15. SOCIOECONOMIC AND TRANSPORTATION RESOURCES

15.1. Introduction

This section outlines the study plans for socioeconomic and transportation resources. The socioeconomic sections will address evaluation of regional economic effects as well as effects on social conditions and public goods and services.

15.2. Nexus Between Project Construction / Existence / Operations and Effects on Resources to be Studied

The construction and operation of the Project has the potential to affect social resources, including the local and regional economies; provision of public services by local, state and federal governments; air emissions and local and regional air quality; community health and safety; and traffic levels and capacity of transportation resources including roads, airports, rail, and local river transportation. The type, intensity, and extent of effects on these social resources need to be understood during the licensing process so that appropriate measures, if necessary to mitigate any Project effect, can be considered for incorporation into the Project license.

Some of the potential socioeconomic effects of the Project during the construction phase are related to the large number of construction workers that would be employed to build the Project and their potential impact on communities, public services, infrastructure, and temporary housing. The construction workforce is likely to be drawn from a broad region of Southcentral and Interior Alaska. The number of certain skilled occupations required for the Project may exceed the number of workers available within the state, which could lead to some in-migration of out-of-state workers and their families for some occupations, or such workers might commute from their current residences in other states.

Additional socioeconomic effects that could occur during the construction phase include increased job opportunities and income associated with local employment and through local expenditures by AEA, contractors, other utilities, and non-local construction workers. Also during construction, local government taxes (e.g., sales tax, hotel/motel occupancy tax) would be generated on items and services purchased in communities in the vicinity of the Project.

Project construction will also require the transportation of people, equipment, and materials to and from the construction worksite, which could result in increased rail, air, and road traffic volumes, disruption of normal traffic patterns, and possibly, associated noise and congestion effects. Such conditions may temporarily disrupt the transportation patterns of tourists and local travelers, especially in summer, and may require additional police and emergency response calls for traffic and other incidents.

Project construction would also result in new air emission sources in the vicinity of the Project and could have effects on local community health.

The development of a major new energy source would affect the economy of the Railbelt area. The economic literature suggests that benefits accrue to regional economies from electric utility system improvements. The Project will generate electricity for a significant portion of the state's residents. While the final capital cost, financing, and other information needed to estimate the

cost of this electricity is still uncertain, it is known that the cost will be relatively stable for the life of the Project. In contrast, the cost of electricity generated from fossil fuels may rise over time. Therefore, at some point in time, savings may accrue to residential and industrial consumers of the electricity generated by the Project. These savings in energy costs could expand the regional economy by stimulating business activity and creating more disposable income for consumers to spend on purchases of other goods and services.

Project construction and operation may change the level of production of commercial farming, grazing, logging, mining, and fishing operations in the study area. In addition, Project operation, together with Project features (i.e., reservoir and access roads), could change fishing, hunting, and other recreation and subsistence opportunities, including availability of recreational and subsistence resources, access, and quality of experience. In turn, these changes could have an impact on tourism and other sectors of the local and regional economies. Project features that stimulate residential location, tourism, and other types of economic development may affect surrounding property uses and values. These changes could also affect community health through changes in diets and lifestyles.

New residents may be attracted to the study area by the Project features (i.e., reservoir and access roads) as well as additional business activity stimulated by the Project. This immigration could affect the demand for both housing and municipal and state services, such as police, fire protection, medical facilities and schools. Local government could see additional expenditures for these services and additional revenues based on increased property taxes from new land development.

Project construction activities and operations are likely to result in increased transportation demands that could affect the operation, maintenance, and use of local roadways, Alaska Railroad Corporation (ARRC) facilities, and airports. Air emissions during both construction and operations could change air quality locally, or in the event that the Project affects operations levels at other regional power plants, regionally. Project-related changes in water levels and ice formation could affect local use of the river for winter transportation. Project-related changes in water temperatures and levels, along with development of the dam and reservoir complex and transmission and road system, could alter some of the bio-physical attributes of the Susitna River system that many residents of the Matanuska-Susitna valley have adapted lifestyles around.

15.3. Resource Management Goals and Objectives

The proposed Project would occupy federal lands currently administered by the U.S. Bureau of Land Management (BLM) but selected by the State of Alaska under the Alaska Statehood Act, state lands administered by the Alaska Department of Natural Resources (ADNR), and private lands owned by Alaska Native Corporations and others. The Project site is within the Matanuska-Susitna Borough (MSB), which has adopted an Economic Development Strategic Plan that contains policies designed to support economic growth in the area. The MSB plan will be reviewed and BLM, ADNR, and Alaska Native entities will be contacted to determine their socioeconomic goals and objectives for the lands in the vicinity of the Project. These goals and objectives will be incorporated into the socioeconomic studies.

Local government provision of public services is regulated under Title 29 of Alaska Statutes as well as a variety of city and borough codes and management plans. The goals and objectives for management and use of state and federal lands are documented in area management plans. These

plans are designed to allow use of public lands that is compatible with the purposes and uses identified for the lands in the management plans.

Surface and aviation transportation resources in the Project area are managed under the MSB Long-Range Transportation Plan, as well as under the Alaska Department of Transportation & Public Facilities (ADOT&PF) Statewide Transportation Policy Plan. Rail facilities are managed under Federal Railroad Administration regulations and the state code. All of these agencies work together to ensure that appropriate types and levels of transportation facilities are available to provide for the safe and efficient movement of people and goods to support the state's economy and quality of life.

Air quality is regulated by the Alaska Department of Environmental Conservation (ADEC) and the Environmental Protection Agency (EPA). These regulations are designed to maintain air quality to support public health.

Public health issues in Alaska are monitored by the Alaska Department of Health and Human Services (DHSS), Division of Public Health. Although DHSS does not regulate public health effects from development projects, it does conduct Health Impact Assessments (HIAs) as a best management practice to ensure that decision-makers have information on potential human health effects from development projects.

15.4. Summary of Consultation with Agencies, Alaska Native Entities and Other Licensing Participants

Consultation efforts to date have included discussions with agency representatives, Alaska Native entities, and other licensing participants at the Project Technical Workgroup Meetings held in February, April, June, August and September 2012. Review of the proposed air quality study plan has also been requested of EPA and DEC and consultation on socioeconomic study plans has been undertaken with the Alaska Department of Commerce, Community, and Economic Development (DCCED). Consultation comments received since the release of the PSP are documented in Table 15.4-1. Documentation of these meetings can be found in Attachment 1-1 of this RSP.

Table 15.4-1. Summary of consultation on Socioeconomic and Transportation Resources study plans.

Comment Format	Comment Date	Licensing Participant Name	Licensing Participant Affiliation	Comment	Response
General					
Memo	8/7/2012		National Park Service	Metrics, analyses regarding socioeconomic costs and benefits of the Susitna-Watana Hydroelectric Project should extend beyond estimated value of increased recreation and tourism. Full accounting of all Susitna-Watana Hydroelectric Project-related impacts on the social environment must include an estimate of these values.	The socioeconomic studies are designed to account for a broad range of social and economic costs and benefits. In addition to the regional economic model analysis, social costs and benefits will be addressed. The assessment will be quantitative when possible but some social issues will need to be addressed qualitatively. Where the dollar cost of measures can be reasonably ascertained, we will do so. However, for non-power resources such as aquatic habitat, fish and wildlife, recreation, and cultural and aesthetic values, to name just a few, the public interest cannot be evaluated adequately only by dollars and cents.

Comment Format	Comment Date	Licensing Participant Name	Licensing Participant Affiliation	Comment	Response
Memo	8/7/2012		National Park Service	With respect to Benefits Transfer methodology, this method is most reliable when reference, study sites, projects are very similar, and when the economic impact valuation study at reference site was performed at the highest standard. Given the dearth of large, original hydropower projects licensed on free-flowing rivers in remote locations in recent decades, NPS believes it will be challenging to ID appropriate reference project for Susitna-Watana Hydroelectric Project. There will be numerous assumptions, approximations associated w/ application of the benefits transfer method to the Susitna-Watana Hydroelectric Project. In contrast to lack of appropriate reference sites for benefits transfer analysis, however, the value of ecosystem services – including services associated with the Susitna River – is currently being studied in the Mat-Su Borough.	As described in Section 15.6.4.1 of the draft RSP, the benefits transfer approach will be used to supplement or compare unit values (e.g., value per-day of sport fishing) for recreational goods and services obtained from primary valuation methods. It will not be used as the sole method of estimating the value of changes in recreation activity in the Project area.
Memo	8/7/2012		National Park Service	NPS would like to participate in reviewing proposed survey methodology, ideally before ability to comment on the ILP study plans expires.	Meetings on the survey methodology were held on 9/20/2012 and 10/03/2012. Additional information on the proposed survey methodology is included in the draft RSP, in the Appendix of the Regional Economic Evaluation Study

Comment Format	Comment Date	Licensing Participant Name	Licensing Participant Affiliation	Comment	Response
Letter	8/1/2012	John (Jack) DiMarchi		Significant number of private landowners (approx. 200) congregated along AK Railroad corridor between Gold Creek and Hurricane, AK. FERC appears to recognize community of people who own land along railroad to south of Gold Creek (exp: Chase community), but does not appreciate large number of landowners north of Gold Creek; likely b/c we are not formally organized like Chase community is.	Social and economic effects on residents in the study area will be addressed in the Social Conditions and Public Goods and Services study. Section 15.6.3 of the RSP has been revised so that a "railroad community" located north of Chase is among the communities considered to be in relatively close proximity to the proposed Project road and transmission line alternatives. The other communities are Cantwell, Trapper Creek, Chase, and Talkeetna.
Letter	8/1/2012	John (Jack) DiMarchi		Under Environmental Justice language in NEPA, we should be recognized as a community; as lead permitting agency, FERC should open direct dialogue w/ this community to insure: 1 – Accurate info is delivered directly to community members; 2 – Public meetings are held at locations that facilitate community members to participate in NEPA process; 3 – Community's points of views (for or against Susitna-Watana Hydroelectric Project components) be given weight during development of project alternatives portion of EIS process.	The socioeconomic study will address populations and incomes and may identify whether there are any minority or low-income populations as defined under Executive Order 12898 on Environmental Justice. AEA's goal during these licensing studies is to provide accurate information to all interested parties, to hold meetings and provide opportunities at a variety of locations to facilitate public participation in the process from all interested parties.

Comment Format	Comment Date	Licensing Participant Name	Licensing Participant Affiliation	Comment	Response
Regional Economic Evaluation Study (Section 15.5)					
Memo	8/7/2012		National Park Service	Page 263 – Indicates that PSP for Socioeconomics relies largely on results generated through Recreation and Aesthetics Resources studies. Having not seen survey instruments, protocol, NPS does not know how socioeconomic data will be gleaned from those surveys.	Study teams met with NPS and others on 9/20/2012 and 10/03/2012 to discuss survey instruments and protocols. Additional information on the proposed survey methodology is included in the revised study plan in Section 15.5.4 and the Appendix to the Regional Economic Evaluation Study Plan as well as in the Recreation Study Plan (Section 12).
Work Group Meeting	08/08/2012		Variety of Agencies, Tribal Entities, and Interested Individuals	Review of study plans submitted in July 2012. 1) NPS and other requested more information on the type of people to be interviewed for the socioeconomic studies and the type of questions to be asked. 2) NPS and others requested draft study instruments for review.	1) Information on the type of people/groups to be interviewed and typical questions to be asked have been incorporated into the Appendix of the Regional Economic Evaluation Study Plan. 2) Draft survey instruments are still in development. Example survey instruments are included in the Appendix to the Regional Economic Evaluation Study Plan.
Social Conditions and Public Goods and Services Study (Section 15.6)					
Survey Meeting	9/20/2012	Cassie Thomas	NPS	It is important to include different planning scenarios and future management regimes.	It is anticipated that the With Project and the Without Project alternatives will have different scenarios and likely different management regimes for at least some resources. Interviews will be held with agency and other personnel to develop the appropriate scenarios and potential management regimes.

Comment Format	Comment Date	Licensing Participant Name	Licensing Participant Affiliation	Comment	Response
Transportation Resources Study (Section 15.7)					
Letter	8/1/2012	John (Jack) DiMarchi		DOT transportation access study: South Road and Hurricane alternatives – Landowners along railroad corridor, particularly between Gold Creek and Hurricane, stand to be disproportionately affected by 2 access roads under consideration. Although these landowners are not formally organized, they do represent a "community" that may be affected disproportionately (especially by proposed access roads from Hurricane and/or Gold Creek), compared to population at-large.	There are three access road corridors under consideration but at this point AEA is only proposing that one access road be developed. It is our plan to evaluate effects on residents and land owners in the areas that could be directly or indirectly affected by development of a Project access road. The methodology for the Transportation Resources Study (Section 15.7.4.3) acknowledges that we will need to interview stakeholder organizations and knowledgeable individuals about current transportation use as part of the data collection process. This will facilitate the evaluation of potential impacts of the Project on existing transportation resources and uses.
Work Group Meeting	08/08/2012		Variety of Agencies, Alaska Native Entities, and Interested Individuals	Review of study plans submitted in July 2012. NPS emphasized the need to get information on the use of the river as a transportation corridor.	The Transportation Resources Study Plan (Section 15.7.4.3) addresses how information on river use for transportation will be obtained. Existing published information by various land management agencies, access information gathered as part of other survey efforts (such as Recreation and Subsistence), and interviews with knowledgeable people as discussed above – will all be used to document river use for transportation.
Survey Meeting	9/20/2012	Becky Long	Coalition for Susitna Dam Alternatives	How will you get information on river transportation uses?	The Transportation Resources Study Plan (Section 15.7.4.3) addresses how information on river use for transportation will be obtained as discussed above.

Comment Format	Comment Date	Licensing Participant Name	Licensing Participant Affiliation	Comment	Response
Health Impact Assessment Study (Section 15.8)					
Work Group Meeting	08/08/2012		Variety of Agencies, Tribal Entities, and Interested Individuals	Review of study plans submitted in July 2012. Chickaloon Tribe asked if HIA would be a Rapid HIA or a Comprehensive HIA (CHIA) and how information on subsistence use would be gathered.	The HIA Study Plan (Section 15.8.1.1) clarifies that the HIA will be comprehensive and addresses how information will be gathered.
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	Stress importance of engaging community as early as possible, and keeping CHIA process as transparent as possible, throughout the process. Includes engaging community to contribute to, guide potential impact analysis, data gaps, developing and proposing mitigation strategies.	The HIA study (see Section 15.8.3) will rely on community input and best practices for HIA to develop a set of clear criteria which will help identify potentially affected communities (PACs) in a systematic way and facilitate the development of zones of impact for the Project. Local communities may provide additional criteria for consideration through written comments or consultation.
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	Area regarding Tribal engagement process to allow for provision and recognition of traditional knowledge as complementary to existing baseline health and other scientific info, needs to be strengthened. Tribal people hold history, knowledge of area; must be some mechanism made for acknowledging how this info will contribute to legitimacy of HIA Study Plan and data collection. Will ultimately strengthen this CHIA.	The HECs are fully described in the "Technical Guidance for HIA in AK", but there may be community level health concerns that are expressed holistically and do not fit this analytic structure. Section 15.8.4. 1 outlines how the study will coordinate with other social sciences study areas including the Traditional Knowledge interviews being done under the Subsistence study.

Comment Format	Comment Date	Licensing Participant Name	Licensing Participant Affiliation	Comment	Response
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.1.1. Study Goals & Objectives – Recommend revising "The goals and objectives of the HIA include the following" section to add engagement piece. Add bullet point reading: "Engage the community in a transparent process of identifying community health concerns for evaluation."	The HIA study plan, in Section 15.8.1.1 of the draft RSP, acknowledges that through scoping meetings and community engagement planning, AEA will seek to identify public issues and concerns about how community health might be affected during construction and operation of the Project.
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.1.1. Study Goals & Objectives – In recognition of federally recognized Tribal governments in potentially affected areas, revise bullet point #2 to read: "Collect baseline health data at the state, borough or census area, tribal, and potentially affected community, as possible."	Section 15.8.1.1 of the draft RSP has been revised to read: "Collect baseline health data at the state level, borough or census area level, tribal level, and at the level of the potentially affected community."
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.1.1. Study Goals & Objectives – Question bullet point #3. Once data gaps are IDed, how will this trigger additional studies? Or, will there be weighting of data gaps to determine which are priorities for further review? Can this be addressed in this section?	Section 15.8.1.1 of the draft RSP has been updated to describe how AEA will attempt to identify gaps and determine the most efficient method to fill those gaps, through community consultation and coordination with other field studies such as subsistence, social and demographic studies.
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.1.1. Study Goals & Objectives – Revise bullet point #4 to read: "Evaluate the baseline data against the Project description to determine the magnitude of potential impacts, both positive and negative."	Section 15.8.1.1 of the draft RSP explains that the HIA will use methods and guidelines in the Alaska Department of Health and Human Services (DHSS) "Technical Guidance for HIA in Alaska" July 2011.

Comment Format	Comment Date	Licensing Participant Name	Licensing Participant Affiliation	Comment	Response
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.1.1. Study Goals & Objectives – Strongly believe a projective component for potential impacts and applied mitigation strategies should be attempted in CHIA.	As noted in Section 15.8.4.3 of the draft RSP, the information developed in this study may be used to prepare a Health Management Plan (HMP) which may include: Traditional Knowledge, perspectives, and activities that may represent uniquely tribal approaches to human wellness.
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.2. Existing Info & Need for Add'l. Info – Feel strongly that traditional knowledge should be gathered through qualitative discussions within Tribal communities to contribute to completion of HIA. Info should be given same weighting as other scientific info gathered.	Section 15.8.3 of the draft RSP has been updated to describe that the study will rely on community input and best practices for HIA to develop a set of clear criteria which will help identify PACs in a systematic way and facilitate the development of zones of impact for the project.
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.2. Existing Info & Need for Add'l. Info – Data gaps should not just be noted, but should attempt to be adequately addressed in further studies to be determined by community.	Section 15.8.1.1 of the draft RSP describes how we will identify gaps and determine the most efficient method to fill those gaps, through community consultation and coordination with other field studies such as subsistence, social and demographic studies.
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.3. Study Area – Tribal communities should have opportunities to: weigh-in on impact areas; in defining study area; in defining key subsistence resources rather than simply relying on ADF&G or USFWS as only viable source of info for CHIA.	Section 15.8.3 of the draft RSP has been updated to describe that local communities may provide additional criteria or considerations through written comments or consultations.

Comment Format	Comment Date	Licensing Participant Name	Licensing Participant Affiliation	Comment	Response
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.4.1. – Community should have opportunity to ID the "Issues Summary."	Section 15.8.4 of the draft RSP has been updated to confirm that AEA intends to coordinate through community engagement other social study areas, and through AEA licensing participant engagement programs to ensure there will be enough information to meet Health Impact Assessment needs.
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.4.1. – Comprehensive discussion pertaining to Social Determinants of Health (SDH) should occur to ID disparities affecting various community groups, and potential to project future impacts, both positive and negative.	Section 15.8.4.3 of the draft RSP outlines how AEA will undertake detailed consideration of impacts to Alaska Natives through the presentation of tribal health data and inclusion of the results of tribal health consultations in the HIA.
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.4.1. – Many local indigenous cultures pass down info orally. Traditional knowledge regarding past, present concerns related to similar development projects should be acknowledged as valid in addressing "Casual links between the proposed project and the anticipated health impacts." There must be consideration in CHIA for undocumented, yet authentic experiences conveyed orally.	Section 15.8.4.3 of the RSP outlines how AEA will undertake detailed consideration of impacts to Alaska Natives through the presentation of tribal health data and inclusion of the results of tribal health consultations in the HIA. The Traditional Knowledge interviews in the Subsistence studies will also likely help AEA identify more information that could be of use in the HIA.
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.4.2. Phase 2: Baseline Data Collection – Clearer definition for study of subsistence issues and "reasonably close proximity" needed. Project will likely impact salmon and displace moose habitat significantly; therefore, definition will need to be discussed w/ scientific experts, local Tribal experts.	Section 15.8.4.2 of the draft RSP notes that the HIA Team will coordinate with communities and the subsistence study team to address how subsistence issues interact with the proposed project locations, size, linear features, and potentially affected communities.

Comment Format	Comment Date	Licensing Participant Name	Licensing Participant Affiliation	Comment	Response
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.4.3. Phase 3: Impact Assessment – Suggest adding / revising following bullet point to include "An in-depth review of available state, regional, tribal, and local health data."	Section 15.8.4.3 of the draft RSP has been updated to include accommodation for an in-depth review of available state, regional, tribal, and local health data.
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.4.3. Phase 3: Impact Assessment – Suggest special emphasis be performed for impacts to tribal peoples; especially in relation to social determinants of health and subsistence impacts.	Section 15.8.4.3 of the draft RSP describes how AEA will access information from existing State disease-control programs and strategies to address information regarding background and conditions regarding social determinants (e.g. HIV/AIDS, hypertension, diabetes, substance abuse, etc.).
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.4.3. Phase 3: Impact Assessment – Holistic approach to looking at health will help w/ development of more effective Health Mgmt. Plan; however, if CHIA finds no place for Traditional Knowledge, a HMP could be one more document which compartmentalizes health in a way that is not helpful or applicable to local Tribal peoples.	The Traditional Knowledge interviews and studies outlined in the Subsistence Study Plan (Section 14.5) describe how Traditional Knowledge information will be gathered and analyzed. Section 15.8.4.3 of the draft RSP describes how Traditional Knowledge, perspectives, and activities that may represent uniquely tribal approaches to human wellness will be assessed.
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.5. Consistency w/ Generally Accepted Scientific Practices – Stress importance of traditional knowledge, and how CHIA should make a place for this type of evidence-based knowledge.	Section 15.8.4.3 of the RSP describes how traditional knowledge (gathered both in HIA and Subsistence studies), provides information and perspectives that may represent uniquely tribal approaches to human wellness.

Comment Format	Comment Date	Licensing Participant Name	Licensing Participant Affiliation	Comment	Response
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	13.8.6. Schedule – Not enough time allocated on front end to help w/ development of Project Overview and Issues Summary. Section is integral to getting community buy-in on the CHIA. If work is not done on the front end, it will not have credibility on the back end. Not enough to do this during Baseline Data Collection process. CHIA calls for more of a community-based participatory research approach. The community, whenever possible, should be included to have ownership over contributing to the document.	Section 15.8.4.2 of the RSP has been updated to describe that in addition to community engagement discussions, the HIA team will visit relevant communities during the field studies phase of the baseline data collection to document community food sources and make observations on critical community services, such as water, sanitation, and health care facilities.
Letter	9/14/2012	Lisa Wade, Director	Chickaloon Village Health & Social Services	This only constitutes commentary on sections 13.8. Have made several recommendations that will strengthen CHIA process. Have similar concerns pertaining to other parts of Section 13. Would like additional time to review these sections, as they all have direct impact on Tribal citizens.	Comments noted and AEA expects to continue to engage Chickaloon Village and other interested parties during the final study plan process and during implementation of studies and eventual development of AEA's license application for the Susitna-Watana Hydroelectric Project.
Air Quality Study (Section 15.9) – No Comments to Date					

15.5. Regional Economic Evaluation Study

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 other socioeconomic study, 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.

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 timeframe for construction of the Project and its operations, 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 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 time frame of 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 forecast analysis performed by the REMI model will be guided by assumptions about reasonably foreseeable future actions that would have an important and measurable effect on Alaska's economy. These actions will be identified through interviews conducted with individuals knowledgeable about the state's economy. 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 persons to be interviewed and the types of interview questions that will be used to develop REMI model assumptions are presented in the Appendix.

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.

15.5.4.2. Documentation of Regional Economic Analysis

The results of the regional economic analysis will be documented in the initial and updated study report. The report 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 over the 12 months of 2013 to provide the Initial Study Report. 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 at the end of 2014 (Table 15.5.1).

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

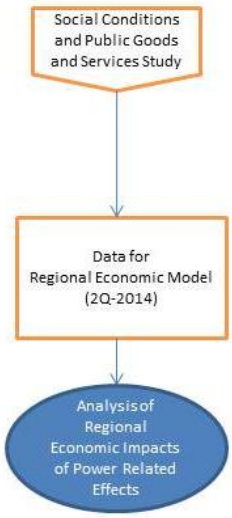
Activity	2012				2013				2014			
	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q
Gather/Review Existing Information					——							
Document Existing Conditions						——						
Develop Reasonably Foreseeable Future Action Assumptions							——					
Initial Regional Economic Evaluation Study Report								—— 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

Completion of the Regional Economic Evaluation Study will require some input from the Social Conditions and Public Goods and Services Study as illustrated below.

STUDY INTERDEPENDENCIES FOR REGIONAL ECONOMIC EVALUATION STUDY



15.5.7. Level of Effort and Cost

Conducting this analysis and preparing the report sections is estimated to require about 1,200 to 1,500 person-hours in 2013. This effort would occur over a six to seven month period required to prepare the Initial Study Report. The estimated cost could range from about $250,000 to $400,000.

15.5.8. 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.

15.5.9. Appendix

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. In general, the model assumptions will be general in nature, without specific amounts provided. The intention is to create a qualitative framework within which the quantitative economic impact analysis of the REMI model will be developed.

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. A list of prospective businesses and organizations that will be contacted is provided in Table A-1. Semi-structured interviews will be used to explore the future of a number of economic activities in-depth. Possible categories of economic activities that have already been gleaned from general observation or other data are provided in Table A-2. The interviews will focus on those activities expected to occur over the next thirty years. Ultimately, Northern Economics, Inc. will be responsible for assessing the likelihood of the future economic activities identified by these sources and compiling the information into model assumptions.

Table A-1. List of possible companies or organizations that will be contacted

Alyeska Pipeline Service Company	Alaska Department of Fish and Game
Northrim Bank	Alaska Department of Labor & Workforce Development
Alaska Department of Commerce, Community & Economic Development	University of Alaska, Institute of Social and Economic Research
Totem Ocean Trailer Express	Railbelt Utility Task Force
Alaska Miners Association	Associated General Contractors of Alaska
U.S Bureau of Ocean Energy Management	Alaska Oil and Gas Association
Alaska Industrial Development and Export Authority	National Marine Fisheries Service
Matanuska-Susitna Borough	Denali Commission
Alaska Industrial Development and Export Authority	Alaska Department of Revenue
Denali Borough	Alaska Department of Transportation and Public Facilities
Fairbanks Economic Development Corporation	Alaska Travel Industry Association
U.S Bureau of Land Management	Anchorage Economic Development Corporation
Village and Regional Native Corporations	Talkeetna Community Council, Inc.

Table A-2. List of possible economic activity topics that will be discussed

Trans Alaska Pipeline System	Alaska In-state Oil Refining and Imports of Petroleum Fuels
Spending by the State of Alaska	Mining
Permanent Fund and Permanent Fund Dividends	Fisheries
State Taxes on Oil and Natural Gas Revenues	Recreation and Tourism
State Taxes on Mining Revenues	Air Transportation
State Income and Sales Taxes or Other Future Taxes	Economic Diversification
Railroad Projects	Electrical Generation Infrastructure
State Funded Road Projects	Statewide Population Growth
Timber Activity	Energy Use
Port Projects	Rural and Urban Changes

15.6. Social Conditions and Public Goods and Services Study

15.6.1. General Description of the Proposed Study

15.6.1.1. Study Goals and Objectives

The study goal for the social conditions and public goods and services section of the socioeconomics study plan is to assess potential changes in population, housing, public goods and services, and other quality of life factors resulting from the construction and operation of the proposed Project and potential changes in regional economic conditions resulting from the non-power effects of the Project. Coordination with the other social resource analyses (e.g., recreation, transportation, and subsistence) from the outset is an essential component of this study plan.

The objectives of the study are listed below.

- Describe, using text and appropriate tables and graphics, existing socioeconomic conditions within the study area.
- Evaluate the effects of on-site manpower requirements, including the number of construction personnel who currently reside within the study area, who would commute to the site from outside the study area, or who would relocate temporarily within the study area.
- Estimate total worker payroll and material purchases during construction and operation.
- Evaluate the impact of any substantial immigration of people on governmental facilities and services, and describe plans to address the impact on local infrastructure.
- Determine whether existing housing within the study area is sufficient to meet the needs of the additional population.
- Describe the number and types of residences and businesses that might be displaced by the Project access road and transmission corridors.
- Describe the non-power effects on the local or regional economy, including commercial opportunities related to fishing, logging, mining, and recreational activities.
- Describe based on other studies, what bio-physical attributes of the Susitna River system may change as a result of the Project and what those changes might mean to recreation and subsistence use values, quality of life, community use patterns, and social conditions of the area.

15.6.2. 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 AEA's 2011 PAD provides substantial information about the Project and socioeconomic resources in the Project vicinity.

Information provided for communities within the study area by the U.S. Census Bureau, the Alaska Department of Labor and Workforce Development (ADLWD), the Alaska Department of

Commerce, Community and Economic Development (DCCED), MSB, Denali Borough, and other secondary sources includes the following:

- Current population and population density statistics
- Per capita income
- Number and composition of workforce (e.g., manufacturing; transportation and public utilities; wholesale trade; retail trade; finance, insurance, and real estate; and services)
- Current unemployment rate (latest year of record)
- Number of units and vacancy rates for temporary housing (e.g., apartment rentals, hotels/motels, and campgrounds)
- Location and availability of local government public services (e.g., police, fire protection, medical services, utilities, and schools)
- Local tax revenues and sources of funding (e.g., personal property, sales, hotel/motel occupancy, etc.)

Information that will be needed to complete the analysis includes the following:

- Final location of the Project components
- Duration and schedule of construction phase
- Cost of materials and supplies during construction
- Approximate cost of materials and supplies during construction that will be spent locally, versus non-locally
- Size of total workforce, including how many workers will be hired locally versus non-locally (data from the ADLWD on employment by occupation will be used to estimate the percent of out-of-state workers)
- Total size of construction workforce by month, or peak number of workers and when that peak would occur
- Summary of construction workforce by craft or discipline
- Total construction wages or average construction pay, including benefits
- Total number of workers required for operation and maintenance of the Project, and total wages including benefits
- Approximate cost of materials, supplies, and services during operation that will be spent locally versus non-locally
- For trucks that would be used, estimated number and size, number of trips per day and week to and from the Project site, travel route, and capacity of the roads on which the trucks will be traveling
- The number of residences or businesses that could be displaced by construction of the Project
- Number of acres of agricultural/pasture land or timberland that will be removed from production

Information on recreation values will be obtained from a combination of recreational surveys and survey techniques augmented with existing sources. The methodology for determining recreation values is still being determined.

Information on subsistence use values will be obtained from a subsistence survey that will be conducted in the study area. The survey will collect information on participation in subsistence fishing, hunting, and gathering in the study area.

There is little published information on non-economic, socio-cultural values, quality of life, and needs of study area residents; therefore, the intent is to use informal interviews with community council members, residents, Real Estate professionals, MSB officials, and other knowledgeable people to help provide additional information that could be useful in evaluating social impacts in the study area.

15.6.3. Study Area

Based on the current Project description, the principal study area for the analysis of impacts on social conditions and public goods and services includes communities in the Denali Borough and MSB that are located in relatively close proximity to the proposed Project, including the hydroelectric facility, access road, and transmission lines. Most of the effects specific to these communities during the construction phase are related to the transportation and supply of construction materials, the number of construction workers that would work on the Project and their potential impact on population, public services and infrastructure, and temporary housing during construction. Within the Denali Borough, the principal community under consideration is Cantwell, as this is the closest community to the proposed Project. In the MSB, the closest communities are Trapper Creek, Chase, and Talkeetna.

A wide range of occupations is needed to construct and operate a large hydroelectric facility, and it is likely that workers in many regions of Alaska would benefit from the additional employment opportunities created by the Project. However, the largest concentration of workers with the required occupational skills is in highly populated Southcentral Alaska. The concentration of major engineering, construction, and manufacturing firms in the MOA makes it probable that this city would be most affected by construction period expenditures.

Transportation effects during the construction phase of the Project would occur in ports of entry for freight and along the subsequent transportation routes for supplies, equipment, and labor. Boroughs and census areas through which potential overland transportation routes pass include the MOA, FNSB, Valdez-Cordova Census Area, KPB, Yukon-Koyukuk Census Area, MSB, and Denali Borough.

During and after Project construction, there may be additional requirements for law enforcement and health and human services. The Alaska Department of Public Safety (ADPS) provides law enforcement in the unorganized areas of the state (census areas) and in areas of municipalities without police powers. State and Alaska Native programs provide most health and human services in Alaska.

Effects of Project operations and features (i.e., reservoir and access roads) on the local or regional economy, including changes in commercial opportunities related to fishing, hunting, boating, wildlife viewing, mountaineering, and other recreation, are likely to be concentrated in those communities in the Denali Borough and MSB that are located in relatively close proximity to the Project.

15.6.4. Study Methods

The study methods discussed below are consistent with the socioeconomic analysis completed during the licensing proceedings for other hydroelectric projects.

15.6.4.1. Data Collection and Analysis

The proposed Project would not start operations until 2023 under the current schedule. The Project is anticipated to operate for more than 50 years, similar to other large hydroelectric developments around the world. Given the long time frame for operation of the Project, the Project's socioeconomic effects 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 the REMI model described for the Regional Economic Evaluation study. While the REMI model provides a wide range of output variables, the 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 forecast analysis performed by the REMI model will be guided by assumptions about reasonably foreseeable future actions that would have an important and measurable effect on Alaska's economy. Additional information about the development of the REMI model assumptions is provided in the Regional Economic Evaluation Study Plan.

As the Project design is further refined, specific requirements for the types of construction specialties (e.g., firms with roller-compacted concrete experience) will be identified and compared with current expertise of regional construction companies to see which opportunities can be filled by Alaska firms. This evaluation would improve the model estimates of future economic activity and provide recommendations to increase the percentage of these opportunities captured by Alaska businesses.

The effect of potential immigration during Project construction and operations on municipal and state services, such as police, fire protection, medical services, and schools, will be assessed. For schools, the effect of the influx of additional school-age children on teacher-pupil ratios will be determined. In an attempt to identify changes to quality of life and overall natural resource uses trends and potential changes resulting from the Project, some survey questions will be added to the public survey proposed in the Recreation and Aesthetics Study Plan. The survey questions will be oriented toward identifying how the Susitna River corridor and upper basin is used and valued by local residents and to identify the importance of the various bio-physical aspects important to area residents. Once the types of Project-induced changes in riverine and basin resources are known, a further analysis will be undertaken to identify how such changes might alter the resources used and valued by the area residents. The results of the Project effects on subsistence, recreation, and transportation can be used to further evaluate the overall effects on the residents of the region.

A fiscal impact analysis will be conducted to evaluate incremental local government expenditures in relation to incremental local government revenues that would result from construction and operation of the Project. Incremental expenditures include, but are not limited to, school operating costs, road maintenance and repair, public safety, and public utility costs. Incremental revenues include, but are not limited to, property taxes and hotel/motel occupancy taxes.

Transportation of construction equipment and materials through communities on the transportation routes to and from the Project could result in increased rail traffic and road traffic volumes, with associated noise and congestion effects. Such conditions might require additional police and emergency response calls for traffic and other incidents. These impacts will be assessed based on the results of the Transportation Resources study. For example, estimates of changes in vehicle miles traveled can be converted into estimates of traffic incidents and injuries, which could place additional demands on police, emergency response, and medical services.

The economic impact of the Project on local tourism establishments (e.g., river sport fishing, whitewater boating) and the regional economy will be estimated using the results of the Recreation and Aesthetics study. Calculations will be based on information obtained from the recreation survey, including the estimated recreation-related expenditures per recreational day or trip and changes in the number of days or trips per year. The regional economic impact of changes in subsistence-related expenditures due to the proposed Project will be estimated using the results of the Subsistence study. Approximate cash expenses to generate each pound of subsistence harvest will be based on published information.

The Project, including access roads, could affect surrounding property uses and values. These effects will be described by identifying the properties that are in or in close proximity to the Project area, including the access road(s) that will be built; determining the degree to which the use of the properties would change as a result of the Project; and estimating to the extent practicable, the extent that properties' values may change as a result of the change in use.

If Project features (i.e., reservoir and access roads) stimulate residential development, spending by new residents in the local economy will generate new economic activity, including additional jobs and labor income. Interviews will be conducted with regional businesses to identify potential opportunities for residential development and estimate the economic impacts should this development occur.

To the extent that Project construction and operations will change the level of production of commercial farming, grazing, logging, mining, and fishing operations, these effects will be approximated by the change in production multiplied by the current price of the resource in question. Information on the quantity and value of market-based natural resources is available through state and federal resource management agencies.

Changes that result in increases or decreases in economic activity such as production of commercial resource extraction (e.g., commercial fishing), or changes in spending for recreational goods and services will become inputs to the REMI model to calculate the regional economic impacts. The annual incremental change (i.e., from the Without-Project condition) in dollars for each activity with the Project will be estimated and then added or subtracted from the Without-Project condition to arrive at the With-Project condition.

The study will address changes in recreation, but AEA is still determining the most appropriate methods for addressing this topic.

Information on the values, attitudes, and lifestyle preferences of residents in Talkeetna, Trapper Creek, Cantwell, Chase, and the area north of Chase will be collected through informal interviews with community residents, real estate professionals, MSB officials, and other knowledgeable people. Questions asked during these interviews will be oriented toward identifying how the Susitna River corridor and upper basin is used and valued by local residents. The results of the informal interviews will be used to supplement information collected through the recreation surveys. The results of the analyses of Project effects on population, local economies, subsistence, recreation, and transportation will be used to evaluate the overall effects on the quality of life of residents of the region.

15.6.4.2. Work Products

The results of the social conditions and public goods and services study will be documented in initial and updated study reports. The report will include study objectives, study area, methods, and tabulated results.

15.6.5. 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.

15.6.6. Schedule

It is anticipated that completion of the work described above would require about six or seven months of effort in 2013 and would be summarized in an Initial Study Report in December 2013. There may be additional analyses or model runs in 2014 to incorporate information from the 2013 studies. These will be addressed in the Updated Study Report in December 2014 (see Table 15.6.1).

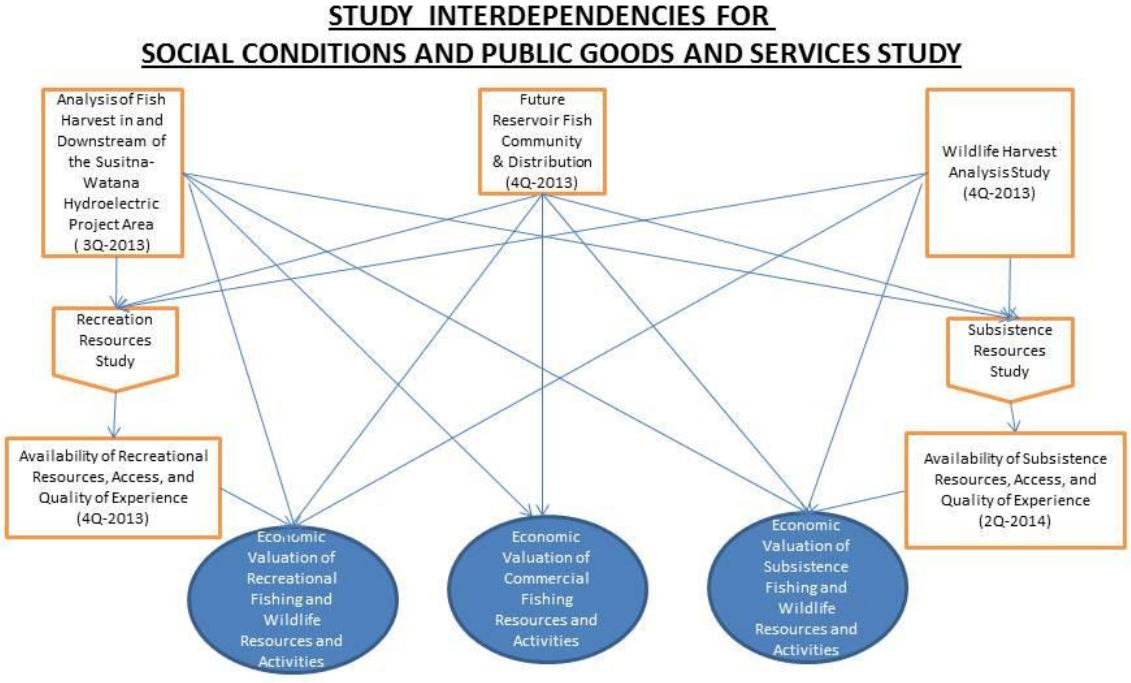
Table 15.6-1. Schedule for implementation of the Social Conditions and Public Goods and Services Study.

Activity	2012				2013				2014			
	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q
Gather/Review Existing Information					——							
Document Existing Conditions						——						
Stakeholder Interviews							——	——				
Initial Social Conditions and Public Good and Services Study Report								—— Δ				
Incorporate Information from Other Studies								——	——	——	——	
Updated Social Conditions and Public Good and Services Study Report											——	—— ▲

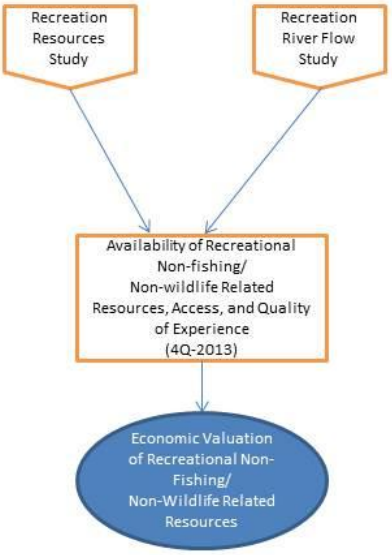
Legend:

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

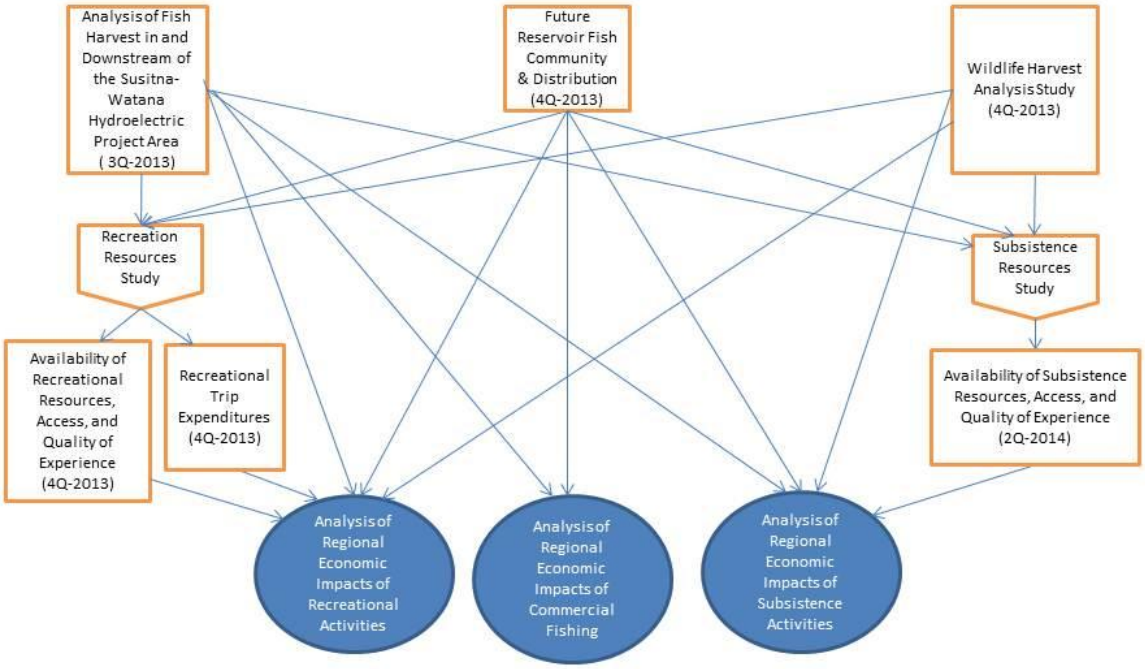
The Social Conditions and Public Goods and Services Study will require input from several other studies as shown below.

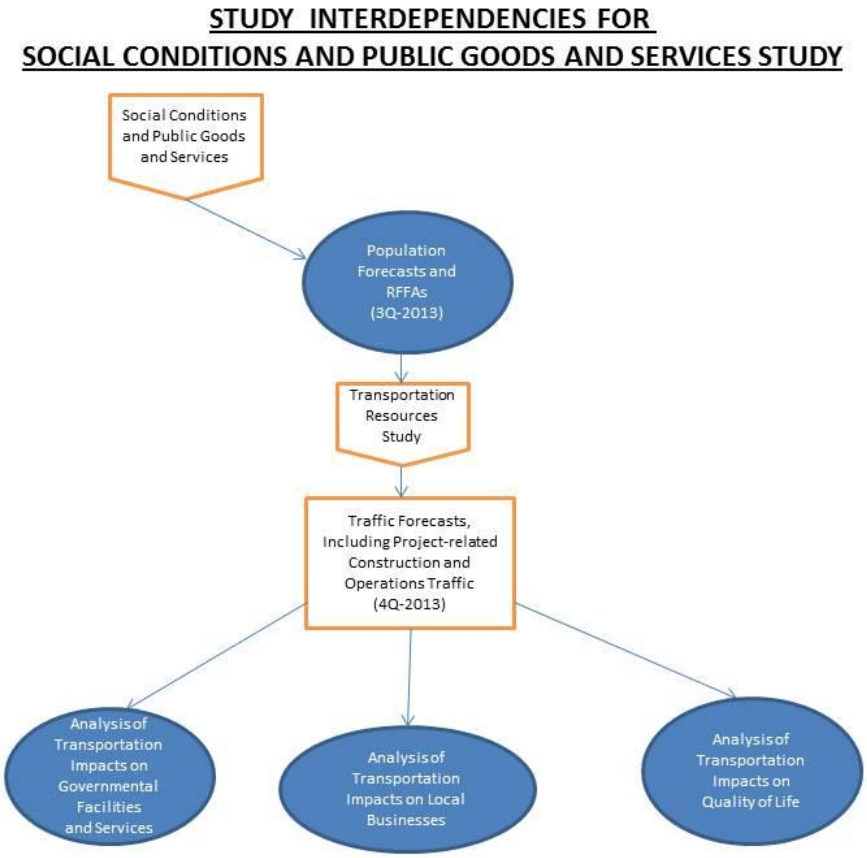


STUDY INTERDEPENDENCIES FOR SOCIAL CONDITIONS AND PUBLIC GOODS AND SERVICES STUDY



STUDY INTERDEPENDENCIES FOR SOCIAL CONDITIONS AND PUBLIC GOODS AND SERVICES STUDY





15.6.7. Level of Effort and Cost

Conducting this analysis and preparing the report sections for the seven boroughs and census areas, and the associated communities, is estimated to require about 2,500 to 3,500 person-hours in 2013 and 2014. Limited secondary data for many of the communities in the study area will require telephone calls and executive interviews to develop sufficient information to evaluate the effects of the Project on each community. This effort, including both the initial and updated study reports, would occur over a 10 to 14 month period. The estimated cost would range from about $500,000 to $800,000, depending on the final survey methodologies used.

15.6.8. Literature Cited

AEA 2011. Pre-Application Document, Susitna-Watana Hydroelectric Project, FERC No. 14241.

Black, R., B. McKenney and R. Unsworth. 1998. Economic Analysis for Hydropower Project Relicensing: Guidance and Alternative Methods. Prepared for U.S. Fish and Wildlife Service. Washington, D.C.

Braund, S.R. and T.D. Lonner. 1982. Alaska Power Authority Susitna Hydroelectric Project Sociocultural Studies. Submitted to Acres American Inc. Duffield, J. 1997. Nonmarket

Valuation and the Courts: The Case of the Exxon Valdez. *Contemporary Economic Policy* 15 (4):98-110.

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

15.7. Transportation Resources Study

15.7.1. General Description of the Proposed Study

15.7.1.1. Study Goals and Objectives

The Transportation Resources Study will assess the current conditions of the Project area and evaluate the Project demands versus current capacity and safety requirements for road, railroad, aviation, port, and river traffic. The study will inform an assessment of the short-term (construction) and long-term (operational) direct and indirect impacts of the Project, as well as of the cumulative impacts of the Project. The transportation effects of the Project (With-Project) will be compared to a Without-Project scenario.

Identifying traffic demands during Project construction and operation will allow the Project team and regulatory agencies to identify needed local and regional transportation operational requirements and infrastructure improvements to accommodate Project-related traffic transportation demands and, if necessary, mitigate potential negative impacts on transportation capacity and public safety. Potential effects of the Project on local river use for winter transportation will also be evaluated.

Jurisdiction over public transportation infrastructure and operations is shared by ADOT&PF, ARRC, local governments, and federal transportation agencies. These entities all have similar management goals: for roads, railroads, ports, and aviation facilities to have sufficient capacity to safely and efficiently meet transportation demands during Project construction and operations; and to provide transportation facilities and services that support economic development and general public safety.

The Project team will use information from this study to identify and coordinate needed transportation infrastructure improvements with ADOT&PF, ARRC, MSB, the Denali Borough, and others. This report will also provide valuable information for the multidisciplinary analysis of the Project required under the National Environmental Policy Act (NEPA).

15.7.2. Existing Information and Need for Additional Information

The existing transportation resources in the Project area are well documented and studied. Included in this documentation are studies conducted by AEA and ADOT&PF specifically for the Project; reports developed for the Alaska Power Authority (APA) Project in the 1980s; and other documents publicly available from the MSB, the Denali Borough, ADOT&PF, ARRC, and the Federal Aviation Administration (FAA).

Tables 15.7-1 through 15.7-5 identify some key reports that will help provide a foundation for the Transportation Resources Study.

Table 15.7-1. General Resources for Transportation Resources Study.

Report Title	Year Published	Publishing Agency[1]	Area Covered
Susitna-Watana Hydroelectric Project, Socioeconomic, Recreation, Air Quality and Transportation Data Gap Analysis (Draft)	2011	AEA	MSB
Pre-Application Document: Susitna-Watana Hydroelectric Project FERC Project No. 14241	2011	AEA	MSB
Mat-Su Long Range Transportation Plan	2009	MSB	MSB
Mat-Su Long Range Plan	2013; in progress	MSB	MSB
Talkeetna Comprehensive Plan	1999	MSB	MSB
Big Game Guides and Transporters	2011	DCCED	Statewide
Susitna-Matanuska Area Plan	2010	ADNR	MSB
Railbelt Large Hydro Evaluation Preliminary Decision Document	2010	AEA	MOA, MSB, Denali Borough
Matanuska-Susitna Borough Comprehensive Development Plan	2005	MSB	MSB
Railbelt Electrical Grid Authority Study	2008	AEA	MOA, MSB, Denali Borough
Susitna Basin Recreation Rivers Management Plan	1991	ADNR, ADF&G	Susitna Basin Recreation Rivers Management Plan

Notes:

1 ADNR: Alaska Department of Natural Resources; ADF&G: Alaska Department of Fish and Game; DCCED: Department of Commerce, Community and Economic Development; MOA: Municipality of Anchorage.

Table 15.7-2. Road Resources for Transportation Resources Study.

Report Title	Year Published	Publishing Agency[1]	Area Covered
Access Corridor Evaluation	2012; in progress	ADOT&PF	MSB
Annual Traffic Volume Report, Northern Region, 2008-2010	2011	ADOT&PF	MSB, Denali Borough
Annual Traffic Volume Report, Central Region, 2007-2009	2010	ADOT&PF	MOA, MSB
State of Alaska Annual Vehicle Miles of Travel	2010	ADOT&PF	Statewide
Parks Highway Visioning Document	2008	ADOT&PF	MSB, Denali Borough
The George Parks Highway Scenic Management Byway Corridor Partnership Plan	2008	ADOT&PF	MSB, Denali Borough
Alaska's Scenic Byways: Parks Highway	2006	ADOT&PF	MOA, MSB, Denali Borough
Alaska Denali Highway Points of Interest	2008	BLM	Denali Borough
Memorandum on the Economic and Demographic Impacts of a Knik Arm Bridge	2005	KABATA	MOA, MSB

Notes:

1 BLM: Bureau of Land Management; KABATA: Knik Arm Bridge and Toll Authority.

Table 15.7-3. Rail Resources for Transportation Resources Study.

Report Title	Year Published	Publishing Agency	Area Covered
Alaska Statewide Rail Plan	2013; in progress	ADOT&PF	MOA, MSB, Denali Borough
Alaska Railroad 2011 Program of Projects	2011	ARRC	MOA, MSB, Denali Borough

Table 15.7-4. Aviation Resources for Transportation Resources Study.

Report Title	Year Published	Publishing Agency[1]	Area Covered
Alaska Aviation System Plan	2011	ADOT&PF	Statewide
Mat-Su Regional Aviation System Plan	2009	MSB	MSB
Ted Stevens Anchorage International Airport 2008 Master Plan Study Report (Draft)	2009	TSAIA	MOA
Wasilla Airport Master Plan Update 2010	2010	City of Wasilla	MSB
Palmer Municipal Airport Master Plan Update	2009	City of Palmer	MSB

Notes:

1 TSAIA: Ted Stevens Anchorage International Airport.

Table 15.7-5. Port Resources for Transportation Resources Study.

Report Title	Year Published	Publishing Agency	Area Covered
Port MacKenzie Master Plan	2012	MSB	MSB (Port MacKenzie)
Port of Anchorage Master Plan	1999	MOA	MOA (Port of Anchorage)

Additional information needed to complete the Transportation Resources Study is discussed below.

- Project Information
  - Proposed access corridor alternatives
  - Approximate volumes of construction materials, construction equipment, and personnel that need to access the Project area during construction and operation
  - Expected modes of transportation for various materials, supplies, and personnel
  - Information on any other proposed Project transportation infrastructure, such as airstrips
- Existing Operations Information
  - Existing operations data for all modes of transportation
  - Information on existing operating and maintenance costs for the different modes of transportation
  - Existing capacity and any capacity issues

- Future Operations Information
  - Forecasts of operations for different modes of transportation
  - Information on planned or proposed non-Project transportation infrastructure improvements

15.7.3. Study Area

The proposed study area for the Transportation Resources Study extends north from Anchorage to Fairbanks and east to the Susitna River to cover all relevant traffic sources, traffic nodes (points where travelers or shippers may select different routes), and destinations for each mode of transportation. The primary sources and destinations of road and railroad traffic will be the Project site, the Port of Anchorage, Port MacKenzie, and local material sources. The majority of the aviation traffic will originate in populated areas at primary and smaller general aviation airports. As preliminary design progresses and local material sites are identified the transportation study area may change.

The proposed study area includes the roadways listed below.

- New access roads to the Project site
- The Denali Highway, Mile Post (MP) 78-133, from the Susitna River crossing to the Parks Highway
- The Parks Highway, MP 35 to 356, from the Glenn Highway to Fairbanks (the junction with the Denali Highway is at MP 210)
- The Glenn Highway, MP 0 to 35, from downtown Anchorage to the Parks Highway
- MSB roads to access Port MacKenzie: Point MacKenzie Road, Knik Goose Bay Road, Burma Road (after completion of realignment and upgrade currently being designed), Big Lake Road, and Vine Road
- MOA streets that access the Port of Anchorage: A Street, C Street, 3rd Avenue, 4th Avenue, 5th Avenue, and 6th Avenue
- Other state highways and local roads near the Project site

The study area also includes the ARRC main line from MP 113 (Anchorage) to MP 478 (Fairbanks), giving consideration to the following areas:

- MP 113, Anchorage Yard (Ship Creek Intermodal Transportation Center)
- MP 173, Port MacKenzie branch line (under construction – roughly 40 miles long)
- MP 248, Curry Quarry
- Access corridor alternatives identified by the Project design team
  - MP 263, Gold Creek
  - MP 274, Chulitna
  - MP 319, Cantwell
- MP 478, Fairbanks Yard

For aviation facilities, the study area contains two primary airports (Ted Stevens Anchorage International Airport and Fairbanks International Airport), plus several smaller general aviation airports (Lake Hood and Merrill Field in Anchorage, plus public airports in the MSB).

For river transportation the study will evaluate transportation uses in the Susitna River corridor in the areas to be affected by the Project.

15.7.4. Study Methods

The proposed methodology consists of the five steps described below.

15.7.4.1. Collect and Review Data

The first step is developing a bibliography of existing documents including recent transportation reports from AEA and the items mentioned in Section 13.8.2. The bibliography will evaluate the relevance of each document to the overall study. The study team will also compile information regarding transportation planning projects, design projects, and any scheduled construction projects near the Project site; these projects may already address potential impacts from the Project, but this will need to be verified.

15.7.4.2. Inventory Assets and Conduct Any Field Studies

The study team will develop a transportation asset inventory for the Project area focused on roads, railroads, bridges, ports, air infrastructure, traffic levels, capacities, and crash and accident statistics. Some traffic data are available; depending upon the type and the age of the data, traffic counters may need to gather current data. Information on use of the river for winter transportation will be obtained by interviewing knowledgeable sources.

15.7.4.3. Document Existing Conditions

Existing transportation infrastructure and traffic levels will be documented to establish baseline conditions for the various transportation resources. Much of this information is available from existing sources, but the information will be supplemented and updated with field collection or interviews if needed.

In particular, executive interviews with knowledgeable individuals and some property owners in the area will be used to collect data on the types, levels, areas, and seasons of river transportation use in the study area. Knowledgeable individuals would include staff from MSB public works and planning departments, state troopers, BLM and DNR staff in the area, tourism operators in the area, and other individuals recommended during these interviews. Surveys being conducted by the recreation and subsistence study teams will also include questions on access to study area sites to supplement the interviews conducted under this study. These surveys will include a combination of in-person and telephone interviews along with information from the recreation surveys and subsistence interviews will be supplemented with information from field crews that encounter people in the study area. Results of the recreation surveys and interviews will be used to document river transportation uses, help understand possible relationships of river transportation flow levels and ice conditions, and the relationship of how new access alternatives might relate to existing uses of the river corridor for transportation. Results of the recreation surveys and interviews will be used to document river transportation uses, help understand

possible relationships between river transportation and flow levels and ice conditions, and the relationship of how new access alternatives might relate to existing uses of the river corridor for transportation.

15.7.4.4. Forecast Future Conditions

Future traffic forecasts, including Project-related construction and operations traffic, will be developed. These forecasts will address the following issues:

- Proposed transportation/transmission corridors
- Railroad loading and unloading facilities
- Proposed airport facilities
- Other facilities to support fueling, maintenance, and operations
- Possible staging areas
- Temporary improvements for construction
- Any scheduled improvements, such as improvements proposed for the Denali Highway

The study will use *Trip Generation, 8th Edition* (ITE 2008) to forecast future roadway traffic levels. *SimTraffic 8, Synchro 8,* and *HCS 2010* may be used to simulate and evaluate the current and future capacity of the road system. Existing aviation forecasts for existing public airports will be modified if needed, and forecasts for proposed new airports would be developed in accordance with FAA Advisory Circular 150/5070-6B and Forecasting Aviation Activity by Airport (July 2001). These methods of evaluating and predicting traffic levels are consistent with the standard practices of the transportation engineering community. For railroad and port traffic, the study team will work with ARRC operations staff and MSB and MOA port staff to project future activity levels and evaluate future capacity.

15.7.4.5. Evaluate Impacts

The study team will identify the direct, indirect, and cumulative transportation capacity and safety concerns based on projected future road, railroad, port, aviation, and river traffic levels. All modes of transportation will be evaluated before, during, and after Project construction. After identifying and evaluating the effectiveness of scheduled improvements on projected future traffic levels, the team will, if and as necessary, identify and evaluate options to avoid, minimize, and mitigate any remaining capacity and safety concerns. Some mitigation measures may consist of general best management practices, such as widening shoulders and adding guardrails on roadways to improve safety. Other mitigation measures may apply to a particular mode of transportation at a specific site and location. Examples include adding additional lanes or passing lanes along the Parks Highway; adding apron space, improving navigation aids, or improving runway surfaces at existing airports; and improving or adding siding tracks along the existing ARRC mainline.

River transportation effects will be assessed based on expected changes in flow levels and ice formation using data from the hydrology and ice processes studies proposed. Measures to mitigate potential effects on river transportation uses will be identified.

15.7.5. Consistency with Generally Accepted Scientific Practice

Transportation forecasts will be developed using standard forecasting tools for highway and aviation operations. Forecasts of roadway traffic levels will be based on the Institute of Transportation Engineers (ITE) *Trip Generation, 8th Edition* (ITE 2008). Other generally accepted models, including *SimTraffic 8*, *Synchro 8*, and *Highway Capacity Software* (HCS) can be used if needed to evaluate road capacity. Forecasts for aviation traffic will be in accordance with FAA *Advisory Circular 150/5070-6B Airport Master Plans* and *Forecasting Aviation Activity by Airport* (July 2001).

15.7.6. Schedule

The initial transportation study would be carried out over 12 months, with an initial study report issued in December 2013. An Updated Study Report would be issued in December 2014 to incorporate any new or changed information that becomes available based on other studies conducted in 2013 or changes in the proposed Project.

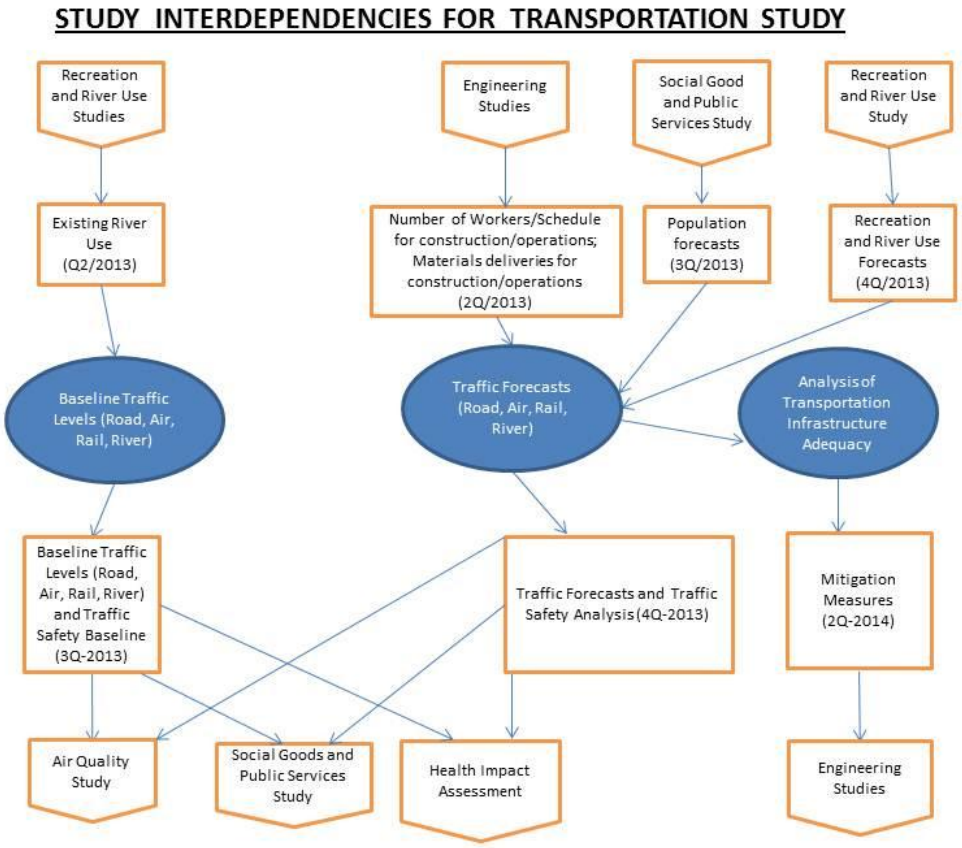
Table 15.7-6. Schedule for implementation of the Transportation Resources Study.

Activity	2012				2013				2014			
	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q
Data Collection and Review				——	——							
Asset Inventory and Field Studies						——						
Document Existing Conditions							——					
Forecast Future Conditions							——	——				
Evaluate Impacts								——				
Initial Study Report								—Δ				
Updated Study Report									——	——	——	—▲

Legend:

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

The Transportation Resources Study will require input from other studies as shown below.



15.7.7. Level of Effort and Cost

The research into local and regional transportation will require professional engineers and planners with experience relevant to each mode of transportation to conduct the field investigations and data analyses identified in Section 15.8.4 (Study Methods). Total study costs are estimated to be approximately $137,000.

15.7.8. Literature Cited

Center for Microcomputers in Transportation (McTrans). Highway Capacity Software (HCS) 2010, Release 6.3 [computer software]. University of Florida, Gainesville, Florida.

Federal Aviation Administration (FAA). 2001. Forecasting Aviation Activity by Airport.

FAA. 2007. Advisory Circular 150/5070-6B, Airport Master Plans.

Institute of Transportation Engineers (ITE). 2008. Trip Generation, 8th edition: An ITE Informational Report. Washington, DC.

Trafficware. 2011. SimTraffic 8 [computer software]. Sugarland, Texas.

Trafficware. 2011. Synchro 8 [computer software]. Sugarland, Texas.

15.8. Health Impact Assessment Study

15.8.1. General Description of the Proposed Study

15.8.1.1. Study Goals and Objectives

Health Impact Assessment (HIA) is a structured planning and decision-making process for analyzing the potential positive and negative impacts of programs, projects, and policies on health of residents in communities impacted by the Project. In particular, three aspects of the Project may impact community health:

- The large size of this Project will require a large influx of construction personnel over several seasons which could impact the residents in various railbelt communities.
- The development of the Project could lead to increased rail traffic and possibly additional traffic on the Parks and Denali Highways, potentially impacting communities and individuals using these transportation resources.
- If construction and operation of the Project is shown to produce conditions that could lead to the bioaccumulation of naturally occurring mercury, which then could be ingested by humans of harvestable resources, then the public health implications of those changes may need to be evaluated as to effects on local communities harvesting the natural resources of the Susitna River.

Potential health considerations for construction and operational staff are not typically evaluated in HIA as they are addressed in the Occupational Medicine and Safety component of the various plans and specifications for construction activities and operational manuals for the Project.

The comprehensive HIA will use the methods and guidelines in the Alaska Department of Health and Human Service's (DHSS's) "Technical Guidance for HIA in Alaska," July 2011 (www.epi.hss.state.ak.us/hia/AlaskaHIAToolkit.pdf).

The goals and objectives of the HIA include the following:

- Identify potentially affected communities (PACs) and establish a community engagement plan.
- Through a review of the FERC scoping meetings and ongoing community engagement, identify public issues and concerns about how community health might be affected during construction and operation of the Project.
- Collect baseline health data at the state level, borough or census area level, tribal level, and at the potentially affected community level, as possible.
- Identify data gaps and determine the most efficient method to fill those gaps, through community consultation, and coordination with other studies, such as subsistence, socioeconomics, and recreation.
- Evaluate the baseline data against the Project description to determine the nature and extent of potential impacts, both positive and negative.
- Prepare an HIA study report document which is transparent, scientifically rigorous and understandable to the public.

15.8.2. Existing Information and Need for Additional Information

A variety of existing information sources are available and potentially useful to the HIA analysis. These information sources include reports from various Alaska state agencies including:

- Alaska Department of Health and Social Services
  - Bureau of Vital Statistics
  - Alaska Behavioral Risk Factor Surveillance Survey (BRFSS)
  - Youth Risk Behavior Study (YRBS)
  - Section of Epidemiology bulletins
  - Alaska Trauma Registry (ATR)
  - Cancer Registry
- State of Alaska Department of Labor and Work Force Development
  - Employment reports
- Alaska Department of Transportation and Public Facilities
  - Highway traffic statistics, particularly on large loads vehicles
  - Alaska State Trooper annual reports
- Alaska Department of Fish & Game
  - Harvest studies
  - Community Information System

The Alaska Native Tribal Health Consortium (ANTHC) prepares health status reports on a statewide and regional basis. The HIA team will use these reports as baseline data:

- Alaska Native Health Status Report, August 2009
- Regional Health Profile for Interior Alaska, July 2011
- Regional Health Profile for Anchorage and Matanuska-Susitna, December 2011

In addition, pertinent reports from the U.S. Centers for Disease Control and Prevention and annual reports, such as County Health Rankings, prepared by the University of Wisconsin are important resources that will be reviewed.

Review of the above data sources allows identification of data gaps which require additional information.

15.8.3. Study Area

The proposed HIA study area includes those communities potentially affected by construction activities, such as Cantwell and communities along the Alaska Railroad corridor, as well as those communities further away but potentially affected by the movement of workers, materials, and supplies by using the criteria available in the Technical Guidance for HIA in Alaska (DHSS 2011). The study will rely on community input and best practices for HIA to develop a set of criteria which will identify PACs in a systematic way and facilitate the development of zones of impact for the analysis of Project effects. Some sample best practices criteria that could be used are communities with:

- Close geographic proximity to the Project,
- ,
- High likelihood for worker influx,
- Intense work force recruitment potential,
- High likelihood for change in key subsistence resources,
- High likelihood for change in transportation infrastructure,
- Potential for economic change including regional staging centers, and
- Existing high level of exposure to an environmental hazard that would be potentially exacerbated by Project development.

Local communities may provide additional criteria or considerations through follow-on consultation.

15.8.4. Study Methods

The HIA would be divided into the following phases to accommodate the possible need for field studies to address data gaps identified during the overview process**.**

15.8.4.1. Project Overview and Issues Summary

The Project overview process is designed to

- develop Project-specific criteria for establishing potentially affected communities (potentially affected communities for health may not be the same as for other social sciences and must be established);
- coordinate through community engagement, other social study areas, and other AEA licensing participant engagement programs to ensure there will be enough information to meet health impact assessment needs; and,
- identify potential health concerns and issues related to the Project.

The result of this effort will be a "Project Overview and Issues Summary" that will be included in the Initial Study Report at the end of 2013 and will include a set the geographical, time scale, and population boundaries of the assessment. The report will follow the overall strategies and methodologies presented in the "Technical Guidance for HIA in Alaska." For example, the State of Alaska HIA Program has identified the following eight health effect categories (HECs) that should be used to categorize the issues and concerns:

- Social Determinants of Health (SDH),
- Accidents and Injuries,
- Exposure to Potentially Hazardous Materials,
- Food, Nutrition, and Subsistence Activity,
- Infectious Disease,
- Water and Sanitation,
- Non-communicable and Chronic Diseases, and
- Health Services Infrastructure and Capacity.

These HECs are fully described in the "Technical Guidance for HIA in Alaska." In addition, there may be community-level health concerns that are expressed holistically and do not fit this analytic structure. An HIA, however, cannot address every conceivable health effect or effects that are primarily nuisance impacts and rarely observed. Instead, the initial Project review process highlights health effects that produce intense impacts with persistent duration and broad geographical scope that are highly likely to occur. There must also be a clearly defined causal link between the Project and the anticipated health effect.

15.8.4.2. Phase 2: Baseline Data Collection

After the Project overview process is complete, it will be necessary to perform an analysis of available federal/state/regional/tribal/community/household level health data in the second half of 2013. Data collected by other Project studies will be included where such studies will produce baseline data that may be useful to the HIA. For example, the HIA team will use information from the air quality study concerning existing and future air quality levels, and from the socioeconomic studies for population projections and household characteristics, which have been shown to be key determinants of health. Coordination between study teams will avoid unnecessary duplication of effort and community 'survey fatigue.'

Subsistence issues and existing available community / household consumption and nutritional data are often critical for local communities. The HIA team will coordinate with communities and has coordinated with the subsistence study team to address how subsistence issues interact with the proposed Project location, size, linear features, and PACs. Community input and subsistence baseline data will be used to identify those subsistence foods that are vital to residents of the area, and this information will be used to identify potential impacts to the quality and quantity of, and access to, subsistence resources. Direct, indirect, and cumulative impacts to subsistence must be considered during HIA baseline data evaluation.

After the key baseline data have been assembled and reviewed, the HIA team will assess whether there are significant data gaps remaining. Such gaps will be noted in the Initial Study Report along with a plan on how to obtain the data.

Field studies will be designed to fill data gaps. In addition to community engagement discussions, the HIA team will visit PACs during the field studies phase of the baseline data collection to document community food sources and make observations on critical community services, such as water, sanitation, and health care facilities. Field studies and community visits will be coordinated with other Project study efforts in the area to provide the information in an efficient manner.

The output of the baseline data review, data gaps analysis, and field studies will be a "Baseline Community Health Data Assessment" chapter in the HIA which will be included in the Updated Study Report at the end of 2014.

15.8.4.3. Phase 3: Impact Assessment

The specific health impacts for the Project will be identified when all components of the Project have been defined and evaluated against the baseline data. The HIA team will rate and rank the health impacts using a semi-quantitative model described in detail in the HIA Toolkit. The purpose of rating and ranking impacts is to enable interested parties to construct a health impact management framework.

The HIA should include impacts that have beneficial or detrimental consequences to communities or individuals. Each health impact has several different dimensions, listed below.

- Significance
- Nature
- Timing and duration
- Extent
- Magnitude (intensity)
- Frequency

The HIA process may include the following components:

- In-depth review of available state, regional, tribal, and local health data;
- Comparison of study area data to state and regional health data;
- Analysis of special at-risk subpopulations (such as children under the age of five years, pregnant women, elderly, or other previously defined vulnerable groups);
- Consideration of key Project-specific toxicology issues, e.g., mercury loading associated with reservoir development and impacts on subsistence resources;
- Field survey visit by an HIA study team and consultation with local health representatives, particularly from tribal organizations, if present;
- Seasonality considerations, i.e., summer versus winter differences in subsistence practices, water use, and associated disease-transmission dynamics;
- Variability of existing health care infrastructure across different affected areas;
- Coordination and alignment with existing State disease-control programs and strategies (e.g., TB, HIV/AIDS, hypertension, diabetes, substance abuse, etc.); and
- Detailed consideration of impacts to tribal peoples through the presentation of tribal health data and inclusion of the results of tribal health consultations in the HIA.

The information developed in this study is intended to be sufficient to be able to prepare a Health Management Plan (HMP), if needed in the licensing process, which may include:

- Types of health protection processes that may be needed;
- Traditional knowledge, perspectives, and activities that may represent uniquely tribal approaches to human wellness;
- Strategies available to lessen impacts and the timescales relating to health impacts;
- Temporary measures which can be put in place; and
- Local capacity to put the proposed strategies into practice.

15.8.4.4. Phase 4: HIA Document Preparation

An HIA document, with technical appendices as needed, written in accordance with the DHHS HIA guidelines will be issued as an Updated Study Report in December 2014. The HIA will be updated to include relevant results from 2013 field studies as reported in the Initial Study Report of December 2013.

15.8.5. Consistency with Generally Accepted Scientific Practice

The HIA uses rigorous scientific methods to determine potential impacts and appropriate mitigation, and the assessment will follow the ADHHS technical guidance for HIAs (ADHSS 2011).

15.8.6. Schedule

The HIA could be completed by the end of the 2014.

Table 15.8-1. Schedule for implementation of the HIA

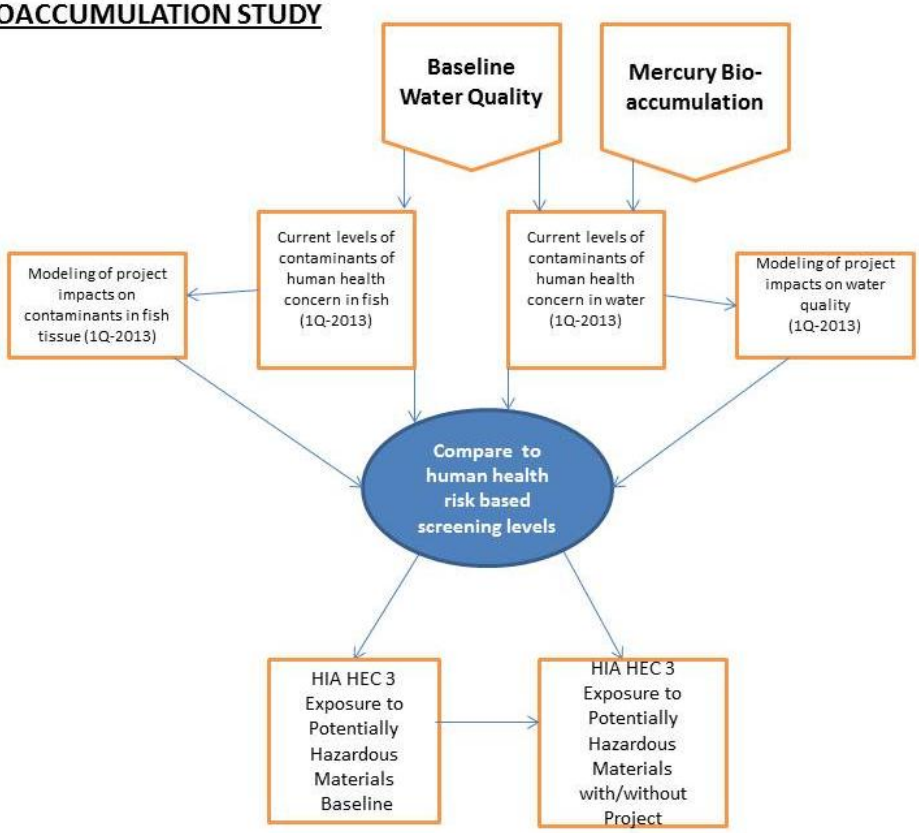
Activity	2012				2013				2014			
	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q
Project Overview and Issues Summary					——	——						
Baseline Data Collection					——	——	——	——				
Initial Study Report								——	Δ			
Impact Assessment									——	——	——	
Updated Study Report											——	▲

Legend:

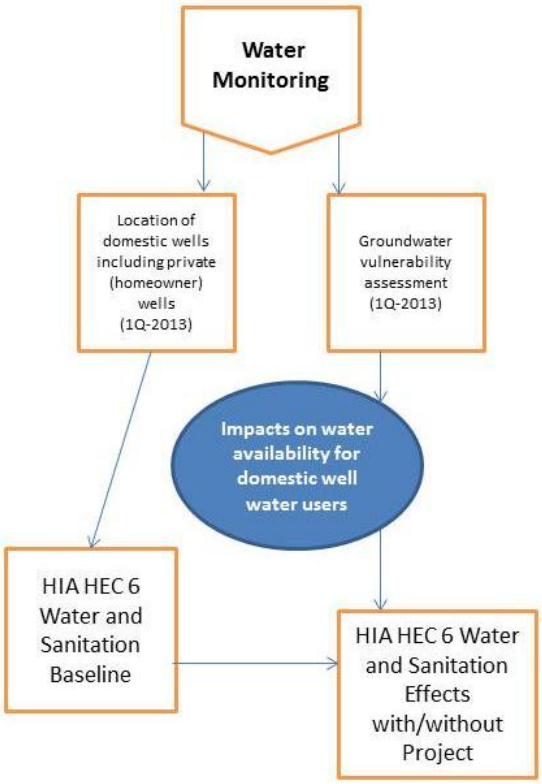
—— Planned Activity
----- Follow up activity (as needed)
Δ Initial Study Report
▲ Updated Study Report

The HIA is dependent upon results from several other studies as illustrated below.

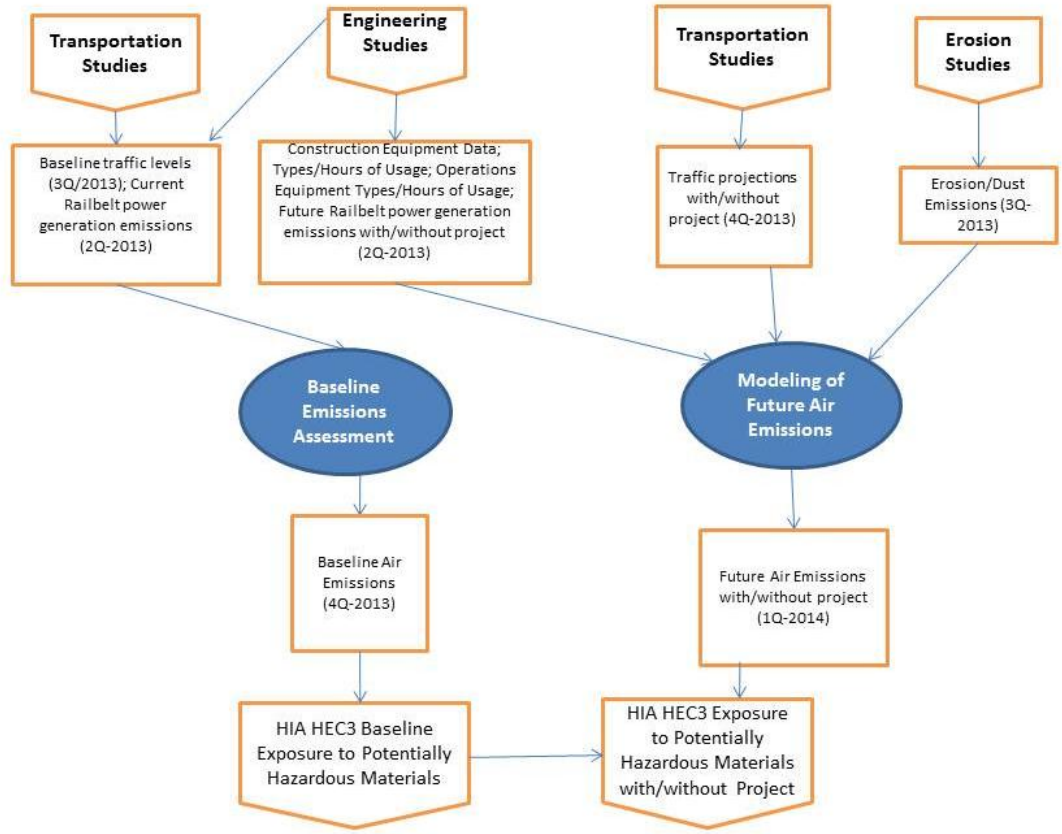
INTERDEPENDENCIES FOR HIA- BASELINE WATER QUALITY STUDY & MERCURY BIOACCUMULATION STUDY



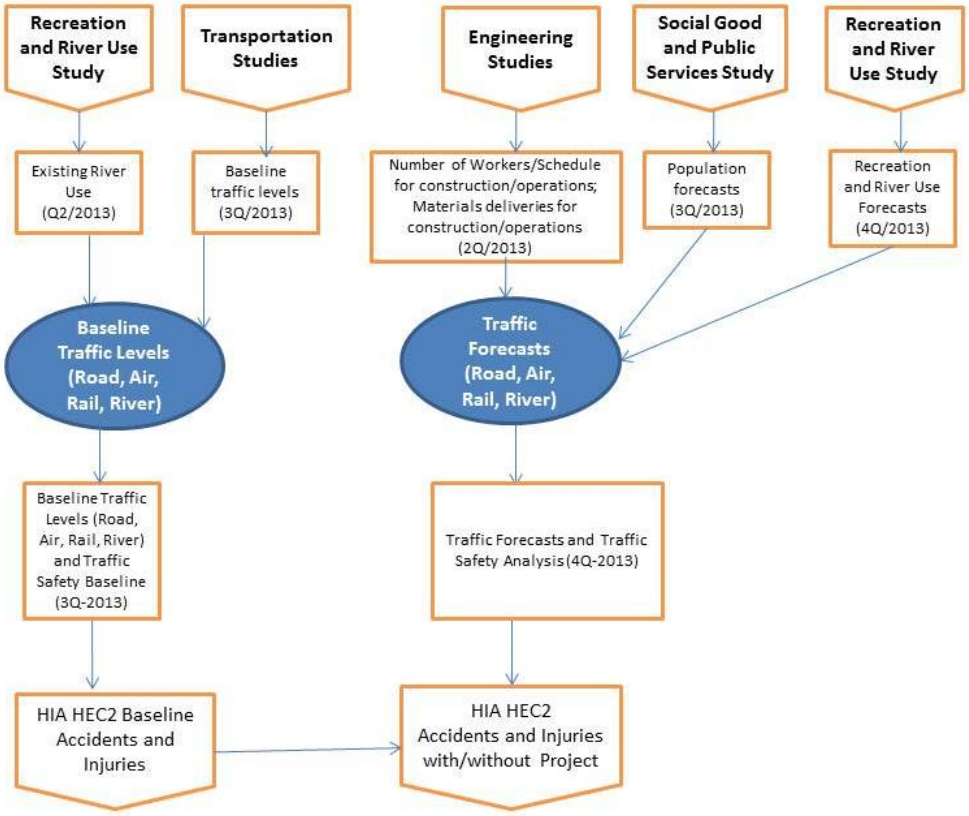
INTERDEPENDENCIES FOR HIA- WATER MONITORING STUDY



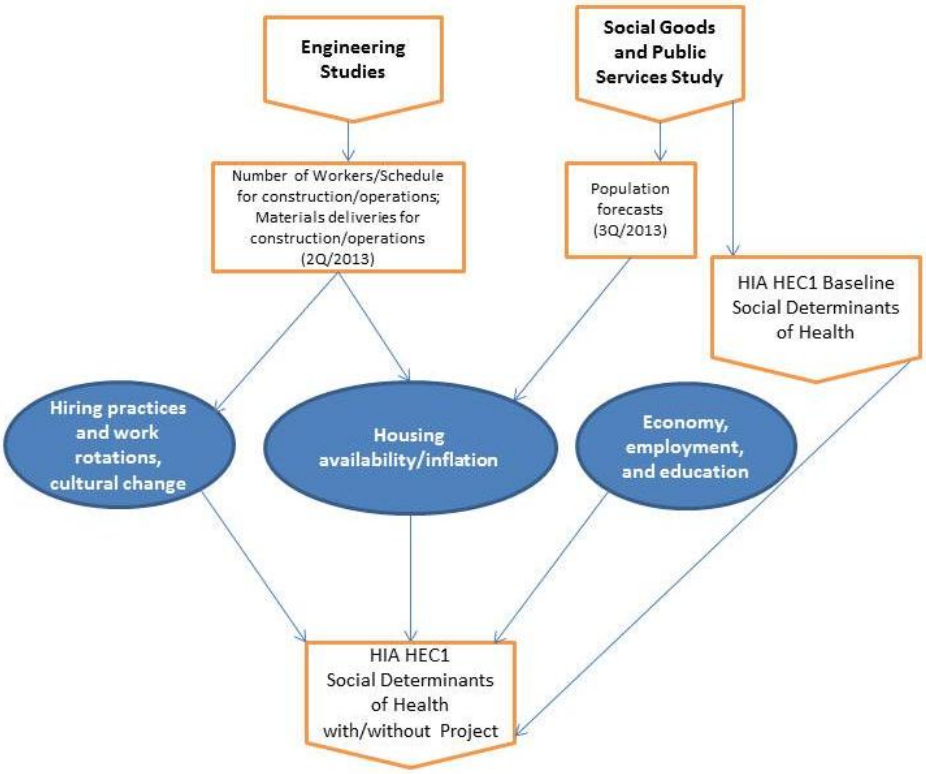
INTERDEPENDENCIES FOR HIA- AIR QUALITY AND TRANSPORTATION STUDIES

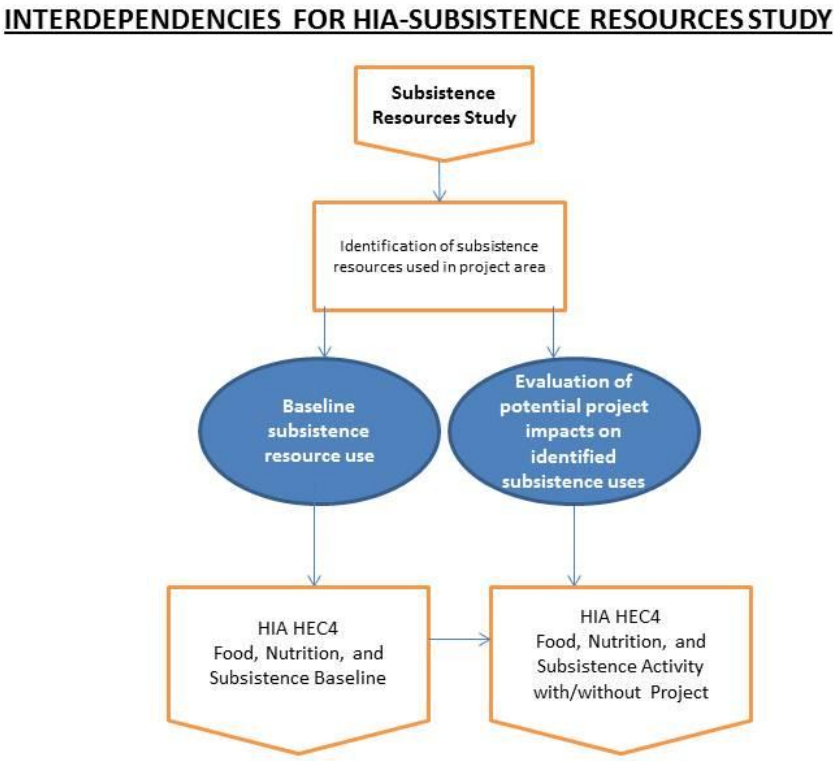


INTERDEPENDENCIES FOR HIA- TRANSPORTATION STUDY



INTERDEPENDENCIES FOR HIA-SOCIAL CONDITIONS AND PUBLIC SERVICES STUDY





15.8.7. Level of Effort and Cost

Based on past HIA experiences in Alaska, the HIA is expected to cost approximately $140,000.

15.8.8. Literature Cited

AEA 2011. Railbelt Large Hydroelectric, Presentation to the Alaska Senate Resources Committee and the House Energy Committee, by the Alaska Energy Authority, January 25, 2011.

DHSS 2011. Technical Guidance for Health Impact Assessment in Alaska, Alaska Department of Health and Human Services, Section of Epidemiology, Health Impact Assessment Program, July 2011

15.9. Air Quality Study

15.9.1. General Description of the Proposed Study

The air quality study will assess the current conditions of the area against applicable state and national air quality standards and evaluate the Project's air quality impact against these standards. The analysis will evaluate both short-term (construction) and long-term (operational) impacts from the Project and how Project emissions compare to the Without-Project alternative. The analysis will also include an assessment of the indirect impact of the Project on existing fossil-fuel electricity generators in the area, which could result in improvements to regional air quality to the extent that Project generation replaces fossil fuel generation.

In addition to identifying potential emission sources and levels to assess the potential impacts of the Project on air quality, the results of the study will help, if necessary, in identifying potential options to reduce emissions during construction and operations to meet regulatory requirements and maintain public health and safety.

15.9.1.1. Study Goals and Objectives

The primary goal and objective of the air quality analysis is to ensure that the proposed Project does not violate state air quality standards in Alaska Administrative Code (AAC) 18 AAC 50. The national and state air quality regulations are designed to maintain and/or improve air quality by controlling or reducing emissions of air pollutants. The air quality impact analysis is subject to the state and national ambient air quality standards and state and national attainment designations (i.e. attainment, non-attainment, maintenance).

The following are the primary objectives of the air quality study:

- Assess the current conditions of the area against applicable state and national air quality standards.
- Review and summarize existing air monitoring data in the area.
- Determine attainment status of the study area (i.e. attainment, non-attainment, maintenance, and unclassifiable).
- Quantify short-term (construction) and long-term (operational) emissions.
- If applicable, analyze ground level impacts using air dispersion models.
- If applicable, evaluate indirect mobile source emissions from additional traffic generated.
- Compare Project emissions to the Without-Project alternative.
- Evaluate potential emission reductions from nearby Railbelt fossil-fuel utility plants if the Project is implemented.
- Develop information to be used in the identification of potential mitigation measures, if necessary, to reduce emissions during construction.
- Ensure that the Project does not violate any state air quality standards (18 AAC 50).

15.9.2. Existing Information and Need for Additional Information

There is little existing ambient monitoring data available in the vicinity of the Project site. The nearest state monitoring sites are located in the MSB urban core. The primary air quality concern in the area is particulate matter (PM_{10} and $PM_{2.5}$) from fugitive dust, volcanic ash, and

wildfire smoke. There have been supplemental monitoring projects conducted by ADEC within the MSB over the past several years which will also be reviewed. These supplemental studies mainly pertain to particulate matter. There are some limited data available from a site in Denali National Park. The team will investigate whether the state has any other project-specific data that may be available and will summarize any available data to support the existing conditions section.

Existing data will be compared to applicable standards for criteria pollutants in a table. The study assumes ambient air monitoring will not be required. If site specific monitoring data is required, it is anticipated that at least one year's worth of data will be collected consistent with methods outlined in 18 AAC 50.035. The area is likely considered unclassifiable under 18 AAC 50.015, as there may be insufficient data to determine whether it is in attainment with respect to all criteria pollutants. EPA maintains a list of non-attainment areas for all six criteria pollutants on their Green Book website: (http://www.epa.gov/oar/oaqps/greenbk/index.html).

An emissions inventory of other Railbelt fossil-fuel utility plants will be generated and categorized by type (i.e. coal, oil, gas, etc.) to evaluate the potential emissions reductions from such facilities if the Project is implemented. This inventory will be based on existing information in the RIRP or updated information, if available.

Detailed information on Project construction and operations will be needed to estimate and evaluate the Project emissions for criteria pollutants for comparison to national and state standards. This would include levels of traffic by various modes and timeframes, construction equipment and activities, and operations equipment and schedules. A table comparing projected With-Project emissions with projected Without-Project emissions will be generated.

15.9.3. Study Area

The Project study area for the air quality analysis will mainly comprise the immediate vicinity of the Project Study Area (Figure 1.2-1) and the greater Railbelt region

While preparing the air quality analysis, particular attention will be made to the following:

- Environmentally sensitive areas
- Nearby dense population areas
- Issues raised by ADEC and other agencies such as the National Park Service (NPS) or other licensing participants

15.9.4. Study Methods

EPA and ADEC have air quality standards that must be met for new sources of emissions of criteria pollutants. The study team will estimate emissions generated by the Project, including construction and operation emissions. The emissions, along with the type and size of equipment, will be compared to appropriate ADEC thresholds as outlined in 18 AAC 50 to determine the type of license and air dispersion modeling required, if any. Denali National Park is designated as a Class I area through the federal Prevention of Deterioration (PSD) program. Emission estimates from the Project are expected to be below major source thresholds, therefore a PSD and Title V permit are not anticipated for the Project.

The air quality study will assess the existing conditions of the area against applicable state and national air quality standards and evaluate the Project's air quality impacts against these standards. The analysis will include evaluation of both short-term and long-term impacts from the Project and a comparison of Project emissions to the no-action alternative. An emissions inventory of other Railbelt fossil fuel utility plants will be generated and categorized by type (i.e. coal, gas, oil, etc.) to evaluate the potential emissions reduction from these facilities if the Project is constructed and in operation.

15.9.4.1. Document Existing Conditions

Air monitoring reports prepared by ADEC will be reviewed to assess the existing conditions of the area for comparison to applicable standards. There is little existing ambient monitoring data available in the vicinity of the Project site. The team will investigate whether the state has other project-specific monitoring data that may be available to help characterize the air quality within the Project area. ADEC data and any other available data will be summarized to support the existing conditions section. The monitoring data will be compiled and compared to applicable standards for criteria pollutants in a table. Criteria pollutants as defined by EPA are nitrogen dioxide (NO_2), sulfur dioxides (SO_2), carbon monoxide (CO), PM_{10}/$PM_{2.5}$, lead (Pb) and ozone (O_3).

The attainment status of the area will be determined based on the latest EPA designations. If the air quality in a geographic area meets or exceeds the national standard, it is designated an attainment area. Areas that do not meet the national standard are designated non-attainment areas. If there is insufficient information to classify an area as attainment or non-attainment for a particular air pollutant, the area is designated unclassifiable for that pollutant. Once a non-attainment area meets the standards, the EPA will re-designate the area as a "maintenance area".

The area is likely considered attainment or unclassifiable under 18 AAC 50.015 and EPA Green Book, as there may be insufficient data available to ADEC and EPA to determine whether it is in attainment with respect to all criteria pollutants.

15.9.4.2. Estimate Project Emissions

Emissions from construction equipment and related activities will be estimated for comparison to appropriate state licensing criteria. Construction equipment emission factors will be obtained from the EPA's NONROAD model or similar model. Fugitive particle matter emissions from the handling and storage of raw materials and wind erosion during construction will be quantified according to methodologies specified in EPA's Compilation of Air Pollutant Emission Factors (AP-42) or similar source of emission factors. Typical construction activities could include, but are not limited to, construction equipment, earth moving activities, construction worker commutes, material deliveries, earth hauling, and operation and maintenance activities. Detailed information on Project construction and operations will be needed to estimate and evaluate the Project emissions. This will include levels of traffic by various modes and timeframes, construction equipment and activities, and operations equipment and schedules. The temporary air quality impacts from construction activities associated with the proposed Project are not expected to be significant. If a state license is required, air quality dispersion modeling may also be required and will be performed consistent with 18 AAC 50 dispersion modeling guidelines.

The Project is likely not located in an EPA designated non-attainment area; therefore, General Conformity and Transportation Conformity is not anticipated. If the Project generates average daily traffic volumes that exceed a state mobile source threshold for CO, $PM_{10}/PM_{2.5}$, or mobile source air toxics (MSATs) analyses, then a mobile source evaluation may be required. This will be determined after consultation with appropriate state personnel and a review of the transportation study.

15.9.4.3. Summarize Baseline Fossil Fuel Generation Emissions

The study will also include a summary of the baseline fossil fuel generation emissions in the area. The team will use the source data and references identified by HDR in the Section 7.3.1.2 of the Data Gap Analysis along with other applicable source data for generating the emissions inventory. It is assumed that no additional monitoring or data collection will be required at existing power generation sites.

15.9.4.4. Analyze and Compare With-Project Emissions to Without-Project Emissions

The study will include a comparison of future estimated With-Project emissions to emissions estimated for future Without-Project emissions. The estimate of Without-Project emissions will include the potential emissions from other Railbelt fossil fueled facilities to provide the equivalent annual generation power as the Project if the Project is not implemented, or the installation of new generation facilities for the future using a similar fuel mix to the current Railbelt facilities.

15.9.4.5. Identify Best Management Practices

Best management practices to reduce air emissions related to construction and operation of the Project will be identified, including evaluating dust mitigation measures based on studies conducted by ADEC and the Alaska University Transportation Center.

15.9.5. Consistency with Generally Accepted Scientific Practice

Air quality study estimates and forecasts will be developed using EPA's NONROAD model or EPA's Compilation of Air Pollutant Emission Factors (AP-42) for construction equipment and other non-automotive sources. If needed, EPA-approved methods would be used to estimate mobile source emissions.

15.9.6. Schedule

The anticipated schedule for the air quality analysis would be six to seven months as shown in the table below. The Initial Study Report will be completed by the end of 2013, and the Updated Study Report will be completed by the end of 2014.

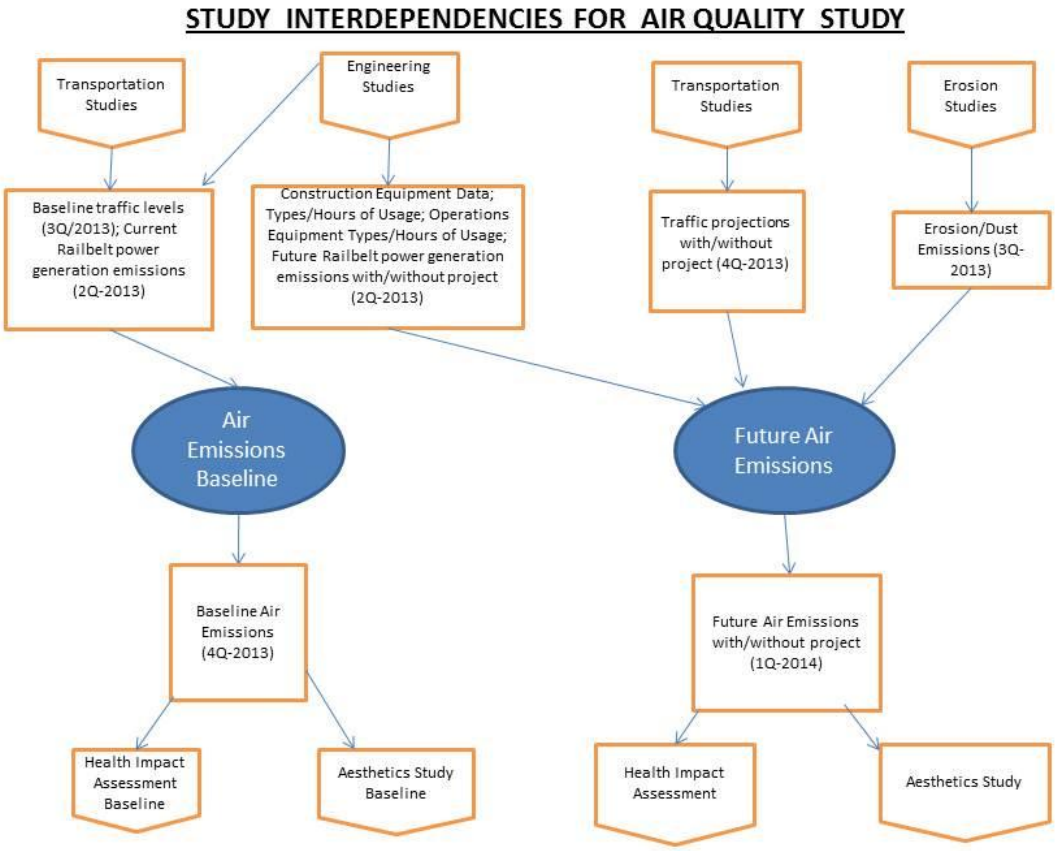
Table 15.9-1. Schedule for implementation of Air Quality Study.

Activity	2012				2013				2014			
	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q
Review Existing Information/Identify Needs					——							
Document Existing Conditions						——						
Summarize Baseline Fossil Fuel Emissions							——					
Initial Air Quality Study Report								—— Δ				
Estimate Future Emissions with/without Project									——	——		
Updated Study Report											——	—— ▲

Legend:

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

The air quality study will require information developed in other studies as illustrated below.



15.9.7. Level of Effort and Cost

Given the lack of nearby existing monitoring data, existing monitoring data may not be representative of the area. If this is determined to be the case, a program of air quality monitoring would need to be implemented to gather baseline data. Details regarding equipment to be used for construction and operations and operational information should be sufficient to perform an analysis of Project emissions. Information on emissions from other Railbelt power sources that may be offset by this Project would be needed to allow for a full analysis of potential costs and benefits.

Completion of the work described above would require seven to ten months of effort over the two year study period, assuming that no air monitoring is required, at an estimated cost of $100,000.

15.9.8. Literature Cited

18 AAC 50, Alaska Administrative Code, Air Quality Control.

EPA 40 CFR Part 50, National Ambient Air Quality Standards.

EPA Green Book Non-Attainment Areas for Criteria Pollutants.

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

42 U.S.C. 7401, The Clean Air Act.