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Briefing Paper on the “Worst Case” Implications of Low Missouri River Flows For Power Plants

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BRIEFING PAPER ON THE “WORST CASE” IMPLICATIONS OF LOW MISSOURI RIVER FLOWS FOR POWER PLANTS

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In April 2004, FAPRI evaluated two water control plans considered by the Corps of Engineers for the Missouri River in terms of their impact on power plants. The Corps called these plans the Preferred Alternative and the GP2021 plan. The Preferred Alternative plan was adopted by the Corps on March 19, 2004, as the new water control plan. The GP2021 water control plan includes a spring Gavins Point release of 20,000 cubic feet per second above navigation requirements and a low summer release of 21,000 cubic feet per second.

FAPRI evaluated the impacts of these plans using weather conditions experienced over the 1898 to 1997 period to formulate probability distributions around the impacts. Due to the low summer flow included in the GP2021 water control plan, it would result in economic damages that were on average twice the level of those incurred by the Preferred Alternative water control plan with expected values of \$45.6 million and \$21.0 million, respectively. In addition, the GP2021 water control plan produced higher economic damages more frequently than the Preferred Alternative. For example, the GP2021 water control plan has a 50 percent chance of producing economic damages to power plants of \$5.2 million or more compared to the Preferred Alternative which has a 50 percent chance of producing economic damages of \$0.005 million or more. Similarly, with a 25 percent chance, the GP2021 water control plan produced economic damages of \$51.7 million compared to \$9.9 under the Preferred Alternative. With a 10 percent chance, the GP2021 water control plan produced economic damages of \$148.9 million compared to \$48.8 under the Preferred Alternative. In the most extreme case, with a 1 percent chance, the GP2021 water control plan produced economic damages of \$598.4 million compared to \$259.0 under the Preferred Alternative.

While blackouts or rolling blackouts are difficult to precisely predict, the stress on the power transmission system is significant when annual summer economic damages exceed \$100 million. The GP2021 scenario has a 15 percent chance of producing economic damages of \$100 million dollars or more while the Preferred Alternative scenario has a 7 percent chance of producing economic damages of 100 million dollars or more. Therefore, rolling blackouts or blackouts are twice as likely under the GP2021 scenario as the Preferred Alternative.