

Big Chino Valley Pumped Storage Project
October 2018 Stakeholder Meetings: Comment Response Matrix¹

	Comment	Response
1.	We continually hear about drought and future development. Isn't a 9 billion gallon withdrawal of water equivalent to a catastrophic drought event?	<p>No, the withdrawal of the water for the Project would not be equivalent to a catastrophic drought event. To assess the scope of the impacts of the Project, ITC is undertaking an evaluation of the potential impacts to the Big Chino Aquifer and the Verde River by modifying, updating and improving the U.S. Geological Survey's Northern Arizona Regional Groundwater Flow Model with input from key stakeholders including representatives from state and federal agencies, local municipalities, tribal representatives and local and national environmental groups.</p> <p>Through hydrological modeling and evaluations underway, ITC's goal is to produce a conservative estimate of the project's effects on the aquifer system. Where assumptions are made in the model, we will overestimate the project's effects and underestimate the effects of mitigation. By using conservative estimates, ITC can avoid adverse impacts to water resources.</p> <p>ITC is working with a stakeholder groundwater working group and other stakeholders to identify potential short-term and long-term strategies to offset potential impacts based on sound science – all with the goal of maintaining long-term stewardship of the water and land resources.</p> <p>If studies identify adverse impacts to the Big Chino Aquifer and/or Verde River, we are committed to undertaking mitigation efforts to address impacts on the Big Chino Aquifer, Verde River and residential wells.</p>
2.	If you were a retired landowner in Paulden, depending on the aquifer for domestic water, would you advise to sell now?	ITC is consulting with a stakeholder groundwater working group and other stakeholders to identify potential short-term and long-term strategies to offset potential impacts based on sound science – all with the goal of maintaining long-term stewardship of the water and land resources. ITC's objective is to mitigate identified impacts from the Project so that landowners and domestic well owners are not adversely affected.
3.	How many closed loop storage facilities are there in the United States, where are they located and how long have they been in operation?	There is a one closed loop project operating in the U.S. today. It is the Lake Hodges Hydroelectric located in San Diego County, California. This project began operation in 2012.

¹ To increase the utility of this chart for stakeholders, ITC has consolidated comments to the extent they raise overlapping issues.

4.	You are putting millions of gallons of water where it hasn't been before. Where will the water go if the dams break?	Water from a dam break of either the upper or lower reservoir would flow through existing washes and overland toward the Big Chino Wash and toward the headwaters of the Verde River some 35 miles downstream. Dam safety will be a specific area of regulatory oversight and of design consideration that includes dam break analyses. These analyses will determine areas of potential inundation as flows resulting from a dam break attenuate over distance and space and flow toward built up areas.
5.	As possible mitigation measures, is anyone looking at selective cutting of water-hungry trees (Juniper especially) in surrounding woodland/Prescott National Forest to increase recharge?	At this time, ITC has not ruled out any specific mitigation options. Potential mitigation measures will be studied as part of the groundwater modeling study to assess the feasibility and utility of those measures. As part of the groundwater modeling study, ITC will work with stakeholders to assess possible mitigation options and develop a mitigation plan.
6.	Can you use storm water to recharge the aquifer?	There is consensus among ITC and Stakeholders that flood flow characteristics of the Verde River should not be altered. Retention of runoff that would otherwise reach the Verde River would influence the river's flood flow characteristics and is not desirable. However, some flows that do not reach the Verde might be available for artificial recharge. The goal for such an operation would be to reduce evaporation losses of the surface flow and infiltrating that water which would otherwise evaporate.
7.	What are the recharge rates?	Recharge rates to the local aquifer average about 30,000 acre-feet per year.
8.	With the four to five years of construction needed for the project, how will you address the dust and noise that will fill the area?	Noise and dust are typical concerns relating to construction projects and can be mitigated through construction environmental management plans. ITC will consider these issues as part of its licensing application and it is expected that FERC will include this in its NEPA analysis. Dust can be controlled through the application of water to well-travelled roads, or through road surface hardening. Noise is a consideration relative to the receiving body, distance and competing sources of noise. As warranted, noise impacts may be addressed by limiting certain construction activities to specific time periods.
9.	What period of time would the reservoirs be filled? What are the factors that will drive how many years you will take to fill the reservoirs?	Pre-feasibility studies assessed several potential filling durations up to 5-years. Ultimately, the factors that weigh into that decision will include construction schedules and project lead times (i.e., when the lower reservoir would be ready to start receiving water) on one side; and considerations around attenuation of pumping on the other. A slower pumping program would attenuate potential impacts on the Verde River but would also imply greater losses due to evaporation during the construction period.

10.	Why can't ITC use other sources (i.e., wind sails, natural gas) to generate power?	Wind, solar, and natural gas generation facilities do not have the same attributes as a pumped storage project because they only <i>generate</i> electricity. A pumped storage project such as the Big Chino Valley Pumped Storage Project (Project) operates like a giant battery. Specifically, the Project will have the ability to take excess electricity, use it to pump water uphill, and release that water to generate "stored" electricity when it is needed (e.g., at night when solar facilities do not generate electricity). Given the unique operational characteristics of a pumped storage project, in particular its ability to absorb excess electricity, renewable or gas-fired facilities cannot provide the same type of benefits to the electric grid that a storage facility can.
11.	Why not build in Nevada as that state has more rainfall?	ITC analyzed numerous areas within the southwest to assess where an energy storage project could have the best effect in terms of providing services to the electric grid. The site selected was a prime location after considering a number of factors, including access to the interstate transmission grid, opportunities to purchase property, and land elevations.
12.	Does the Arizona Corporation Commission have jurisdiction over the project?	Pursuant to federal law, the Federal Energy Regulatory Commission has jurisdiction over the licensing, construction, and operation of the Project. The federal licensing process provides a number of opportunities for state agencies to provide input to FERC regarding the development and operation of the Project.
13.	How will you address cumulative impacts (e.g., City of Prescott development?)	ITC will submit a cumulative impacts analysis as part of its license application to FERC and FERC's NEPA document will contain a discussion of BCV's cumulative impacts. A cumulative effect is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.
14.	How can stakeholders communicate with FERC?	The FERC Project Manager for the Big Chino Valley Project is Kim Nguyen. She can be reached at Kim.Nguyen@ferc.gov .
15.	What is the FERC Project number?	P-14859
16.	Can you use Key Observation Points (KOP) from the NW part of the Prescott National Forest? Provide input for KOPs for 2019 study.	KOPs for the Visual Resources Study in the transmission line corridors will be developed in consultation with stakeholders during study implementation. KOP selection takes into account a number of factors including viewable distance and public use. Portions of the Prescott National Forest will be considered in this analysis.
17.	Would ITC's proposed mitigation address the impacts from both the initial withdrawal and evaporation?	Yes.

18.	When you take inventory of mitigation measures off the table because ITC used them to address Project impacts, are they available for future use (i.e., to mitigate for other future development)?	The project initial fill is a one-time event and by and large would only require temporary mitigation efforts to offset it. Those proposed mitigation measures could theoretically therefore be available to address other impacts.
19.	Where does the Yavapai transmission line cross SR 89? Is this near the Verde River headwaters?	Currently, there are two proposed crossings under consideration. The preferred route crossing of SR 89 will be near the border between the Prescott National Forest and the Kaibab National Forest near Forest Service Road NF 930. The proposed crossing of SR 89 on the alternative route is at the intersection of SR 89 and E Road 5N. Only one crossing will be utilized once the final route is determined.
20.	How did you provide notice for the October stakeholder meetings? How can you improve notice and outreach regarding Project activities?	As part of its ongoing effort to maximize stakeholder engagement, ITC took several steps to notify potential stakeholders of the recent licensing meetings. These steps included: (1) announcements shared on the Boulder City Review’s website under “News Briefs”; (2) notification and invitation through direct mail via first class delivery to 1,199 landowners within 1,500 feet of the Arizona and Nevada transmission corridors; (3) direct mail to Nevada-based Indian Tribes; (4) print advertisements in the Boulder City Review, the Arizona Daily Sun, the Las Vegas Review Journal, and the Daily Courier; (5) direct mail to Arizona and Nevada elected officials; (6) emailed invitations to a broad group of stakeholders; (7) notification and invitation in the Seligman Bulletin Board, a quarterly community newspaper; and (8) notification and invitation on the “News” section of the Seligman Chamber of Commerce’s website. In addition, ITC regularly updates the Project website. ITC would welcome suggestions for additional ways in which ITC could provide notice to stakeholders.
21.	How many wells will ITC use to fill the reservoir? Will the model help determine how many wells you will use?	The number of wells that will be used to fill the reservoir is currently being studied and hasn’t been determined yet. The project is taking this uncertainty into account in its current groundwater modelling exercise.

22.	What are the climate change projections that you are using for your models? Also consider impact on climate change on species in the Upper Verde.	Model assumptions about future recharge rates are being considered by the Stakeholder working group. As to climate change impacts on species in the Verde River, ITC is awaiting the results of the groundwater modelling study to determine if impacts to the Verde River from the Project can be mitigated. Until the groundwater modelling study is completed, the current geographic scope of the licensing studies is generally limited to the area near the reservoirs and the three primary transmission lines.
23.	What will prevent our wells from going dry? Would you consider entering into a financial Partnership to make homeowners whole in case wells go dry (i.e., pay to drill new or deeper wells)? Who do I talk to when my well goes dry?	The groundwater modelling study is designed to identify Project impacts to groundwater (including wells) and assess potential mitigation measures. ITC's objective is to mitigate Project impacts so there is no impact to stakeholder wells. At this time, the groundwater modelling study is underway but has not yet been completed. ITC is awaiting the results of the study before any homeowner-specific measures may be considered.
24.	What are the other options that are being considered re use of water from locations other than the aquifer?	Water importation is a possible outcome that is being considered. ITC is exploring potential regional water projects in which the Project could participate. At this time, there are no conclusions to report.
25.	How will this Project benefit local stakeholders?	The project, once operational, is expected to be a major taxpayer in Yavapai County and the State of Arizona and will generate significant tax revenues for the state and local governments. The Project will not require tax-payer support. Additionally, the Project will create new jobs, particularly during the construction period, and will have benefits to the local economy associated with an increase in demand for goods and services. ITC also supports numerous community initiatives in the communities in which it does business.
26.	How many other pump storage projects have you attempted?	This is ITC's first energy storage project although the company has a long track record of developing, owning, and operating utility infrastructure.
27.	Did you state the aquifer would be recharged over a year or two years? How does annual recharge rate relate to your mitigation plans?	Rates of natural recharge to the aquifer do not influence mitigation measures and are not a factor in Project mitigation plans. The goal of mitigation would be to completely offset any negative influence of Project groundwater use. The effects of both the Project withdrawals and mitigation measures are superimposed on variations in recharge and non-Project withdrawals from the groundwater system, which occur independent of Project use and mitigation.

28.	Can you limit the amount of grazing to provide better habitat for pronghorn?	ITC plans to develop a Wildlife Management Plan addressing lands that are owned and managed by ITC following Project construction. Fencing, grazing, and pronghorn habitat will be considered during Plan development.
29.	Water is not a renewable resource in AZ; we are in a 20-year drought and Verde River flow has declined. Why are you developing the Project here and how will you mitigate the impacts?	ITC analyzed numerous areas within the southwest to assess where an energy storage project could have the best effect in terms of providing services to the electric grid. The site selected was a prime location after considering a number of factors, including access to the interstate transmission grid, opportunities to purchase property, and land elevations. ITC is working with a stakeholder groundwater working group and other stakeholders to identify potential short-term and long-term strategies to offset potential impacts based on sound science – all with the goal of maintaining long-term stewardship of the water and land resources. If studies identify adverse impacts to the Big Chino Aquifer and/or Verde River, we are committed to undertaking mitigation efforts to address impacts on the Big Chino Aquifer, Verde River and residential wells.
30.	Who are ITC's potential partners in the Project?	ITC is meeting with potential local partners, including all of the utilities within the State of Arizona. However, those discussions are still in their preliminary stages.
31.	Will there be light pollution from the reservoirs, substations, and transmission lines? What is the ITC Dark Skies initiative referenced during the meeting?	ITC uses industry leading lighting technology in its current footprint. The current lighting design utilizes highly efficient warm color LED technology with down focused shades. This lighting practice meets International Dark Sky Standards. ITC's lighting practice is to minimize general area lighting during non-work periods. ITC does require task/spot lighting during operation where an employee is present. This is done for the safety of our employees. All task lighting is turned on with an automatic timer to ensure that the specific lighting is only used during physical operation of the components and will shut off after the work is performed.
32.	What does the weather station track?	The weather station is recording windspeed and direction; relative humidity; ambient air pressure; ambient air temperature and solar radiation.
33.	How did you acquire the Project property?	ITC entered into an option agreement with the landowner who was looking to sell the property. ITC performed due diligence on the feasibility of the parcel to be used as a site for a pumped storage facility.
34.	Have you looked at alternative sites such as Yucca Valley or in Nevada?	ITC analyzed numerous areas within the southwest to assess where an energy storage project could have the best effect in terms of providing services to the electric grid. The site selected was a prime location after considering a number of factors, including access to the interstate transmission grid, opportunities to purchase property, and land elevations.

35.	What is your planned outreach to local fire departments to address potential water impacts?	ITC plans to meet with local first responders as part of the licensing process.
36.	Will there be Electric and Magnetic Field (EMF) impacts associated with the Project?	<p>Human beings encounter electric and magnetic fields (EMFs) as part of everyday life. Any device that uses or carries electricity creates EMFs, including everyday appliances, lighting and household wiring. EMFs are created anytime electricity is flowing in a wire or device. Electric fields are measured in volts per meter and magnetic field are measured in milligauss. The strength of these fields quickly decreases the further away from the source. Below are a few websites from third-party independent sources that address EMFs:</p> <ul style="list-style-type: none"> • Electric Power Research Institute: http://emf.epri.com • National Cancer Institute: http://www.cancer.gov (type EMF in search bar) • World Health Organization: http://www.who.int/peh-emf/en • National Research Council: http://www.nap.edu and search for “Possible Health Effect of Exposure to Residential Electric and Magnetic field” (a free PDF of this book is available).
37.	Has ITC considered potential tectonic movements and associated impacts on the Project?	As part of the FERC licensing process, ITC will be required to prepare a supporting design report that must include, among other things stability and stress analyses for all major structures and critical abutment slopes under all probable loading conditions, including seismic and hydrostatic forces induced by water loads up to the Probable Maximum Flood. The supporting design report also must provide the bases for ITC’s determination of seismic loading and the spillway design flood in sufficient detail to permit an independent review by FERC staff.
38.	How much notice of the initial fill of the reservoirs will ITC provide to stakeholders?	At least six months’ notice will be provided to stakeholders before the initial fill begins.
39.	What are the anticipated evaporation losses?	Evaporation rates from the reservoirs are currently estimated as about 925 acre-feet per year. Data from a weather station installed at the reservoir site will help refine the estimate. Evaporation limiting technologies are also being considered to reduce that amount to as minimal as feasible.
40.	What options for mitigation are being considered?	Mitigation options being considered include offsetting withdrawals with temporary cessation of existing water withdrawals from the aquifer; permanent cessation of existing agricultural withdrawal on the Project property; putting in place conservation easements on the Project property to preclude future sub-division and residential development; targeted recharge opportunities that can reduce evaporative loss of storm water but do not impact flood flow hydrology on the Verde River; and the potential to import some or all of the initial fill of the reservoirs. Additionally, the Project is exploring technologies to minimize evaporative losses from the reservoirs.

41.	How much time are you going to allow experts to review the groundwater model study results?	We are working with the Stakeholder groundwater working group and reviewing the proposed schedule to ensure that Stakeholders have sufficient time to review and comment on the groundwater model results.
42.	When the groundwater modelling is complete, will ITC share the results with stakeholders?	Yes, the results of the groundwater study will be posted to FERC and ITC will hold public meetings to discuss the results of the study.
43.	Where will energy generated from the Project be sold?	ITC is currently engaging in outreach to Arizona utilities regarding the benefits of the Project, and all of the electricity stored and released by the Project could potentially be contracted to Arizona utilities. Currently, Arizona's demand (load) is approximately 20,000 MW, and the Project could provide 2,000 MW of storage. ITC believes that 10% is an appropriate amount of storage versus overall demand and will help incorporate public policy requirements for renewable generation resources. Given the amount of change and future uncertainties in the broader electric system, this Project will provide an additional tool to help manage the unknowns. ITC will not discriminate against interested parties of the Project; however, any non-Arizona participation will benefit Arizonans through a variety of benefits including – but not limited to – tax contribution, jobs, and contribution toward Project costs.
44.	Will ITC contact local drilling companies to gather additional information?	The project has accessed drilling records available through ADWR as a source of local information to augment current and updated understanding of the aquifer's properties. Additional outreach may be considered.
45.	Will the reservoirs be sealed?	The reservoirs will be lined to limit losses due to seepage. The project is currently investigating the use of "shade balls" or other physical barriers to reduce evaporative losses. "Sealing" of the large surface area of the reservoirs would be impractical.
46.	What additional cost to our utility rates?	The goal of this project is to minimize future utility investments in new generation by making existing and future generation investment as efficient as possible. Long-term this project should reduce rates to customers. Any short-term impact to rates will be dependent upon which utilities invest in this project and to what extent that investment will be.
47.	Why don't you know time-period for filling the reservoir?	The initial fill is expected to take between 2 and 5 years. This will be developed in concert with future detailed engineering and establishment of the construction schedule while taking into account attenuation and mitigative benefits of an extended fill.
48.	How many wells are needed?	The design and spacing of the proposed well field will be the subject of ongoing engineering studies.

49.	What are the options for water sources?	Primarily, the percolating groundwater from below the CV/CF Ranch. The potential for importation of some or all of the initial fill is currently being investigated.
50.	How many years will it take to refill the aquifer to account for the initial withdrawal?	The groundwater model will determine the length of time over which the aquifer responds to both Project groundwater use and mitigation measures. Groundwater withdrawn from aquifer storage by the Project will be addressed by mitigation measures such as reducing other groundwater use that has been occurring historically.
51.	How do you know what the recharge rate is? What is the recharge rate?	The recharge rate to the local aquifer is constrained by observations of discharge to streams including the Verde River and estimates of water use by riparian vegetation and for other uses including agriculture, stock, domestic, industrial, and municipal. Based on previous investigations, the recharge rate to the local aquifer, which contributes to flow in the Verde River, is about 28,000 acre-feet per year on average. This region is a portion of the larger Big Chino Sub-basin, which has a recharge rate of about 41,000 acre feet per year.
52.	What if your assumptions in the groundwater model are wrong?	The groundwater modelling study will produce a conservative estimate of Project impacts, meaning net impacts of Project groundwater use will not be underestimated and the impact of mitigation measures will not be overestimated. ITC is using conservative assumptions to mitigate the risk of error in the study results.
53.	Does water temperature affect operation of the facility?	No. Not within expected reservoir water temperature range.
54.	Has ITC looked at international rainfall data?	ITC is using observations and estimates of local precipitation.
55.	Is ITC depending on mother nature for recharge/mitigation?	No.
56.	Why didn't ITC conduct the groundwater modelling study first?	Given the timeframe associated with the FERC licensing process, it is important to proceed with all the licensing studies in parallel to be in a position to file a license application in a timely manner.
57.	ITC's evaporation rate is two times annual rainfall? How will ITC address?	Reservoir evaporation will be replaced by groundwater withdrawals that currently support agriculture on Project property. The agricultural use would be retired.
58.	Is it feasible for ITC to bring water in from another aquifer?	Water importation for either the full or partial initial fill is being considered among other mitigation strategies. There are currently no conclusions to report.

59.	Will ITC work with the Arizona legislature to prevent future development and use of water from the aquifer?	No, currently ITC does not anticipate lobbying the Arizona legislature to prohibit future development in the region. ITC's focus is the development of the Big Chino Valley Project and the mitigation of any associated Project impacts.
60.	Are you building the Project to simply arbitrage power prices?	No. The purpose of the Project is to provide a facility that can store excess electricity to be used when the grid needs that electricity as well as to provide other ancillary services required for the reliable and ongoing operation of the transmission system.
61.	How much water is stored in the aquifer?	According to the Arizona Department of Water Resources (ADWR) there are about 10 million acre-feet or 3,258,510,000,000 gallons (one acre-foot is the equivalent of 325,851 gallons) of accessible water stored in the aquifer to a depth of 1,200 feet. The initial fill is estimated to be 0.2 to 0.3% of the estimated stored volume.
62.	Is ITC considering effluent reinjection to the aquifer?	Artificial recharge of effluent is a potential mitigation measure.
63.	Will there be water quality issues associated with the operation of the Project?	The project's engineers carried out a preliminary mass balance on the closed loop reservoir water, taking into account preliminary estimates of evaporation losses and samples of Big Chino Valley aquifer groundwater. It was concluded that water quality would not present an issue to the project's operations.