

Texoma Region Public Meeting - Question Card Questions for Southwestern Power Administration (SWPA or Southwestern)

- 1. Does SWPA or its customers have the option to purchase power from natural gas or coal fired electric plants?**

Answer: Yes. Both Southwestern and its customers have the ability to purchase power from other sources. In times of drought, purchasing replacement power from other sources is a strategy that is used by Southwestern and its customers in order to conserve the hydropower water resource for when it is needed most and to preserve project capacity. Because hydropower in this region of the United States is used primarily for peaking power (providing electricity during times when power demand is at its highest), replacement power tends to be very expensive. Southwestern's customers that receive the hydropower output from Denison Dam (Lake Texoma) spent over \$5 million on replacement power purchases in 2013 to mitigate the severely reduced amount of generation from Denison Dam.

- 2. From January thru July 2013, 35,233 dsf of water was released for hydropower production. From August thru December of last year, this amount was increased dramatically to 67,685 [SWPA: should be 267,685] dsf when the lake dropped its sharpest. Is there not a direct correlation between lake levels and the amount of water released, and why was this amount increased by nearly 10-fold during the second half of last year? Who made that decision and how was it made?**

Answer: Southwestern would agree that there is a correlation between Texoma's lake level and the amount of water released. As to the question about why was the amount increased nearly 10-fold the second half of the year, several circumstances came together to contribute to the increase.

First, throughout early 2013 while inflows remained well below normal, Southwestern's customers voluntarily kept generation from Denison Dam at significantly reduced levels in order to conserve the hydropower water resource for when it was expected to be needed most – in the hot summer months. From February through July 2013, generation was at just 3% of average.

Second, in August 2013, generation picked up both to meet increased power demand and to keep the lake at or below the top of the conservation pool in accordance with the seasonal pool plan agreed to by the Corps, Southwestern and other stakeholders.

Third, with the approach of fall, some electrical generating plants were taken off-line (“moth-balled”) because they are only used during the summer months when electricity demand is usually highest. Others were taken off-line for routine maintenance. These plants being off-line, coupled with some unplanned generation and transmission outages in the region, meant Denison Dam was called on to generate to make up regional shortfalls in generation. The trend continued into the winter months, during which the region experienced extremely cold temperatures and higher than usual electricity demand.

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As for the question of who makes the decision to generate and how is the decision made, Southwestern's customers schedule the generation from Denison Dam, generally based on end-user electricity demand. Generation is in full accordance with the Army Corps of Engineers' (Corps) rules and regulations (i.e., Lake Texoma Water Control Manual, 2011) and all applicable laws, including Public Law 100-71.

- 3. TLA suggests re-energizing a 138 KV trans-mission line to provide hydroelectricity from its projects in OK, MO, and AK to supply its TX co-op customers when Texoma levels are low. Has SWPA ever studied this option? Would an AC/DC converter/intertie be required? Any idea of cost?**

Answer: In the 1980s, Southwestern studied a tie between its projects in the Eastern Interconnection and its projects in the Electric Reliability Council of Texas (ERCOT) Interconnection and concluded the proposed project was not economically feasible.

Regarding the requirement of an AC/DC converter/intertie, yes, such a converter would be necessary to provide electricity from projects in the Eastern Interconnection to the ERCOT Interconnection. There are also jurisdictional, operational, and contractual issues and impacts that would have to be seriously considered. From Southwestern's perspective, and from the perspective of Southwestern's customers who would have to pay the cost of making such a tie operational, spending money on a project that has been judged to be economically infeasible does not agree with the "sound business principles" Southwestern is congressionally mandated to follow. As for the cost of such a project, Southwestern has not conducted a recent detailed analysis, but a DC tie project is usually in the cost range of tens to hundreds of millions of dollars.

- 4. How much water- gallons and inches- is released per hour of electricity generation? Per day 6hrs? Max generation?**

Answer: At full power generation (70 MW nameplate capacity), Denison Dam releases approximately 9,100 cubic feet per second, which is the equivalent of over 4 million gallons per minute. Generation at that rate for 24 hours would be equivalent to about 2½ inches of water at Lake Texoma pool elevation 617.

- 5. I have heard that the SWPA contract authorizes the release for power generation of 3' elevation per month. Is this true?**

Answer: Per the Corps' Lake Texoma Water Control Manual (2011), the maximum rate of pool drawdown is 1 foot per week or 3 feet per 4-week period.

- 6. During the first 3 months of 2014, 60,250 dsf was released for hydropower use from the Denison Dam, compared to 18,785 dsf during the first three months of last year, despite the lower lake levels. Is this the new norm?**

Answer: As explained in the answer to question #2 above, hydropower from Denison Dam is generally used as a power resource to meet electrical demand during extremely hot months and, in this case, extremely cold months. Despite the extreme conditions and high power demand, generation from Denison Dam during the period January-March 2014 was only 16% of average.

7. How long can stored power stay useful? If you generate now to store for peak usage how long can it be stored ahead of time?

Answer: Electricity itself cannot be stored; once electricity is generated it has to be used to meet an electrical load (i.e., appliances, heating and air condition systems, lighting, etc.). Methods to store energy on a large scale are very limited. In the case of hydropower, the water resource is considered stored energy because it is held in a reservoir, such as Lake Texoma, which then can be used to generate electricity when it is needed to meet load.

8. Regarding contract w/ customers, For how long are they? When are they conducted?

Answer: The current contract for the output of Denison Dam is effective until December 31, 2018. However, as contracts expire and for isolated projects like Denison Dam, Southwestern's marketing policy states that Southwestern "will negotiate new contract arrangements for each project's production with the preference customer then receiving the benefit of such federal project," in essence, making existing contracts perpetual.

9. Why are some pdf files password protected on the SWPA website?

Answer: The only password protected files on www.swpa.gov are the work plans for Southwestern's program to recapitalize the aging equipment at Corps hydropower plants. The plans contain proprietary cost estimate information which could potentially be misused by potential vendors for the work. The plans are on the web site so that Southwestern, the Corps, and Southwestern's customers can evaluate planned replacement work during the year.

10. Has adding a third generator/turbine to the Denison Dam even been considered by the SWPA, and if so, would more water be released as a result?

Answer: Denison Dam was built with three additional penstocks so that the addition of up to three more hydropower units would be possible. Southwestern and its customers have in the past considered adding a third turbine/generator to Denison Dam, but there are currently no plans to do so. The authorized hydropower storage at Lake Texoma will not increase due to additional hydropower unit(s), so the total amount of water available to hydropower from the conservation pool would not increase. The amount of water released during full power generation would increase if there were an additional hydropower unit. During flood control operations, water that would normally go over the spillway could be generated with the additional unit.

11. Please explain peak demand during the winter when electrical use is lower than the summer months.

Answer: Electricity demand in Texas, where the hydropower output of Denison Dam goes, is at its highest in the hot, summer months. Winter months can experience higher electricity demand than the milder fall and spring, but typically not as high demand as summer. Winter electricity demand is typically lower than peak summer demand due to the diversity in heating sources used to heat homes and businesses in the winter months. Since many end users have propane, natural gas, wood, or other heating sources, the demand for electrical use is typically less in the winter than in the summer where almost all facets of air conditioning load are electricity based in design. However, it should be noted that many areas offer incentives for end users to install electric heat pumps. As more of these devices are installed, winter electricity

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demand continues to grow. Additionally, even during times when electricity demand is lower, the loss of generating or transmission resources, due to planned or unplanned outages, or a source supply shortage (natural gas, coal, wind, etc.) can put increased demand on available power sources.

12. On the graph of all info the graph did not show population growth of the area, why not?

Answer: The graphs from Southwestern's presentation showed inflows and outflows, magnitudes of generation, and actual and seasonal pool elevations for Lake Texoma and Denison Dam. Southwestern is unsure how the commenter wants Southwestern to add population growth to one or all of these graphs.

13. Will Southwestern Power continue to draw water for hydroelectric power generation after Panda comes online?

Answer: Yes. The Panda Temple II Power Project is an investor-owned venture that is being built to meet growing power demand in Texas. Southwestern is not involved in the Panda Temple II Power Project and the Panda Temple II Power Project does not impact the Denison Dam Federal power contracts or the hydropower storage at Lake Texoma.

14. Does it really require an act of congress to reduce the amount of water that is released for hydroelectric generation, or is this actually a decision and determination left up to the SWPA?

Answer: In short, yes. Hydropower is one of two project purposes which pay into the U.S. Treasury for water storage in Lake Texoma. The other is Municipal & Industrial (M&I) water supply. As an authorized user of the project with designated water storage, Southwestern has the right to use the water storage for which it has paid. Southwestern markets and our customers schedule hydropower from Denison Dam in accordance with Corps rules and regulations and all applicable laws, including Public Law 100-71. That said, however, Southwestern and its customers have voluntarily reduced generation to save storage during the drought responsible for the low Lake Texoma elevations.

15. Considering a 590' lake elevation scenario: How would SWPA and/or ERCOT provide for their obligations? Where would the power come from? What would the costs be? Is there a plan with mitigation measures that may help NOW that could prevent such a situation?

Answer: Southwestern's customers that receive the hydropower output from Denison Dam would be responsible for acquiring replacement power from other sources in the event that hydropower is unavailable from Denison Dam. Generally, replacement power for the hydropower normally produced at Denison Dam would come from thermal generators such as natural gas or coal plants. As for the cost, Southwestern's customers spent \$5 million in 2013 replacing power normally received from Denison Dam.

Southwestern and its customers have already instituted mitigation measures by voluntarily reducing generation and purchasing replacement power to save the hydropower storage for those times when it is needed most.

- 16. How much will the hydro-electric facility be used in the foreseeable future? If the drought persists. We have major concerns about not having enough water to irrigate our crops downstream. Our usage months are primarily June, July and some in May.**

Answer: Southwestern's customers have indicated that they will continue in the voluntary reduction of generation from Denison Dam in order to save the hydropower storage for those times when it is needed most. The year 2013 was recorded as the lowest generation year since the project came on line in 1945, including setting record low generation for the months that you indicate (May, June, July), and it is possible that 2014 will see generation levels that low again. Changes in hydrologic conditions or in the power system could cause the need for more generation.

- 17. Is "pumped storage" feasible for Lake Texoma to reduce the amount of water released for hydropower? Has a study been done to consider it?**

Answer: Pumped storage is not feasible for Denison Dam since that type of project requires a different design, such as a downstream afterbay and reregulation dam, as well as a completely different type of turbine and other equipment. Converting Denison Dam to a pumped storage project has not been studied by Southwestern and is not an option being considered by the Corps.

- 18. Is there a different way they can generate the power? Seems like in the 21st century there should be a different and more economical way than to release water to the Red River to the Gulf of Mexico.**

Answer: Southwestern's generation resources are all Corps-owned hydroelectric powerplants. Southwestern's only other option to meet its contractual obligations to its customers would be to purchase power on the market, and the amount of power purchased is subject to limits set by annual appropriation laws.

As for the economy of hydropower, it is one of the lowest cost ways to produce electricity according to the Energy Information Administration (see http://www.eia.gov/forecasts/aeo/er/electricity_generation.cfm). Additionally, in an average year, the environmentally sound energy marketed by Southwestern from 24 Corps hydroelectric powerplants saves the American people the equivalent of 9.5 million barrels of oil, 2.9 million tons of coal, or 47.5 billion cubic feet of natural gas. It also prevents the emission of greenhouse gases equivalent to 4.6 million tons of carbon dioxide, 13.9 thousand tons of sulfur dioxide, and 5.8 thousand tons of nitrogen oxides.