time | Agenda Topic |
| 7:00-7:15 | Shuttle Bus Pickup at Renaissance Hotel (918 17th Street, Denver CO 80202) (you can drive to the workshop site too) |
| 7:30 | Registration Opens |
| 8:00 – 8:30 | *Breakfast and Coffee provided* |
| 8:30 - 8:45 | **Welcome and Introduction**● *Zhiyong Jason Ren, Workshop Chair, University of Colorado Boulder- brief background and objectives of this workshop* ● *Molly Mayo, Facilitator, Meridian Institute – workshop agenda, things to remember, and other remarks* |
| 8:45– 9:45(10 min talk each + 20 min Q&A) | *Molly Mayo, Meridian Institute, Facilitator***Keynote Panel Discussion**: Background of this effort●  EPWRR report summary (Aaron Fisher, Energetics/WE&RF)●  WE&RF Test Best Network Directory (Jeff Moeller, WE&RF)●  DOE concept paper (Seth Snyder, DOE/Argonne National Lab)●  The rationale and looking forward (Bill Cooper, NSF) |
| 9:45 – 10:10(20 min talk + 5min Q&A) | **Keynote 1**: *Evaluation Metrics to Advance a National Water Resource Recovery Facility Test Bed Network*●   Jim Mihelcic, Samuel L. and Julia M. Flom Professor, University of South Florida  |
| 10:10 – 10:30 | Break  - *Coffee and snacks provided* |
| 10:30 – 10:55(20 min talk + 5min Q&A) | **Keynote 2**: *Industry Insights on the Structure of a Test Bed Network*●   Jim McQuarrie, Chief Innovation Officer, Denver Metro Wastewater Reclamation District  |
| 10:55 – 11:20(20 min talk + 5min Q&A) | **Keynote 3**: *Brackish Groundwater National Desalination Research Facility*●     Randy Shaw, Facility Manager, BGNDRF  |
| 11:20 – 11:30 | Afternoon Breakout Session Summary and Charge*Molly Mayo, Meridian Institute, Facilitator* |
| 11:30 – 12:30 | *Working lunch provided* |
|  | **Day One Breakout Session (In 4 breakout rooms, see table for details)** |
| 12:30 – 2:30 | **Stakeholder Identification and Their Needs for the Test Bed Network***Who are the stakeholders? (eg. utilities, consultants, regulators, financiers, public, innovators, academics, manufactures, others)**What are the different stages of technology development? (eg. proof of concept, pilot and scale-up, validation, etc.)**What are the objectives of the stakeholders in different stages? What are the activities? What would they consider success? (interactive activities and/or subgroup discussions)*  |
| 2:30 – 3:00 | Break- *Coffee and snacks provided* |
| 3:00 –5:00 | **Continuation of breakout discussion (same breakout group and room)***Where do the activities of stakeholder groups align?* *What activities should be prioritized?**How to perform such activities?**What does the network structure look like?* |
| 5:00 - 5:30 | Transport to Wynkoop Brewing Company (shuttle available)  |
| 5:30 – 7:30 | Gathering at Wynkoop Brewing Company (1634 18th Street, Denver, CO 80202, walking distance to Renaissance hotel) - Sponsored by WE&RF  |
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| **Day Two** | **Tuesday, June 21, 2016** |
| Time | Subject |
| 7:00-7:15 | Shuttle Bus Pickup at Renaissance Hotel (918 17th Street, Denver CO 80202) (you can drive to the workshop site too) |
| 8:00 – 8:30 | *Breakfast and Coffee provided* |
| 8:30 – 8:40 | **Welcome Back***Molly Mayo, Facilitator* |
| 8:40 – 9:20(10 min talk each) | *Molly Mayo, Meridian Institute, Facilitator***Breakout Presentations from Day One breakout session***Presentations from Breakout Rapporteur followed by Q&A and discussion.* ● Group 1: Rapporteur: Marcus Gay (New England Water Innovation Network)● Group 2: Rapporteur: Heng Zhang (MWRD Chicago)● Group 3: Rapporteur: Jeff Prevatt (Pima County RWRD) ● Group 4: Rapporteur: Michael Murphy (Mass CEC) |
| 9:20 – 10:00 | *Molly Mayo, Meridian Institute, Facilitator*Reflections and discussions on Day 1 breakout and questions to be answered in Day 2 breakout.  |
| 10:00 – 10:30 | Break- *Coffee and snacks provided* |
| 10:30 – 11:20(5 min talk each + 25 min Q&A) | **Panel discussion:** How to develop a pathway for new technologies entering into the market with minimal regulatory delays.*Molly Mayo, Meridian Institute, Facilitator*●      Federal Regulator: Jason Turgeon (EPA)●  State Regulator: Sharon Rivard (NH Dept. of Env. Services)●      Consulting industry: (Art Umble, MWH Global)●      Technology provider: Gerhard Forstner (CNP tech)●      Private Investor: (Tom Pokorsky, XPV Capital) |
| 11:20 – 11:30 | Day 2 Breakout Session summary and chargeMolly Mayo, Meridian Institute, Facilitator |
|  | **Day Two Breakout Session (In 4 breakout rooms, see table for details)** |
| 11:30 – 12:45 | **The Organization and Structure of the Test Bed Network***How should the network be organized and structured?**What are the different structures available to develop this network?* *What are the specific next steps needed for the formation, operation, and assessment of the testbed network?* *What are the next steps for different stakeholders?*  |
| 12:45 – 1:40 | *Working lunch provided* |
| 1:40-2:40(10 min talk each + 20 min Q&A) | *Molly Mayo, Meridian Institute, Facilitator***Breakout Presentations from Day 2 breakout session**.*Presentations from Breakout Rapporteur followed by Q&A and discussion.*●      Group 1: Rapporteur: Bob Bucher (King County Wastewater) ●      Group 2: Rapporteur: Leonard Blanchette (Brunswick Sewer District)●      Group 3: Rapporteur: Tanja Rauch-Williams (Carollo Engineers)●      Group 4: Rapporteur: Matt Magruder (Milwaukee Metro SD) |
| 2:40 – 3:00 | Closing and Next Steps*Molly Mayo, facilitator; Organizing committee members,**Z. Jason Ren, workshop chair* |
| 3:15 – 4:00 | MWRD Robert W. Hite Treatment Facility Tour - onsite |
|  | **Note:** Transportation after workshop will be on your own due to different schedules and destinations (Carpool, Taxi, Uber, SuperShuttle, etc.) |
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**Participant List**

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| **Frist Name** | **Last Name** | **Organization** |
| Aaron | Fisher | WERF |
| Ariela | Zycherman | AAAS Science and Technology Policy Fellow |
| Art  | Umble | MWH Americas |
| Ayman | Shawwa | Schrieber |
| Barry | Liner | WEF |
| Beverley | Stinson | AECOM |
| Bill | Cooper | NSF |
| Bob | Bucher | King County Pilot Test Facility |
| Bobby | Jacobsen | PG Environmental |
| Brandi | Schottel | NSF |
| Bret | Icenogle | CDPHE |
| Craig | Criddle | Stanford |
| Craig | Turchi | National Renewable Energy Lab |
| Dan | Murray | U.S. EPA |
| David | Jassby | UC Riverside |
| Erik | Coats | U of Idaho Advanced WRRF |
| Gerhard | Forstner | CNP - Technology Water and Biosolids Corp. |
| Heng | Zhang | MWRD Chicago |
| Hong | Zhao | Veolia Kruger |
| Jason | Turgeon | EPA |
| Jeff | Moeller | WERF |
| Jeff | Prevatt | Pima County RWRD |
| Jeremiah | Wilson | Department of Energy |
| Jim | McQuarrie | MWRD Denver |
| Jim | Mihelcic | USF |
| Jocelyn  | Hittle | Colorado State University |
| Joe | Zuback | Global Water Advisors |
| Joe | Cresko | AMO, DOE |
| Jonathan | Rogers | Energetics Incorporated |
| Julius | Enriquez | US EPA |
| Ken | Williamson | Clean Water Services |
| Ken | Carlson | Colorado State University |
| Leanne | Miller | Water Research Foundation |
| Leonard | Blanchette | Brunswick (Harry Shulman) WPCF |
| Linda | Figueroa | Colorado School of Mines |
| Ling | Tao | National Renewable Energy Lab |
| Lutgarde | Raskin | U Michigan |
| Malcolm | Fabiyi | Hydromantis USA |
| Marcus | Gay | Novus Technical Services |

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| **Frist Name** | **Last Name** | **Organization** |
| Mark | Philbrick | DOE |
| Matthew | Magruder | Milwaukee Metro SD - South Shore WRF |
| Michael | Murphy | Mass CEC |
| Michael | Bolan | Urbanalta Corp |
| Molly | Mayo | Meridian |
| Pablo | Cornejo | Univ. of Colorado Boulder |
| Ping-Ching | Maness | NREL |
| Randy | Shaw | National Desal Test Bed |
| Richard | Leger | Aurora Sand Creek Water Reuse Facility |
| Seth | Snyder | ANL |
| Sharon | Rivard | NH DES |
| Sherri | Cook | Univ. of Colorado Boulder |
| Tanja | Rauch-Williams | Carollo |
| Theresa | Stone | Metro Wastewater Reclamation District |
| Thomas | Pokorsky | XPV/NEXOM |
| Tyler | Huggins | Univ. of Colorado Boulder |
| Tzahi | Cath | Colorado School of Mines |
| Yuliana | Porras Mendoza | Bureau of Reclamation |
| Zachary | Scott | Trojan Technologies |
| Z. Jason | Ren | Univ. of Colorado Boulder |