

02-15-22 Chat Log from NAWI RFI Pilot Workshop

NAWI RFI and Other Resources:

1. Link to RFI documents and an RFI-specific FAQ: <https://nawi.infoready4.com>
RFI is due March 15th by 5:00 pm PT.
2. Recording, chat, and PPT slides: www.nawihub.org
3. The application to join the NAWI Alliance is here:
<https://forms.gle/Xpf7EWeePJkmmAs17>
4. Water-TAP: <https://www.nawihub.org/knowledge/water-tap3/>
5. Water DAMS: <https://www.nawihub.org/knowledge/water-dams/>
6. NAWI roadmaps: <https://www.nawihub.org/knowledge/roadmap-publication-series/>

Links and Contact Info from Various Resources:

09:34:31 From Rodney Herrington to Everyone:

Rodney Herrington, Aqua Membranes Inc. Rodney@aquamembranes.com,
www.aquamembranes.com

09:36:46 From Tzahi Cath - Mines to Everyone:

Colorado School of Mines - Mobile DPR lab
<https://www.youtube.com/watch?v=pZO9AEAG7Ls>

09:38:17 From Tzahi Cath - Mines to Everyone:

Colorado School of Mines - Water Reclamation Hub:
<https://people.mines.edu/tcath/mines-park-water-reclamation-hub/>

09:39:47 From Malynda Cappelle-USBR to Everyone:

Brackish Groundwater National Desalination Research Facility (a.k.a. BGNDRF).
<https://www.usbr.gov/research/bgndrf/>

09:40:59 From Tzahi Cath - Mines to Everyone:

Colorado School of Mines - WE2ST Water Technology Hub:
<https://we2st.mines.edu/research-facilities/>

09:41:19 From Richard Breckenridge, EPRI to Everyone:

Electric Power Research Institute (EPRI) rbreckenridge@epri.com and
jmonnell@epri.com

09:56:42 From Jason Monnell - EPRI to Everyone:

EPRI has several research facilities set up to conduct pilots and access to member locations across the country. For more information -- contact: Richard Breckenridge (rbreckenridge@epri.com) or Jason Monnell (jmonnell@epri.com)

09:42:36 From Kyle Thompson to Everyone:

Las Virgenes-Triunfo Pure Water Demonstration Facility
<https://www.ourpureh2o.com/learn-more/demonstration-project>

- 09:46:40 From Pei Xu to Everyone:
New Mexico Produced Water Research Consortium conducts pilot scale testing:
<https://nmpwrc.nmsu.edu/>
- 09:59:32 From Jon Czas - Trident to Everyone:
Trident Desalination Inc - High Salinity Brine Treatment. <https://www.tridentdesal.com/Contact@Tridentdesal.com>
- 10:13:29 From Thomas Borch - CSU to Everyone:
<https://agsci.source.colostate.edu/csu-researchers-launch-1-9-million-project-for-water-treatment-and-reuse-using-biochar/>
- 10:18:16 From Mike Waite Agua DB Ltd to Everyone:
In terms of application of technology into small rural communities, this project could be a pathfinder: <https://affordabledrinkingwater.ucdavis.edu/>
- 10:20:08 From Jeff Mosher - SAWPA (CA) to Everyone:
SAWPA and other regions of CA have grants from CA DWR addressing DACs. Info our program is at: <https://sawpa.org/owow/dci-program/>
- 10:20:55 From Kristen Jenkins-OLI Systems to Everyone:
OLI can help by modeling your technology, identifying conditions most likely to succeed in piloting. kristen.jenkins@olisystems.com

Chat Log

- 09:36:48 From Zach Stoll - NAWI to Everyone:
Welcome everyone! Please don't hesitate to ask questions throughout the presentation in the Chat. Jenn and I are here to help answer any questions you may have.
- 09:37:16 From Ibrahim Abdallah, NEWT to Everyone:
Would the participants get an access to the recorded meeting?
- 09:37:45 From Zach Stoll - NAWI to Everyone:
@Ibrhim Yes, we will post the recording, chat log, and PPT slides on our public website at www.nawihub.org
- 09:38:01 From Ibrahim Abdallah, NEWT to Everyone:
Thanks, Zach
- 09:39:04 From Zach Stoll - NAWI to Everyone:
And I like what Rodney and Tzahi are doing! If you have a test site, a pilot (or technology) that you would like to promote, feel free to add those links in the chat here so others can explore these resources after the Workshop

09:41:11 From Zach Stoll - NAWI to Everyone:

Thanks Malynda and great to see you! For those that don't know, BGNDRF is a test-bed for brackish groundwater desalination testing. They have all the facilities to house and test desal pilots, which includes access to 4 different "flavors" of brackish water, electricity, and disposal.

09:41:23 From Jennifer Berrie, NREL/NAWI to Everyone:

Please consider joining the NAWI Alliance! It's free to join and connects you to a large number of water R&D orgs and people.

09:54:21 From Rodney Herrington to Everyone:

You probably have this somewhere, but define "small scale desal".

09:54:48 From Wen Zhang to Everyone:

Could you explain the meaning of electrified membrane systems? All membrane systems consume electricity or are electrified in some ways. Do you also refer to those electrochemically active membranes or any other forms?

09:55:36 From Qilin Li to Everyone:

What are the end uses considered for the recovered water from brine treatment?

09:56:29 From Zach Stoll - NAWI to Everyone:

@Rodney, this is a good question! I personally do not think there is a definitive line; however, for the NAWI pilot program, we are considering pilots with minimum influent flow rates of 0.5 gpm or higher. Pitch to Pilot (P2P) from the USBR uses 1.0 gpm, but we are curious what you all think. What does "small scale" mean to you?

09:56:31 From Alexander Dudchenko to Everyone:

Electrified would be any process that does not require a dedicated chemical input. This would include pressure and electrically driven processes, (excluding any feed chemical additives...)

09:56:50 From Arian Edalat to Everyone:

If we contribute information to the RFP process, can we apply for it as well?

09:57:29 From Zach Stoll - NAWI to Everyone:

@Qilin - it depends on the water source. For produced water, one end use could be hydrogen production (just thinking out loud). But from Ag wastewater, maybe that water could be reused for irrigation

09:57:38 From Marcus Griswold, CSIRO to Everyone:

Since this is a federal source, are there any constraints on receiving in-kind cost share support from federal sources (such as the Bureau of Reclamation)?

09:59:14 From Zach Stoll - NAWI to Everyone:

@Wen, are you referring to NAWI "Electrified" focus in A-PRIME? If so, the "electrified" motif isn't confined to membranes. It is the entire area of how to electrify process - in other words, use electricity to drive unit processes that are currently not electrified. Some examples are electrocoagulation for generating coagulants from metal electrodes, or bipolar membrane electrodialysis, which can generate acids and bases on site from salts.

09:59:43 From Zach Stoll - NAWI to Everyone:

But electrified membranes themselves do fit into several areas of NAWI's focus (electrified and precision separation to name a couple)

09:59:45 From Kris Villez - ORNL to Everyone:

Is "Novel" measured relative to best available technology at pilot level or technology currently in use at full scale?

09:59:57 From quantum wei to Everyone:

can you say anything about the timing of this potential RFP?

10:00:21 From Jeff Mosher - SAWPA (CA) to Everyone:

0.5 - 1.0 gpm looks more like a bench scale demo. Is that the intent?

10:00:41 From Tzahi Cath - Mines to Everyone:

How long the projects are expected to run?

10:00:45 From Zach Stoll - NAWI to Everyone:

@Marcus, because this is a federal (DOE), accepting federal funds as cost-share is NOT allowed.

10:01:22 From Megan Plumlee_OCWD to Everyone:

You may want to avoid requiring any min flow size for the pilot, and let the proposal submitters make the argument to you about why they consider their project a "pilot".

10:01:23 From Zach Stoll - NAWI to Everyone:

@Arian, if you respond to the RFI, you are able to respond to the RFP. There are no constraints around RFI responses. It is just what the name implies: a request for information.

10:01:36 From Malynda Cappelle-USBR to Everyone:

I agree, @Jeff. I would consider 5-10 gpm a small pilot. 20-40 gpm a better demo scale. And operation at steady state for as long as financially possible (>1 month?)

10:02:05 From Zach Stoll - NAWI to Everyone:

@Jeff, this is a good point and this question is part of the poll.

- 10:02:26 From Zach Stoll - NAWI to Everyone:
@Tzahi, we are anticipating a potential project length of ~2 years. Actual pilot run time will likely vary depending on the project but a minimum run time of 6 months would be wonderful!
- 10:03:45 From Marcus Griswold, CSIRO to Everyone:
What are allowable sources of cost share (e.g. staff, equipment, etc)?
- 10:04:28 From Zach Stoll - NAWI to Everyone:
@Quantum the RFI document that is posted on the InfoReady website (<https://nawi.infoready4.com>) has the (tentative) timeline.
- 10:05:03 From Jennifer Berrie, NREL/NAWI to Everyone:
Don't forget to scroll down to answer all 5 poll questions
- 10:05:52 From Zach Stoll - NAWI to Everyone:
@Marcus, in-kind and cash are all eligible cost-share contributions. Time and equipment count!
- 10:07:17 From Zach Stoll - NAWI to Everyone:
@Megan, this is good advice but does make evaluations difficult if there is not a minimum flow requirement. How would you deal with submissions that propose very low flow rates to a pilot program? We are definitely open to ideas!!!
- 10:08:04 From Marcus Griswold, CSIRO to Everyone:
Will you share poll results on screen?
- 10:08:19 From Zach Stoll - NAWI to Everyone:
Yes @Marcus.
- 10:08:49 From Kris Villez - ORNL to Everyone:
It is not fully clear if or how this would address the "automation" agenda if the requirement is to pilot new process technologies only. Many industrial partners may be interest in automation research for existing process technology instead.
- 10:09:47 From Gilbert Van Deventer to Everyone:
We have a 25-40 gal/min system treating brackish water. Technology from ceramic membrane filtration and/or Electrodialysis Reversal, and nano-diffusion. Systems in place ready to go for further research and better optimization and performance.
- 10:10:20 From Xuesong(Eric) Xu_NMSU to Everyone:
@zach, if multi processes included with varying flow rate in each unit, which flow rate would be considered for meeting the flow requirement?

10:10:56 From Gilbert Van Deventer to Everyone:

Our system is built and located in Odessa TX. We have UTPB as a partner and two manufacturers so far

10:11:15 From Floyd Wicks, with SeaWell LLC to Everyone:

Can we obtain a copy of the PPT presentation?

10:12:21 From Megan Plumlee_OCWD to Everyone:

@Zach, my thinking is that a "pilot" could primarily mean that it has "graduated" up from past bench-scale work AND will be done in a realistic environment with a design representative of how it would work at full scale - and perhaps if it is below 1 gpm, the proposer is required to justify well WHY such a low flow would be sufficiently representative/OK.

10:13:38 From Jennifer Berrie, NREL/NAWI to Everyone:

@Floyd, we will post the recording to the NAWI website: <https://www.nawihub.org/>

10:14:10 From Kris Villez - ORNL to Everyone:

@Megan Plumlee: I like this idea. Define the pilot level relative to what a full-scale system would look like (e.g., 5% of full-scale flow). This could be relevant especially for small-scale/remote/unmanned systems.

10:14:40 From quantum wei to Everyone:

we are currently building a batch RO pilot (1 gpm) to be demonstrated at Yuma Desalting Plant (AZ) this July as part of the BoR's MWLC challenge.

10:15:01 From Zach Stoll - NAWI to Everyone:

@Kris, you are correct. We did have Autonomous Water as an area of interest in the RFI text. And the approach for quantifying/measuring the improvements (or impacts on pipe parity) could be different than if testing a novel technology. Did you have any recommendations or thoughts on how we could make this intention of Autonomous Water more explicit?

10:17:39 From Richard Breckenridge, EPRI to Everyone:

Good comments about scale/size. Besides the source, the size needs to represent the mechanisms and dynamics, e.g. cross-flow velocity as one example. Length of trial is also subjective to local conditions. Seasonal variations for example.

10:17:49 From Gilbert Van Deventer to Everyone:

Is it necessary or required or recommended to partner with a National Lab?

10:18:10 From Kris Villez - ORNL to Everyone:

@Zach: I would make it explicit that novel technology can mean both novel process/system as well as novel systems for monitoring, operation, and control

10:19:57 From Jennifer Berrie, NREL/NAWI to Everyone:

Please consider joining the NAWI Alliance! It's free to join and connects you to a large number of water R&D orgs and people. The application to join the NAWI Alliance is here: <https://forms.gle/Xpf7EWeePJkmmAs17>

10:19:57 From Zach Stoll - NAWI to Everyone:

@kris, great suggestion - thank you!

10:22:53 From Zach Stoll - NAWI to Everyone:

@Megan, this is a very interesting point. @Brent Alspach has discussed the idea of a “Fundamental Element” with regards to piloting. In other words, what size system would you need, for a given unit process, to accurately represent full-scale treatment. For RO, this “Fundamental Element” might be a 4” element, maybe even 2 or 3 in series to accurately represent concentration polarization. A question to the community, is this a viable approach when thinking about minimum flows/pilots? Or is there a “better” way?

10:27:04 From Zach Stoll - NAWI to Everyone:

@Malynda, with respect to Dr. Peters question, are there other funding opportunities in USBR that have more of a specific focus on desal intakes?

10:27:14 From Malynda Cappelle-USBR to Everyone:

@Zach & @Megan, I think the fundamental element depends on what the final usage will be. If we are to look at small community systems, a 5 gpm system is full scale. If we're talking water for agriculture, we might be talking 100s of gpm being full scale. I think I am understanding what Megan was saying - the submitter must make a case for what is full scale for their application and how their unit is applicable.

10:27:53 From Malynda Cappelle-USBR to Everyone:

@Zach - I'm not aware of intake opportunities, but I'll check to see if I'm wrong. That might be a great idea for a pitch to pilot or something.

10:28:13 From Zach Stoll - NAWI to Everyone:

@Malynda, this is great clarification. I'll chat w Peter on this but so far it sounds like requiring a minimum flow might not be the best approach!!

10:29:42 From Zach Stoll - NAWI to Everyone:

@Gilbert, if you haven't connected with @Pei Xu yet from New Mexico State University and one of the Directors of the NM Produced Water Research Consortium, you should reach out to her!

10:33:41 From Christobel Ferguson (WRF) to Everyone:

Hi Zach - thanks for the shout out - we are actually evaluating a technology at the moment which is a software tool to assist with monitoring the quality of seawater intake water for desal plants.

10:35:02 From Malynda Cappelle-USBR to Everyone:

@Zach & @Dr Peter - there are two bullets in the last DWPR notice of funding opportunity (NOFO) about intakes:

1-Assess environmental impacts from desalination intake, concentrate management approaches, and reclaimed water.

2-Develop improved intake methods at coastal facilities to minimize impingement of larger organisms and entrainment of smaller ones.

10:35:27 From Marcus Griswold, CSIRO to Everyone:

Could you clarify that we need to respond to the RFI if we would like to response to the potential RFP?

10:35:42 From Marcus Griswold, CSIRO to Everyone:

*respond

10:36:40 From Zach Stoll - NAWI to Everyone:

@Marcus, this is a good question for the group! I'll ask Peter in a moment.

10:38:03 From Mike Waite Agua DB Ltd to Everyone:

With agriculture using >70% of abstracted water globally, mostly pretty inefficiently, surely there are massive gains in terms of resource efficiency by promoting efficient use of water in agriculture? Sounds like a plug for Netafim and similar businesses - but, there is an issue: where farmers invest in better irrigation technology, they'll grow higher value crops - and use even more water. There needs to be some mechanism to reward good water stewardship in ag.

10:38:08 From shahnawaz sinha (ASU) to Everyone:

Are you equally interested in desalination and water reuse? or, does one have more weight than the other?

10:38:52 From Marina Foster to Everyone:

Is there a template for the RFI or do we write our own paper?

10:39:24 From Katy Roodenko to Everyone:

Same question about RFI - where to find, how to submit (email?)

10:39:45 From Zach Stoll - NAWI to Everyone:

@Marina, there is a template on the RFI submission portal (called InfoReady) that you should download, fill out, and submit through InfoReady. There is a set of complete instructions within the RFI document. <https://nawi.infoready4.com>

Within this link, there are two documents:

1. The "NAWI Pilot Program RFI" contains all of the background information pertaining to NAWI's rationale/focus on piloting and has additional instructions regarding on how to submit an RFI response.

2. The “Request for Information (RFI) Response Template” is a separate document with only the RFI questions that should be fill out and submitted as a PDF in the InfoReady platform. Only this second document is what should be submitted.

10:45:36 From Zach Stoll - NAWI to Everyone:

@Shahnawaz, to directly answer your question, both reuse and desalination are focuses in NAWI but I don't think we have a “weight” to either of them. However, as Peter just mentioned, reuse needs to be in the context of desalination, as NAWI is a Desalination Hub. In terms of weighting, we are taking the approach of using the RFI responses to inform the RFP. So if (theoretically), we receive RFI responses than are over-weight in a certain area, it may be our prerogative to focus on this research area, or “weight” a research area. Without the RFI responses, it is too difficult to say how this will shake out. Please note that everything is still subject to change, including an RFP release.

10:49:05 From Malynda Cappelle-USBR to Everyone:

And, if you want PFAS & brackish water, the BGNDRF is the place to be.

10:51:26 From Zach Stoll - NAWI to Everyone:

@TJ, did we sufficiently address your question?