

Jennifer Anders
Chair
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Vacant
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Guy Norman
Washington

Patrick Oshie
Washington



Northwest Power and Conservation Council

Richard Devlin
Vice Chair
Oregon

Ted Ferrioli
Oregon

Jim Yost
Idaho

Jeffery C. Allen
Idaho

August 6, 2019

DECISION MEMORANDUM

TO: Council members

FROM: John Fazio
Senior Systems Analyst

SUBJECT: GENESYS Model Redevelopment Testing and Deployment

PROPOSED ACTION: Two actions are proposed:

- Amend contract C2019-29 with Gwendolyn Shearer for testing the redeveloped GENESYS model
- Contract with Gwendolyn Shearer for the 2020 fiscal year to continue vetting the redeveloped GENESYS model and to aid staff in preparing and performing analyses to develop the 2021 Power Plan

SIGNIFICANCE:

Both the contract amendment and new contract are a direct result of the Council's Seventh Power Plan action items ANLYS-20 (review analytical methods), ANLYS-21 (GENESYS model redevelopment) and ANLYS22 (enhance the GENESYS model to improve the simulation of hourly hydroelectric system operations.) Because the regional power supply is becoming more complex, with significant amounts of variable generation resources and new market structures, it is imperative that GENESYS be able to accurately reflect more granular system operations, including how balancing reserves are assigned. The contract amendment will ensure that the new model is properly and completely vetted without disruption, and the new contract will help staff develop more detailed analyses, the results of which will feed into other analytical tools used by the Council to develop the 2021 Power Plan.

BUDGETARY/ECONOMIC IMPACTS

The current contract with Ms. Shearer was first amended in January 2019 to increase the total Contract budget to \$75,000 and to extend the period of work through the end of

the 2019 fiscal year. The contract amendment was necessary due to the high level of complexity in the new model, which required more extensive data requirements and testing. It was anticipated at that time that the amended contract would be sufficient to complete the vetting process by September 2019. However, since then, Council staff has requested additional refinements to the new GENESYS model, which expanded and further complicated the vetting process. In order to complete the testing of the new model within a time frame that will not delay progress toward the development of the 2021 Power Plan, staff recommends that the budget be increased by \$11,250 (adding 75 hours at a rate of \$150/hour), bringing the total budget for Contract C2019-29 to \$86,250.

Staff also recommends that the Council approve contracting with Ms. Shearer for the 2020 fiscal year to continue vetting the redeveloped GENESYS model and to aid in preparing and running analyses to develop the 2021 Power Plan. The new model is substantially more complex than the current version and requires significantly more time and effort to set up and run studies, and to interpret and summarize results. If approved, the new contract would begin on October 1, 2019 and extend through the end of the 2020 fiscal year (September 30, 2020). The total contract budget would be \$75,000 (500 hours at a rate of \$150/hour).

BACKGROUND

The GENESYS model is one of the major quantitative tools used to develop the Council's regional power plan. GENESYS is primarily used to assess the adequacy of the power supply but it also provides hydroelectric system output and other data to both the AURORAxmp model and the Council's Regional Portfolio Model (RPM). It is used to assess the capacity contributions of all potentially new regional resources (including energy efficiency) and is used to establish an adequacy reserve margin, which is used in the RPM as a guide for resource acquisition decisions. In addition, GENESYS is used to validate that the power plan's resource strategy will produce adequate supplies. GENESYS has also become one of Bonneville Power Administration's major tools for assessing federal system adequacy and is being used to a lesser degree by several other regional entities.

ANALYSIS

In order for the Council to complete the GENESYS redevelopment project in time for the 2021 Power Plan, the new version must be thoroughly tested before analysis begins for the new plan. The goal is to use the redeveloped model, in parallel with the current model, to produce this year's regional power supply adequacy assessment. This will allow regional planners (through the Council's Resource Adequacy Advisory Committee) to more fully vet the redeveloped model and to gain confidence in its results prior to the use of the new model in the power plan development process.

ALTERNATIVES

The Council could choose to not amend the current contract. This alternative would save \$11,250 but would significantly delay and disrupt completion of the vetting process for the new model. This in turn would delay the use of the new model in producing required data that feeds into the Council's other analytical tools used to develop the power plan.

The Council could also choose to not contract with Ms. Shearer for the 2020 fiscal year. This would save \$75,000 but would significantly increase the risk of delaying the completion of the 2021 Power Plan. The redeveloped model is substantially more complex than the current version and requires significantly more time and effort to set up and run analyses. Not using the redeveloped GENESYS is not a viable option given that the new model explicitly addresses capacity and flexibility issues that the current model can only approximate.

ATTACHMENTS

Sole source justification for the 2020 fiscal year contract

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August 6, 2019

MEMORANDUM

TO: Council Members

FROM: John Fazio, Senior Systems Analyst

SUBJECT: Sole source justification – Gwendolyn Shearer, 2020 fiscal year contract

The GENESYS model is one of the major quantitative tools used to develop the Council's regional power plan. GENESYS is primarily used to assess the adequacy of the power supply but it also provides hydroelectric system output and other data to both the AURORAxmp model and the Council's Regional Portfolio Model (RPM). It is used to assess the capacity contributions of all potentially new regional resources (including energy efficiency) and is used to establish an adequacy reserve margin, which is used in the RPM as a guide for resource acquisition decisions. Consistent with Seventh Power Plan action items, the Council is undertaking GENESYS model redevelopment and enhancements to the GENESYS model to improve the simulation of hourly hydroelectric system operations.

The purpose of this contract is to assist staff in continuing to test the redeveloped GENESYS model and to develop detailed analyses, the results of which will feed into other analytical tools used by the Council to develop the 2021 Power Plan and other Council work products. The redeveloped GENESYS must be thoroughly tested and vetted before analysis begins for the new power plan. Ms. Shearer has an intimate knowledge of the GENESYS model, the ongoing redevelopment and significant experience with Pacific Northwest power operations, including valuable perspective on power planning. Ms. Shearer has the necessary experience to provide staff guidance on the GENESYS redevelopment testing and to aid in preparing and running analyses for use in development of the 2021 Power Plan. Ms. Shearer is the only individual that can provide the services sought, at the level of quality required and within the schedule necessary to not risk delaying development of the Council's 2021 Power Plan.