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August 6, 2019

DECISION MEMORANDUM

TO: Council members

FROM: Massoud Jourabchi
Manager, Economic Analysis

SUBJECT: Extension to Contract C2019-04: Energy 2020 Scenarios and Model Update for 2019

PROPOSED ACTION: Staff recommends extension to the Council Contract C2019-04 addressing long-term load forecasting model updates in preparation for the 2021 Power Plan

SIGNIFICANCE: The proposed Council action is needed to enable the staff to continue to evaluate and enhance the model that will be used for load forecasting in the 2021 Power Plan.

BUDGETARY/ECONOMIC IMPACTS

Funds for this contract amendment are available within the Power Planning Division budget for this fiscal year. Work on the amended tasks identified in the attached scope of work would begin in August 2019 and be completed by the end of September 2019.

BACKGROUND

Over the past two power plans, Council staff has used Energy2020 to produce a wide range of load forecasts and measure the future impact of a variety of scenarios. Energy2020 has produced reasonable forecasts of the electricity demands of the region. Energy2020 has been used throughout the country by many states and utilities. It can produce electricity energy and load forecasts for a wide range of business sectors.

However, as the regional electricity industry has evolved, so have the requirements for load forecasting. During fiscal year 2019, the Council contracted with Systematic Solution Inc. to enhance the modeling capability of Energy2020 for use in the development of the 2021 Power Plan. At the time of initial contracting and development of the original scope of work, the full extent of some of the tasks were not known; staff has now refined those tasks. Additionally, the 2021 Power Plan's concentration on incorporating climate change into the analysis, as well as the pollution tracking needed to understand the impact of various scenarios were not fully realized at the time of original contracting; thus, staff seeks to amend the contract to account for these additional considerations in the model updates.

ANALYSIS

The contractor will perform the tasks identified in the scope of work, attached.

ALTERNATIVES

One alternative is for the staff to proceed on its own to enhance the model and make the necessary changes. This alternative would delay the date when an enhanced version of this model would be available for use in the development of the 2021 Power Plan.

ATTACHMENTS

Scope of work and budget.

Budget Estimate: Remaining Tasks for Scenario Development and Model Update				
Date: July 22, 2019				
Task Description	Dollars		Estimated Hours	
	Total	Principal	Consultant	Analyst
Total Budget Estimate	\$37,419	46	331	56
1. Solar Plus Battery	\$3,618	6	7	4
2. Policy/scenario development support	\$6,074	4	22	10
3. Outstanding current data update tasks, sent by M.Jourabchi	\$2,792	0	14	4
4. Ductless heat pumps space heating	\$1,041	1	4	0
5. Pollution calibration to historical inventories	\$6,782	23	208	38
6. Deep Decarbonization scenario	\$ 17,112	12	76	-
1. Solar Plus Battery	\$3,618	6	7	4
a. Incorporate revised costs of solar+battery	\$350	0	2	0
b. Incorporate consumer choice equations for solar optimal vs myopic	\$2,921	6	4	2
c. Consolidate solar battery output files	\$347	0	1	2
2. Policy/scenario development support	\$6,074	4	22	10
a. Set up Medium, Low, and High Cases runs for 8th Plan - Create new batch files for order of runs (per M. Jourabchi email of 7/12/2019)	\$1,044	0	4	4
b. Standard-No Standard Case - Turn off codes and standards run model without calibration to obtain impact of appliance standards and building codes.	\$522	0	2	2
c. Stepwise increases in natural gas prices - Estimate price elasticity for natural gas. Explain results/debug as required.	\$2,937	4	8	2
d. General support for policy development (respond to questions, output files, debugging)	\$1,571	0	8	2
3. Outstanding current data update tasks, sent by M.Jourabchi	\$2,792	0	14	4
a. Run version with revised XLSF and old XLSF for comparison of the peaks (NWPCC staff)	\$699	0	4	0
b. Update Tech-EC-Enduse residential splits in model from calculated values (done by NWPCC staff) in "Revised XDmd and XDST sent to Randy on July 15, 2019.xlsx"	\$347	0	1	2
c. Replace XDST in new RData2.src (sent 7-14-19 from M.Jourabchi) then test/debug RData2.src to incorporate into model	\$347	0	1	2
d. Use XDST by tech in the historic period to check historic values for market share by tech (NWPCC staff); respond to questions as required.	\$699	0	4	0
e. Execute model; review results; revise as required	\$699	0	4	0
4. Ductless heat pumps space heating	\$1,041	1	4	0
a. Modify logic so ductless heat pump is installed only in homes with electric baseboard heating - (have ductless heat pumps as a conversion option for electric baseboard).	\$1,041	1	4	0
5. Pollution calibration to historical inventories	\$6,782	23	208	38
a. Identify source of differences in GHG energy emission for 1990	\$3,994	3	16	2
- Electric utility – incorporate historical emissions totals and calculate coefficient based on emissions divided by driver (sales plus losses)	\$864	1	2	2
- Transportation – determine why differences in CO2 vs N2O totals	\$1,041	1	4	0
- Execute, review, compare to inventory, debug/revise as needed	\$1,740	1	8	0
- Write one-page summary of pollution calculations (revisions as required)	\$350	0	2	0
b. Incorporate calculations for process emissions (agriculture, waste, etc.)	\$2,788	0	12	8
- Input historical non-energy emissions into model (gathered by NWPCC staff). Need data for all sectors.	\$695	0	2	4
- Calculate the coefficient based on historical emissions divided by driver	\$350	0	2	0
- Execute, review, compare to inventory, debug/revise as needed	\$1,743	0	8	4
6. Deep Decarbonization Scenario	\$ 17,112	12	76	0
Revise model code for fuel switching to electricity; run model and verify code changes as required - in NW version.	\$ 2,082	2	8	0
Revise model code for fuel switching to electricity; run model and verify code changes as required - in California/Canadian version.	\$ 1,810	2	8	0
Create policy files to initiate decarbonization policies starting in 2022.	\$ 1,041	1	4	0
Review and verify California electric and gas load forecast from ENERGY 2020 matches latest CEC forecast; revise if required	\$ 2,797	0	16	0
Review impacts to electric and natural gas loads in California and NW; revise if not as expected; send loads to NWPCC staff to estimate new generation requirements.	\$ 3,480	2	16	0
Review model impacts to emissions (CO2e) in California and NW; compare to target.	\$ 1,740	1	8	0
Implement additional switching measures if emissions target not met.	\$ 2,082	2	8	0
Meetings, project management, write-ups to summarize methodology and/or results	\$ 2,082	2	8	0
Rates		\$297	\$152	\$75

Tasks are charged based on the hourly rates listed below by staff category.

Table 2. SSI Hourly Rates by Staff

Staff Member	Staff Category	Rates (US\$)
Jeff Amlin	Principal	\$297.00
Randy Levesque	Consultant	\$152.00
Ben Amlin	Consultant	\$152.00
Ian Beitenhaus	Consultant	\$152.00
Luke Davulis	Analyst	\$75.00
Tom Harger	Analyst	\$75.00