UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Utah Board of Water Resources,	)
Lake Powell Pipeline Project	) P-12966-001
	)

LAKE POWELL PIPELINE COALITION'S COMMENTS ON THE PRELIMINARY LICENSING PROPOSAL AND DRAFT STUDY REPORTS

Pursuant to 18 C.F.R. §5.16, the Lake Powell Pipeline Coalition ("the Coalition") hereby comments on the Utah Board of Water Resources' Division of Water Resources' ("UBWR") Preliminary Licensing Proposal ("PLP") and revised draft study reports for the Lake Powell Pipeline Project ("Project"), eLibrary no. 20151202-0046 (Dec. 1, 2015).

The Coalition consists of: Citizens for Dixie's Future, Glen Canyon Institute, Grand Canyon Wildlands Council, Living Rivers - Colorado Riverkeeper, Utah Chapter Sierra Club, Grand Canyon Chapter Sierra Club, Save The Colorado and Utah Rivers Council. The descriptions and interests of member groups are stated in our Scoping Document (SD1) Comments.[1]

These comments raise concerns related to the adequacy of the information included in the PLP, including the Study Reports, to serve as the basis for the Federal Energy Regulatory Commission's (FERC or Commission's) environmental review under the National Environmental Policy Act (NEPA) and ultimate licensing decision under the Federal Power Act (FPA).

Based on our review of the PLP, the Coalition is concerned that the Project as proposed is legally and hydrologically infeasible. For example, the PLP does not adequately address the following issues:

- Whether the Project is needed to meet existing or forecasted demand;
- Whether UBWR has sufficient water rights under the Law of the River to effectively operate the Project over the term of license. Utah's Colorado River Compact rights are only a percentage of water left after senior water rights of the Lower Basin Compact obligations have been met.
- Whether the proposal to divert water from Lake Powell is in accordance with the Law of the River. According to the Colorado River Compact Utah's Upper Basin water rights cannot be used in the Lower Basin where the Project is located.

[1] e-Library no. 20080707-5206 (July 7, 2008).

- Whether, and if so to what extent, reasonably foreseeable climate change scenarios will limit the availability of water for Project uses. UBWR incorrectly claims that it can divert water in dire conditions, and that, therefore, it does not have a responsibility to address the risk of climate change.
- Whether UBWR has sufficient resources to construct, operate, and maintain a project of this scale for the term of any new license.

For ease of reference, to the extent possible, our comments track the title and outline number in these documents for each section where we have a comment. We underline our issues of concern for emphasis. The quotations from the Study Plan and Study Report are in italics.

I.
COMMENTS ON THE PRELIMINARY LICENSING PROPOSAL

According to the Commission's regulations, a preliminary licensing proposal must:

> (1) Clearly describe, as applicable, the existing and proposed project facilities, including project lands and waters;
> (2) Clearly describe, as applicable, the existing and proposed project operation and maintenance plan, to include measures for protection, mitigation, and enhancement measures with respect to each resource affected by the project proposal; and
> (3) Include the potential applicant's draft environmental analysis by resource area of the continuing and incremental impacts, if any, of its preliminary licensing proposal, including the results of its studies conducted under the approved study plan.[2]

We are concerned the PLP is incomplete, includes major errors, and includes many unsubstantiated claims that do not comply with these requirements, as described below.

A. The PLP Does Not Provide Complete Information on Project Facilities and Operation.

The PLP does not provide information on the impact of low reservoir levels on power production and its implications if UBWR cannot operate the Project in drought or other low-inflow conditions.

The PLP also lacks information on capacity and generation of power from the pump storage project and the estimated power that would be needed for pumping from Lake Powell and what this power production will cost.

[2] 18 C.F.R. § 5.16(b).

The PLP does not include the timing for completion of transmission upgrades to provide power to the pumps and for upgrades required to the Glen Canyon switchyard. Further, how much will local utility rates have to be raised to pay for the required transmission improvements for the Project? For example, Page Electric's cost in 2009 was estimated to be seven million dollars and Garkane Power's cost was 40 million dollars.

B. The PLP Does Not Provide Accurate Descriptions of the Proposed Action and Action Alternatives

The PLP Section 3.5 No Lake Powell Water Alternative

The PLP describes the No LPP Alternative as follows:

> *"The No Lake Powell Water Alternative would involve a combination of developing remaining available surface water and groundwater supplies, developing reverse osmosis treatment of existing low-quality water supplies, and eliminating residential outdoor potable water use as a conservation measure in the (Washington County Water Conservancy District) WCWCD service area. This alternative could provide a total of 86,249 acre-feet of water annually to WCWCD and KCWCD for (Municipal and Industrial) M&I use without diverting Utah's un-allocated water rights from Lake Powell."* [3]

Comment

UBRW continues to a make a major error in its description of the No LPP Alternative. Therefore, the analysis throughout the PLP is erroneous. If the Project was not built, there would be no need to eliminate residential outdoor water use because UBWR only uses 17,219 AF of culinary water in the No LPP Alternative. Therefore, outdoor potable water use is not eliminated. We discuss this error in detail in our comments on Study Report No. 22 below.

Also, the Study Report does not identify all the remaining existing water supplies. There are still abundant existing water supplies not identified by UBWR that could be developed if the Project was not built. We discuss available water supplies below in our comments in Study Report No. 19 Water Needs Assessment.

The PLP Section 3.5.1.1. Background

The PLP states:

> *"These future water supplies are all part of the 72,362 acre-feet per year that would be developed by 2025. The same amount of water comprises the 2052*

[3] PLP, p. 3-127, (emphasis added).

potable water supply, indicating Washington County would have no new water supplies after 2025".[4]

Comment

The information the Coalition provided in our comments does not demonstrate that the County will run out of water by 2025 in the No LPP Alternative. As discussed in our detailed comments on Study Report No. 19, Water Needs Assessment below. If the water use and water supplies were validated as the State Auditor General recommended there is ample water for growth under the No LPP Alternative.

The PLP Section 3.5.1.2 WCWCD No Lake Powell Water Alternative Features

The PLP describes the impacts of the No LPP Alternative on Washington County as follows:

"*[b]eginning in 2025, Washington County residential outdoor potable water use would be permanently re-purposed to indoor potable water use to help meet increasing indoor potable water demands.*"[5]

Comment

UBWR makes the same error in its conclusion that outdoor potable water use would be eliminated under the No LPP Alternative. It is not supported by evidence in the record. This alternative only requires 17,219 (AF) of culinary water and the County will have 98,727 (AF) of water by 2060. As explained in our comments on Study Report No. 22 Water Needs Assessment below, outdoor watering of potable water would continue under the No LPP Alternative.

The PLP Section 3.5.1.2.1 Re-Purposing Potable Water Use

The PLP claims that the No LPP Alternative would drastically alter outdoor use of potable water:

"The No Lake Powell Water Alternative would permanently eliminate residential outdoor potable water use in Washington County, re-purposing the portion of potable water used for residential outdoor watering to indoor potable use. Projections of future water use through 2060 account for population growth, climate change (projected 6 percent reduction of Virgin River flows by 2050), water conservation (35 percent reduction in per capita water use from 2000 to 2060), and a water planning reserve (10 percent) to avoid utilizing all available

[4] PLP, p. 3-128, (emphasis added).
[5] PLP, p. 3-128, (emphasis added).

water supplies in meeting demands. Potable water in Washington County is consumed for residential indoor and outdoor uses, commercial uses, institutional uses, and industrial uses. These potable water uses would total 130,245 acre-feet per year by 2052, which would be equal to the potable water demand. Gradually eliminating residential outdoor potable water use starting in 2025 would provide the growing population with potable water for indoor use through 2045; however, re-purposing residential outdoor potable water use to indoor use would not increase the water supply and would have to be accompanied by adding another water supply to meet the growing demand. By 2045, all potable water would be used for indoor purposes, including residential indoor, commercial, institutional and industrial use. Re-purposing residential outdoor potable water use to indoor potable use would require converting traditional."[6]

Comment

UBWR's statements continue to misinterpret Study Plan No. 22. UBWR's No LPP Alternative should only replace 86,264 acre-feet (AF) of water. UBWR's No LPP Alternative includes only 17,219 (AF) of culinary water with 68,076 (AF) of water treated by reverse osmosis. Therefore, not all culinary water in the county is re-purposed to indoor use. Consequently, this error is repeated throughout the PLP. The Commission Staff should assure the information is accurate. This inaccurate information must be deleted from the PLP.

C. The PLP Does Not Address the Cumulative Effects of the Project and Climate Change on the Affected Environment

The PLP does not accurately characterize the cumulative impacts of climate change on the Project and on the affected environment over the term of the license. Contrary to the approved Study Plan, all the models used by UBWR do not consider climate impacts on water availability for the Project. UBWR used the Colorado River Simulation System (CRSS) flow model for the analysis of climate change on the Project, which is unaffected by climate change. UBWR used the Direct Natural Flow, Index Sequential Model (DNF) that does not consider climate change. Also, UBWR used the Climate Change Inflow Hydrology (CC) model that held Upper Basin depletions to 2015 levels. Further, UBWR did not apply the results of the best available science information from a Downscaled General Circulation Model (GCM), which is a climate model to analyze water availability for the Project. In particular, the PLP does not describe the extent to which predicted increases in temperature will lead to increased evaporation of water stored in Lake Powell.

More importantly, UBWR must prove it can divert water in drought and other low-flow conditions. As the flow of the Colorado River diminishes UBWR's junior water rights will subordinate to the rights of senior water rights holders. If a drier climate is considered the

[6] PLP, p. 3-128, (emphasis added).

cumulative effects of the Project will be different in the analysis of the affected environment. We explain the reasons in greater detail in our comments in Study Report No. 19 Climate Change below.

D. The PLP Does Not Provide Adequate Environmental Analysis of the Environmental Impacts of the Project and Alternatives

UBWR's claim that it can always divert water at the end of river system is unsubstantiated. Therefore, UBWR cannot assure an adequate environmental analysis of the impacts of the Project. The PLP must consider the probability of reduced flows of the Colorado River over the term of the license, but it does not. We address this issue in more detail below in our comments on Study Report No. 19 Climate Change below.

The PLP Section 5.3.1.4.4. Unavoidable Adverse Effects of the No Lake Powell Water Alternative

The PLP states:

> *"The No Lake Powell Water Alternative would have long-term unavoidable adverse effects on soil resources in the St. George metropolitan area. Soils would no longer be irrigated with potable water and would transition to either unvegetated conditions or support only desert vegetation, and the soil resources would be susceptible to erosion from wind and precipitation events."*[7]

Comment

The PLP does not provide a factual basis to support this claim and it should be deleted from the PLP. We describe the error above in Section 3.5.1.2.1 Re-Purposing Potable Water Use.

The PLP Section 5.3.2.5 Unavoidable Adverse Effects

The PLP states:

> *"The No Lake Powell Water Alternative would have unavoidable adverse effects and unavoidable adverse long-term cumulative effects on water supply in the St. George metropolitan area. The unavoidable adverse effects would result from hardening the water supply to the point there would be no water system supply buffer from drought conditions, low stream flows, low reservoir storage and other water supply limitations. All potable water would have to be used to meet indoor water demands, and no outdoor water use of potable water would be allowed."*[8]

[7] PLP, p. 5-81, (emphasis added).
[8] PLP, p. 5-96, (emphasis added).

Comment

The PLP does not provide sufficient information to support this conclusion. We describe the error above in Section 3.5.1.2.1 Re-Purposing Potable Water Use. These Unavoidable Adverse Effects should be deleted from the PLP.

The PLP Section 2.3.1 Economic Analysis

The PLP states:

> *"It is an annualized analysis of the costs and revenues to the licensee under the existing license and the proposed new license. This section estimates costs for: any construction, operation and maintenance of the project facilities; property and income taxes; each proposed environmental measure; and any such measure proposed by a participant and rejected by the licensee. Costs include: out-of-pocket payments, as well as foregone revenues associated with alternative flow schedules and other operational restrictions. Revenues include: proceeds from sale of capacity and generation in the electricity markets, as well as miscellaneous revenues associated with recreational and other uses of project facilities."*[9]

Comment

The PLP does not include the actual analysis of costs and revenues referenced above and are incomplete. This data should be available to Commission Staff and stakeholders so they independently can verify the analysis.

In addition, UBWR has not demonstrated it has the funding necessary to build the pump storage project. Despite this, it is used in the benefit/cost analysis of the Project to show more benefit than cost. We explain how the PLP does not include complete information on the Project in our comments in Study Report No.10 below.

Most importantly, the PLP was released Dec.1, 2015 for public comment. Then UBWR submitted a letter to FERC Dec. 18, 2015 which changed the cost of the Project. The pump storage project's cost decreased significantly from a range of $2.6 billion-$3.2 billion to $1.5 billion-$1.8 billion. Therefore, the lower cost estimate makes the economic analysis in Study Report No.10 erroneous. In addition, the costs of the project have not been released yet which makes a creditable cost/benefit analysis impossible.

[9] Content requirements for Exhibit E of the license application (18 C.F.R. § 5.18[b]) (emphasis added).

II.
SPECIFIC COMMENTS ON REVISED DRAFT STUDY REPORTS

A. Revised Draft Socioeconomics Water Resource Economics Study Report No.10 (*Modified*)

In Scoping Document 2, the Commission stated that scoping was intended to serve as a guide to issues and alternatives to be addressed in the Environmental Impact Statement (EIS). The public expressed concerns in the scoping process that should be addressed in the EIS.

> "As shown in both the transcripts of the scoping meetings and in Appendix A, many individuals have provided either oral or written scoping comments, or both, concerning the Lake Powell Pipeline proposal. Many of the public comments express similar concerns or issues:
>
> - The estimated cost of the pipeline is increasing and little is known about how the final cost of the pipeline will affect fees and the taxes and rates paid by water users."[10]

Comment

UBWR has not answered the question of what fees, taxes and rates will have to increase to pay for the Project in the PLP. The Commission Staff must assure this issue be address in the PLP.

Also, UBWR has not included FERC's requests from 2011 commenting process. They include:

[10] "Scoping of Environmental Issues for the proposed Lake Powell Pipeline Project," eLibrary no. 20080821-3005 (Aug. 21, 2008), p.7.

Figure 1. FERC Questions and UDWR Responses[11]

FERC comment	DWR response	Current study report 2015
FERC C20: Preliminary Opinion of Probable Capital Costs (MWH 2009) should be included as an appendix to the study rpt and construction, O, and M costs clearly stated in the body of the rpt for proposed project and each alternative.(Refer to July 2011 doc for more details.)	Final study rpt will include these revisions.	Still not included
FERC C21: Chapter 5 should be corrected in the final report to include pumped storage development in analysis of project and analysis of pumped storage effects on proposed project's economic benefits presented separately. p. 89	Final study rpt will include revisions.	Still not included
FERC C26: Ch 5 draft study rpt NED analysis tables 5-1 thru 5-4 need descriptions of each b/c line items to help reader understand methods and assumptions. P. 89	Final study rpt will include these revisions.	Still not understandable and is the same as 2011 study report
FERC C29: Draft study rpt lacks project financing and cost allocations to Districts and lacks user costs. Need current user costs and evaluation of increased user costs associated with project financing. P. 90	Final study rpt will include these revisions.	Still not included

Section 10.2.1 Primary Goals and Objectives

- *"Provide a clear picture of Project economic benefits and costs*
- *A comparison to Project alternatives*
- *Determine the cost-effectiveness of the Project, and compare the relative costs of new water supplies for the alternative configurations; describe the costs and cost-effectiveness of the baseline condition.*

[11] *Draft Study Report 10: Socioeconomics and Water Resource Economics, Attachment B*. Lake Powell Pipeline Project, July, 2011 eLibrary 20110728-4143, 7-28-2011, ILP UBWR Responses to Draft Study Reports comments, (emphasis added).

- *Determine Project (and alternatives) marginal costs and cost allocations to the Water Conservancy Districts."*[12]

Comment

UBWR did not provide these goals and objectives in the Study Report. UBWR must provide the plan to finance the Project and show its ability to implement the plan together with a repayment schedule. We do not believe that the Commission Staff can complete a valid cost/benefit analysis on the conflicting incorrect data provided by UBWR to date. We are also very concerned that UBWR has not disclosed its cost/benefit analysis to the ratepayers who will be responsible for paying for this billion dollar water project.

Section 10.3 Agency Resource Management Goals

- *"Confirm the supply and cost-effectiveness of the Project and alternatives.*
- *Ensure Project consistency with regional planning efforts.*
- *Determine the marginal costs of water and water delivery.*
- *In terms of new supply options and marginal costs, consider the general economic impacts to the Districts and to the state; clarify the likely fiscal impacts.*
- *Identify the net economic impacts associated with the loss of power generation at Glen Canyon Dam; including any fiscal impacts to the regional power system (CRSP power rates).*
- *Impact estimates will cover any power losses at the power plant from energy/peaking.*
- *Power losses and the costs of replacement power.*
- *Impact estimates will be determined for water system pumping and distribution.*
- *Identify whether regional acceptance or rejection of new water supplies from Colorado River is an issue of public concern.*
- *Provide an accounting of the state's Colorado River water rights allocation assigned to the Project; determine whether the state perceives other allocation (water right use) options separate from the Project."*[13]

Comment

UBWR did not address the issues required by the approved Study Plan, as listed above. Consequently, UBWR varied from the specific requirements of the approved Study Plan. We request that the Commission direct UBWR to file a supplemental report that addresses these issues.

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[12] Socioeconomics Water Resource Economics Study Plan, p.78, (emphasis added).

[13] Study Plan, p. 79, (emphasis added).

Section 10.4.3 Issues and Data Needs

- *"Availability and costs of new electric power supplies directly related to Project operations; and power supply forecasts for the region under different growth scenarios—integration with NED analyses.*
- *Cost allocations among existing and new water users; including the likely impacts of user costs under different development timing phases—who pays and when.*
- *Potential fiscal impacts on the State of Utah for funding (bonding) the Project; changes to costs of capital for the state or affect on capital allocation to other major state infrastructure projects.*
- *An accounting of the State's Colorado River water rights allocated to the Project; any potential water right impairment issues*
- *Reviewing existing marginal cost data for West-wide water resources projects, including conservation costs."*[14]

Comment

UBWR did not address the issues required by the approved Study Plan, as listed above. Commission Staff should direct UBWR to supplement the Study Report with this information prior to proceeding with EIS preparation.

ES-1.1.1 NED or State Direct Economic Impacts Perspective

> *"Overall, the LPP Project displays greater benefits than costs given the complex set of economic variables and assumptions under consideration. Depending on economic perspectives and assumptions, the LPP Project direct net benefits range from about $1.8 to $2.7 billion, and the LPP Project costs range from about $1.8 to $2.7 billion (2010$, present value). The cost and benefit ranges are exactly the same."*[15]

Comment

We do not understand how UBWR can simultaneously claim benefits greater than costs when the costs and benefit ranges are exactly the same. We request that Commission Staff direct UBWR to provide further explanation. The NED analysis is not understandable. It lacks the evaluation of the willingness of residents to pay for the increase of goods and services attributable to the higher fees they will have to pay for this water project. For instance, water fees will have to be raised in St. George City to pay for the Project's water. According to their web page the cost of water per 1000 gals over 5000-10,000 gals is $0.78.

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[14] Study Plan, p. 82, (emphasis added).

[15] State Direct Economic Impacts Perspectives (ES-1.1.1 NED), p. ES-2, (emphasis added).

In Study Report No.10, on chart 5-172 B, it states that 1,000 gallons of water from the Project will cost $3.34. Therefore, water rates will have to increase by four fold to cover the increase in cost of 1000 gallons of water. As water rates go up people will use less water and this should be included in the analysis. Other rates will go up as well for instance; the City of St. George monthly base rate for water is $24.72 for 5000 gallons. If the city has to pay $3.42 per 1000 gallons, then the city will lose funds to pay for water service expenses. Presently cities have minimal costs for water. However, at a rate of $3.34 per 1000 gallons for the Project's water, 5000 gallons would cost $16.70. Consequently, the city will lose $16.70 from their base rate to pay for their increased cost of water. Then the city will have to raise rates as well to have enough operating revenue in their water fund. Commission Staff should direct UBWR to disclose these impacts to ratepayers in a supplement to this Study Report.

Additionally, the NED analysis does not include the (1) time horizon for project benefits; nor (2) the annual pumping costs; (3) or the deferred installation costs, or (4) the cost of pumping structure; or the cost of new transmission lines and improvements at the Glen Canyon Switch yard. Most importantly, there is no Risk Analysis. The primary risk is a measure of probability of undesirable consequences, since the 1957 water right that UBWR intends to use for the Project is a junior water right and is at risk of being subordinated to senior water rights holders as the Colorado River flows are diminished over the term of license.

Also, the Commission Staff commented on the Study Report No, 10 in 2011 (*see* "Figure 1. FERC Questions and UDWR Responses" above) that Chapter 5 of the NED analysis (tables 5-1 through 5-4) needed descriptions of each line item to help readers understand methods and assumptions.[16] However, UBWR has still not provided this explanation in the Study Report.

Further, UBWR needs to better explain how the estimated costs of the pump storage project decreased significantly from a range of $2.6 billion-$3.2 billion to $1.5 billion-$1.8 billion, as reported in a letter dated December 9, 2015. This letter changes the entire cost/benefit analysis of the Project. We request that Commission Staff direct UBWR to update the analysis with a completely new supplement to the Study Report to reflect the new analysis provided on December 9.

A letter to FERC from UBWR, dated December 9, 2015, explained the lowering of costs of the pump storage project. The letter states:

> "In Chapter 3, Section 3.1.1.3.4 (pp.3-42 to 3-46) and Section 3.1.2.3 (pp.3-74-77) the PLP describes the facilities and operation of the Hurricane Cliffs Pumped Storage Hydroelectric Generating Station. Impacts of the facility and proposed

[16] *Draft Study Report 10: Socioeconomics and Water Resource Economics, Attachment B*. Lake Powell Pipeline Project, July, 2011 eLibrary 20110728-4143, 7-28-2011, ILP UBWR Responses to Draft Study Reports comments. FERC comment C 26, p. 89, (emphasis added).

environmental measures are described at various places in Section 3.1.3. and in relevant draft study reports. The discussion indicates that this generating station will be used for pumped storage. However, UBWR's license application is expected to include operation of this facility to generate 35 megawatts (MW) of peaking power independent of its operation as a 300 MW pumped storage project. Under operation for peaking power, water would be held the fore bay reservoir released through the power plant as demand requires. Attached are benefit/cost tables on the Lake Powell Pipeline Project with peaking power. UDWR therefore requests that any comments on the PLP regarding this project address its operation for peaking purposes under pumped storage and non-pumped storage conditions.

Depending on variable economic perspectives and assumptions, the LPP Project with peaking power direct net benefits range from about $1.8 to 2.7 billion, and the LPP Project with peaking power costs range from about $1.5 to $1.8 billion (2010$, present value, rounded) (see Tables 5-172A and 5-172B). Overall, the LPP Project with peaking power is displaying greater benefits than costs given the complex set of economic variables under consideration.

From an NED "principles and guidelines" or state direct value perspective, the LPP Project with peaking power development benefits are greater than the costs of LPP Project with peaking power construction and operation, given the life-cycle cost review conducted here (B/C ratio of about 1.20). This perspective assumes some relative escalation (2.5 percent) in monetary values between the costs of water resources development today versus other "product" costs tomorrow, and a more short-term cost-of-capital factor of 4.14 percent. It also reflects relatively high marginal costs for long-term water supply resources. From a sensitivity analysis perspective (Table 5-172B), where the inter-generational benefits and costs of the LPP Project are taken more fully into consideration (social time preference discount rate percent) and the real monetary value of water, power, and construction costs are assumed to increase over the life of the LPP Project, the LPP Project with peaking power benefits exceed the costs. The B/C ratio is about 1.49. Stated differently, the value of future benefits to future residents is given more emphasis, than just consideration of the "up-front" costs of LPP Project construction, and the value of water and power is assumed to escalate in real terms."[17]

17 *Utah Department of Natural Resources submits comment to the Preliminary Licensing Proposal and revised draft study reports for the Lake Powell Pipeline Project under P-12966,* eLibrary 20151218-0011 (December 9, 2015), (emphasis added).

Comment

The explanation in the letter includes costs and B/C ratios that are very different from the Study Report No.10, which states:

> *"The analyses have incorporated a LPP Project configuration that includes a pump storage hydro-generation component. This LPP Project configuration has LPP Project costs of about $2.6 to 3.2 billion, with benefits potentially in the $2.9 to $4.3 billion range. These estimates are preliminary in nature. The B/C ratio is about 1.14 to 1.34 depending on analysis assumptions."*[18]

Comment

It is not clear if the 300 MW generated at the pump storage project is being produced as base load power. Commission Staff should direct UBWR to clarify this in a supplement to Study Report No.10. Also, it is noted in Section ES-1.1.2. that the Project power cost is greater that the market regional power costs; therefore, the power may be hard to sell to the market. This Project's cost/benefit needs to be reevaluated in a supplement to Study Report No.10.

Our understanding of the NED B/C ratios is that if the B/C ratio is over 1, then it is not recommended to build the project. If it less than 1 then it is efficient and building it is recommended. B/C as listed above is 1.20 and 1.49. Accordingly, in a NED evaluation, the pump storage project is not recommended to build. Also, UBWR uses 2009 cost estimates that are out of date and will increase. Further, not all the costs are included or released yet; thus how can a valid cost/benefit ratio be presented for analysis? Whatever the Project produces in power is used so it is questionable that the Project has any benefits; not including the pump storage project. UBWR needs to explain the details of its assumptions and what is included in the ratios.

FERC's Economic and Fiscal Impacts Perspective

> *"From a 'true' marginal cost perspective, the LPP Project power costs should be treated as incremental costs to the water delivery pipeline—depicting with and without hydro-project analysis. In this analysis, the costs of the water delivery system are not included as part of the hydro project. Under the pump storage configuration, the hydro project benefits are approximately equal to or greater than the costs, with the costs estimated to be about $100/MWh. The corresponding B/C ratios would be in the 0.97 to 1.10 range (direct project benefits and costs, depending on the discount rate applied)."*[19]

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[18] Socioeconomics Water Resource Economics Study Report 10, p. ES-2, (November 30, 2015) (emphasis added).

[19] Study Report, FERC's Economic and Fiscal Impacts Perspective, p. ES-3 (emphasis added).

Comment

However, costs vary; for example, in this section the Project has a lower cost to MWh at $42, not $100.

> *"Page 2-5 LPP Project system power pumping costs: The direct water pumping system costs for the LPP Project are estimated to be about $42/MWh. This takes into account some ability to pump during off-peak power demand periods. This ability varies over the life of the LPP Project."* [20]

Comment

The Study Report does not acknowledge or explain the contradiction as quoted above. The Study Reports contains other contradictions later in this section, where it states that the pump storage B/C ratio is only .47 to .89. Commission Staff should direct UBWR to provide a supplement to the Study Report that explains how these numbers were derived and resolve the apparent contradictions.

We are concerned about the lack of transparency in what the Project will cost. Above all, all the elements which are needed to conduct an accurate benefit-cost and cost-effectiveness must be included and properly analyzed. This cost-benefit analysis in Study Report No.10 does not consider alternative technological solutions to water use which could be achieved through innovative efforts to meet water demand. Study Report No.10 must be supplemented and or revised to correct the data and provide missing information prior to Commission Staff preparing the EIS.

Study Report Hydro Project Benefits

> *"The hydro project costs include all capital construction for power generation and transmission and penstock (pipeline) construction, and associated O&MR costs. They do not include water pumping or Water Conveyance System pipeline and pump station construction costs to the hydro project portion of the larger LPP Project.*
>
> *The pump storage configuration of the LPP Project would have B/C ratios of about 0.47 to 0.89, and the power costs are estimated to be about $80-130/MWh. This cost per MWh is higher than the avoided cost of about $65/MWh (or $85/MWh for the green power premium)."* [21]

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[20] *Ibid.*

[21] Study Report Section 6.2, Hydro Project Benefits, p. 6-1, (emphasis added).

Comment

Commission Staff should direct UBWR to supplement Study Report No.10 to explain what the ratios quoted above mean, and what assumptions are built into them. Also, UBWR should be required to address the discrepancies in different power costs listed throughout the Study Report.

The Study Report does not include an analysis disclosing how the public can possibly afford this billion dollar water project. In FERC comments on the 2011 Study Report ("Figure 1. FERC Questions and UDWR Responses" chart above), Commission Staff commented that the report lacks project financing and cost allocations to districts and lacks user costs. The reports needs current user costs and evaluation of increased user costs associated with project financing.[22] However, UBWR fails to include this type of analysis in the Study Report. Further, 21 Utah University economists signed a letter to Utah's Governor and completed a report. Based on their analysis they concluded that the Project proposal will cause debt and increased fees. They said; "If there is only a need for a small portion of water over coming 20-40 years and there are a variety of alternative water sources; the economists questioned why the project is being proposed now."[23]

More importantly, since UBWR does not have the funds to build the pump storage project and has no intention of building it anytime soon, there should be a separate analysis of the LPP Project without the pump storage project. Using the pump storage to increase the benefits analysis skews the results in the Study Report. Additionally, the Commission Staff commented in 2011 ("See Figure 1. FERC Questions and UDWR Responses" above) that Chapter 5 should be corrected in the final report to include pumped storage development in analysis of the Project and analysis of pumped storage effects on the proposed project's economic benefits presented separately, which did not occur.[24] Also, missing completely in this Study Report is any comparable economic analysis of the alternatives. The Commission must assure accurate information for decision makers to understand the choices.

B. Revised Climate Change Draft Study Report No. 19

In considering the relationship between climate change and the Project, there are two distinct aspects to keep in mind. First, there is the question of how climate change (and rising

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[22] *See Draft Study Report 10: Socioeconomics and Water Resource Economics, Attachment B.* Lake Powell Pipeline Project, eLibrary 20110728-4143, ILP UBWR Responses to Draft Study Reports comments. FERC comment 29, p.90, (July 28, 2011) (emphasis added).

[23] *Letter to the Governor*, University of Utah, available at http://citizensfordixie.org/wp-content/uploads/2011/11/Economist-Letter-to-Governor-2015.pdf Report http://citizensfordixie.org/wp-content/uploads/2011/11/Economists-report-pipeline-2015.pdf; (Oct 26, 2015).

[24] *Draft Study Report 10: Socioeconomics and Water Resource Economics, Attachment B*. Lake Powell Pipeline Project, eLibrary 20110728-4143, ILP UBWR Responses to Draft Study Reports comments. FERC comment 21, p.89, (July 28, 2011) (emphasis added).

temperatures in particular) will affect the background conditions against which the project will operate during its lifetime. Second, there is the question of how the energy demands of the project will generate greenhouse gas emissions that contribute to climate change and global warming. Both of these aspects are addressed in our comments below and need to be included in the Study Report.

In addition, the Coalition wants to establish that even if water is physically in the river and Utah is not using all of its remaining Colorado River Compact apportionment of 350,000 (AF), it does not guarantee the water is actually available. Before the Colorado River Compact was created in 1922 annual river flows were originally thought to be in the range of 18-21 million acre feet a year (MAFY) at Lees Ferry, Arizona. Lees Ferry is the dividing line between the Upper and Lower Colorado River Basin States. The Lower Basin States of Arizona, Nevada and California were apportioned 7.5 (MAFY) which are firm allocations and draw their water supply from Lake Mead. The Upper Basin States of Colorado, New Mexico, Wyoming and Utah were apportioned 7.5 (MAFY) and these rights are more uncertain and variable because they are allocated only a percentage of what is left after obligations to the Lower Basin are met and are more dependent on stream flows. "Apportioned water in accordance with the Law of River exceeds the approximate 100 year average flow of river of 15 MAFY at Lees Ferry and is 16.4 MAFY."[25] However, river flows at Lees Ferry during last 15 years have only been 12.5 (MAFY) and the reservoirs of Lake Powell and Lake Mead are only at 50 percent capacity. The rising temperatures from climate change indicate river flows will likely continue to decline. Therefore, even if UBWR claims its remaining water right is secure, in reality, it is not. We explain the reasons in our following comments.

In Scoping Document 2, the Commission stated that scoping was intended to serve as a guide to issues and alternatives to be addressed in the Environmental Impact Statement (EIS).[26] The public expressed concerns in the scoping process that should be addressed in the EIS.

> "As shown in both the transcripts of the scoping meetings and in Appendix A, many individuals have provided either oral or written scoping comments, or both, concerning the Lake Powell Pipeline proposal. Many of the public comments express similar concerns or issues:
>
> 1. Continued droughts and climate effects from human activity could put the supply of water from Lake Powell Reservoir at risk."[27]

[25] Colorado River Basin Stakeholders *Moving Forward* to address Challenges identified in the Colorado River Basin Water Supply and Demand Study, Phase 1 Report: Executive Summary, Bureau of Reclamation, May 2015.

[27] Scoping of Environmental Issues for the proposed Lake Powell Pipeline Project, eLibrary no. 20080821-3005, p.7, (Aug. 21, 2008).

Comment

The Study Report results still do not detail the overall risk from climate change to the water supply for the Project. UBWR incorrectly claims it can divert water in dire conditions, and that, therefore, they do not have a responsibility to address the risk of climate change. On the contrary, the Commission Staff must require a detailed analysis from UBWR that proves their assumption about water availability is valid before the EIS process begins. Further, the staff must ensure the environmental information is accurate so that decision makers can understand the consequences of their decision. The Study Report lacks scientific accuracy that is both reasonable and objective that the agencies and the public can rely upon and must be revised.

This consideration also has implications for the NEPA analysis of the Project. More specifically, the Council on Environmental Quality (CEQ) has issued draft guidance documents recommending the use of "future baseline conditions" for NEPA analysis in situations where the background conditions against which a project operates will change due to climate change. With climate change, the amount of water being reduced in the Colorado River system because of raising temperatures and subject to loss through evaporation will increase with a corresponding decrease in the amount of water stored in the reservoir. The Commission Staff's exclusive reliance on an existing conditions baseline for NEPA analysis would result in an inaccurate analysis of water available during the anticipate lifetime of the Project.

Study Report 18, Lake Powell Pipeline Hydrologic Modeling Analysis

> *"Though the potential impacts of climate change have been studied in the Colorado River Basin, the data needed to quantitatively evaluate these potential impacts with CRSS was not yet available at the time of study*."[28]

Comment

The impact of climate change on water availability for the Project has been a controversial issue since scoping for the Project in 2008. Despite the intervening eight years and an acknowledged body of scientific study, UDWR has failed to integrate this impact into water availability modeling. Consequently, UDWR has not provided vital environmental information in the Study Report pursuant to the Study Plan. Similarly, by failing to undertake a meaningful analysis, the Study Report claims there will be no climate change-related impact on power generation. Without changes to the Study Report to incorporate the impact of climate change on water availability and power generation, the scientific record on which a new license is based will be fundamentally flawed.

[28] Study Report 18, Reclamation Colorado River Model Report, Appendix 2, p. 2.

Chapter 3, Literature Review, Introduction

> *"Under most drought scenarios, the most secure water rights are from reservoirs at the downstream end of river system."*[29]

Comment

UBWR's very general and broad statement in the Study Report that their water right is the most secure because it is at the "end of river system" is not based on facts in the record—there is nothing secure about this water right that is junior to all water rights established before 1957. This is very a misleading statement and UBWR did not perform an adequate supporting analysis in the Study Report. The Study Report results claiming that their water right is secure at low reservoir levels is not a true statement as the Project's water rights are junior to the Upper Basin Compact obligations to the Lower Basin and at risk in conditions of shortage.

We detail in our following comments the reason this claim is not legitimate. The Commission Staff must assure these statements of the UBRW are not mere opinion and are scientifically valid before the EIS process begins. This is a significant issue that needs to be analyzed for its accuracy, or be deleted from the Study Report.

Chapter 5 Summary and Conclusions

> *" It is unknown at this time what impacts such management strategies might have on the State of Utah or the LPP Project. The LPP Project intake would be designed at an elevation which would be physically capable of receiving water in times of low storage. There are currently no plans to curtail Upper Basin State's water use beyond what is required by the Colorado River Compact."*[30]

Comment

UBWR has not put evidence into the record of how they come to the conclusion that they will be able to divert water at such low reservoir levels. We detail how Upper Basin States' obligations to Lower Basin States in the 1922 Colorado River Compact have priority over the Project's junior priority water right of 1957 at low reservoir levels.

The Commission Staff must require accurate information be put into the Study Report record before the EIS process begins which clearly supports UBWR's claim. If UBWR does not provide evidence of this claim it should be deleted from the Study Report.

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[29] Study Report No. 19. p. 3-1, (emphasis added).

[30] Study Report, p. 5-1, (emphasis added).

The facts do not support that UBWR would be able to pump water for the Project in low storage conditions in Lake Powell. For instance, the Pipeline intakes are proposed at three elevations. We use those elevations and the amount of storage at each level in Lake Powell to illustrate the problem with UBWR's assumption. The first intake is proposed at 3575 mean sea level (msl) with an active storage of 9.52 million acre feet (MAF) stored in Lake Powell. The minimum power pool elevation level is 3490 msl. The elevation level of the second intake is proposed at 3475 msl which is 16 feet below minimum power pool elevation with an active storage in Lake Powell at below 5.93 MAF. Therefore, at this level of storage in Lake Powell the water is all committed to senior water rights holders which are the Lower Basin states. The Upper Basin states deliver to the Lower Basin States 7.50 MAF a year, at Lees Ferry. (The States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years.) The third intake is proposed at 3375 msl in which there is zero active storage in Lake Powell near dead pool.[31] Therefore, UBWR must describe in the Study Report the conditions of reservoir storage that allows them to continue to pump water in low storage using a junior water right. Also, UBWR must explain how their junior water rights takes priority over other senior water rights holders if there is only 5.93 MAF of storage at the second intake level and then no active storage in Lake Powell at the third intake level.

We understand the lower basin commitment is technically a rolling ten-year average rather than a specific annual amount. However, the Commission Staff should require UBWR to demonstrate availability through climate change modeling if their water right would be available at the proposed intake levels.

Section 19.5 The Study Plan Water Availability

The Study plan describes the nexus of water availability to the Project as follows:

"[t]he availability of water for the pipeline would affect the ability of the Project to supply water to comunities in Utah and to generate power. Therefore, the availability of water supply is directly related to the Project's purpose."[32]

Comment

Water availability for the Project has been a key issue since 2008, and yet a much-needed objective analysis is still not included in the Study Report. The Study Report results that claim water availability is not an issue for the Project because they can pump water for the Project in

[31] "Dead Pool is the term used to describe inactive water storage behind Glen Canyon Dam. About 2 MAF of Powell's 26 MAF storage capacity is considered "dead storage" because the dam currently has no means to release it. During construction of the dam, the river bypass tunnels were filled with reinforced concrete, thus prohibiting any releases from the dam once reservoir elevations dipped below the 237 foot River Outlet Works." See at: http://www.glencanyon.org/about/faq.

[32] Study Plan No.19, p. 219, (emphasis added).

dire conditions is not substantiated by facts in the record. UBWR must detail the supply availability over the term of the license as required in the Study Plan since it is the Project's purpose. The Commission Staff must assure that the environmental studies are not based on faulty assumptions.

Section 19.4.3 Issue and Data Needs

- *"Previous research into potential climate variability will be summarized relative to its effects on the proposed LPP diversion.*
- *The effects of the long-term drought affecting the Colorado River water supply will be assessed to determine the effects on the proposed LPP diversion.*
- *Requirements and stipulations for the proposed LPP diversions … [to] be evaluated, including those described in the 1922 Colorado River Compact."*[33]

Comment

UBWR does not analyze how climate variability will affect the Project diversion in the Study Report. It includes climate change reports and references to the Downscaled General Circulation Model (GCM) model, but does not explain how these predictions of reductions from climate change will affect the physical water supply for the Project; or how rising temperatures will impact the Project diversion over the term of the license. Therefore, UBWR left out this vital environmental information in the Study Report and did not interpret the Study Plan provisions adequately. The Commission Staff must assure UBWR provides this critical information and sufficient evidence of their conclusion into the Study Report before the EIS analysis begins.

Further, UBWR did not provide this information pursuant to the Study Plan in the Study Report. The Study Report gives a brief summary of the Law of River and the 1922 Colorado River Compact, in (Chapter 2 .1, p.2-1) but is silent on the issue that UBWR water rights are junior in priority to the Colorado River Compact obligations to the Lower Basin at low reservoir levels. Consequently, the Study Report has insufficient detail for the Commission Staff to complete its environmental analysis in the EIS. UBWR did not evaluate how it will meet its obligations of the Colorado River Compact. It wrongly concludes it can still withdraw water for the Project in dire conditions. In our research, UBWR will not be able to pump water for the Project in dire conditions due to the fact that Utah's Colorado River Compact water rights are only 23% of whatever is left after obligations to the Lower Basin and Mexico (8.23 million acre feet) are met at Lees Ferry.[34] Therefore, as the flows of the Colorado River diminish over time, Utah's junior priority water right of 1957 for the Project will be subordinated to senior water rights holders that predate the Projects water right of 1957. Consequently, Utah will receive considerably less water from the Colorado River in the future.

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[33] Ibid.

[34] The 1922 Colorado River Compact, See at: https://www.usbr.gov/lc/region/pao/pdfiles/crcompct.pdf,

For instance, the obligations having priority over the Project water rights include the following:

- Water is required for Mexico in the 1922 Compact, Article III (c): "If, as a matter of international comity, the United States of America shall hereafter recognize in the United State of Mexico any right to the use of any waters of the Colorado River System….."[35]
- Water is required for the Lower Basin is 7.5 million acre feet a year. The 1922 Compact Article III (d) states: "The States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years reckoned in continuing progressive series …"[36]
- Utah's Compact water rights are only a percentage of what is left over after the above obligations are met. Utah's water rights will be reduced over time because of a drying climate. The Upper Basin Compact of 1948 Article III. includes:[37]
  - "to provide for the equitable division and apportionment of the use of the waters of the Colorado River System, the use of which was apportioned in perpetuity to the Upper Basin by the Colorado River Compact;"
  - "to establish the obligations of each State of the Upper Division with respect to the deliveries of water required to be made at Lee Ferry by the Colorado River Compact;"
  - "apportionment for State of Utah, 23.00 percent;"
  - Article IV – "In the event curtailment of use of water by the States of the Upper Division at any time shall become necessary in order that the flow at Lee Ferry shall not be depleted below that required by Article III of the Colorado River Compact, the extent of curtailment by each State of the consumptive use of water apportioned to it by Article III of this Compact shall be in such quantities and at such times as shall be determined by the Commission……"
- Additionally, there is a Resolution by the Upper Colorado River Commission that reads:
  - "Whereas, hydropower generated from Lake Powell provides stability for the Western Power Interconnection and funding for operation and maintenance of the primary (Colorado River Storage Project) CRSP Act units and for environmental and development programs throughout the Upper Basin;
  - Whereas, if the water elevations at Lake Powell reach minimum power pool levels, water supply and development for consumptive and non-

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35 Ibid. Article III (c).

36 Ibid. Article III (d).

37 Upper Basin Compact 1948, See at: https://www.usbr.gov/lc/region/pao/pdfiles/ucbsnact.pdf (emphasis added)

consumptive uses in the Upper Basin and power supply options for the Western Area Power grid could be compromised."[38]

Further, due to this Upper Colorado River Commission resolution a comprehensive plan of action should be available by December 2016. This Emergency Resolution should assure that the Upper Basin States will take measures to keep the level of Lake Powell above the minimum power pool elevation. For this reason, it is unlikely Utah will be able to ignore this goal and continue to pump from the second intake using junior priority water rights below this minimum power pool elevation. This is a significant issue that has to be included in the analysis of the Study Report.

Another issue that needs clarification in the Study Report is that it is not certain all states agreed to UBWR moving water from the Upper Basin to use in the Lower Basin where the Project is located and is mentioned in this resolution. A 2003 Resolution of the Upper Colorado River Commission explains the issue,
stating:

> *"Whereas, the states of Colorado, New Mexico, Utah and Wyoming all support the proposed Lake Powell Pipeline project, but the states are not in agreement as to whether, under the Law of River, Utah may use a part of its Upper Basin apportionment to serve uses in the Lower Basin portion of Utah, without obtaining the consent of the other states. However in the spirit of comity, and without prejudice to the position of any state regarding these unresolved issues, all the states support and to the extent necessary consent to the Lake Powell Pipeline Project in Utah."* [39]

According to legal scholars UBWR cannot use an Upper Basin water right in the Lower Basin as this Project does and it could set a precedent.[40]

Also, Utah has over-appropriated water rights in the Upper Colorado River Basin. Consequently, water applicants with junior priority water rights should make a determination as to whether or not water will be physically available if undeveloped senior water rights are finally put to beneficial use. UBWR needs to provide this determination in the Study Report.

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[38] Resolution by the Upper Colorado River Commission, "*Development of an Emergency Upper Basin Contingency Plan*." (Dec. 10, 2014). See at: http://citizensfordixie.org/wp-content/uploads/2015/12/Upper-Basin-Resolution-Emergency-Drought-2014.pdf

[39] Resolution of the Upper Colorado River Commission, 2003, See at: http://www.riversimulator.org/Resources/LawOfTheRiver/HooverDamDocs/Supplements/2003aUCRCResolutionUseAccountingWaterLakePowellPipeline.pdf ,(emphasis added)..

[40] James S. Lochhead, *An Upper Basin Perspective on the California's Claims to Water from the Colorado River Part 1: the Law of the River*, pp.322-329, See at: http://citizensfordixie.org/wp-content/uploads/2015/12/Lochhead-An-Upper-Basin-Perspective.pdf

Also, there is an additional "upstream" aspect of the Law of the River that might affect the amount of water for the Project, particularly in times of drought. Under the Law of the River (the 1922 Colorado River Compact and the 1928 Boulder Canyon Dam Act), the Upper Basin states (Colorado, Wyoming, Utah and New Mexico) were allocated 7.5 MAF annually. Of this 7.5 MAF, 51.75% was allocated to Colorado, 23% to Utah, 14% to Wyoming and 11.25% to New Mexico. In times of shortage/drought, these percentages apply to any reductions. So in a dry year, Colorado still gets to take 51.75% of the water -- meaning there may not be that much left over for Utah and the other two Upper Basin states. Given that the State of Colorado is allocated the lion-share (51.75%) of the Upper Basin allocation, in times of drought, Utah is particularly vulnerable.

In addition, with less water now in the Colorado River and in the future, it is unclear how UBWR will handle pre-compact commitment to protecting the Tribes' reserved water rights. UBWR must provide evidence into record that shows proof it can meet its obligations under the various Compacts and resolutions, including the Tribal reserved water rights over the term of license.

Further, there are also federal *Winters* Doctrine reserved water rights of tribes in Arizona,[41] and how water must be released from Lake Powell to satisfy these *Winters* rights (which are above and beyond Arizona's Law of the River allocation). Therefore, the Winters obligations might affect the water available in Lake Powell for the Project and also need to be considered in the Study Report.

Further, FERC's Study Plan Criteria CFR 18 5.11 (d) (2) states that a plan should "address any known resource management goals of the agencies or Indian tribes with jurisdiction over the resources to be studied." Therefore, the Project's diversion and how it might impact Tribal reserved water rights in dire conditions must be analyzed in the Study Report.

Additionally, the Colorado River Basin Ten Tribes Partnership Tribal Water Study of the Colorado River is expected to be completed in December of 2016 (originally projected for completion in December of 2015).[42]

Tribal water rights trump States' 1922 Colorado River water rights and the Project's water rights. Tribal water rights are called, "present perfected rights" that pre-date the 1922 Compact. These Tribal rights in Utah were estimated in a recent BOR *Colorado River Basin Water Supply and Demand Study* to be diversion rights of 480,594 (AF) with depletion rights of 258,943 (AF). UBWR must include a discussion in the Study Report of how Utah's will handle agreements with the Indian Tribes with less water during the term of license. The Indian Tribes

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[41] Kennith E. Foster, The Winters Doctrine: Historical Perspective and Future application of Reserved Water Rights in Arizona. See at: https://info.ngwa.org/GWOL/pdf/781500880.PDF

[42] Ten Tribes Partnership, See at: http://www.riversimulator.org/Resources/Tribes/ColoradoRiverBasinTribalWaterStudyPlanOfStudy.pdf.

were not at the table in the Colorado River Compact, nor in any later Compacts, nor did the Compacts change any of their original rights. However, now the States have to settle with the Tribes that have reservations in that state and their water rights have to come out of the State's Compact water rights.

In 2003, Utah and the Navajo Nation executed a memorandum of agreement to pursue negotiations before litigation; they both agreed to an annual water right of 81,000 acre feet of water. Now the Utah State Legislature and the U.S. Department of Interior and Congress have to approve the agreement to also pay the Tribe $200 million; Utah may chip in $8 million. The Ute Tribe also has Colorado River water rights that have yet to be finalized by all the parties and the State of Utah. These rights also have to come out of Utah's portion of its remaining share of Colorado River Compact water rights (see Figure 2. below).

Therefore, in a water shortage, Tribal rights will not be reduced. Consequently, the Project's junior priority water rights are more vulnerable in a shortage. The priority date for the Project's water rights is 1957 when the Flaming Gorge reservoir and Central Utah Project were approved. The Central Utah Project also has priority over the Project's water rights. This means that all water rights granted prior to 1957 plus compact obligations have a higher priority than the Project's water rights.

Figure 2. Utah's Remaining Colorado River Compact Water Rights

Utah's planned projects Colorado River	Utah's Total Allocation 1.369 MAFY 1.008 MAFY used
Ute Tribe Reserved Water	105,000 (AF)
Navajo Nation Reserved Water	81,000 (AF)
Lake Powell Pipeline	86,000 (AF)
New Ag uses	40,000 (AF)
New M & I Uses	29,000 (AF)
Total new planned projects	341,000 (AF)

As Figure 2. illustrates, Utah assumes it has 341,000 (AF) of water from its remaining share of the Colorado River, but it does not consider this remaining share could be reduced in the future.

The important issues listed above are not included in the Study Report and need to be. The Commission Staff should assure UBWR provides a full and fair discussion of these issues to accurately inform decision makers about the feasibility of the Project as a permanent water project over the term of license.

Section 19.2.2 Issues and Data Needs

> *"The Bureau of Reclamation CRSS model will be used to determine potential effects on downstream water rights such as Navajo, Ute, Paiute and Hopi tribes."*[43]

Comment

This provision in the Study Plan has been left out of the Study Report. There is no analysis of Tribal reserved water rights in the Study Report and how they will be affected by the Project's withdrawals at low reservoir levels. Consequently, they need to be included in the Study Report.

1.1 Study Report Introduction

> *"This document reviews studies of hydrologic extensions for the Colorado River near Lake Powell, and identifies their potential impact on LPP Project reliability."*[44]

1.2 Methodology

> *"No new river system modeling or analysis was performed as part of this review."*[45]

Comment

However, the Study Report does not discuss the potential impact of climate change to the Project's reliability adequately. We detail in our comments that this is a significant issue and deserves more analysis in this Study Report before the EIS process begins.

ES.1 Executive Summary

> *"The majority of the studies predict future inflow into Lake Powell is likely to decline because of climate change or natural reversion back to the long-term historical mean observed in the tree-ring studies (Reclamation 2015). Reduced inflow to Lake Powell could have detrimental effects on storage levels if more stringent shortage and demand management strategies than included in the Interim Guidelines EIS are not implemented. It is unknown at this time what impacts such management strategies might have on the State of Utah or the LPP Project. There are currently no plans to curtail Upper Basin States' water use beyond what is required by the Colorado River Compact."*[46]

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43 Study Plan Section 19.4.3, p. 219.
44 Study Report Introduction, p. 1-1,(emphasis added).
45 Study Report, p.1-1.
46 Study Report 19, Executive Summary, p. ES-3, (emphasis added).

Comment

We disagree with UBWR's assumptions that it is unknown what management strategies might have to be taken by the State as future water supplies are reduced over the term of license. All the scientific studies confirm there will be less water from the Colorado River in the future due to rising temperatures. Therefore, a simple scenario could be developed to define when Utah could no longer divert water for the Project's using junior priority water rights at different reservoir levels. As we describe in our comments. Utah's Colorado River Compact water rights are only a percentage of what is left over after other senior water rights of the Lower Basin Compact obligations are met. Therefore, decision makers should also be made aware that Utah will only get twenty-three percent of whatever water remains in the Upper Basin. It is not a fixed amount like the Lower Basin's Colorado River Compact water rights.

We detail in our comments Utah's obligations under the Colorado River Compact and the management strategies it imposes on the Project. Also, the Upper Basin States are developing an action plan to prevent Lake Powell from falling below the minimum power pool elevation. Therefore, there are management strategies that govern the operation of the Project and they should be disclosed in the Study Report.

Section 19.2.1 Study Description

> *"The study will identify potential impacts of the Project on water supply……and estimate potential effects of climate change and climate variability on Project operations and water deliveries."*[47]

Comment

However, the current Study Report inappropriately excludes this analysis based on the UBWR's unsupported assertion that climate change is not a concern. UBWR claims it will be able to draw water in dire conditions. There is no conclusive evidence in the record that supports this conclusion. UBWR does provide the various climate studies in the Study Report, but fails to relate these studies to water availability for the Project as required in the Study Plan. The statements of UBWR must be supported by reliable scientific evidence in the record which has not been provided in the Study Report. Consequently, the Commission Staff needs more accurate information in the Study Report before the EIS process begins.

Section 19.2.2 Goals and Objectives

- *"To provide a summary of the long-term water supply to Lake Powell and the potential effects on water supply from climate variation."*

[47] Study Plan, p. 215, (emphasis added).

- *"Include an analysis of long-term water availability from Lake Powell <u>under various water supply scenarios.</u>"*[48]

Comment

These provisions of the Study Plan above have been totally left out of the Study Report. The Commission Staff should require UBWR to fully achieve the objectives in the Study Plan and address how climate change will affect water availability by providing various water supply scenarios for the Project. Further, the Commission Staff must insure the information in the Study Report is accurate in order that decision makers can understand the consequences. Consistently throughout the Study Report, UBWR uses the caveat that they do not need to address these issues because they can always pump water even in dire conditions – this is not substantiated by fact as noted in our various comments.

ES.1 Executive Summary, Introduction

> *"The Lake Powell Pipeline Hydrologic Modeling report (Reclamation 2015) compared scenarios with and without the LPP for each of two hydrologic datasets, observed hydrologic record (DNF) and the alternate, more variable, climate change inflows (CC)."*[49]
>
> *The "Climate Change (CC) Inflow Hydrology – This future inflow hydrology scenario uses climate change projections used in the 2012 Basin Study."(p. 4-1)*

Comment

However, none of models used by UBWR were adequate in assessing climate change impacst on water availability for the Project. All of models use 15 MAFY at Lees Ferry, which over estimates the flow of river in the future. The Study Report explains UBWR used the Colorado River Simulation System (CRSS) model to assess climate change impacts although the model is not affected by climate change. Also, UBWR used the Direct Natural Flow, Index Sequential Method (DNF) model that uses only 100 year average of 15 MAFY, which doesn't include reductions due to climate change. Further, UBWR used a Climate Change Inflow Hydrology model (CC) that held depletions in the Upper Basin to 2015 levels. In addition, UBWR did an analysis of the potential effects of the Lake Powell Pipeline project under the 2007 Interim Guidelines EIS that were evaluated for only three years, the first three years of the pipeline when the project is coming on line and pipeline depletions are lower. Therefore, UBWR did not gather the right data. It should have used the best available model on climate change which is the Downscaled General Circulation Model (GCM) climate model for the analysis in

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48 Study Plan, p. 215, (emphasis added).

49 PLP Study Report, p.ES-3.

the Study Report found in *Colorado River Basin Water Supply and Demand Study*, Technical report B.[50]

4.1.3 CRSS Model Summary

> *"The results from these hydrologic model runs should be interpreted with consideration to the model assumptions. Unique to this analysis is the model assumption that no new projects or depletions will occur in the Upper Basin.*
>
> *It is recognized that the Upper Basin States plan to develop their compact allocated Colorado River water and, as such, it is highly unlikely that depletions will remain at the 2015 level in the future.."*[51]
>
> *"Thus, for this analysis the potential effects of the Lake Powell Pipeline project under the Interim Guidelines are evaluated for only three years, the first three years of the pipeline when the project is coming on line and pipeline depletions are lower."*[52]

Comment

The models used by UBWR the Colorado River Simulated System (CRSS) model and the Direct Natural Flow, Index Sequential Model (DNF) did not consider climate change. This fact is explained in the Bureau of Reclamation's *Colorado River Basin Water Supply and Demand Study*, Technical report B, water supply assessment. It states:

> "In 2004 Reclamation initiated a multi-faceted research and development program too enable the use of methods beyond those that use the observed record for projecting possible future inflow sequences for Basin planning studies. Through this effort, two additional water supply scenarios were developed and have been used in previous Basin planning studies, these scenarios assume that characteristics of the water supply critical uncertainties are represented by the observed and paleo-reconstructed stream flow records. Those scenarios, Paleo Resampled and Paleo Conditioned, have most recently been published in appendix N the Colorado river Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead EIS, 2007. For the purposes of the study, it was determined that these previously used scenarios did not provide a sufficiently broad range of plausible futures because they did not include the consideration of changing climate beyond what has occurred in history. For this reason a fourth scenario was developed that assumes the characteristics of the critical uncertainties Changes in Stream flow Variability, and trends, and Changes in Climate

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[50] Colorado River Basin Water Supply & Demand Study, Final Study Report 2012, Technical Report B –page S-4.

[51] PLP Study Report, p.4.6, (emphasis added).

[52] Ibid. p, 4-7.

Variability and Trends are indicated by Downscaled General Circulation Model (GCM) projections and simulated hydrology."[53]

Comment

In the Study Report UBRW refers to Downscaled General Circulation Model (GCM), but did not include the results of the (GCM) or analyze how climate change would affect the water supply for the Project. The major results of the GCM model are left out of the Study Report. The Downscaled GCM model results project flows in the future at Lees Ferry to be only 13.6 MAFY rather than current assumptions in the CRSS models that use 15 MAFY. The GCM model also projects flows at Lees Ferry could be reduced by 9%. Therefore, if you subtract 9% from Utah's existing water rights, the Projects junior priority water rights would be subordinated to senior water rights holders. However, UBWR did not use results of the best available science--the GCM model to analyze water availability for the Project.

The other Colorado River Simulated System (CRSS) model runs used to assess water availability do not consider the reduction in flows that are already occurring and will occur in the future, and this is a fatal flaw in the Climate Change Study Report No. 19 results. UBWR misinterpreted the CRSS model because the model does not include all Colorado River Compact water rights, other water rights, or non-federal project operations. It is a flow model to keep track of what flows into the system and what flows out of the system. The CRSS does represent the operations of Lake Powell and Lake Mead. Further, the CRSS model uses 15 MAFY that is unaffected by climate change at Lees Ferry overestimating the flow, which has been much lower since the year 2000 at only 12.5 MAFY.

In order for the Study Reports to be complete for the EIS, UBWR must consider the over allocation of the Colorado River and the fact that water demand already outstrips supply. The Commission must require UBWR to prove that the physical water supply is available for the Project for the term of license. UBWR's analysis must look at the system as a whole and what the status of river flow would be if all Upper Basin Colorado River Compact water rights are developed.

The BOR using 15 MAFY to make water management decisions over-estimates the flow. The same problem of over-allocation of the river is continuing as new diversions are being approved by Utah and the BOR. The Colorado River Simulated System (CRSS) river model used to assess the impact of the Project is overly optimistic by projecting that reservoir and river flows will still be as robust in the future as they have been in the past. Bureau of Reclamation's CRSS studies have used this higher estimated flow of 15 MAFY for its 100 year average (1906-2010) of the river's natural flow at Lees Ferry below Glen Canyon Dam. Assuming flows of 15 MAFY to assess environmental impacts of the Project is flawed by assuming that the past will predict

[53] *Colorado River Basin Water Supply & Demand Study, Final Study Report* 2012, Technical Report B, p. S-4. See at: http://www.usbr.gov/lc/region/programs/crbstudy/finalreport/index.html

the future. Yet, due to the fifteen year drought the actual flows are nearer to 12.5 MAFY. Then, for a different section of time the BOR stated flows in the years 2000-2009 were only 11 MAFY, the lowest ten year average in over 100 years of record keeping on the Colorado River.

Section 4.1.3 Study Report CRSS Model Summary

> *"The results from these hydrologic model runs should be interpreted with consideration to the model assumptions. Unique to this analysis is the model assumption that no new projects or depletions will occur in the Upper Basin. This model assumption adopts a rigorous definition of what reasonably foreseeable future depletions are in the Upper Basin and is consistent with DOI NEPA Implementing Regulations. Under this approach, a reasonably foreseeable future depletion is one which has state legislation, or a tribal resolution or Federal Indian water settlement, or a Federal finding of no significant impact (FONSI) or record of decision (ROD). These are the criteria of certainty that a future depletion would occur at a particular time and place. This is a conservative approach to modeling the alternatives and takes the strictest approach to defining what is included and excluded for the cumulative impact analysis required by the Council on Environmental Quality's regulations 40 CFR 1508.7.4. It is recognized that the Upper Basin States plan to develop their Compact allocated Colorado River water and, as such, it is highly unlikely that depletions will remain at the 2015 level in the future. It should also be noted that the modeling effect of holding most Upper Basin depletions constant at 2015 levels results in depletions significantly lower than the future long-term depletion projections provided by the Upper Basin States which assume that Upper Basin depletions will grow through 2060."*[54]

Comment

UBWR using the Colorado River Simulated System (CRSS) model, as a definition for reasonably foreseeable future depletions in the Upper Basin is flawed because they kept the Upper Basin depletions constant at 2015 levels. We disagree with using the CRSS model results because the model did not include climate change impacts on water deliveries to the Project.

We describe in comments the reasons the CRSS model, is flawed and cannot be used as rigorous definition of reasonable and foreseeable:

- The model kept Upper Basin depletions constant at 2015 levels.
- The model does not include the Colorado River Compact allocations; UBWR did not evaluate how it will meet its obligations of the Colorado River Compact in dire conditions.
- The model does not include climate change impacts to water availability for the Project.

[54] Study Report, CRSS Model Summary, p. 4-6, (emphasis added).

Projects that should be added as reasonable and foreseeable are:

- Within the term of license, there will be by December 2016 (Contingency Planning) and the review of 2007 Interim Guidelines, which begins in year 2020 or sooner as needed according to the ROD[55]
- Drought Contingency planning that the seven states must complete by the next Colorado River Water Users Association meeting in December of 2016. If the deadline is not met the Department of Interior would complete the contingency planning without the states.
- The Colorado River Basin Ten Tribes Partnership Tribal Water Study is expected to be completed in December of 2016 (originally projected for completion in December of 2015).[56]
- The 2014 Upper Basin Emergency resolution to protect Lake Powell from falling below minimum power pool elevation.
- Moffat Collection System Project - 18,000 acre feet. FEIS issued, waiting for ROD. In Colorado.
- Windy Gap Firming Project - 30,000 acre feet. FEIS issued, waiting for ROD. In Colorado.
- Northern Integrated Supply Project - 40,000 acre feet. SDEIS issued. May use Colorado River water. In Colorado.
- Fontenelle Dam Re-Engineering - 123,000 acre feet. EIS process not yet began. In Wyoming.
- The Green River Nuclear Power Plant, 50,000 acre feet in UT,
- Navajo water rights transfers in UT have claimed 86,000 acre feet of UT's share.

Section 19.3 Agency Resource Management Goals

The Study Plan states that it "*will address resource management goals of Bureau of Reclamation.*"[57] It also quotes the requirement under Federal Power Act section 10(a)(1) that:

> *"[a]ny License issued shall be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses."*[58]

Comment

55 See at: http://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf
56 http://www.riversimulator.org/Resources/Tribes/ColoradoRiverBasinTribalWaterStudyPlanOfStudy.pdf
57 Study Plan Section 19.3, p. 216.
58 Study Plan Section 18.3, p. 206.

UBWR fails to outline how the proposed Project fits into the goals of the Bureau of Reclamation's *Colorado River Basin Water Supply and Demand Study* (Basin Study).

In addition, under FPA section 10(a)(1) each license must assure that a project is "best adapted to a comprehensive plan of development of the affected river basin for the beneficial uses of energy generation, water supply, flood control, recreation, and fish and wildlife. A project must serve the public interest in a river basin, and not just the interest in power generation." However, with limited water resources remaining in the Colorado River this Project is an example of what should not be proposed without the agency using water efficiently and having accurate justification of its need. Washington County has the highest per capita water use in the nation at 325 gallons per capita day in 2010 and the cheapest water. Moreover, in Washington County Water Conservancy District's 2015 Water Conservation Plan it will only save 40 gallons per capita day, or 14,000 (AF) and lower per capita water use to 289 gallons per capita day (gpcd) between the years 2010 to 2060.

The objectives of the Basin Study conform around a system of efficiency and conservation for existing projects. In other words, if UBWR were consistent with the goals of the Basin Study, it would start by using water more efficiently first before applying for more water from the Colorado River.

UBWR does not take into consideration the call for action to conserve water and use water efficiently by the Bureau of Reclamation (BOR) in their Basin Study, or the effort to keep Lake Powell above minimum power pool elevations. For instance, BOR confirmed in its Basin Study, "absent future action; the Colorado River Basin faces a wide range of plausible future long-term imbalance between supply and demand. This imbalance computed as a 10-year running average, ranges from no imbalance to 6.8 million acre-feet (MAF) with a median of 3.2 MAF in 2060. The assessment of impacts to Basin resources found that any long-term imbalance will impair the ability of the Colorado River system to meet the needs of Basin resources resulting in negative impact (for example, reduced reliability of water deliveries for municipal and agricultural purposes, decreased hydropower generation, and reduced recreational opportunities)."[59]

Comment

Study Plan and NEPA Analysis of Project's Contribution to Climate Change

Distinct from the ways that climate change may impact the background conditions against which the Project will operate, there is also the question of how the energy demands of the Project will contribute to greenhouse gas ("GHG") emissions that in turn contribute to global

[59] Colorado river Basin Stakeholders *Moving Forward* to address Challenges identified in the Colorado River Basin Water Supply and Demand Study, Phase 1 Report: Executive Summary, Bureau of Reclamation (May 2015), p. 3.

warming. More specifically, there are many segments of the Project where large quantities of water will need to be pumped uphill for considerable distances. According to Project documents, the approximately 86,000 acre-feet of water diverted annually from Lake Powell (over the 40-50 year life of the project) will need to be lifted 2,000 feet. Pumping such large amounts of water uphill will require significant amounts of energy, and to the extent this production of this energy will or may contribute to climate change and global warming.

The PLP does not provide sufficient information on this question. The PLP assumes that hydropower from Glen Canyon Switchyard will be available in a timely matter to meet the energy needs of the Project, but provides scant documentation on when the power upgrades will be completed or analysis to support this assumption. More particularly, there is not adequate analysis regarding the amount of energy required to pump water during the lifetime of the Project and the entitlement of UBWR to receive such power from the hydroelectric facilities operated at Glen Canyon Dam. Given the uncertainties and reduced storage in Lake Powell, it seems foreseeable if not likely that the Project may need to rely on non-hydropower sources of energy such as fossil fuels.

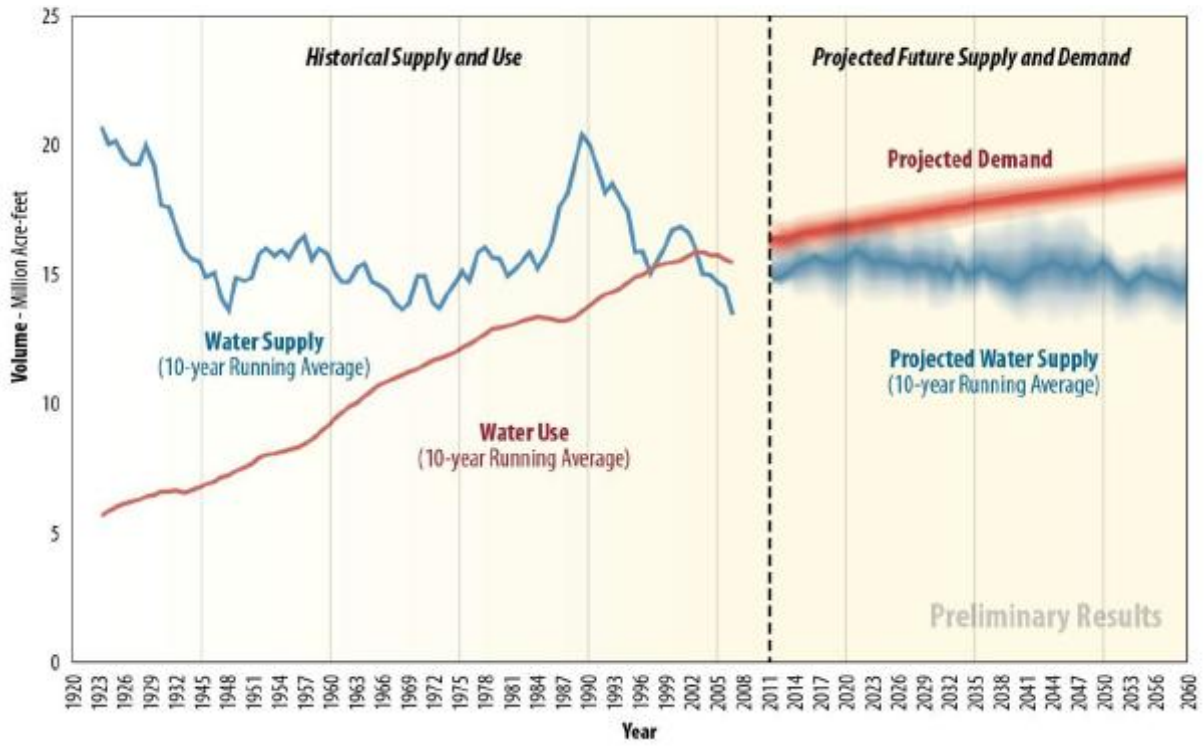
Information about the climate change impacts associate with such fossil fuel energy production (to meet the energy needs of the project) was not provided in the PLP or the Study Reports. Without this information, Commission Staff cannot satisfy NEPA's requirement of providing an accurate project description and of identifying alternatives and mitigation measures to reduce the adverse impacts of the Project. How can a NEPA document assess what level of GHG emission mitigation is appropriate if the NEPA document fails to quantify the amount of GHG emissions that may be created by the Project?

Water Demand already Outstrips Supply

In Figure 3, the Bureau of Reclamation, depicts 10-year average supply and demand totals for the Colorado River basin, and illustrates that since 2002 demands have exceeded supply. This is nowhere more evident than in the declining volume of water in storage throughout the basin. The Project proponents must acknowledge that while new demands for Colorado River water may be supplied out of storage in the short term, the inevitable, long-term result is that a new demand in a system already fully used will either itself be shorted, or will result in a shortage to another water use somewhere else in the system.[60]

[60] Doug Kenney, Rethinking the future of the Colorado River, Colorado River Governance initiative Dec 2010

Figure 3. Historical and Projected Supply, Use, and Demand



The red line represents the water supply and the blue line represents water demand. Figure 3 illustrates clearly that a supply and demand imbalance currently exists in the Basin. This imbalance will grow in the future if major changes are not made in how we use water.

Figure 4-3, Probability of Not Exceeding Minimum Power Pool Elevation in March, DNF Inflow Hydrology

> *"Overall, the probability of not exceeding Lake Powell's minimum power pool (3,490 feet) in March is higher in the CC inflow scenario compared to the DNF inflow scenario (Figure 4-4). In addition, differences between the action and no action alternatives for the CC inflows occur more frequently than did for the DNF inflows. The action alternative results in slightly higher probabilities (0.9 percent to 2.7percent higher) of Lake Powell being below minimum power pool in 19 of the 46 years simulated. Source: Reclamation (2015)"*[61]

Comment

[61] PLP Study Report, Figure 4-3, p.4-4.

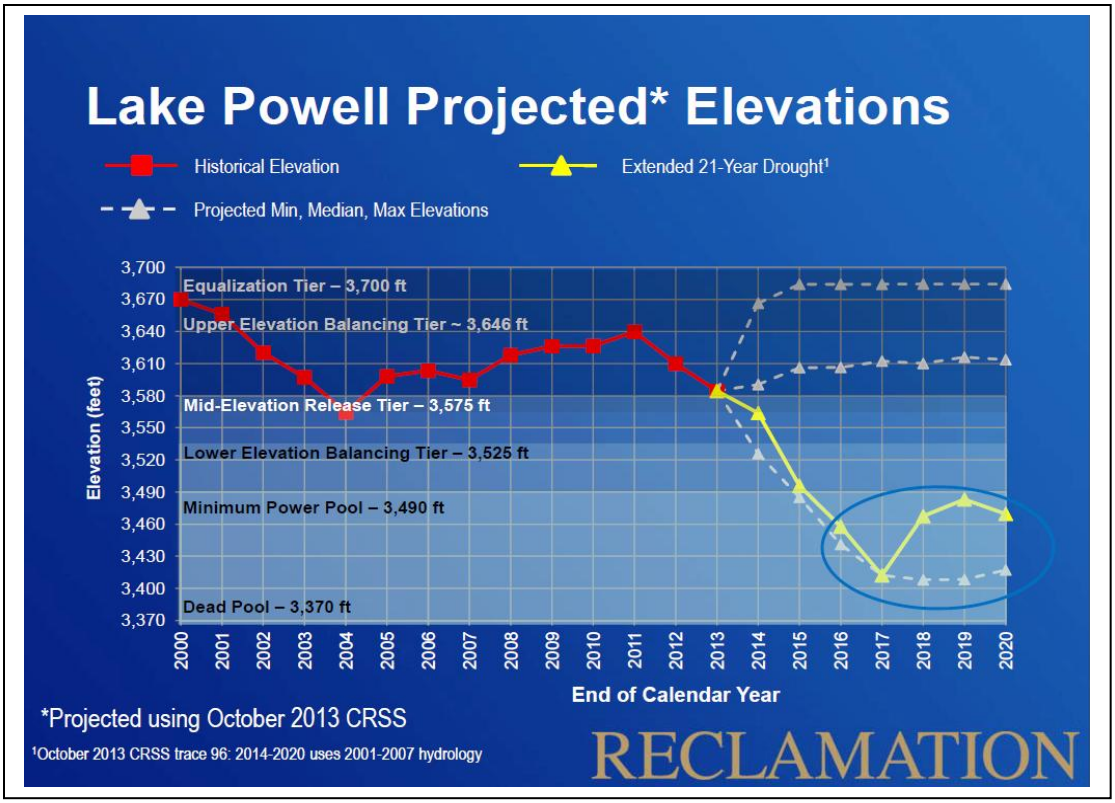
We described in our comments that the DNF model only considered 100 year average at 15 MAFY a year at Lees Ferry and the CC model holds depletions in the Upper Basin to current levels therefore, the models do not consider climate change impacts on water deliveries for the Project. Therefore, the conclusion that the models "indicate the proposed pipeline would have little or no affect on the ability to generate power at Glen Canyon power plant" are not legitimate, nor based the current best available science of the GCM model that includes climate change and rising temperatures.

On the contrary, a Bureau of Reclamation chart, Figure 4, shows that if the drought continues from a fifteen year to a twenty-one year drought, the elevation of Lake Powell could fall below the minimum power pool level.

Further, in the Revised Draft Socioeconomics Water Resource Economics Study Report, it state: "the LPP Project impacts on power generation from Glen Canyon Dam releases would be measurable, projected to be $58,401,000 in forgone power generation revenue (present value 2010$)….."[62] This loss of power revenues reveal there is a significant impact from the Project's withdrawals on Lake Powell levels. However, UBWR did not do an analysis using lower lake elevations in dire conditions.

[62] PLP, Study Report No, 10, Chapter 11, Cumulative Impacts,p.11-1

Figure 4. Lake Powell Projected Elevations

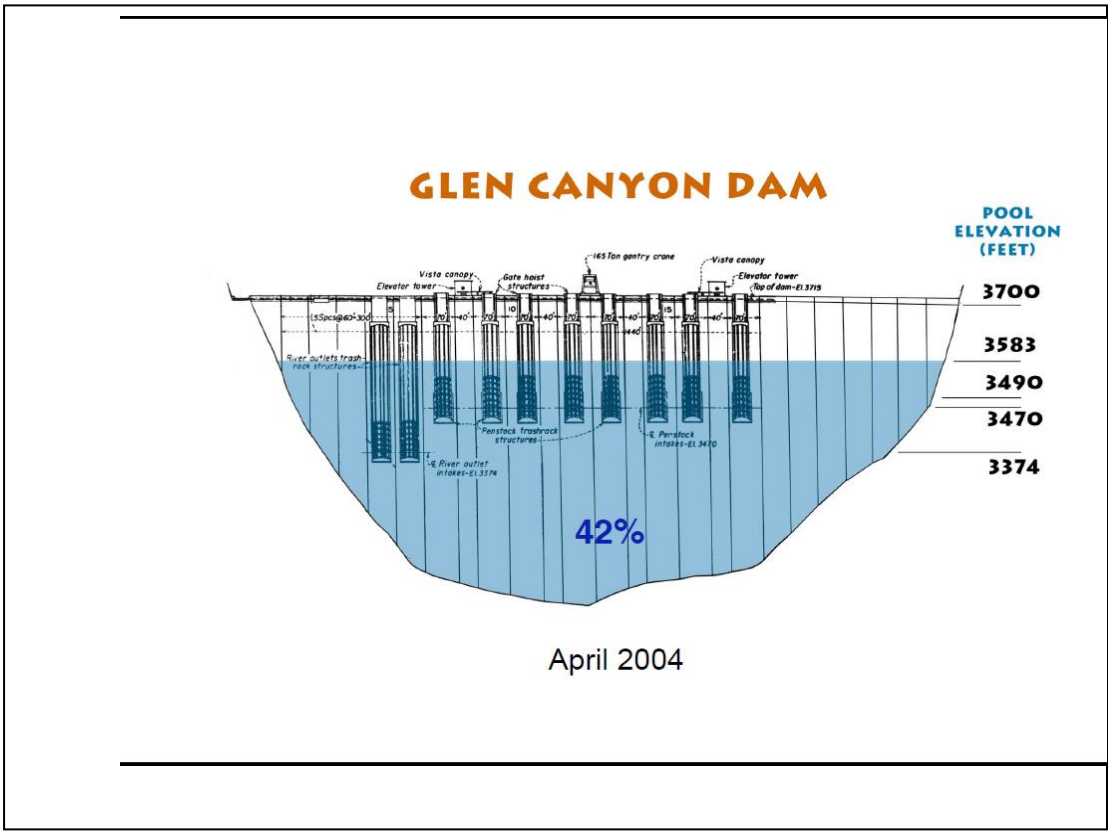


These illustrations below of the penstocks show the elevation of Lake Powell and how much water covers the penstocks.

The level of the Lake Powell has an impact on the amount of power that will be generated, as water levels in the lake decrease less power will be being produced. Therefore the issue is not only if the reservoir level goes below the minimum power pool elevation, but what impact the Project will have on reduction of kilowatts produced at the lower proposed intake levels.

Figure 5. Glen Canyon Dam Penstocks at 42% Capacity[63]

Figure 5. illustrates the Project's first intake at 3574 msl. When Lake Powell is at 42% capacity the water covers half of penstocks.



63 Graphics of Penstocks from: See at: http://www.onthecolorado.com/resources.cfm?mode=section&id=Graphics

Figure 6. Glen Canyon Dam Penstocks at Minimum Power Pool 3490 msl

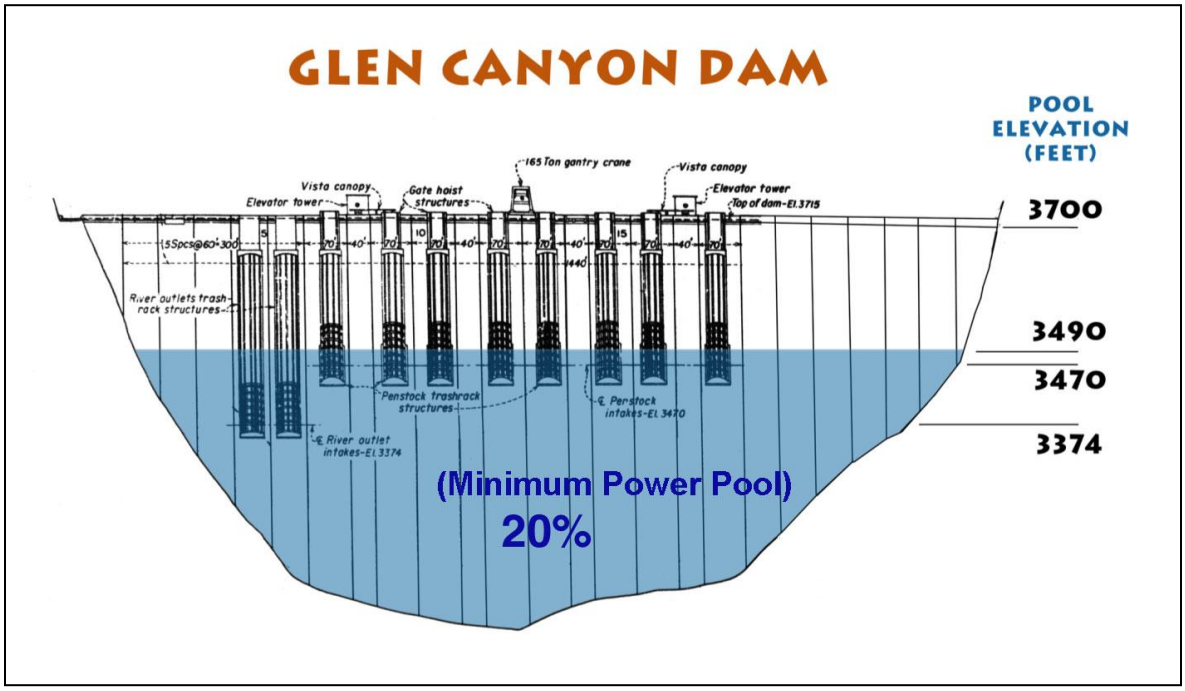
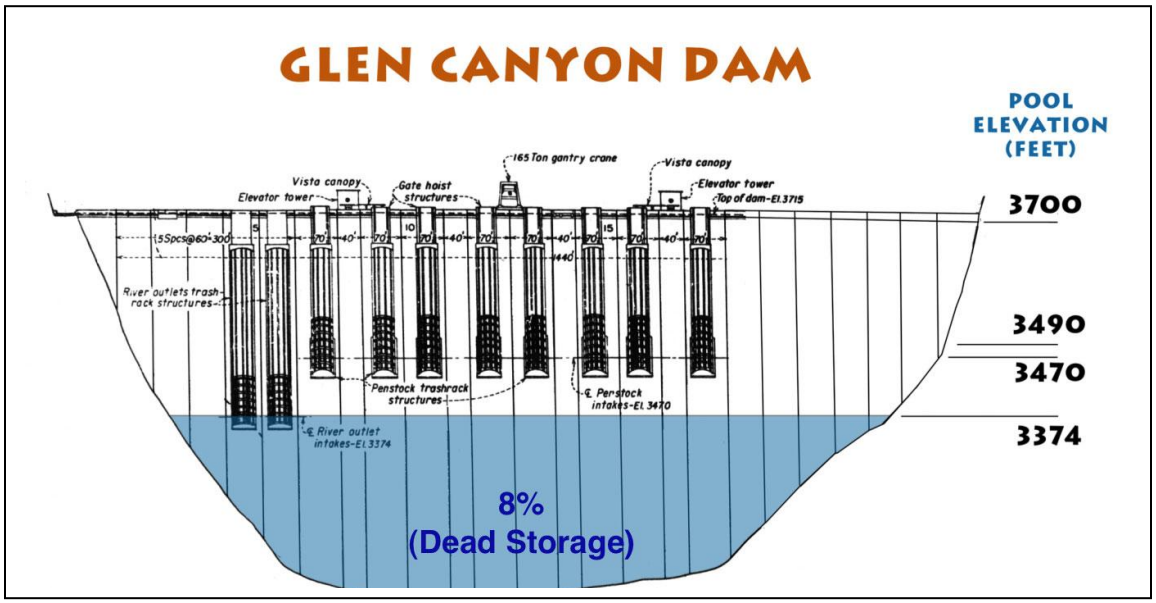


Figure 6. Illustrates the minimum power pool elevation in Lake Powell at 3490 feet msl. The Project's second intake is at 3474 msl in Lake Powell, which is 16 ft. below minimum power pool elevation in Lake Powell

Figure 7. Glen Canyon Dam Penstocks at Dead Pool

The third intake is at 3375 msl, which is 5 feet above dead pool in Lake Powell.



"Dead Pool is the term used to describe inactive water storage behind Glen Canyon Dam. About 2 MAF of Powell's 26 MAF storage capacity is considered "dead storage" because the dam currently has no means to release it. During construction of the dam, the river bypass tunnels were filled with reinforced concrete, thus prohibiting any releases from the dam once reservoir elevations dipped below the 237 foot River Outlet Works." See at: http://www.glencanyon.org/about/faq.

C. Revised Draft Water Needs Assessment Study Report No. 19

Although there is a hydropower aspect to the Project that provides FERC with certain regulatory permitting jurisdiction, it is important to highlight that the hydropower aspect of the project is incidental to its primary purpose – which is to provide additional water supplies to support expanded residential and commercial development of Washington County and Kane County in the State of Utah. This is reflected plainly in Section. 2.1 of the PLP, which lists the following as the first and foremost "purposes" of the project: "[t]o deliver 86,249 acre-feet of the UBWR's Colorado River water rights on an annual basis from Lake Powell to Washington County (82,249 AF) and Kane County (6,000 AF of diversion or 4,000 acre-feet of depletion) to meet *future* municipal and industrial (M&I) water demands in southwest Utah."[64]

The purpose of the Project is therefore not to meet current water demands but to facilitate development in Washington County and Kane County. This point was conceded by Eric Mills with the UBWR at the scoping meeting convened by FERC on June 10, 2008, where Mr. Mills stated: "It is first and foremost a water development project."[65] Mike Noel, General Manager for the Kane County Water Agency echoed this point, admitting that, "[r]ight now, the needs assessment does not show a need for this water for quite a ways out."[66]

In considering the scope of the Study Reports and NEPA review required for this Project, there are two ways in which the "future" development aspect is relevant. First, if the underlying "need/purpose" of the Project is not compelling, then this may affect the willingness of decision-makers and the public to accept the costs and adverse environmental impacts associated with the Project, or perhaps to scale back the Project scope to reduce its costs and adverse environmental impacts. Second, there seems to be consensus that without the additional Washington County and Kane County water supplies made possible by the Project, the level of projected development in Washington County and Kane County will not occur. Or put another way, the projected development in Washington and Kane Counties will be a direct or indirect consequence of the construction and operation of the Project. This suggests that the resulting environmental impacts of growth in Washington and Kane Counties need to be evaluated in the Study Reports and EIS for the Project.

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64 PLP, Section 2.1, p. 2-1,(emphasis added).

65 eLibrary no. 20080610-4015, p.6.

66 *Id.* at 39.

19.2.2 Goals and Objectives

"*Determine the validity for the participants' water supply requests based on estimates of future supplies and demands.*"[67]

Comment

Determining the validity of the Water District's need is critical to demonstrating the need for the Project. However, based on our research, UBWR's data on future supplies and demands are seriously flawed. Moreover, in 2015, the Utah Legislature directed the Office of the Legislative Auditor General to perform an audit of the Utah Division of Water Resources. The purpose of the audit was to determine the reliability of the Division's data and assess the accuracy of the Division's projections of water demand and supply. The audit took a year and half to complete.

The Audit found:

> "The division does not have reliable local water use data. In order to effectively manage the state's water resources and plan for future water needs, accurate water use data is critical. The Division of Water Resources relies on water use data submitted by local water systems to the Division of Water Rights as the starting point for projecting future water needs. Unfortunately, we found that the submitted data contains significant inaccuracies. State water agencies as well as local water systems operators also acknowledge these inaccuracies. The Division needs an improved process for ensuring water data is reliable."[68]

The Audit report continued:

> "A consistent methodology and accurate water use data are both necessary to prepare a reliable baseline estimate of the state's future water demand. The current projections are based on a 2000 M&I study which indicates that water was used at a rate of 293 gpcd. Due to concerns with the accuracy of the source data as well as methodology used, we cannot validate the accuracy of 293 gpcd or the projections of future water demand …."[69]

Further, based on our research of the current data in the PLP, UBWR's is using unreliable data for its baseline water use of 439 gpcd in the year 2000. There is no M&I Water Supply and

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[67] Study Plan, Goals and Objectives, p. 216, (emphasis added).

[68] A Performance Audit of Projections of Utah's Water Needs, May 2015, Office of the Legislative Auditor General, State of Utah, Chapter II Reliability of Water Use Data Needs to Improve, p. ii, and p. 24. See at: http://citizensfordixie.org/wp-content/uploads/2015/05/DWR-audit-water-5-5-15.pdf

[69] *Id.* at p. 24.

Use report for the year 2000 from which to establish an accurate baseline.[70] This is problematic because the PLP relies on the 2000 baseline as the basis for its conservation accomplishments. The error occurs in the 1997 M&I Report, that identifies 439 gpcd was for whole Kanab Creek Virgin River Basin, and not the water use for Washington County.[71] This is a major error by UBRW that needs to be corrected in the PLP. We provide more evidence that UBWR makes an error in stating the gpcd was 439 in the year 2000. UBWR states in the 2015 Water Needs Assessment that 439 gpcd was Washington County's 2000 baseline per capita use, and then incorrectly claims WCWCD's per capita water use dropped 26 percent between the years 2000 and 2010. That claim is also contradicted by UBWR's 2006 M&I report[72] with data from 2002 report the total potable use and secondary water use was 354 gpcd.

The Washington County Water Conservancy District (WCWCD) also confirmed the gpcd in the year 2000 was 335 gpcd, and not 439 gpcd. The report also explained how the data was incomplete. Its report stated:

> "In order to find what water savings have been found throughout the county, the WCWCD has established the baseline water use of 335 gallons per capita per day (gpcd). This number was determined by Boyle Engineering in a study prepared for the WCWCD in 1995. Great strides have been taken in gathering, tracking, and analyzing water data. However, still some of the data has been hard to come by and unfortunately is incomplete. Explanations have been given as needed to indicate missing data."[73]

Additionally the Division of Water Rights in its 2000 water report indicates the gpcd was less than 300 gpcd. See Figure 8 below.[74]

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[70] There is a M&I report for 1997 and one in 2002.

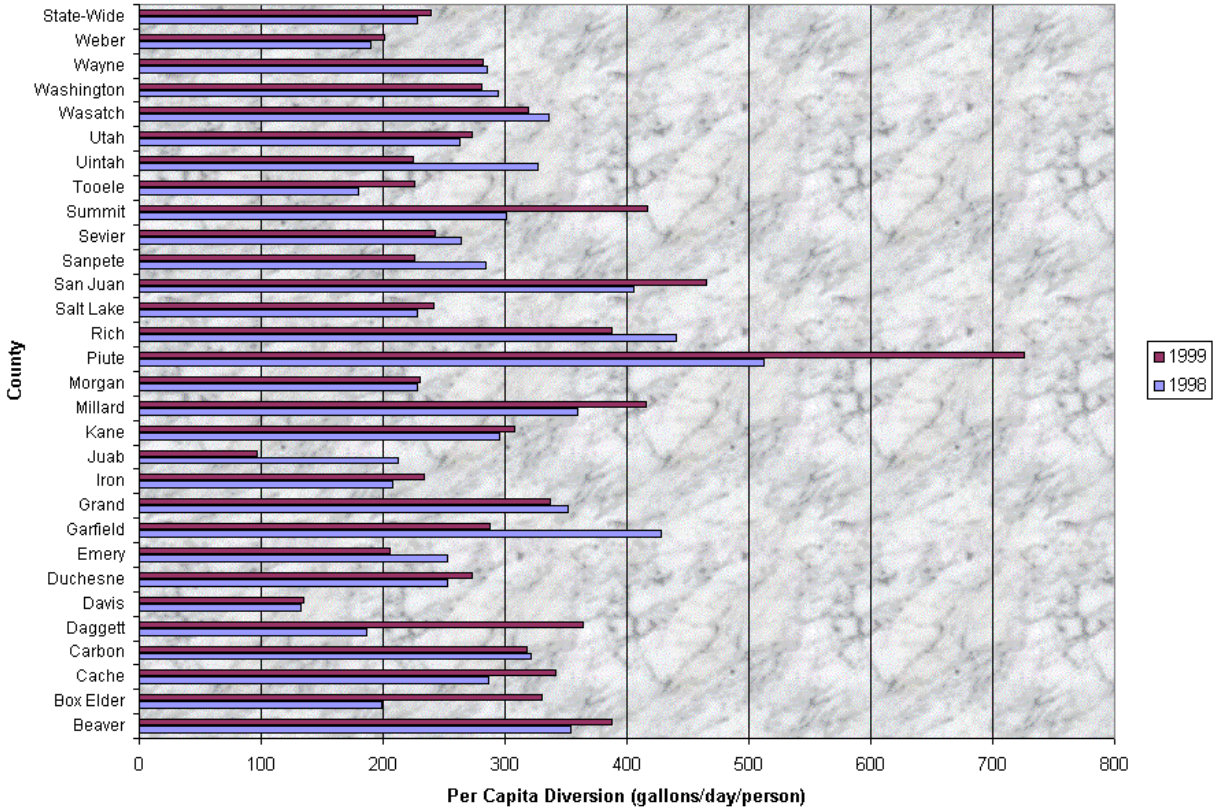
[71] Utah Division of Water Resources, Municipal and Industrial Water Supply and Uses in the Kanab Creek Virgin Basin, data 1997, p. x.

[72] Utah Division of Water Resources, Municipal and Industrial Water Supply and Uses in the Kanab Creek Virgin Basin, data 2006, Table 18, p.43.

[73] Washington County Water Conservancy District 10-Years of Water Conservation 1995-2005, p. 15, *See at* http://content.lib.utah.edu/utils/getfile/collection/wwu/id/24/filename/25.pdf.

[74] See at: http://waterrights.utah.gov/techinfo/wuse/w9899/percap.htm

Figure 8. Per Capita Use Washington County



The Auditor also questioned data used to establish the year 2000 as a baseline. The Audit report stated:

> "We question the reliability of the division's baseline water use study. We also have concerns about the 2000 water study, which the division uses as a baseline to project Utah's future water needs. We could not confirm the study's results because of the lack of documentation of the source data and the steps used to prepare the report. In addition, the 2000 water study relies on a compilation of water studies performed between 1992 and 1999, which may not be representative of the year 2000. Finally, because secondary water systems are not typically metered, much of the reported outdoor water use is based on estimates."[75]

The Audit Report's summary of conclusions found:

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[75] *A Performance Audit of Projections of Utah's Water Needs, Office of the Legislative Auditor General State of Utah* (May 2015), p. ii, *See at:* http://citizensfordixie.org/wp-content/uploads/2015/05/DWR-audit-water-5-5-15.pdf.

- "Water Use Data Lacked reliability. DWR does not have reliable actual local water use data and accurate water use data is critical for effective water management.

- Conservation could reduce water demand much further than DWR's low estimates. DWR assumes water use will decline to only 220 gpcd by 2025 and then no decrease after that to 2060. Thereby, DWR overestimates future water demand.

- Does not consider growth in water supply by communities beyond what was developed in 2010.

- The current basin plans underestimate the amount of agricultural water that could be available for municipal use in the future.

- Policymakers should consider the way water is priced in Utah. Utah's existing price structure does not encourage conservation.

- Policymakers should pursue steps to meter all water use that includes culinary and secondary. Universal metering provides managers data needed to effectively manage their systems."[76]

Comment

UBWR does not address the conclusions and recommendations in the Audit Report in the Study Report. It is a state project and these recommendations on water management should be included in the Study Report.

Further, UBWR has not addressed the Governor's recommendations [77] for accurate water need projections in his budget. The budget states:

> "Assuming that current water usage levels continue as-is or only minor additional conservation occurs, the demand for M & I water is projected to exceed supply over the coming decades as Utah's population continues to grow. Utahans have an important choice to make about water use. The need for additional water supply at some point is a given; however, the timing of water system development varies dramatically depending on changes in water usage. Increased conservation could delay major development projects for decades while the failure to conserve water will lead to accelerated building schedules and their associated increased costs sooner.

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[76] *A Performance Audit of Projections of Utah's Water Needs, Office of the Legislative Auditor General State of Utah* (May 2015), *See at:* http://citizensfordixie.org/wp-content/uploads/2015/05/DWR-audit-water-5-5-15.pdf.

[77] Utah Governor's Budget Recommendations in the Water Budget. See at: http://citizensfordixie.org/wp-content/uploads/2015/12/Govs-budget-water-12-11-15.pdf

Prior to undertaking a major expansion to the state's role in water project funding, the following minimum conditions should be met:

The details of these minimum conditions include:

- Better water data and data reporting prior to any state financing or funding, including universal metering of water in all areas that would receive state-funded water and three years of data reporting of water usage under new state reporting standards to be implemented in 2016.
- Building upon previous efforts, the implementation of new and meaningful water conservation targets that strongly emphasize improved water conservation, including reductions of government water use.
- Independent validation, including a comprehensive price elasticity and repayment feasibility study, reporting of water use data in CAFRs, and independent validation of project costs.
- Local funding effort and increased emphasis on user fees, including local conservancy districts paying up front for a meaningful portion of the project itself (for example, the federal government required a 35% local contribution on recent projects); water rates that reflect a local water user effort demonstrating a strong local commitment when compared with the water rates of other state taxpayers that will be paying to finance the projects; and movement away from property taxes in favor of user fees for water (which will enhance economic incentives for conservation).
- Transparency and local voter engagement through public processes, including public hearings disclosing projected water rate increases and a local vote agreeing to the project and associated state repayment, including needed rate increases.
- Appropriate financing and repayment terms, including all interest capitalized into the loan; an interest rate set in statute that reflects the state's borrowing costs." [78]

Comment

UBWR has not addressed these minimum conditions in the Study Report.

Section ES-3.1 Water Demand Forecast

"*Total M&I demand for WCWCD is expected to increase from 50,380 ac-ft per year in 2010 to 184,250 ac-ft per year in 2060 (DWRe 2014c). With feasible local project developments estimated to add about 13,670 ac-ft per year, without the LPP, WCWCD demand will exceed supply by about 98,200 ac-ft per year in 2060,*

[78] Utah Governor's Budget Recommendations in the Water Budget. See at: http://citizensfordixie.org/wp-content/uploads/2015/12/Govs-budget-water-12-11-15.pdf .

with the shortfall starting in about 2024 (Figure ES-2). <u>The LPP is the only water source available to meet this demand</u>."[79]

<u>Comment</u>

The PLP is incorrect on water demand due to UDWR's flawed data collection we detail errors in our comments. We also dispute that the Project is the only water source available to meet water demand. UBWR purposely doesn't include all water supplies available in the County that would be used if the Project was not built. They also ignore the Auditor's report and the Governor's recommendations by not collecting accurate data first and start using water more efficiently before you consider building large expensive water projects. There is no evidence in the record that supports their claim the Project is only source of water for the future. The evidence that is in the record contradicts their claims. For instance, (see Figure 11 below) the Water Needs Assessment (WNA) of March 2011, on page ES-11, table ES-4 contradicts the WNA of 2015 on water demand and gpcd

In the 2011 the WNA indicated with a population of 559,670, a baseline per capita use of 294 gpcd and savings of 14% with conservation, the gpcd would be 254 gpcd with a demand of 159,400 ac ft. by 2060, which is much less that 289 gpcd in the 2015 WNA. (See Figure 11.)This conclusion in the WNA of 2011 would mean there are enough existing water supplies for growth until 2060, especially if UBWR collected the correct data on use and counts all the water supplies that UBWR is excluding.

Additionally, UBWR makes a significant error in calculating per capita water demand. It adds on 55 gpcd per capita use for secondary water that is an arbitrary number and as the population grows this increases water demand significantly. Also, UBWR adds even more water demand by adding 8505 (AF) annually without validating this amount. For instance, most of the 55 gpcd added onto per capita use includes water used for golf courses, which is now served by reuse water. The reuse plant only operates from late March to late October. Consequently, it should not be added as a daily use and adding 55 gpcd to per capita use increases demand artificially. If UBWR collected accurate water use and supply data as recommended in the audit and the Governor's budget, and makes the corrections, it would suggest that the County is not running out of water by 2024. The County has an abundance of existing water supplies and secondary water for future supply. Thus, there is no need to add 55 gpcd to per capita use. We detail all the extra water supplies and secondary water supplies not identified as future supply by UBWR in our following comments.

Throughout the study report it refers to Division Water Resources (DWR) data reports 2013-2014. However, according to DWR, there are no reports and they only have data from 2010. Therefore, all those references should be deleted from the Study Report. The Commission Staff should require UBWR to provide current validated data on water supplies and demand to

[79] Study Plan, p. ES-2, (emphasis added).

determine if there is a need for the project by 2024. As directed in the *Study Plan 19.2.2. Goals and Objectives* above before the EIS process begins.

UBWR is using the wrong population growth rate. According to Section 3.1.1., WCWCD projected population is using a 3.6 percent annual growth rate for the next 15 years. However, Utah's Work Force Housing is currently using 2.2 percent for 2013-2014. This also pushes up water demand artificially.[80]

Section 2.3.5 Forecasting Water Demand:

> "*Total projected water demand was determined for the two Districts for the period from 2010 to 2060 by multiplying the projected population for each of the Districts by the projected total per capita water use with conservation. Separate culinary and secondary untreated water use demands were estimated to determine the potential secondary untreated supply that could be utilized by the Districts."*[81]

Comment

However, the Auditor found in its investigation of the UBWR that the agency's data could not be relied on. The audit stated "the effectiveness of the division's data verification process is also a concern because much of the submitted data is accepted at face value. The division reports that if a water system states that its data is accurate and appears reasonable, then the division has no other alternative than to accept that data. The problem with this approach is that inaccurate data can still be submitted. Another concern is that by verifying the data every five years, the division is unable to perform annual trend analysis, which would help in detecting inconsistencies in water use from year to year."[82]

The Coalition illustrates just a few of the major errors in inaccurate data collection by UBWR on water use and supply in Washington County. They include:

- There are less expensive alternatives to gain 86,264 (AF) of water that are being ignored in the studies.
- If accurate water use and supplies were collected as recommended in the audit the Project would not be needed by 2024, or by 2060.
- Reports to Division of Water Rights are incomplete and are different than Division of Water Resources data on water supplies and use. Data is supposed to

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80 http://jobs.utah.gov/wi/pubs/countiesinreview.pdf.

81 Study Report, p. 2-10 (emphasis added).

82 *A Performance Audit of Projections of Utah's Water Needs, Office of the Legislative Auditor General State of Utah* (May 2015), *available at* http://citizensfordixie.org/wp-content/uploads/2015/05/DWR-audit-water-5-5-15.pdf.

flow from Division of Water Rights to Division of Water Resources and the data does not match.

- Cities do not report the amount of secondary water they use. UBWR just adds 55 gpcd to per capita use. This artificially inflates water demand for the Project. The secondary water use is only an estimate and not validated.
- The 2000 baseline level in M & I reports of water use that is used for conservation savings is not validated and is incorrect.
- The 2011 Water Needs Assessment (WNA) and the WNA of 2015 have major conflicts of results regarding water demand. The 2011 report has far more conservation gains and lower water demand by 2060.
- UBWR only identifies existing water supplies as supplies that meet EPA drinking water standards thereby reducing the supply.
- Not all existing supplies or water rights are included as required in the Study Plan.
- There is no current or validated data on water supplies and use; the last M & I report was done in 2010 and the Auditor found the data flawed back to 2000.
- The last time UBWR's Kanab Creek Virgin River Basin M & I water report was updated was 1993. (Audit, page 53)
- UBWR's methodology in data collection hasn't changed in thirty years and this inflates water demand.
- The current yield from existing projects has been reduced over the years and is detailed in our following comments.

Section 4.2.4. Washington County Municipal and Industrial Water Supplies

"*Total reliable existing and near-term supply for Washington County is approximately 67,677 ac-ft per year, made up of culinary (potable) and secondary untreated (non-potable) supplies."*[83]

Future culinary supplies of 13,670 (AF) and future secondary water reuse supplies of 7800 (AF) and 10,000 (AF) that equals 98,727 (AF) a year.

Figure 9. Water Supplies/Acre Feet (AF)

67,677	WCWCD and Cities
13,670	Future culinary
17,380	Future secondary reuse 7800, 10,000 agricultural conversion
98,727 (AF) a year	Total water 2060

[83] PLP, Study Report, p.4-12.

Comment

UBWR claims that only 98,727 (AF) of existing and future water supply is in the county by 2060 and the county runs out of water by 2024. It is not based on accurate facts because they ignore all the other existing and future water supplies listed below. In addition, they inflate water demand by not validating the data.

Section 2.4. Water Supplies

> *"Water supplies that meet the EPA's secondary untreated MCL for drinking water of TDS less than 500 mg/L are deemed usable for culinary purposes in this Assessment. The EPA's secondary untreated MCLs are guidelines which address aesthetic concerns in culinary water, such as taste, color and odor."*[84]

Comment

All water rights and those that do not meet EPA drinking water standards in the county should be included in the Water Needs Assessment as existing and future supplies so decision makers can decide what future water supplies are really needed if the Project is not built. The Commission Staff should require full disclosure of all water resources in Washington County. Water treatment of the abundant lower quality water in the county could be a cheaper alternative to the Project.

UBWR varied from the Study Plan and must provide sufficient information about all existing and future water supplies and not reduce them every year. It must not narrow what is disclosed by only stating that the existing water supply is only culinary water that meets EPA standards for Drinking Water. The Commission Staff should require that all existing water supplies be included in the Study Report as required in the Study Plan (Section 19.2.2).

Section 19.2.2. Goals and Objectives

> *"An estimate of existing and future water supplies will also be developed and compared with projected M&I water demands to determine the need for additional future water supply."*[85]

Section 19.4.1 Existing Information and Additional Information Needs, Background Description

- *"Review capacities of existing supplies – the yield and reliability of existing water supplies were summarized for each of the Project participants. Information that was*

[84] PLP, Study Report, p. 2-10, (emphasis added).
[85] Study Plan, p. 215, (emphasis added).

characterized includes the location of the source water, reliable yield of the water supply, water quality, water rights and other institutional issues, and water treatment.

- *Evaluate potential new water supplies – potential new water supplies were characterized based on data from Project participants, including information on the reliable yield, water quality, water rights and other institutional issues, water treatment requirements, and planned timing of implementation for the potential water supplies."*[86]

Comment

The current information in the Study Report is inadequate because it submits only data to the record that has been declared by the auditor's report as being unreliable. Therefore, the record is not complete or ready for environmental analysis. The Commission Staff must require UBWR to account for all water supplies and water rights in the county as directed in *Study Plan 19* (Section19.2.2 and section 19.4.1) above.

For instance, existing and future supplies not listed include:

- More water conservation is possible; the Washington County Water Conservancy District's Water Conservation Plan, 2015 only saves 12 percent, 40 gpcd, or 14,000 (AF) of water over fifty years from 2010 to 2060.

- Section 4.2.3.1 WCWCD System Facilities page 4-*6, 2015.*
  - "The District only identifies 4000 ac. ft in future supplies from the Sand Hollow aquifer.. However, Sand Hollow reservoir aquifer *currently stores about 100,000 ac-ft with an estimated future capacity of about 300,000 ac-ft.* in section 4.2.3.1."

- In section 4.2.3.1 WCWCD System Facilities page 4-6, 2015 "*describes Quail Creek Reservoir having a capacity of 40,000 ac-ft and supplies raw water to the Quail Creek Water Treatment Plant. Sand Hollow Reservoir has a 50,000 ac-ft capacity with an active pool of about 30,000 ac-ft and a drought pool of 20,000 ac-ft reserved for extreme drought.* However, the WCWCD only identifies a yield of both Quail Creek and Sand Hollow reservoirs as 24,900 ac. ft. yield as future supply by 2060 in the Study Report."

- The yield of Sand Hollow reservoir has been described with much more yield in the past as a "project that serves both as a storage facility and a ground water recharge. The reservoir has capacity storage of 50,000 AF of storage covering a surface area of approximately 1,300 acres. A 20,000 AF drought pool will act as a buffer in extreme droughts. The reservoir acts as a groundwater recharge facility

[86] Study Plan, p. 217, (emphasis added).

for the Navajo Sandstone Aquifer. This recharge will provide an annual yield of approximately 20,000 AF to the aquifer. The yield of surface water is estimated at approximately 15,000 AF. This project has a total yield is 35,000 AF." [87] However, in the Study Report it only lists 4000 (AF) yield of water by 2060 for the aquifer and about 4,900 (AF) for the reservoir.

- WCWCD has available water rights to divert up to 40,000 (AF) of low quality water annually from the Virgin River at the Washington Fields Diversion. This project will provide for more efficient storage, management, blending, and conservation of these water resources. The Water District does not identify it as future supply in the WNA.

- The water agencies of WCWCD and DWR[88] state there are no un-appropriated water rights to be purchased county. This is because these agencies applied and were approved for any remaining water rights in the County.

- More agricultural rights could convert to culinary use than what was identified in WNA listed below.

- In addition, there is abundant brackish well water in the county that is not being considered as future supply even though credible research exists showing how this could be economically achieved with water treatment.[89]

- In the No Lake Powell Water Alternatives Section 3.3.1.2, the maximum projected wastewater treatment plant effluent available for use in 2060 is projected to be 39,500 (AF) per year. However, UBWR only identifies 7800 (AF) as future reuse supply in the WNA.

- Future supply does not include all the towns' and cities' water rights that can still be developed in the future.

- Future supply does not include water rights outside of the cities' ownership.

- In addition, the Utah State Water Plan indicates developable surface water (rivers and streams) supply of 211,000 (AF) in Washington County. The Virgin River Management Plan estimated the potential water supply at 280,000 (AF). Keep in

[87] USGS, Assessment of Artificial Recharge at Sand Hollow Reservoir, Washington County, Utah, Updated to Conditions through 2006 (2007), p. 1. See at: http://pubs.usgs.gov/sir/2007/5023/

[88] Water rights of DWR and WCWCD, See at: http://citizensfordixie.org/wp-content/uploads/2015/12/WCWCD-Water-Rights-DWR.pdf

[89] 6 Ways to Reduce Desalting Costs by 50 percent, Mark Bird, professor at UNLV. See at: http://citizensfordixie.org/wp-content/uploads/2011/11/Bird-Mark-cost-of-water-treatment.pdf

mind UBWR only identifies 98,727 (AF) as annual future supply by 2060 and claims the county will run out of water by 2024.

Figure 10. Ground and Surface Water Rights

	Acre feet
Utah State Water Plan, developable water supply Kanab Creek/Virgin River water supply at 247,000 ac ft for developable supplies; you should take out 35,500 ac ft for Kane and still have 211,000 ac ft for Washington County.[90]	211,000
Virgin River Management Plan, potential water supply[91] Major approved applications that are yet to be developed totaled over 280,000 Acre Feet in 1989.	280,000

Comment

There are ample existing secondary water supplies and future supply not being counted in the Study Report. Thus, there is no valid reason to add an extra 55 gpcd to per capita use for secondary use which inflates water demand for the pipeline.

Secondary water not listed in existing and future supply in WNA 2015 includes:

- Section 4.2.5.2.5 Toquerville City**,** ***"****The current secondary untreated water system in Toquerville City is currently only using a third of its capacity. By 2060 the existing secondary untreated system could be used to full capacity, which could be as much as 2,063 ac-ft per year, the total original water rights of the system."*

- Section 4.2.5.2.6, *"Washington City**,** Washington City's 2005 Secondary Water Master Plan (Washington City 2005) estimates potential secondary untreated water demand through 2025 and recommends a future pressurized secondary untreated water system. The Plan considered water resource recovery facilities (WRRFs) also known as scalping plants in conjunction with their wastewater system improvements. Preliminary calculations show that on average the amount of water recovered from the scalping plant could take care of the secondary untreated irrigation needs of the community."*

[90] Utah State Water Plan, Utah's Water Resources Planning for the Future, May 2001, on p. 13. See at: http://www.water.utah.gov/waterplan/SWP_pff.pdf

[91] Virgin River Management Plan, page 13, See at: http://www.wcwcd.org/downloads/plans/VRMPFinal5.PDF

- Section 4.2.3.3.5 La Verkin City Secondary Untreated System, *"The original La Verkin diversion was merged into WCWCD's Quail Creek diversion in 1985 and the WCWCD is responsible to transmit the associated 2,650 ac-ft of water rights. In February 2007 the City of La Verkin acquired these water rights along with the La Verkin Bench Canal Company secondary untreated water system. The original pressurized irrigation distribution system was installed around 1985 and facilities are being used at or near capacity, although there are sufficient water rights to support an expanded infrastructure*."

Comment

Another example of how cities incorrectly over estimate water demand is:

Section 3.3.1. Required Source-Sizing Standards

> *"Per capita water use is anticipated to decline resulting from increased conservation, but ultimately, the quantity of water municipalities must be capable of providing their customers is dictated by design standards for source sizing. Utah Division of Drinking Water (DDW) requires sources to meet both average and peak day demands (DDW citation, R309-510). A minimum of 0.45 ac-ft per year of source water is required per equivalent residential connection (ERC) statewide to meet indoor demands. The ERC could influence the demand needs in the future as the requirement may be more than the per capita use after conservation measures have been taken."*[92]

Comment

However, another legislative audit questions the logic of this rule of .45 (AF) per home Drinking Water's Minimum Source Sizing Requirement because these regulations have not been updated in thirty years.[93] The cities misinterpret the rule that increases water demand and are requiring too much storage costing them more money for unnecessary infrastructure. The Water District has been using .89 (AF) per home for water demand and so have other cities which artificially inflate water demand.

The audit found current requirements were out of date:

- indoor source sizing requirements appear outdated and lack supporting data
- average day indoor standard appears excessive
- peak day indoor standard appears excessive

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92 PLP, Water Needs Assessment, p. 3-4.

93 A Review of the Division of Drinking Water's Minimum Source Sizing Requirement, Dec 2014, Office of the Legislative Auditor General State of Utah. See at: http://le.utah.gov/audit/14_13rpt.pdf

For instance the City of St. George misinterprets the rule and requires a large amount of water (1,487 gpcd per home) be held in storage, which in turn increases water demand artificially. [94]

Indoor storage: 400 gpcd
Outdoor storage: 480 gpcd
Emergency storage: 540 gpcd (established by staff)
1,487 gpcd per home is very high

Comment

UBWR submitted into the record totally different information on water supplies in the Water Needs Assessment (WNA) in 2011 and in WNA 2015. Water supplies have gone down since 2008 reporting by 16,233 (AF).

Figure 11. Water Needs Assessments 2008, 2011, 2015

Year WNA	Existing reliable supplies (AF) Culinary & secondary Washington County	Population	gpcd
2015 [95]	67,677	[1]167,439	
2011 [96]	83,910		[2] 294
2008 [97]	83,910		[3]328

- [1] Study Report 10, 2015, page 4-2
- [2] Further, the 2011 Water Needs Assessment's water demand forecast for a population of 559,670, using as a baseline 294 gpcd (average of the six largest cities), with 14% conservation savings by 2060 and was only 254 gpcd, with a demand of only 159,400 ac ft. In the 2015 WNA 325 gpcd for 2010, page 3-2
- [3]Water Needs Assessment of 2008, used 2005 data for gpcd

The charts above show the Reliable Potable Water Supply. It is defined by UBWR "as the annual volume within the maximum developed water supply that is available to meet peak demands. This is generally calculated as 100% of the maximum supply from surface water sources, 50% of the maximum yield of wells, and between 50% and 100% of the average annual spring flows. When this number is divided by the average per capita usage, the resulting number represents the theoretical maximum population that the water source can serve."[98]

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94 St George City Impact fee Facilities Plan and Impact Fee Analysis, June 2014, Lewis and Young, Roberson & Burningham.

95 DWR Water Needs Assessment, 2015, page 4-12.

96 DWR Water Needs Assessment, 2011, page 6.

97 DWR Water Needs Assessment, PAD, 2008, page ES-8.

98 DWR M & I, 2009, page 17, See at:
http://www.water.utah.gov/M&I/PDF/KanabVirgin/09KCVR_M&I_2005.pdf

The charts below show the difference in the Water Needs Assessments and how water supplies have gone down over the years. Supplies have been lowered or deleted in the 2015 Water Needs Assessment. In addition, UBWR in the 2015 WNA is only disclosing water supply that meets EPA's standard for drinking water in an effort to show the pipeline is needed by 2024.

Figure 12. Culinary Existing and Future Water Supplies WCWCD

	Estimated 2015 Reliable yield ac ft yr
Quail Creek and Sand Hollow Reservoirs	24,900
Sand Hollow aquifer	4,000
Cottam well field	875
Kayenta Water system	250
Crystal Creek Pipeline	2,000
Total	32,047 ac ft

2015 WNA, page 4-4.

	Estimated 2011 Reliable yield ac ft yr 2060
Quail Creek and Sand Hollow Reservoirs	22, 590
Sand Hollow aquifer	3,000
Cottam well field	2,000
Kolob Reservoir	2,000
Meadow Hollow Reservoir	200
Sullivan Well Field	750
Kayenta Water system	1000
Crystal Creek Pipeline	2,000
Ash Creek Pipeline	3,830
Total	37,398 ac ft

2011 WNA, page 6-4.

	Estimated 2008 Reliable yield ac ft yr 2060	
Quail Creek and Sand Hollow Reservoirs	29,500	
Sand Hollow aquifer	8,000	
Cottam well field	2,000	
Kolob Reservoir	2,000	
Meadow Hollow Reservoir	200	
Kayenta Water system	1000	
Sullivan Well Field	750	
Gunlock pipeline	Secondary (future treated culinary)	2,500
Total	43,450 ac ft	2,500

2008 WNA. page 4-9.

	Future supplies
Ash Creek Pipeline	5,000
Future Waste water reuse	16,700 (current capacity WNA 2015, 7,300)

2008 WNA, page 19.

Comment

UBWR's data submitted on existing and future water supplies in the Water Needs Assessments is contradictory; therefore, the Commission Staff should require validated data be submitted to the record before the EIS process begins.

Further, UBWR's reports overestimate secondary water in Washington County in the Water Needs Assessment (WNA). UBWR describes how they estimate secondary water in their M & I water Plans. For example, "*Reliable secondary water supply is defined to be equal to the secondary use determined for each community system*."[99] This same wording is also found in DWR's 2002 M & I report, on page 10.[100]

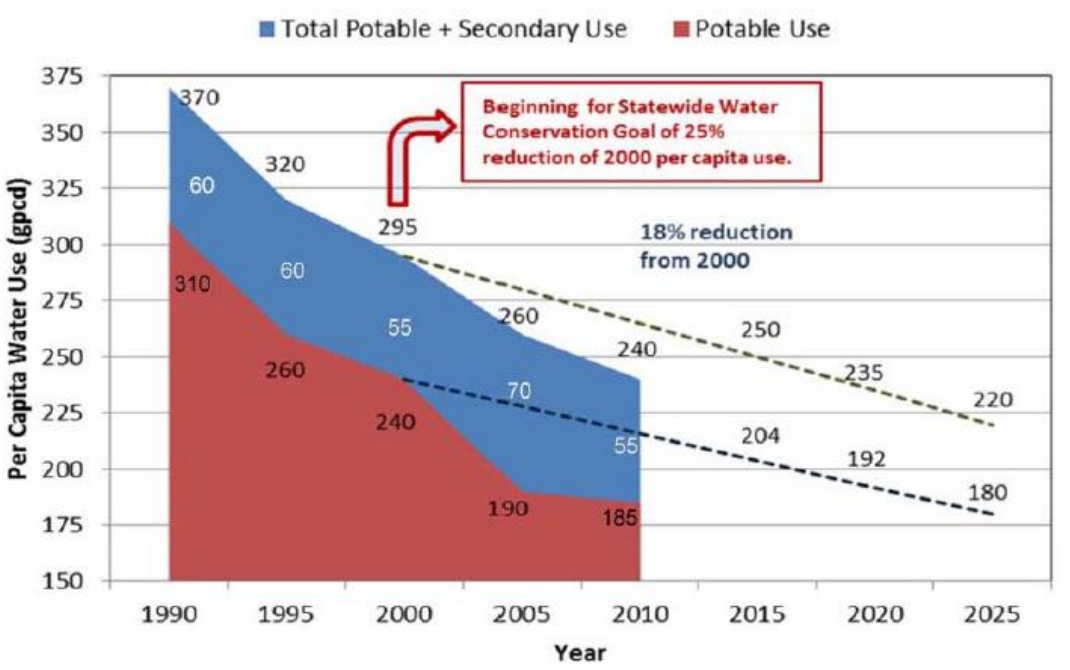
The Auditor's report explained its concerns with the accuracy of accounting for secondary water statewide by referring to this chart below (Figure 13).

[99] Division of Water resource Municipal and Industrial Water supply and Uses in the Kanab Creek/Virgin River Basin , July 2006.

[100] Ibid, M &I report 2002, p 10.

Figure 13. Utah's Water Use Since 1990[101]

Utah's Water Use Since 1990. Volatility in the reported secondary water use raises doubts about the comparability of past water studies. It also raises questions about the accuracy of the report that water use has declined by 18 percent from 2000.



Source: Division of Water Resources

The Auditors report also shows the problem with UBWR adding on 55 gpcd as a standard for secondary water without justification throughout the state.[102] They wrote, "volatility in the reported secondary water use raises doubts about the comparability of past water studies. It also raises questions about the accuracy of the report that water use has declined by 18 percent from 2000. The Division of Water Resources Figure 13 shows large fluctuations in secondary water use (shown in blue) during 2000, 2005, and 2010. It shows secondary water use in 2000 was 55 gpcd. This is the difference between year 2000's total water use of 293 gpcd and the potable use of 240 gpcd. In 2005, that reported secondary water use rose to 70 gpcd. Then it declined to 55

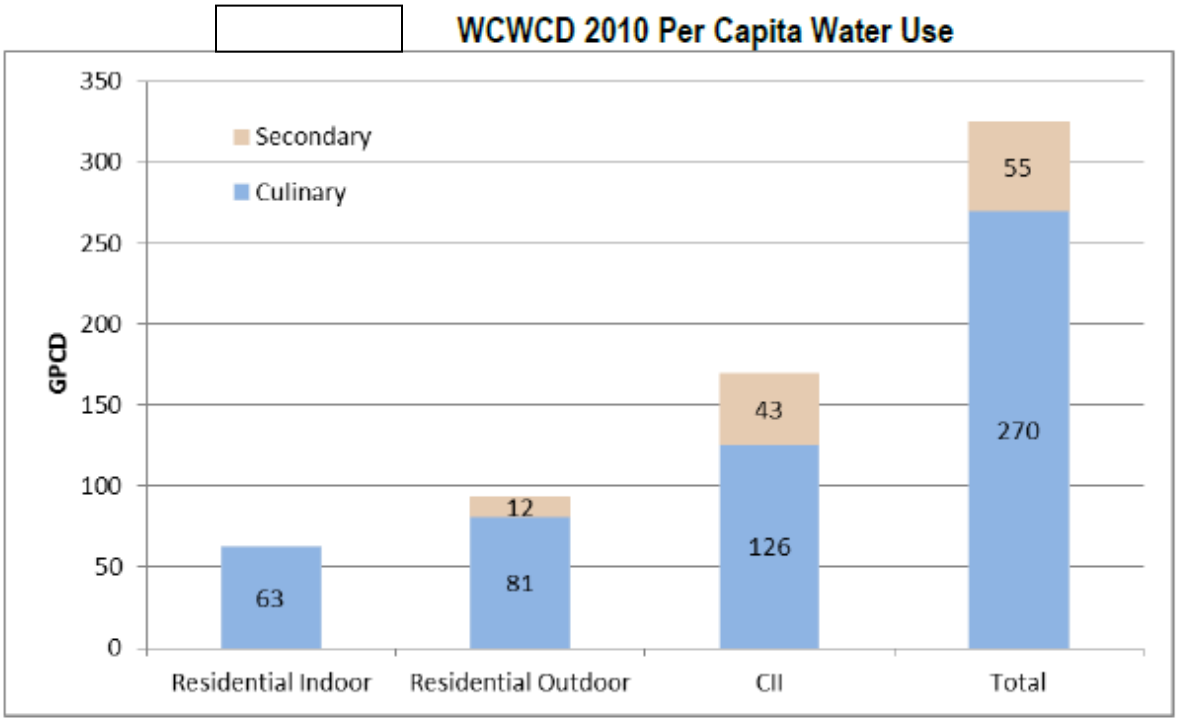
[101] Source Figure13. The Performance Audit of Projections of Utah's Water Needs, May 2015 Office of the Legislative Auditor General, State of Utah, Chapter II Reliability of Water Use Data Needs to Improve, p. 23.

[102] State of Utah Municipal and Industrial Water Supply and Use Study Summary 2010, page xvi, The total, 185 is potable and 55 gpcd is non-potable.

gpcd in 2010. These swings in the reported use are explained, in part, by the use of different methods to estimate secondary water use."[103]

The Auditor's report continues, "deliveries of non-potable (secondary water) are an important component of water use with the boundaries of public community water systems. However, quantifying the available supply is difficult. In Utah, many of the secondary water systems are part of a larger agricultural irrigation system. Hence, the theoretical supply includes both agriculture and M & I water. Currently, separating M & I secondary from agriculture is mostly estimated, due to the lack of and/or absence of metering, particularly at the level of individual property connections. For planning purposes, the DWR assumes that the supply for M & I secondary irrigation is simple equal to current use."[104]

Figure 14. WCWCD 2010 Per Capita Water Use[105]



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[103] A Performance Audit of Projections of Utah's Water Needs, May 2015 Office of the Legislative Auditor General, State of Utah, Chapter II Reliability of Water Use Data Needs to Improve, page 25. See at: http://citizensfordixie.org/wp-content/uploads/2015/05/DWR-audit-water-5-5-15.pdf

[104] Division of Water resource Municipal and Industrial Water supply and Uses in the Kanab Creek/Virgin River 2008, pp. 10-12 .

[105] This chart above, Figure 14, Page 3-2 WNA, shows how the extra 55 gpcd is added to per capita use in Washington County that overstates water demand. The per capita use is explained by UBWR below

Section 3.2.1 WCWCD 2010 Per Capita Water Use, page 3-2, 2015

> *"In 2010 the per capita water use in the WCWCD service area was estimated to be 325 gpcd. Figure 3-1 above shows that 270 gpcd was culinary water and 55 gpcd was secondary untreated water. Residential use contributed 156 gpcd, and commercial, institutional and industrial (CII) use contributed 169 gpcd. CII includes use from second homes."*

Comment

UBWR explains the problem of not having accurate data on secondary water use below.

4.2.4.2 Secondary Untreated Water Supplies, on page 4-13

> "*A number of irrigation companies deliver secondary untreated water to M&I systems in Washington County. While these 2010 secondary untreated water use data are considered reliable due to the significant validation process followed by DWRe, reliable data for previous years are not available with enough frequency to assess possible trends in use within the county or on a per capita basis. Total secondary untreated use in Washington County, including systems owned by WCWCD, is approximately 8,505 ac-ft per year (DWRe 2013a, Table 4-4)."*

Comment

UBWR just carries forward 8,505 (AF) of secondary water annually since 2000 without any justification for that which also artificially increases demand, especially when you add the extra 55 gpcd to per capita use. If UBWR corrected these errors by collecting accurate data in the WNA and then eliminated or lowered the 55 gpcd it would reflect more water savings than is in the current District's Water Conservation Plan by 2060. For example, the District's 2015 Water Conservation Plan in the WNA only saves 40 gpcd, 12 percent, in 50 years between the years 2010-2060 and will cost taxpayers $44 million. More importantly, if UBWR would correct their errors the Project would not be needed by 2024.

Section 4.2.5.3., Agricultural Conversion for M&I Supply

> *"The study estimated that 12,880 ac-ft per year could be converted for secondary untreated M&I purposes with a 90 percent reliability. This value includes some existing irrigation supplies that have already been converted.*
>
> *Using the M&I Water Use Report data (DWRe 2013g) for secondary untreated water supplies, it was estimated that about 2,800 ac-ft per year of Washington Fields was included in the 12,880 ac-ft per year value. Thus, the remaining irrigation water available for conversion to secondary untreated M&I use is about 10,080 ac-ft per year.*

The majority of agricultural supply that would be converted to M&I supply as a result of development has high TDS concentrations that would either require blending with lower TDS supplies or very costly (RO) treatment to reduce overall TDS. In the future, water from agricultural conversions made in the Washington Fields area could be placed in a future storage facility, allowing efficient management of this water for secondary untreated and other purposes in the area. Blending with reuse water and Santa Clara River stored water could reduce the overall TDS. WCWCD intends to use stored water for use in M&I pressurized secondary untreated supply systems in the future."[106]

Comment

UBWR is not accounting for all the 87,000 (AF)[107] of agricultural water in the county correctly and more will convert to urban use by 2060 than is identified in the WNA. For example, the WNA only accounts for 22,960 (AF) of agricultural water that includes 4000 (AF) converting to culinary use and 10,000 (AF) for secondary use by the year 2060 and 7420 (AF) is already included in existing water supply.[108]

Figure 15. Agricultural Water

Agricultural water estimated in 1993	87,000 (AF) [109]
Agricultural water estimated in the Lake Powell Pipeline 2011 studies converting to culinary and secondary by 2060	4,000 ac feet for culinary and 10,000 (AF) for secondary to 2060. In, addition 7420 (AF) is included in existing water supply

Some of this water will have to be treated and some will convert to culinary without treatment. This is because the 87,000 (AF) of agricultural water is still somewhere in the system keeping something green--either a pasture, a yard, or public open space--and all of it needs to be accounted for.

Comment

The Study Report is incorrect by only accounting for 22,960 (AF) of agricultural water rights available for growth by 2060. As the land is developed, more agricultural water rights will become available. All 87,000 (AF) of agricultural water rights need to be accounted for in the Study Report before inclusion in the EIS analysis.

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106 PLP Study Report 19, p. 4-20.

107 Water Resources Planning for the Future. May 2001, Division of Water Resources, Utah State Water Plan, page 13 ; see at: http://www.water.utah.gov/waterplan/SWP_pff.pdf

108 MWH Lake Powell Pipeline Water Needs Assessment, March 2011, Utah Board of Water Resources, p. 64. See at: http://citizensfordixie.org/wp-content/uploads/2012/04/19DraftWaterNeedsAssessmentReport-1.pdf

109 Utah State Water Plan, Kanab Creek/Virgin River Basin, August 1993. p 5-25 estimated irrigation water use 87,800 (AF) in Washington County; See at http://www.water.utah.gov/planning/swp/kan_vir/Kan_VirIndex.htm

Section ES-3.Water Demand Forecast, WCWCD

> *"There is no practical water conservation program that could offset reasonably anticipated demand over the study period."*[110]

Comment

The Study Report results that conservation programs could not replace the Project are incorrect. UBWR did not consider any other conservation programs in its analysis except reverse osmosis. For example, the Jordan Valley Water Conservancy District (JVWCD) had 585,372 residents in 2010 and will spend only $7,899,000 and save 144,200 (AF) of water over the next five years according to their 2014 Water Conservation Plan,[111] UBWR will spend billions of dollars for the Project to get 86,264 (AF) and only saves 14,000 (AF) from the year 2010 to 2060. Clearly UBWR could develop a conservation plan to gain 86,264 (AF) by 2060 at less cost and not have to spend billions of dollars on the Project.

In addition, the JVWCD from the year 2000 to 2013 saved 237,000 (AF) and only spent $14,189,568 on conservation programs, shown on page 16, of the plan. This plan shows that water conservation is a very viable alternative to the Project and it is a lot cheaper for the state taxpayers.

Moreover, the Auditor investigated the method for forecasting water demand by UBWR for a year and half. They found that statewide "conservation and policy choices can reduce demand for water conservation will lead to less water use. We question the division's projected demand for water, which assumes Utah residents will consume on average 220 gallons per day through the year 2060. The accuracy of this projection appears overstated for a number of reasons. First, the projected amount of water use, 220 gpcd, is based on a 2000 baseline water study, which, as described in Chapter II, may be unreliable. Second, other western states appear to use less water than Utah, indicating Utah residents may be able to further reduce their water use. Third, ongoing trends towards conservation should continue to reduce per capita water use beyond the state's 25 percent conservation goal."[112]

Furthermore, the auditor concluded, "We could not find many other states with conservation goals to compare to Utah's projected demand of 220 gpcd in 2060. Only California has a statewide conservation goal which is to reduce water use to 154 gpcd by the year 2020. However, we find one regional comparison that is insightful. The Southern Nevada Water

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110 PLP Study Report 19, p. ES-3(emphasis added).

111 Jordan Valley Water Conservancy District's, Water Conservation Plan 2014, p.28 See at: http://citizensfordixie.org/wp-content/uploads/2011/11/Jordan-Valley-Water-Conservancy-District-Water-Conservation-Plan-2014.pdf

112 A Performance Audit of Projections of Utah's Water Needs, Office of the Legislative Auditor General, State of Utah, May 2015, p. 13, See at, http://citizensfordixie.org/wp-content/uploads/2015/05/DWR-audit-water-5-5-15.pdf

Authority, which serves the Las Vegas region, has a goal to reduce water use to 199 by 2035. In contrast, the communities in Southwestern Utah, which have a climate that similar to that of Southern Nevada, have a goal to reduce water use to 292 gpcd by the year 2060." [113]

Section 5.2.3 Conservation Savings

> *"As previously shown in Table 51, total per capita water use decreased 26 percent in WCWCD's service area between 2000 and 2010 (DWRe 2014c). The overall culinary water conservation savings for WCWCD from 2000 to 2010 was determined by DWRe to be 15 percent utilizing actual data for the 6-Cities between 2000 and 2010 (DWRe2013c). Reduction in regional per capita water use can result from conservation actions, changes in housing density, housing types, landscaping, lot sizes, climate water pricing, drought policies, regional economic conditions (e.g., recessions), percentage of non-permanent residents, hotel occupancy, and commercial, institutional and industrial (CII) uses."*[114]

Comment

As we have detailed in our comments there is no validated evidence in the record that 439 gpcd was accurate for Washington County in the year 2000. It is an error that needs to be corrected. Therefore, the claim of conservation saving 26% is not valid using 439 gpcd as a baseline for the year 2000. On the contrary, the 2011 Water Needs Assessment uses data from the six cities that established the baseline in 2000 at 325 gpcd. We support the six cities version because they are the largest cities that will use water from the Project. However, UBWR does not use the baseline of 325 gpcd for 2000, nor the 20% conservation savings, nor the lower 246 gpcd listed below by 2060 in the Water Needs Assessment of 2011.

Moreover, water conservation savings are derived by simply dividing supplies by population. Therefore, as the population grows and similar water supplies are included the per capita use goes down. Thus, it is not necessarily because of implementing any water conservation programs.

Section 5.2.4 Future Goals and Water Conservation Programs

> *"Future water conservation savings were estimated through a detailed water conservation study, originally conducted for WCWCD by Maddaus Water Management*

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[113] A Performance Audit of Projections of Utah's Water Needs, Office of the Legislative Auditor General, State of Utah, May 2015 Chapter III, p. 25, See at, http://citizensfordixie.org/wp-content/uploads/2015/05/DWR-audit-water-5-5-15.pdf, (emphases added).

[114] PLP, Study Report 19, pp. 5-8.

in 2010 (MWM 2010b) and updated in 2015 (Appendix B, MWM 2015a). This analysis reviewed water use data (billing data), evaluated existing water conservation measures, considered potential future water conservation measures and selected a program considered likely to be implemented in the future. The analysis relied on a model developed by MWM that analyzes water use at the end-use level (e.g., individual appliances and fixtures) and considers factors such as individual unit water savings, year of implementation, unit costs, and market penetration".[115]

"Table 5-4 summarizes the projected GPCD reductions and percent conservation anticipated with the selected program. Results show that by 2060 WCWCD could reduce its 2010 GPCD levels by12 percent by 2060."

Comment

UBWR included conflicting data in the record. The Water Needs Assessment that was submitted into the record in 2011 is different than the current 2015 Water Needs Assessment (WNA). The 2011 WNA had 325 gpcd in 2000 as baseline per capita use, not 436 gpcd as stated in the 2015 WNA. The 2011 WNA also shows much more conservation is possible and the gpcd is much lower at 256 gpcd by 2060. (See Figure 11.)

Water Needs Assessment, March 2011, page 5-11 states the following:

"*Based on the five sources of water use data reviewed, the Governor's Water Conservation Team data for the 6 largest cities in Washington County appeared to be the most reliable in determining the historical water conservation achieved in the WCWCD service area since 2000. This is shown in Figure 5-1. The data were analyzed in several different ways.*

- *The percent conservation achieved from 2000 to 2007 was computed since both years have net Et values of 39 inches. The culinary water use reduced from 325 gpcd in 2000 to 281 gpcd in 2007, which is a 14 percent reduction or about 2 percent per year. Extrapolated to 2009 this would be a total culinary water use reduction of 18 percent.*
- *A 5-year moving average of culinary water use was computed for years starting in 2000 through 2005. The 5-year moving average declined from 290 gpcd to 261 gpcd, an average of 2.1 percent per year. Applied to the 2000-2009 period, this results in an estimated culinary water use reduction of 19 percent.*
- *A linear regression was fit to the 10 years of data. The regression line decreases from 308 gpcd to 246 gpcd, a total of 20 percent or 2.2 percent per year.*

[115] PLP, Study Report 19, p.5-9.

All of the methods of analysis give similar results, with culinary water use in WCWCD's 6 largest cities declining 18-20 percent between 2000 and 2009. DWRe estimated that the secondary water use of 52 gpcd remained relatively constant over this period.

Comment

Included in the Water Needs Assessments, are water conservation programs from the Maddaus reports. The 2010 Maddaus report saves more water than the proposed water conservation programs in the 2015 Maddaus report. For example, in the 2015 Maddaus report it saves only, 14,515 acre feet of water, or 12 percent, reduces water use to 285 gpcd, and saves 40 gpcd from 2010 to 2060.

However, on the other hand the Maddaus conservation program in the Washington County Water Conservancy District Water Conservation Plan of 2010 illustrates a savings of 54,000 (AF) .[116] Further the 2010 Maddaus program show much more savings; Program A., saves 11% by 2035, with a savings of 16,600 (AF) by 2035.

Section 6.1 Water Resources Planning, Introduction

"It is estimated the LPP would need to be brought online in 2024 when the projected demand with conservation nears 81,273 ac-ft, exceeding the total reliable supply. Total reliable supply for WCWCD is 67,498 ac-ft per year with an additional 13,670 ac-ft per year of culinary or potable supply projects planned for completion prior to 2060."[117]

Comment

The Study results use inaccurate data and the Commission Staff should require UBWR to provide current validated data as required by Study Plan Section 19.2.2. There is no credible evidence in the record that the county will be out of water by 2024. The Auditor General's Audit points out the flaws in the projections of statewide water needs; all of them apply in Washington County, as well. We have detailed the flaws in the data in our comments.

Section 19.4.3. Issues and Data Needs

"Cost estimates for other proposed water supplies from water providers in the study area will be collected or generated for use in estimating the costs of various water supply alternatives relative to the cost of the LPP."[118]

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116 Washington County Water Conservancy District, Water Conservation Plan, August 30, 2010 p. 33; See at: http://citizensfordixie.org/wp-content/uploads/2011/11/WC-Plan-2010.pdf

117 PLP Study Report 19, p. 6-1.

118 PLP Study Plan 19, p. 219.

Comment

The Study Report is lacking this data. Therefore, the Commission Staff should request this comprehensive analysis from UBWR before the EIS process begins.

Section 5.2.1.13 Water Rates

> "*To encourage the reduction of water consumption, many cities have adopted inclining block-rate structures. Block rate structures consist of fixed amounts of water sold at a unit price. Increased block rate structures are based on the idea that consumers will use less water if the unit rate of water increases with increased volume consumption. Inclining block-rate structures are more effective in encouraging customers to reduce their water use when there is a significant price difference between each tier. WCWCD and the following cities have adopted increasing block rate structures: Springdale, Hurricane Valley, La Verkin, Ivins, Washington, Santa Clara, St. George, Enterprise, and Hurricane, where the price of water is stepped up based upon increased usage. In addition, WCWCD completes a water budget for each of its golf course customers and charges a 50 percent surcharge for usage in excess of the budget amount."*[119]

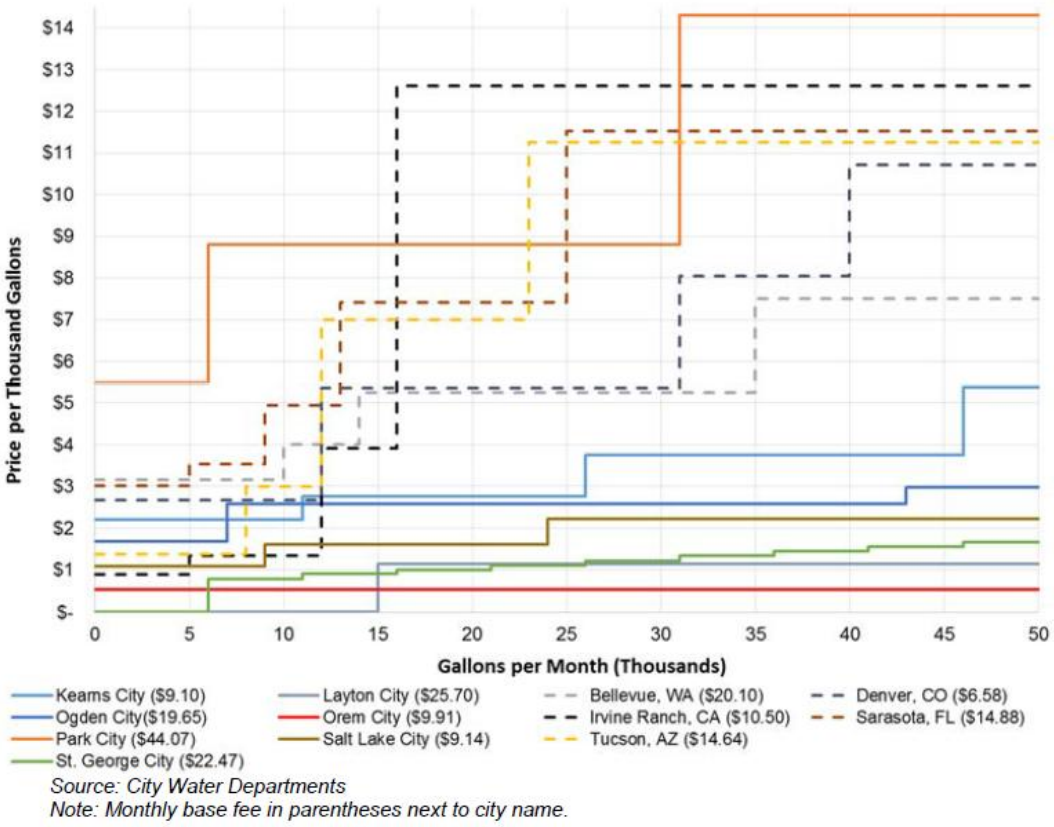
Comment

However, the cities do have block step pricing, but they do not have steps that signal conservation and are relatively flat. This is noted on chart from the audit below Figure 16.

[119] PLP Study Report 19, p.5-7.

Figure 16. Comparison of City Water Rate Structures[120]

Comparison of City Water Rate Structures. Some Utah cities have increasing block rate structures, but the rate increases are relatively flat when compared to cities in other states.



Source: City Water Departments
Note: Monthly base fee in parentheses next to city name.

The Auditor's report explains the problem with relatively flat block rates like we have in southern Utah. It states:

"State Policies on Metering and Pricing Can Affect Water Demand. Utah's relatively low water costs appear to contribute to higher per capita water use when compared with other states Unless per capita water use is reduced, new, more costly sources of supply will need to be developed. As pressures on Utah's currently developed supply intensify, local and state policymakers will need to consider policy options to reduce demand, including universal metering and water pricing."

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120 A Performance Audit of Projections of Utah's Water Needs, Office of the Legislative Auditor General, State of Utah, May 2015, Chart on p.iii, See at, http://citizensfordixie.org/wp-content/uploads/2015/05/DWR-audit-water-5-5-15.pdf

Section 19.6.2 Task 1 Water Needs Assessment Phase II

> *"Phase II of the Water Needs Assessment (Final Water Needs Analysis and No Action Alternative) will have two objectives. First, the potential for water reuse will be evaluated, and a Water Efficiency Study will be performed to carefully document potential future water conservation. Second, preliminary water need forecasts developed in Phase I will be updated based on more detailed information obtained from the communities during the Water Efficiency Study and from evaluation of the potential for water reuse. The updated water need forecasts will be incorporated into the revised water demand forecasts and the resulting integrated water resource plans. The water needs assessment will be updated to incorporate comments received from the public and agencies."*[121]

Comment

UBWR did not analyze the potential of reuse water as required in the Study Plan. They submitted conflicting data into the record. We detail this in our comments below.

Section 19.4.3 Issues and Data Needs

- *"The potential for additional water reuse and conservation as a means to offset culinary water demands will be addressed"*[122]

Comment

The Study Report results lack this requirement to consider additional reuse and conservation in the Study Report. UBWR claims only 7800 (AF) of potential reuse by 2060 in the Study Report. However, in (Section 2.1.1) it states 49,000 (AF) is possible by 2060.

Section 2.1.1 Planned and Potential Future Water Supply Projects of WCWCD

> *"Wastewater reuse would make additional culinary supply available by offsetting secondary demand currently being met with culinary water. The 2060 maximum potential wastewater reuse quantity in theory) is projected to be 49,000 acre-feet per year, assuming there is sufficient capacity to store and provide for beneficial use all of the available return flows. The maximum projected wastewater treatment plant effluent available for reuse in 2025 is projected to be 16,774 acre-feet per year, increasing to 34,453 acre-feet per year by 2052. The RO treatment of 34,453 acre-feet per year*

121 PLP Study Plan, p.220 (emphasis added).
122 PLP Study Plan, p.219 (emphasis added).

wastewater reuse effluent would yield approximately 31,000 acre-feet of product water and 3,454 acre-feet of brine for evaporation and disposal."[123]

Comment

This section (Section 2.1.1) contradicts the conclusion only 7800 (AF) of reuse is possible by 2060 and it is not listed as future supply. Therefore, UBWR used the wrong data in the Study Report.

D. Revised Draft Study Report Alternative Development No.22

In Scoping Document 2 the Commission staff stated that the scoping process was intended to serve as a guide to issues and alternatives to be addressed in the Environmental Impact Statement (EIS). The public expressed concerns in the scoping process that should be addressed in the EIS, the Commission's comments read:

> "As shown in both the transcripts of the scoping meetings and in Appendix A, many individuals have provided either oral or written scoping comments, or both, concerning the Lake Powell Pipeline proposal. Many of the public comments express similar concerns or issues:
>
> 1. *"increased water conservation can delay the need for the pipeline or other water supply projects;* "[124]

Comment

However, UBWR's PLP did not sufficiently consider conservation as an alternative to the Project. The Commission Staff should require more detailed information on the potential of conservation programs to reduce water demand in the PLP.

Further, the Commission Staff said in Scoping 2 "we will consider and assess all reasonable alternatives to the proposed project and alternative locations or other changes to the proposal, as well as protection, mitigation, and enhancement measures identified by the Commission Staff, other agencies, Indian tribes, NGOs, and general public."[125]

Therefore, we request Commission Staff include the Locals Water Alternative[126] eLibrary 20130314-5010, 3-14-13 as one of the alternatives to be studied in the EIS. This

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123 PLP Study Report, p. 2-1 (emphasis added).

124 FERC elibrary 20080821-3005, Scoping of Environmental Issues for the proposed Lake Powell Pipeline Project, August 21, 2008, p.7.

125 Scoping 2, Section 3.2 Our Alternatives to Proposed Action, eLibrary 20080821-3005, 8-21-08.

126 Western Resources Advocates, Locals Waters Alternative, See at: http://citizensfordixie.org/wp-content/uploads/2011/11/WRA-Alternative-LPP-full-report-20121.pdf

alternative was submitted by Western Resource Advocates to FERC in 2013 when only 70,000 (AF) was coming to Washington County. The Project proposal has increased to 86,249 (AF). Consequently, we would add a water conservation program called Water Budget Rates that will save the extra water of 16,249.00 (AF). Water Budget Rates have proven they can save as much as half of the water used. [127]

The Irvine Ranch model decreased water use by 50% by using Water Budget Rates without yards and public spaces being hardscaped. This model uses science to determine how much water landscaping needs and sets a budget. If you go over the budget then you pay more. Studies tell us the issue is not that people need more water per person, but rather that people over-water their yards and landscapes because they are not fully informed about the maximum ability of the plant to take in water at any given period of time.

Section ES.2.Methodology

> *"The alternatives were evaluated on their ability to* ***meet the equivalent population*** *water needs with and without implementing the LPP Project."*[128]

Comment

UBRW makes this major error in methodology throughout the PLP. The alternatives do not have to meet equivalent population water needs. The goal is to compare alternatives that can supply the same amount of water 86,294 (AF) and not for population needs. Therefore, UBWR used the wrong data and varied from the specific requirement of the approved Study Plan. Thus, the Study Report skipped a critical step in the analysis. UBWR must provide the accurate comparison of alternatives in the PLP that use the same amount of water.

Section 22.2.2 Goals and Objectives

- *"Consider alternatives…..and any other alternatives identified during the Project*
- *List the pros and cons of each of the water supply alternatives based on characteristics of each alternative*
- *Document deficiencies of the alternatives considered inappropriate for inclusion in the environmental document prepared for the FERC license application."*[129]

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127 Water Budget Rates, See at: http://citizensfordixie.org/water-workshop-resources/

128 PLP Study Report, p.ES-1 (emphasis added).

129 PLP Study Plan, p. 244.

Comment

However, UBWR only considered reverse osmosis as an alternative to the Project and did not consider the Local Waters Alternative [130] as one of the alternatives to be studied in the Study Report. The results of the Study Report did not give the pros of the all the alternatives. Further, the Study Report did not document deficiencies in the water conservation alternatives rejected by UBWR for NEPA analysis and why a lower gpcd is not possible.

Section 22.4.3 Issues and Data Needs

> *"Specific analyses to be completed as part of alternatives development will address the following:*
>
> - *What non-LPP Action and No Action alternatives can be developed based on the combinations of existing and future water supplies?*
> - *What water supply reliability issues exist for potential project alternatives?"*[131]

Comment

UBWR used the wrong data for existing supply by only considering water that meets EPA standards for drinking water thereby reducing supply. Therefore, the UDWR did not include all the water as future water supply. The Commission Staff should require UBWR to include all possible supplies as future water supply so the Study Report is complete.

In addition, UBWR did not analyze the reliability issues with the proposed action alternative as required in the Study Plan. Therefore, the studies were not conducted as provided for in the approved Study Plan and the Commission Staff should require this analysis before the EIS process begins.

Section 22.6.2 Task 1 – Conceptual Project Development,

> - *"Identify the No Action Alternative consisting of existing and planned future water supply projects, water management actions, and other measures (e.g., ongoing water conservation and reuse) that each District would take in the absence of the LPP."*[132]

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130 ,Western Resource Advocates, Local Waters Alternative, elibrary 20130314-5010, 3-14-13 See at: http://citizensfordixie.org/wp-content/uploads/2011/11/WRA-Alternative-LPP-full-report-20121.pdf

131 PLP Study Plan, p. 246 (emphasis added).

132 PLP Study Plan, p. 247

Comment

UBWR is not considering the potential of increased water conservation and reuse to reduce water demand. Thus, UBWR is using the wrong data and excluding cheaper alternatives in the PLP. The Commission staff must rigorously explore and objectively evaluate all reasonable alternatives. The staff should also require UBWR to provide new accurate, validated 2015 data to comply with task one of the Study Plan.

Section 3.3.1.2 Description of the Conceptual No Lake Powell Water Alternatives Reverse Osmosis Treatment of Future Reclaimed Wastewater Effluent

> *"The existing St. George Wastewater Treatment Plant sends a portion of its treated effluent to the St. George Wastewater Reuse Plant for additional treatment and reuse as secondary irrigation water. The maximum capacity of the existing Reuse Plant is 7,300 acre-feet per year. The reuse water is used as a secondary irrigation water supply from April through October, and currently is not stored during the winter months. The City of St. George has received permits to construct two storage reservoirs to store the reuse water during the winter months and increase the annual reuse of treated effluent. The reuse water would also be stored in the future Warner Valley Reservoir. The maximum projected wastewater treatment plant effluent available for use in 2060 is projected to be **39,500** acre-feet per year.*
>
> *This projected water reuse supply is estimated based on: 1) the projected 2060 combined populations of St. George, Washington, Ivins and Santa Clara, which are the communities served by the St. George Wastewater Treatment Plant; 2) the 2010 total M&I water use less 16 percent conservation; and 3) and a 27 percent wastewater effluent to total M&I water supply ratio. The maximum projected wastewater treatment plant effluent available for reuse in 2025 is projected to be 16,774 acre-feet per year, increasing to 34,453 acre-feet per year by 2052. The RO treatment of 34,453 acre-feet per year wastewater reuse effluent would yield approximately 31,000 acre-feet of product water and 3,454 acre-feet of brine for evaporation and disposal. The RO treated effluent could then be disinfected and delivered for culinary use. This potential component of the No Lake Powell Water Alternative would require a new RO treatment facility or increasing the capacity of an RO facility treating water stored in Warner Valley Reservoir, and also could face a significant public acceptance challenge as well as regulatory approvals."*[133]

Comment

UBWR only identifies 7800 (AF) of reuse by 2060. However, the information above in Section 3.3.1.2 contradicts that claim and identifies that there is 39,500 (AF) of reuse water

[133] PLP Study Report, p.3-5, (emphasis added).

possible by 2060. Therefore, 39,500 (AF) of reuse water should be added to available future supplies.

Section 4.1.2.1 WCWCD Total Conceptual Cost Opinion

> *"The reverse osmosis (RO) treatment of Virgin River water, including brine disposal and operations and maintenance (O&M), is estimated to have a present worth (50 years) total conceptual cost opinion of $1,067,935,000 without financing costs. RO treatment of Virgin River water and reclaimed wastewater to eventual potable water use, including brine disposal and O&M, is estimated to have a present worth (50 years) total conceptual cost opinion of $1,067,935,000 without financing costs. The Warner Valley Reservoir total conceptual cost opinion of $341,088,000 without financing costs. The costs associated with eliminating residential outdoor water use of potable water include the costs the District would incur to develop, issue and enforce regulations and the costs associated with changing landscaping practices. Eliminating residential outdoor water use and removing lawns and plants, shrubs, and trees and replacing them with hardened surfaces and desert landscaping would result in a total conceptual cost opinion of **$94,061,000**. Purchasing and conveying available groundwater from Kane County to Washington County by pipeline would have a total conceptual cost opinion of $155,000,000 without financing costs.*
>
> *Therefore, the total conceptual cost opinion (present worth 50 years) for the WCWCD conceptual No Lake Powell Water Alternatives would be $1,503,084,000 for RO treatment of Virgin River water and reused wastewater effluent, the enlarged Warner Valley Reservoir, and eliminating residential outdoor watering to meet the 82,249 acre-foot demand in 2052, compared to a total conceptual cost opinion of $1,658,084,000 for the RO plant using Virgin River water and wastewater reuse effluent, the enlarged Warner Valley Reservoir, eliminating residential outdoor irrigation with potable water, and conveying groundwater from Kane County to Washington County. Therefore, implementing the RO treatment of Virgin River water and wastewater reuse effluent, and eliminating residential outdoor irrigation with potable water, is the most cost effective conceptual No Lake Powell Water Alternative for WCWCD."*

Comment

UBWR makes a major error in calculating that the cost to convert potable water from outside use to inside use will cost $94,061,000. However, in the No LPP Alternative it only uses 17,219 (AF) of outdoor water. This error needs to be corrected throughout the PLP before the EIS process begins.

54,782 (AF) diverted Virgin River, RO treatment
14,248 (AF) reuse, RO treatment
17,219 (AF) outdoor water culinary
86,249 (AF) total

Further, a WCWCD 2010 Water Conservation Plan shows the cost of a reverse osmosis water plant would have a capital cost of $115,600,000, with annual operation and maintenance cost of $11,975,000; the cost of Brine Recovery and Disposal Capital would be $77,576,000 and O & M would be $3,877,000.[134] Also, costs per acre foot of treatment have been coming down and it could cost less than the cost of opinion of UBWR of a billion dollars for the cost of the reverse osmosis in the No LPP Alternative. Therefore, UBWR should clearly detail all costs, including the cost per gallon, and state how they were derived in the alternatives so they can be compared for their cost/benefit. The Commission Staff must require UBWR to provide accurate detailed information on how it made its conclusions on costs so they can be verified in the final Study Report before the EIS process begins.

Section 4.1.4.1 WCWCD Land Use Considerations

> *"Land use considerations associated with the WCWCD conceptual No Lake Powell Water Alternatives would include **loss of large areas of grazing land** from constructing and operating the RO water treatment facility, evaporation ponds and brine disposal, and the enlarged Warner Valley Reservoir. Converting traditional residential landscapes to hardened surfaces with desert landscape features would alter the vegetation composition on land parcels, but would not change the residential land use designations or classifications. Constructing and operating a water conveyance pipeline from Kane County to Washington County would restrict future land use along the pipeline right-of-way".*[135]

Comment

We disagree with the sufficiency of the study results that claim the conceptual No Lake Powell Pipeline Alternatives would include loss of large areas of grazing land due to the fact UBWR does not include any more agricultural rights in the alternatives. UBWR only claims 22,960 (AF) of agricultural rights converting to culinary and secondary use by 2060. Further, UBWR fails to account for all the 87,000 (AF) of irrigation water rights that were in the County in 1990. We also point out in our comments in Study Report No. 19 Water Needs Assessment all

[134] Washington County Water Conservancy Water Conservation Plan 2010, see at : http://citizensfordixie.org/wp-content/uploads/2011/11/WC-Plan-2010.pdf
[135] PLP , Study Report p.4-4 (emphasis added).

the secondary water that is available by 2060. Therefore, this conclusion has no basis in fact and should be deleted from the PLP.

Section 6.11 Re-Purposing Potable Water Use

> *"The No Lake Powell Water Alternative **would permanently eliminate residential outdoor** potable water use in Washington County, re-purposing the portion of potable water used for residential outdoor watering to indoor potable use. Projections of future water use through 2060 account for population growth, climate change (projected 6 percent reduction of Virgin River flows by 2050), water conservation (35 percent reduction in per capita water use from 2000 to 2060), and a water planning reserve (10 percent) to avoid utilizing all available water supplies in meeting demands. Potable water in Washington County is consumed for residential indoor and outdoor uses, commercial uses, institutional uses, and industrial uses. These potable water uses would total **130,245 acre-feet per year by 2052**, which would be equal to the potable water demand. Gradually eliminating residential outdoor potable water use starting in 2025 would provide the growing population with potable water for indoor use through 2045; however, repurposing residential outdoor potable water use to indoor use would not increase the water supply and would have to be accompanied by adding another water supply to meet the growing demand. By 2045, all potable water would be used for indoor purposes, including residential indoor, commercial, institutional and industrial use. Re-purposing residential outdoor potable water use to indoor potable use would require converting traditional residential outdoor landscapes and uses to desert landscapes compatible with the local climate. Residential water users would be responsible for converting their traditional outdoor landscapes to desert landscapes. Secondary water use in Washington County, totaling 8,505 acre-feet per year, would continue because the secondary water cannot be used for potable water without advanced treatment.*[136]

Comment

UBWR continues the major error in the alternative analysis that outdoor water use would be eliminated. We detailed the error in our previous comments. In a previous section it was only 17,219 ac ft. of outdoor water combined with RO treatment in this Alternative. This section on Potable Water Use is lacking the cost and the amount of culinary water. UBWR needs to clarify and the correct information and compare this to all Alternatives in cost and amount of water. UBWR misinterpreted the results in the Study Report and varied from the specific requirement of the approved Study Plan (Section 22.2.2) on (page 244). The Commission Staff should require sufficient accurate information for the EIS.

[136] PLP, Study Report, p. 6-1 (emphasis added).

Analysis of Dust Suppression Water Demand for Construction of the Project

Comment

In the Project's geology and soils resources study, it describes the extent of the excavated volumes from trenches and tunnels to build the Project. The excavated volumes would be enough to build a 2 lane road from Seattle to Miami, or a 4 ft. wide sidewalk around the Earth at the Equator with the excavated, blasted soil and rocks from one of the most scenic landscapes in the west.

The Project will have extensive excavation of soils to lay the pipeline in the ground. It is more that than cement used to build Hoover Dam. For example, the US Bureau of Reclamation described that 4.5 million cubic yards of concrete was used to build Hoover Dam. The excavated volumes from trenches and tunnels needed to build the Project of 6 million cubic yard is expected to be more than the total volume of concrete used to build Hoover Dam or the Panama Canal (500,000 cubic yards). [137]

Figure 17. Study Report 4, Table 3-14

	South Alignment	Highway Alignment	Southeast Corner
Total Excavated Volume from trenches and tunnels (cubic yards)	6,084,996	6,144,985	5,575,108

Consequently water for dust suppression and where it will come from is an issue that needs to be in the Study Report. The Project calls for the deep excavation and installation of an underground pipeline to convey the water over hundreds of miles to southwest Utah. The construction activities related to excavation and pipeline installation will take place in a hot dry climate and is therefore likely to generate significant amounts of dust that will (unless mitigated) adversely impact air quality. The traditional method for dust suppression for large-scale projects such as this would be watering. The PLP does not provide adequate information regarding the levels of dust generated by the construction phase of the Project, the impacts of such dust on air quality, the amount of water needed to properly mitigate/avoid these dust-related impacts, the source of such water for dust suppression (*e.g.*, identification of groundwater and surface water supplies), and the impacts on such sources of pumping/diversion. Similarly, the Study Reports do not collect and analyze information related to dust suppression water demands for the construction phase of the Project. Without this information, the EIS will not be able to evaluate

137 See at: http://www.usbr.gov/lc/hooverdam/educate/kidfacts.html

the environmental effects of the dust suppression water demand or propose appropriate alternatives and/or mitigation to reduce/avoid such effects.

Analysis of Resulting Development in Washington County and Kane County

Comment

As noted above, the primary purpose of the Project is to provide additional water supplies to support future expansion of residential and commercial development in Washington County and Kane County in the State of Utah. NEPA requires the environmental assessment of all foreseeable direct and indirect effects resulting from a project. In this instance, the resulting residential and commercial development in Washington and Kane Counties would be direct and/or indirect effects of the construction and operation of the Project. As such, the NEPA evaluation would need to include an assessment of the environmental effects of such development (such as conversion/loss of agricultural/undeveloped lands, traffic and related air quality impacts, and GHG emission increases). The scope of the Study Report does not include assessment of these direct/indirect effects.

III.
SUMMARY

We ask the Commission Staff to require UBWR to implement Study Plan No.19 goals and objectives, and tasks listed in the approved plan detailed in our comments. We also ask the Commission to require UBWR to implement other study plan requirements omitted from the Study Reports listed in our comments. We seriously question the viability of this project and if it can be considered as a permanent water project residents can rely on. The requested information is of high importance because it influences communities' decisions to build a billion dollar project. We request that Commission Staff modify the Study Reports consistent with our recommendations to assure the accuracy of the information in the licensing record.

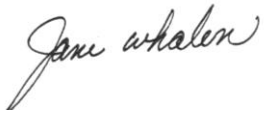
IV.
CONCLUSION

Based on our review of PLP and Revised Study Reports, it does not appear that the UBWR has complied with the regulatory requirements for a preliminary licensing proposal or the requirements of the approved Study Plans. The Coalition found in several instances that UBWR did not adequately report vital environmental information required under the approved Study Plans. In some cases critical data was misinterpreted in the PLP, while in others it was completely omitted. We request that the Commission staff require UBWR to correct studies that have not been conducted in accordance with the approved Study Plans.

We thank the Commission Staff for considering these comments. We look forward to working with UBWR and the Commission Staff in implementing this Integrated Licensing Proceeding.

Dated: February 29, 2016

Respectfully submitted,



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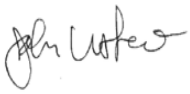

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