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October 4, 2023

DECISION MEMORANDUM

TO: Council members

FROM: John Ollis
Manager of Planning and Analysis

SUBJECT: GENESYS License and Maintenance

PROPOSED ACTION: Staff recommends authorization to contract with PSR Soluções e Consultoria em Energia Ltda (PSR Energy Solutions and Consulting Ltd) in an additional amount not to exceed \$63,000 for the 2024 fiscal year. This \$63,000 would be added to the existing contract for \$120,000 approved by the Council in September, for a new not to exceed of \$183,000.

This additional \$63,000 is for the OptGen module for GENESYS, which is an off-the-shelf capital expansion and resource optimization tool.

SIGNIFICANCE: For FY24, staff is recommending that in addition to renewing the license for the existing tool, the Council add the OptGen module to the GENESYS tool. These services will replace the Council's Regional Portfolio Model (RPM) with a new capital expansion and resource optimization tool. Staff believes this change is the best path forward for ensuring the modeling ecosystem is ready for the analytical needs of the next power plan.

BUDGETARY/ECONOMIC IMPACTS

For fiscal year 2024, the Council has already approved \$120,000 for the license of GENESYS and maintenance and technical support. Staff is now recommending authorization to contract with PSR for an additional \$63,000 (for a new not to exceed \$183,000). This \$63,000 covers the the first-year costs of the OptGen module (future year maintenance costs of the OptGen module will be \$24,000). Staff recommends OptGen as a replacement to the existing RPM model. Staff has budgeted for this full amount in the FY24 budget. (Note that the Council will also need to continue purchasing cloud computing time to minimize model run time. This and other ongoing licensing and support needs for the power division technical work was shared with members via email in September.)

BACKGROUND

Staff is recommending adding PSR's OptGen module to GENESYS. This module would support using GENESYS for regional (and WECC-wide) capital expansion and portfolio optimization. The plan is to move towards using GENESYS for this analysis and replace the Council's existing regional capital expansion and optimization model (RPM). While the RPM was an excellent tool for its time, the changing dynamics of the power system require a different toolset. Over the last several months, staff have been exploring various options for meeting its analytical needs for regional capital expansion and optimization modeling. The options include enhancements to the RPM, leveraging the Council's Aurora model (which is used for west-wide capital expansion and price forecast studies), adding the OptGen module to GENESYS, or another capital expansion model available on the market to supplement our existing modeling suite. Staff compared these options in terms of price, functionality relative to our future modeling needs, and staffing requirements. Based on this assessment, staff believe that adding the OptGen module to GENESYS provides the best path forward at this time. This addition brings the required functionality, builds off existing tools that are well understood by staff and have gained regional support, allows for good data sharing with utilities, and keeps our costs and resources at a similar level as today. The other alternatives explored either required significant cost and/or staffing resources to develop tools with sufficient functionality or did not meet all the functionality requirements sought for the next power plan.

ANALYSIS

Staff will present its full analysis and recommendation of OptGen to the Power Committee at its September 12 meeting. But to summarize further from the more detailed information presented to the Committee, in developing this recommendation, staff considered the following alternatives:

- **Enhancements to the RPM:** Staff could pursue enhancements to our existing RPM model such that it has the needed functionality to support modeling in the future. Staff estimates this would cost at least \$160,000 and require significant time and resources, likely delaying other important work and the start of the next power plan. Staff does not recommend this approach.
- **Using Aurora for In-Region Analysis:** The Council currently uses Aurora for its west wide capital expansion, market price studies, and marginal emissions analysis. Aurora has the capability to be used for in-region portfolio optimization, either with its own portfolio optimization tool or through a staff development

optimization tool in R. Staff is familiar with Aurora's portfolio optimization tool and does not believe it meets the Council's needs for regional portfolio optimization. Therefore, staff does not recommend this approach. Staff is considering developing its own optimization tool in R as a back-up and support option for GENESYS with OptGen. This approach does not have all the functionality of OptGen, but it is low cost (aside from staff time) and low risk, and it will provide the Council flexibility to shift to this approach if the OptGen module ultimately does not meet our needs.

- **Developing an Alternative Model:** The Council specifically explored GridPath, an open-source capital expansion model. Staff were particularly intrigued by the open-source nature of this model, recognizing this is a good fit for the Council's work being done in the public eye. Staff ultimately decided to not recommend this model at this time as the resources required to ensure sufficient functionality and the staff time needed to develop and learn the tool were too large and would likely risk timely development of the next plan. Staff also considered other options, but these would have been replacements for more of the modeling suite (including GENESYS) and staff determined that this would be too risky at this time, although plans to continue to consider alternatives for future power plans.

ALTERNATIVES

The Council needs a modeling solution for regional capital expansion and portfolio optimization, and staff recommends adding the OptGen to GENESYS as the best tool to meet our current needs. The Council could decide, however, to pursue an alternative to the add-on OptGen module. This could be one of the alternatives explored by staff or another tool altogether.