



Oregon Citizens' Utility Board

610 SW Broadway, Suite 400
Portland, OR 97205

(503) 227-1984
www.oregoncub.org

July 28, 2017

To: Mayor Ted Wheeler, Commissioner Chloe Eudaly, Commissioner Nick Fish, Commissioner Amanda Fritz, and Commissioner Dan Saltzman
Cc: Gabe Solmer, Portland Water Bureau (PWB)
Todd Lofgren, Office of Commissioner Nick Fish
Portland Utility Board (PUB) via Melissa Merrill
From: Janice Thompson, Oregon Citizens' Utility Board (CUB)
Re: CUB's resolution amendment to address Oregon Health Authority (OHA) revocation of *Cryptosporidium* treatment waiver

CUB recommends enactment of the attached amendment to the resolution proposed by PWB and Commissioner Fish for adoption on August 2. This memo outlines CUB's rationale for the attached amendment and concerns about the original resolution. Our resolution amendment could only be prepared after receipt of the proposed resolution. However, most of the topics in this memo have been discussed with PWB. CUB also met with Commissioner Fish and had additional conversations with his staff. CUB's invited testimony presented at a recent PUB meeting also included many of these ideas.

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Summary of CUB's Resolution Amendment

- Support filtration treatment. (See discussion of filtration advantages on pages 2-3.)
- Maintain UV treatment as a backup option.
- Council will work with PWB and utility oversight entities on a scoping review that will be the first step in filtration plant planning. After this scoping review, and no later than June 30, 2018, the Council will decide whether to proceed with filtration implementation or shift to the UV backup option.
 - This scoping review will be the first step in the detailed planning required for filtration plant implementation. It would not replace detailed project planning, nor does CUB request detailed planning by June 30, 2018.
 - PWB's current discussion of filtration cost parameters (see pages 4-6) is understandably general, but still provides a helpful delineation of the different features that would be included in a \$350-\$400 million filtration plant compared to a \$400 to \$500 million filtration facility. Using an analogy from healthcare insurance options, there are “bronze” filtration plants and “platinum” filtration plants. The intent of the scoping

review is for the PWB to provide more information on the pros and cons of a “bronze” versus “platinum” filtration plant. This will enable oversight entities and the City Council to provide important scoping guidance to PBW as a first step in detailed filtration project planning.

- This scoping period addresses significant concerns about the short timeline for making a UV versus filtration treatment approach by integrating it into the compliance agreement with OHA. CUB is not recommending a request to OHA for a delay in its current compliance agreement timeline.
- Includes key points from July 18, 2017 letter from Multnomah County Health Officer regarding public health risks and the acceptability of a longer implementation timeframe.
- Requires meaningful integration of City of Portland’s oversight entities into scope of filtration plant planning analysis by PWB, future City Council work sessions, and other deliberations on this issue.

Advantages of Filtration

Ultraviolet (UV) treatment of *Cryptosporidium* only addresses that regulatory requirement. Filtration has the following advantages over and above addressing the *Cryptosporidium* treatment requirement.

- Turbidity and curtailed use of Bull Run water
 - Eleven winter time turbidity events that shut down or curtailed use of Bull Run water have occurred in the last 30 years. PWB groundwater wells can provide 88 million gallons per day (MGD) for 30 days and 71 MGD for 90-151 days. This has been adequate to provide backup given the five year wintertime water use average of 84.8 MGD. Filtration treatment could reduce the need for groundwater backup. This bolsters system resiliency compared to UV treatment that does not address turbidity.
- Enhanced capacity to avoid unnecessary exposure to disinfection by-products linked to turbidity
 - Chlorine treatment (which would still be required regardless of whether filtration or UV treatment is selected) disinfects the water. However, disinfection byproducts, trihalomethanes (TTHM) and haloacetic acids (HAA5), can occur. EPA regulates these byproducts because they are similar to chemicals that promote the development of cancer. Turbidity adversely affects the ability to control TTHM and HAA5 levels, and this has been an occasional issue regarding current use of Bull Run water. That filtration addresses turbidity and bolsters the PWB’s ability to regulate TTHM and HAA5 disinfection by-products is another advantage over UV treatment.
 - Anticipating future regulation trends such as the possibility of water utilities needing to lower TTHM and HHA5 levels is an obvious challenge. However, if the EPA strengthened those regulations, it is possible that a UV treatment plant could become obsolete and require replacement by a filtration plant that addresses turbidity to enable improved control of TTHM and HHA5 disinfection byproducts
- Organics and sediment removal
 - PWB already faces challenges regarding system flushing. Filtration would reduce the amount of sediment that ends up in water system pipes and mitigate this issue.
- Fire risk
 - CUB continues to believe that inadequate attention is being given to fire risk, especially since a small but problematically located fire could disrupt water system operations. Nevertheless, CUB does agree with the PWB’s view that the capacity to address fire damage in the Bull Run watershed should not be considered a governing factor in selecting filtration over UV treatment. It does seem appropriate, however, to consider fire risk as a tipping point factor in support of filtration treatment over UV.

- Climate change
 - Climate change and warmer temperatures likely enhances fire risk in the Bull Run watershed. As noted, fire risk is a tipping point factor rather than a governing factor regarding filtration. Climate change, however, makes that tipping point tipsier.
 - Warmer temperatures could lead to warmer water and increased risk of toxic algae blooms. Filtration addresses algae while UV treatment does not.
 - Climate change may increase the frequency and intensity of winter storms, which could increase the number of turbidity events.

Of course no treatment, including filtration, is perfect. For example, it is possible for filtration plants to overload under atypical turbidity conditions. However, this is uncommon as illustrated by the overload at a Washington state filtration plant after the Mt. St. Helens eruption. Filtration plants can be cleaned and returned to service after such events.

Because Bull Run water is currently unfiltered, the federal Surface Water Treatment Rule and Oregon Administrative Rules require a set of control programs and an annual report. Though construction of a filtration plant would remove this regulatory requirement, that does not mean PWB should end its current watershed protection activities. CUB does not believe that PWB intends to change their protection efforts and there are also environmental regulations regarding fish habitat protections that require watershed protection. Nevertheless, CUB would support City Council action, if deemed necessary, to ensure continuation of current watershed protections.

The bottom line is that there are significantly more advantages to filtration compared to UV treatment beyond the regulatory driver of *Cryptosporidium* treatment. The increased benefits of filtration compared to UV also appear to dovetail with Mayor Wheeler’s stated interest in placing a high priority on robust and future-oriented infrastructure investments.

Public Health Concerns Don’t Require a Five Year Implementation Timeline

Implementation of UV treatment will take five years while implementation of filtration is expected to take ten to twelve years. CUB believes that choosing UV treatment rather than filtration treatment should not be driven by UV’s shorter implementation timeline. Our rationale for this belief is based on the following:

- The implementation schedule outlined in the LT2 rule when it was adopted in January 2006 included a compliance timeline of up to eight years. This compliance timeline included water testing requirements but no other interim mitigation steps. Of course, it is impossible to know, but it seems that a ten to twelve year implementation timeline for PWB to build a filtration plant could have passed muster with regulators after 2006 given the pristine nature of the Bull Run watershed. After all, OHA agreed to the *Cryptosporidium* treatment variance. To be clear, CUB doesn’t think that seeking the *Cryptosporidium* treatment variance was inappropriate; rather this historical review is presented here as a rebuttal to thinking that a five year implementation timeline is essential.
- The July 18, 2017 letter from the Multnomah County Health Officer, Dr. Paul Lewis states:
 - There was “no change in the expected number of [*Cryptosporidium*] illnesses that began in January, February and March [2017] compared to previous years.”
 - “We believe that the on-going risk of illness remains low and consequently, the specific timeframe for the [treatment] upgrade should not be a major factor in the decision. More specifically, we do not anticipate any health benefit from the shorter timeframe for installing ultraviolet versus filtration.”

Filtration Costs – Scoping Review as First Step in Detailed Planning

Baseline is not \$0

The baseline cost is not \$0 because a treatment step is required. Rather, the appropriate baseline cost is an “unbuilt” UV facility, which (depending on how other Headworks improvements are factored into cost estimates) is between \$88 million and \$105 million. In other words, a \$350 million filtration plant costs approximately \$250 million more than a UV plant. That is still a lot of money, but not spending approximately \$100 million on a UV plant, in effect, provides a significant portion of the cost for a filtration plant.

Monthly rate impact of \$350 million cost estimate

CUB was disappointed that PWB did not honor our request to provide rate impact information for a \$350 million filtration plant. To only complete a rate impact analysis for a best case/\$350 million filtration plant would have been inappropriate. However, only providing rate impact analysis for the worst case/\$500 million filtration plant also skews the debate.

Nevertheless, some sense of the rate impact difference between a “bronze” and “platinum” filtration plant is that the \$350 million cost estimate is 70% of a \$500 million cost estimate. Assuming that the monthly bill projections for a \$350 million plant are 70% of the monthly bill estimates for a \$500 million plant, CUB offers the following increase in monthly bills comparison:

Year	\$350 Million Estimate	\$500 Million Estimate
2019	\$0.57	\$0.82
2020	\$1.23	\$1.75
2021	\$1.97	\$2.81
2022	\$2.82	\$4.03
2023	\$3.78	\$5.40
2024	\$4.86	\$6.94
2025	\$6.07	\$8.67
2026	\$7.43	\$10.61
2027	\$8.79	\$12.55
2028	\$10.28	\$14.69
2029	\$11.94	\$17.05
2030	\$12.70	\$18.14
2031	\$11.89	\$16.99
2032	\$10.98	\$15.69
2033	\$10.67	\$15.24
2034	\$10.25	\$14.64

Obviously, PWB will correct this comparison method if it is incorrect. This comparison doesn’t have the visual impact of the PWB handouts, but it still provides a glimpse into the monthly bill impact differences between a \$350 million and \$500 million filtration plant. Monthly bills will increase under either scenario. Selecting a “bronze” rather than “platinum” filtration plant, if appropriate given water system needs, will mitigate rate impacts. This is why CUB’s resolution amendment includes a scoping review as the first step in detailed filtration facility planning to ensure early and adequate discussion of all the components of these options.

PWB on filtration cost parameters

The following information was provided by PWB regarding filtration cost estimates:

The drivers for cost for filtration will be the size of the treatment plant, the treatment processes utilized and the timing of the construction. As an example, I [PWB respondent] will run through a scenario to provide some context for the impact of each of these elements, this is an example only.

If the Water Bureau was asked to plan, design and construct a filtration plant starting today, it would be about 10-12 years before that facility would come online. A \$350-\$400M filtration facility would allow the Water Bureau to meet the LT2 Rule and provide some additional benefits (turbidity protection, organics removal,

disinfection by-products reduction, etc.). The facility would be sized to meet today's current demands (not potentially larger future demands or the full capacity of the conduits) by gravity flow.

With a \$400-\$500M filtration facility, the bureau would have more choices in regards to size and treatment technology. There may be benefit to sizing the facility to match the capacity of the conduits. This would likely require a pump station to meet demand at certain times of the year. There could be consideration of alternate filtration medias such as membranes or activated carbon. There could be consideration given to more advanced solids handling to make disposal more efficient (spreading versus mechanical drying). The amount that you spend between \$400M and \$500M would be determined based on prioritization of these types of options.

Finally, timing plays into this. If we wait 20 years to start the planning and design of these facilities the cost of any filtration facility will likely cost more.

CUB understands that a full cost analysis of all the options described requires a detailed planning process that could take up to two years. However, using a construction management/general contractor approach could possibly shorten that timeline. Even under that scenario, however, we know that detailed planning won't be completed, nor do we expect that level of analysis during CUB's suggested review period that ends June 30, 2018.

CUB wants PWB, with oversight from both CUB and PUB and regular consultation with the City Council, to provide background on the different options described above to inform discussion of the scope of a filtration plant as the first step in detailed project planning. PWB's summary is understandably general at this time, but does highlight the "bronze" versus "platinum" filtration plant choices. These options require more discussion in order to provide PWB additional guidance when moving from this initial scoping step into detailed project planning. To be clear, this scoping review does not replace the required project planning, but would be the first step in that process. This is the rationale behind the provision in CUB's resolution amendment for a scoping period that would end no later than June 30, 2018.

As this memo indicates, CUB sees significant advantages to filtration over UV, but the higher cost of filtration is a definite concern. After the review period proposed in CUB's resolution amendment that ensures more discussion around "bronze" versus "platinum" filtration plant options, CUB would use this improved information in making a recommendation next spring as to whether the City Council should proceed with filtration or shift to the UV treatment backup option.

CUB will provide additional suggestions during the scoping period, but the following bullet points summarize our initial thoughts on size considerations that need to be factored into the scope of filtration planning discussions.

- Consider the following factors regarding size options for a facilitation plant:
 - Average wintertime water use demand, which is 84.8 MGD over the last five years
 - Average summertime water use demand, which is 122.8 MGD over the last five years
 - Conduit capacity, which is 205 MGD
- Include groundwater backup capacity
- Consult with wholesale customers regarding their water demand projections
- Exercise caution when projecting water demand increases for the following reasons:
 - Water demand is declining across the country and this trend includes Portland.
 - Retail demand for PWB water has decreased from 28.9 million CCF in FY 2006-07 to 24.6 million CCF in FY 2016-07.
 - PWB retail demand projections since FY 2006-07 were consistently higher than actual retail water use until FY 2015-16.

- FY 2016-17 retail water use of 24.6 million CCF is the lowest since FY 2006-07 when record keeping enabled tracking this information. It seems worth noting that this level of water use occurred during a period marked by development growth.

UV Hybrid – Doesn't Meet Mayor's Objective

At the June 27 Council work session, Mayor Ted Wheeler made comments regarding a hybrid option where major renovations required for a UV plant in 25 to 30 years would be avoided by building a filtration facility that would begin operation at that time. CUB's understanding is that the Mayor wanted to know if there were re-use options for the UV plant or if the UV plant included elements that could be used or facilitate future construction of a filtration plant. CUB does not believe that PWB has made a compelling argument regarding re-use options for a UV plant at the Headworks site in the Bull Run Watershed. The possibility of using a UV treatment building for ozone pre-treatment was mentioned to me, but this option wasn't cited in a written response to a CUB request for details on possible re-use.

CUB suggested to PWB and PUB that the Mayor's interest in a UV plant serving as a significant steppingstone to a future filtration facility is better addressed by siting a UV plant in the Lusted Hill area. Our rationale is that a future filtration plant at Lusted Hill requires moving conduits, and this step would need to occur if a UV plant was built at this location. Obviously this would increase the cost of the UV plant, but the conduit work meets the capital improvement criterion that triggers financial payments by wholesale customers. Those payments only begin when the construction project is completed; before then the financial support only comes from Portland water customers.

In other words, complete the conduit work required for a filtration facility earlier by building the UV plant at Lusted Hill. For example, if the conduit work represented \$100 million of a \$400 million filtration plant, then wholesale customers would begin their financial support for the \$100 million conduit effort upon completion of a UV system at Lusted Hill followed by their financial support for the remaining \$300 million upon completion of the filtration plant. To be clear, these are not actual dollar figures, and are only used here to illustrate how a UV system at Lusted Hill would trigger earlier payment from wholesale customers for a major component of a future filtration plant. The PWB annual water/sewer combined rate increases handout showing significant drops in residential rate increases when financial contributions from wholesalers begin illustrates the significance of this step.

That said, moving UV to Lusted Hill requires more time and additional costs since current UV plans and permits are for the Headworks site. That dynamic leads CUB to think that moving forward with a filtration plant is a better option. However, more information from PWB on UV at Lusted Hill costs would be required for CUB to make a definitive statement on this point.

CUB's conclusion regarding UV at Headworks, however, is that we do not view it as a meaningful steppingstone towards a future filtration. Therefore, it does not seem to meet what we understand to be Mayor Wheeler's objective in proposing a UV hybrid or UV plus approach.

Troubling Cost Burden Shift in Rate Stabilization Sub Account Approach

Collecting money from current ratepayers to pay for a future filtration plant is another element of the hybrid UV plus proposal linked to Mayor Wheeler's June 27 work session comments. The proposed resolution, though, calls for a sub account in PWB's Rate Stabilization Account to be used for a filtration plant or for rate stabilization. Using these dollars for rate stabilization, however, could be linked to the City Council directing PWB to build other projects rather than a filtration plant, a dynamic that may not be widely understood by the public.

CUB is concerned that this approach places an inappropriate cost burden on current customers for a benefit that will primarily be realized by future customers. For example, private utilities cannot charge customers for investments that are not “presently used.” Instead, shareholders prefund those investments with compensation by earning a regulated rate of return on those investments. Once these private utility investments are “used and useful”, then customers begin to contribute for those expenses in their rates.

Municipal utilities, however, don’t have shareholders, so they are allowed to charge customers via rates before capital investments in major construction projects are “used and useful.” This dynamic does mean that payments from current customers may well benefit future public utility customers. Nevertheless, the timeframe between the onset of including project construction costs into rates and completion of that project is clearly defined and shorter than the timeline contemplated for construction of a future filtration plant.

All possible legal safeguards will be taken in the hybrid proposal to ensure that a future City Council carries out the wishes of the current Council. But these safeguards are not bulletproof, and CUB is concerned that a future City Council could raid the proposed subaccount for another PWB project. Indeed, because subaccount dollars could also be used for rate stabilization there is no assurance that any future filtration project would be built with these dollars collected from current customers.

CUB understands the appeal of saving now for major future projects. However, CUB is troubled by the long timeframe between collecting money from current customers and completion of that major future project as well as inadequate assurances that the future filtration plant would ever be built. While legal, this approach does not seem consistent with best utility financing practices in either the private or public sector. For this reason, this approach is not included in CUB’s resolution amendment.

Affordability

Affordability of water and wastewater bills is one element of affordable housing. Too many customers have trouble paying their bills and raising public utility rates adds to that burden. Therefore, it is important to look at the value of investments paid for with the rate hike. Given that either UV or filtration treatment options will cost money, CUB knows that rates will go up. We also know that filtration provides more benefits to the water system, albeit at a higher cost than UV treatment. The question then is whether the higher rate impact of filtration is just too much, and the less comprehensive but cheaper UV treatment option should be selected because it is more affordable. This is why CUB’s resolution amendment requires a scoping period to assess the pros and cons of a “bronze” versus a “platinum” filtration plant in terms of the scope of filtration plant planning. This is also why CUB’s resolution amendment retains UV as a backup option and sets a June 30, 2018 deadline for City Council – with future CUB input – to decide whether to proceed with filtration implementation or shift to the less expensive UV option.

Since rates will increase under either UV or filtration treatment scenarios, however, it is important for Portland to continue its programs to help struggling customers manage higher public utility bills.

Monthly billing is an option that allows customers to better manage their household finances compared to receiving larger quarterly bills. Currently, 12.42% of customers with quarterly accounts – which is the vast majority of residential customers – have opted to receive bills on a monthly basis, although 6.07% of this group (10,812 accounts) were “budget billing” customers or customers who opted for monthly bills when the e-billing switch was required. PWB removed the e-billing requirement in late 2014 with a publicity push in 2015 and subsequent outreach. Nevertheless, between that time and July 2017, only an additional 6.35% (11,297 accounts) requested the monthly billing option. More outreach is appropriate

to boost participation in the monthly billing option since it has multiple benefits. Such outreach needs to be ongoing, but additional efforts when rate increases occur lets customers know that monthly billing is an option to help manage household expenses.

Portland also has one of the most robust and generous low-income discount programs in the country. CUB has fully supported the actions taken to facilitate ongoing use of the low-income discount program by those with fixed incomes. Steps have also been taken to facilitate use of this program by those in subsidized housing.

The most challenging discount program issue, however, is that it isn't available to low-income Portlanders who don't receive a public utility bill at their address. This is the situation facing many low-income renters in market rate housing. In other words, many of those with the greatest need for a water/sewer rate discount aren't eligible. However, this is a challenge for all public utilities and thus far, CUB has not identified any other municipal utility that has found a solution. CUB believes that this public utility discount challenge underscores the need for the City of Portland to continue and expand its current efforts to address the housing crisis. The unfortunate reality is that low-income public utility discounts, though important, will never be adequate to address the significant housing cost burden faced by too many Portlanders.

Work with Wholesale Customers

Wholesale customers are significant PWB partners who should be more explicitly consulted in the kinds of decisions discussed in this memo. Improved consultation with wholesale customers should be a priority at all times, but particularly during CUB's proposed review period between now and June 30, 2018 regarding the scope of filtration treatment planning.

City Council Process Concerns and Request

CUB shares the concerns of others about the short timelines imposed by OHA. This is why our resolution amendment includes a scoping review as a first step in detailed filtration project planning as part of the OHA compliance agreement.

However, CUB is even more troubled by the City Council process. The Blue Ribbon Commission, convened to improve City Council oversight of Portland's public utilities, recommended that the Council take steps beyond what can be included in City ordinance to ensure robust and timely oversight entity input. This is why PUB and CUB participate in public utility budget work sessions.

CUB was disappointed that Council did not take steps to facilitate more meaningful input from CUB or PUB in the June 27 work session on this issue.

To have only one City Council public hearing is also troubling given the scope of the required investment and history of interest in this topic. It is great that the PUB has been a forum for public comment, but that does not replace public testimony to the decision makers – the City Council.

This memo and resolution amendment reflects CUB's attempt to provide meaningful input to the City Council and an alternative approach to the one proposed by PWB and Commissioner Fish. However, we are gravely concerned that the timeline to act on CUB's resolution amendment at an August 2 public hearing before an August 11 deadline, is inappropriately challenging. Nevertheless, CUB urges careful consideration of this memo and our resolution amendment even if it requires action at a City Council session during the week of August 7.