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**Susitna-Watana Hydroelectric Project
(FERC No. 14241)**

**Regional Economic Evaluation Study
Study Plan Section 15.5**

Final Study Plan

Alaska Energy Authority



July 2013

15.5. Regional Economic Evaluation Study

On December 14, 2012, Alaska Energy Authority (AEA) filed with the Federal Energy Regulatory Commission (FERC or Commission) its Revised Study Plan (RSP), which included 58 individual study plans (AEA 2012). Section 15.5 of the RSP described the Regional Economic Evaluation Study. This study focuses on assessing regional economics resulting from the operation of the proposed Project and the power generated by the Project. RSP 15.5 provided goals, objectives, and proposed methods for data collection regarding regional economics.

On February 1, 2013, FERC staff issued its study plan determination (February 1 SPD) for 44 of the 58 studies, approving 31 studies as filed and 13 with modifications. RSP Section 15.5 was one of the 31 studies approved with no modifications. As such, in finalizing and issuing Final Study Plan Section 15.5, AEA has made no modifications to this study from its Revised Study Plan.

15.5.1. General Description of the Proposed Study

15.5.1.1. Study Goals and Objectives

The goal of the regional economics study plan is to assess potential changes in regional economic conditions in the study area resulting from the operation of the proposed Project and the power generated by the Project. Changes in regional economic conditions resulting from the non-power effects of the Project are included in the social conditions and public goods and services study plan.

The objectives of the study are listed below.

- Describe the effects of the Project on the regional economy resulting from improvements in the reliability of the electrical power grid.
- Describe the effects of the Project on the stability of electric prices over time.
- Determine the economic effects of the Project's power over time.

15.5.2. Existing Information and Need for Additional Information

A data gap analysis report of socioeconomics, recreation, air quality, and transportation was prepared in August 2011 (HDR 2011). That report along with the Alaska Energy Authority's (AEA's) 2011 Pre-Application Document (PAD) provides substantial information about the Project and socioeconomic resources in the Project vicinity. Information collected for the socioeconomic conditions and public goods and services component of the socioeconomic analysis will provide a portion of the data needed for the regional economic model to conduct the regional economic analysis. However, information regarding electric utility rates, power outages, and other data required for this regional economic analysis is not addressed in the Social Conditions and Public Goods and Services Study Plan, and is lacking in the data gap analysis and the PAD. Additional information needed for the regional economic modeling effort includes the following.

- Historical data on electric utility rates for Railbelt utilities.
- System Average Interruption Duration Index reliability minutes for Railbelt utilities.

- Information on the cost of power disturbances in the commercial and residential sectors within the study area.
- Information on how the cost and reliability of power may affect creation of new businesses or expansion of existing businesses.

A review of relevant published documents and information from public scoping meetings will be useful to further inform the study inputs and information collection. In addition, it is anticipated that interviews will be conducted with businesses in the Railbelt to ascertain the potential for changes in business opportunities as a result of the new energy source provided by the Project.

15.5.3. Study Area

The regional economic impacts of the new energy source provided by Project operations will be concentrated in the area collectively referred to as the Railbelt, which includes the Fairbanks North Star Borough (FNSB), Denali Borough, MSB, Municipality of Anchorage (MOA), and Kenai Peninsula Borough (KPB).

15.5.4. Study Methods

The study methods discussed below are consistent with methods used for economic analysis completed during the licensing proceedings for other hydroelectric projects (Public Utility District No. 1 of Chelan County 1999; PacificCorp 2004; Sacramento Municipal Utility District 2005).

15.5.4.1. Data Collection and Analysis

The proposed Project would not start operations until 2023 under the current schedule. In addition, the Project is anticipated to continue operations for more than 50 years. Given the long time frame for operation of the Project, the effects of the power produced by the Project on the regional economy will be estimated by comparing future socioeconomic conditions with and without the Project.

The forecast of socioeconomic conditions with and without the Project will be based in part on estimates derived from a data and software program called REMI (Regional Economic Models, Inc.). The REMI model incorporates aspects of four major modeling approaches: input-output, general equilibrium, econometric and economic geography. Changes in supply, demand and prices are entered into the REMI model in order to identify the iterative economic and demographic effects of these changes. While the REMI model provides a wide range of output variables, the primary variables of interest in the socioeconomic impact analysis for the proposed Project are population, employment, labor income, output (sales), and housing. The REMI model extends economic and demographic forecasts through 2060, which is consistent with the temporal scope of the socioeconomic impact analysis. The REMI model can provide projections for all of the boroughs and census areas within the Railbelt, including the MOA, FNSB, KPB, MSB, and Denali Borough. The current REMI model also includes the Yukon-Koyukuk Census Area and Valdez-Cordova Census Area.

The REMI model assumptions will be obtained from an information collection process aimed at developing a consensus about reasonably foreseeable future economic activities in Alaska with and without the Project. The model assumptions will reflect combined information from

published reports and interviews with industry and government representatives who have experience and expertise in the state's leading industries and economic policy areas. All key informants will be selected for their first-hand knowledge about Alaska's current socioeconomic environment, and for their understanding of the socioeconomic opportunities and obstacles that the state may encounter in the future. An attempt will be made to obtain a diverse set of representatives with different backgrounds and from different groups or sectors. This diversity will provide a broad range of perspectives.

In addition, it is anticipated that interviews will be conducted with business representatives in the Railbelt area to ascertain the potential for changes in business opportunities as a result of the new energy source provided by the Project. The categories of organizations to be interviewed, the information being sought from each organization or category, and examples of interview questions that will be used to develop REMI model assumptions are presented in the Regional Economic Evaluation Interview Protocol.

As part of its ongoing responsibilities separate and apart from licensing and developing the Project, AEA will provide information on power generation, transmission, and demand in the Railbelt, which will be used in the REMI model. As part of this effort, AEA will collect or develop information on the historic electricity rates and system average interruption duration index reliability minutes for Railbelt utilities, as well as power generation costs for the gas-fired plants that are presently under design or construction.

Other assumptions used in the REMI model will come from several different sources, and engineering feasibility studies that will provide information on Project construction and operations cost and the amount spent locally, the cost of power, amount of power available and similar information. The cost estimates, cost of power, and similar information from the engineering feasibility study will be evolving over time and it is anticipated that we will use the most current set of data available in the Regional Economic Evaluation Initial Study Report, and that the engineering data will change for the Regional Economic Evaluation Updated Study Report.

In addition, the interviews described above will provide information for developing assumptions regarding the future for both the With-Project and Without-Project alternatives. Data collected for the Social Conditions and Public Goods and Services Study will also provide information to be used in the regional economic modeling.

Updates to the assumptions will be provided during quarterly TWG meetings in 2013 and 2014, as well as in the Regional Economic Evaluation Initial Study Report.

Production costs will be modeled in a manner similar to that presented in *Measuring the Economic Impact of Improved Electricity Distribution in Connecticut* (REMI, 2007), with modifications made to reflect the specific features of the Project and the Without Project alternatives.

Forecasts for the With-Project condition will be compared to the Without-Project condition. Under the Without-Project case, the mix of electrical generation sources will be based on production cost modeling with Railbelt utilities and an appropriate alternative that does not include a large hydroelectric project. The With-Project condition will be based on the large hydroelectric alternative in the RIRP, adjusted as necessary to fit with the current Project description.

15.1.1.1. *Documentation of Regional Economic Evaluation*

The results of the regional economic evaluation will be documented in the initial and updated study reports. The reports will include study objectives, study area, methods, and tabulated results.

15.5.5. Consistency with Generally Accepted Scientific Practice

Much of the socioeconomic background information will come from published sources, including local governments, boroughs, state agencies, and the federal government. The REMI model being used to forecast future economic conditions has been calibrated for Alaska and has recently been used in work completed for the Alaska Pipeline Project. The REMI model is used by federal, state, and local governments as well as universities and consulting firms.

15.5.6. Schedule

It is anticipated that completion of the work described above would require about six or seven months of effort during 2013 to provide the Initial Study Report in Q1 2014. The process described above should provide sufficient information for the licensing and environmental review of the Project. There could be some additional analyses or model runs in 2014 to update input parameters that perhaps have changed as a result of changes to the Project plans or other changes as determined by AEA in collaboration with licensing participants. Any additional work in 2014 will be reported in the Updated Study Report in Q1 2015 (Table 15.5.1).

In 2014 and 2015, licensing participants will have opportunities to review and comment on the study reports (Initial Study Report in early 2014 and Updated Study Report in early 2015). Updates on the study progress will be provided during Technical Workgroup meetings which will be held quarterly in 2013 and 2014.

15.5.7. Relationship with Other Studies

Completion of the Regional Economic Evaluation Study will require some input from the Social Conditions and Public Goods and Services Study (Section 15.6) and Project engineering feasibility studies as illustrated below (Figure 15.5-1). Much of the information collected for the Social Conditions and Public Goods and Services REMI model will also be required for the Regional Economic Evaluation Study and efforts will be coordinated so that the Social Conditions and Public Goods and Services Study provides that information to the Regional Economic Evaluation Study. Cost estimates, construction and operations employment, cost of power, and a number of other items will be required from the engineering and other feasibility studies that are underway as inputs to the REMI model.

15.5.8. Level of Effort and Cost

Conducting this analysis and preparing the report sections are estimated to require about 1,200 to 1,500 person-hours in 2013 and 2014. The effort in 2013 would occur over a six to seven month period including preparation of the Initial Study Report with additional effort in 2014 to incorporate information from other study plans. The estimated cost could range from about \$250,000 to \$400,000.

15.5.9. Literature Cited

Alaska Energy Authority (AEA) 2011. Pre-Application Document, Susitna-Watana Hydroelectric Project, FERC No. 14241.

HDR, Inc. (HDR) 2011. Susitna-Watana Hydroelectric Project, Socioeconomic, Recreation, Air Quality, and Transportation Data Gap Analysis. Unpublished, by the Alaska Energy Authority.

PacificCorp 2004. Klamath Hydroelectric Project High-Level Socioeconomic Analysis of the Landscape Options—Phase 2. FERC Project No. 2082.

Public Utility District No. 1 of Chelan County 1999. Rocky Reach Hydroelectric Project Socioeconomic Study Plan. FERC Project No. 2145.

Sacramento Municipal Utility District 2005. Upper American River Project, Chili Bar Socioeconomic Study Plan FERC Project No. 2101.

15.5.10. Tables

Table 15.5-1. Schedule for implementation of the Regional Economic Evaluation Study.

| Activity | 2012 | | | | 2013 | | | | 2014 | | | | 2015 |
|--|------|-----|-----|-----|------|-----|-----|-----|------|-----|-----|-----|------|
| | 1 Q | 2 Q | 3 Q | 4 Q | 1 Q | 2 Q | 3 Q | 4 Q | 1 Q | 2 Q | 3 Q | 4 Q | 1 Q |
| Gather/Review Existing Information | | | | | — | | | | | | | | |
| Conduct Interviews | | | | | — | | | | | | | | |
| Document Existing Conditions | | | | | | — | | | | | | | |
| Develop Reasonably Foreseeable Future Action Assumptions | | | | | | — | | | | | | | |
| Develop REMI Model and Analysis | | | | | | | — | | | | | | |
| Initial Regional Economic Evaluation Study Report | | | | | | | | — | Δ | | | | |
| Incorporate Information from Other Studies | | | | | | | | — | — | — | | | |
| Updated Regional Economic Evaluation Study Report | | | | | | | | | | | | — | ▲ |

Legend:

- Planned Activity
- Follow up activity (as needed)
- Δ Initial Study Report
- ▲ Updated Study Report

15.5.12. Figures

STUDY INTERDEPENDENCIES FOR REGIONAL ECONOMIC EVALUATION STUDY

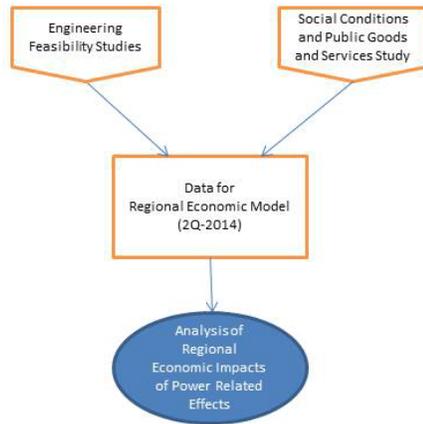


Figure 15.5-1. Study Interdependencies for the Regional Economic Evaluation Study.