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March 2, 2021

DECISION MEMORANDUM

TO: Council members

FROM: John Ollis

SUBJECT: Contract with PSR Soluções e Consultoria em Energia Ltda (PSR) for Cloud Computing Support Services

PROPOSED ACTION: Council staff recommends authorization to enter into a contract with PSR for cloud computing support services in an amount not to exceed \$100,000 to support execution of the redeveloped GENESYS model in development of the 2021 Power Plan.

SIGNIFICANCE: In developing the 2021 Power Plan, Council staff uses the redeveloped GENESYS model as an analytical tool for understanding the impacts of changes in the hydroelectric system's operation on the regional power system and to assess resource adequacy.

BUDGETARY/ECONOMIC IMPACTS

Total contract budget not to exceed \$100,000.

BACKGROUND AND ANALYSIS

The GENESYS model is used to assess resource cost-effectiveness, to evaluate capability of resource portfolios to meet system needs, and to provide estimates of the power system impacts of various scenarios. GENESYS is also used to assess the impacts and costs of non-power related constraints on the regional power system, such as timing and flow restrictions at the dams.

The Council previously contracted PSR to redevelop the GENESYS model in order to bring the software code up to current standards and to implement enhancements including improving the simulation of hourly hydro capability, incorporating reserves into an optimized dispatch to reflect the interaction between assignment of reserves and other system capacity obligations: improving market representation to reflect the trade-off between decisions made for economics and adequacy; and, the inclusion of fuel accounting and forecast error to represent limitations on operators in dispatching the system. PSR recently delivered the redeveloped GENESYS model and staff is utilizing it in development of the 2021 Power Plan.

A remote infrastructure supports execution of the redeveloped GENESYS model, and each run of the redeveloped GENESYS model is processing and storage intensive. PSR has an existing remote infrastructure, the PSR Cloud System, which the Council is currently utilizing to support runs of the redeveloped GENESYS model for development of the 2021 Power Plan. The PSR Cloud System employs multiple Amazon Web Service products capable of efficiently running the redeveloped model, and PSR's Cloud System operates as a pay as you go model, employing an upfront payment method with the cost of each run deducted from the total amount paid and the cost of each run varying depending upon the processing and query times for the model execution as well as the server and storage costs. With this structure, there is not a set termination or expiration date typical of other agreements, rather, staff may continue to execute runs utilizing the remote infrastructure so long as we have sufficient funds to do so.

Staff intends to execute at least one set of associated system capacity contribution runs, one testing the assumptions put forward in the baseline conditions and if needed, another testing assumptions put forward in scenario analyses, and each of these runs require significant storage and processing support. To complete both of these studies for the 2021 Power Plan, additional funds are necessary. Therefore, staff is seeking Council authorization to enter into an agreement with PSR for additional cloud computing support services in an amount not to exceed \$100,000.

ALTERNATIVES

The Council does not currently have a remote infrastructure in place to support or to efficiently run the redeveloped model. Thus, in the alternative, the Council could choose to not add any additional funds for cloud computing support, which would limit further use of the redeveloped GENESYS model in developing the 2021 Power Plan. The Council could also choose to open an account with Amazon Web Services or another cloud computing provider to develop a Council cloud system. However, this alternative would require a substantial amount of staff time and resources to set-up the cloud system and would require the model to be transferred from the PSR cloud to the Council cloud, both of which may adversely impact the overall plan timeline.