TETRA TECH

Tongass National Forest
Forest Plan Amendment

Energy Resource Report

FINAL

Prepared for:

Tongass National Forest

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1. Introduction

The Responsible Official has determined that the conditions on the land and demands of the public require the Tongass National Forest to amend the Tongass National Forest Land and Resource Management Plan (Forest Plan) to provide for the development of renewable energy projects. This decision was based on implementation of the Forest Plan since 2008 and on the September 2013 five-year review of the Forest Plan. Comments received during the five-year review of the Forest Plan included requests that the Forest Service promote the development of renewable energy projects to help reduce fossil fuel dependence in Southeast Alaska communities, stimulate economic development, and lower carbon emissions in the region.

America's forests and grasslands are important sources of clean, renewable energy that can help offset fossil energy and emissions. The Forest Service Strategic Energy Framework (USDA Forest Service 2011) sets direction and proactive goals for the Agency to significantly and sustainably contribute toward resolving U.S. energy resource challenges, by fostering sustainable management and use of forest and grassland energy resources to contribute to national energy security, environmental quality, and economic opportunity.

The Forest Service is proposing to add new Renewable Energy Sites and Utility Lines plan components, e.g., standards and guidelines, to the Forest Plan. As currently conceived, these plan components would take precedence over forest-wide and land use designation (LUD)-specific standards and guidelines (subject to applicable laws) where renewable energy projects or utility transmission lines are proposed or exist.

This report identifies and evaluates available information relevant to energy resources in accordance with the Forest Service Handbook (FSH) 1909.12 (see the Regulatory Framework section below).

2. Regulatory Framework

The regulatory framework for this report is provided by the 2012 Planning Rule, FSH and Forest Service Manual (FSM) direction, and the 2008 Forest Plan, as described below. This section also looks at Inventoried Roadless Areas (IRAs) on the Tongass and how they relate to the energy world.

National Forest System Land Management Planning Rule

The USDA adopted a National Forest System (NFS) land management planning rule in 2012 (2012 Planning Rule). The planning rule guides the development, amendment, and revision of land management plans for all units of the NFS. The requirements for land management plan components for energy are found at Title 36 Code of Federal Regulations (CFR) 219.10(a) as follows:

> (a) *Integrated resource management for multiple use.* When developing plan components for integrated resource management … the responsible official shall consider:
>
> > (2) Renewable and nonrenewable energy and mineral resources.
> >
> > (3) Appropriate placement and sustainable management of infrastructure, such as recreational facilities and transportation and utility corridors.

Forest Service Directives

Implementation of the 2012 Planning Rule is achieved through FSM and FSH directives. FSH 1909.12 provides the following direction with respect to energy:

Chapter 10 – The Assessment

FSH 1909.12 Chapter 10 describes the procedures for writing an assessment for development, amendment, or revision of a land management plan:

13.5 - Assessing Renewable and Nonrenewable Energy Resources, Mineral Resources and Geologic Hazards

This section requires that the Responsible Official "identify and evaluate available information about the contribution of renewable and nonrenewable energy … resources to social and economic sustainability. Renewable energy sources may include wind, hydropower, solar, biomass, and geothermal."

"The Interdisciplinary Team should identify and evaluate available information such as:

1. Projections of renewable energy activity.
2. Potential of the plan area to provide renewable energy.
3. Trends that affect renewable energy activity in the plan area.
4. Existing energy transmission corridors and the potential need for new transmission corridors.
5. The impacts of renewable energy on ecological integrity and species diversity.
6. The contribution of renewable energy in the plan area to social and economic sustainability."

Chapter 20 – Land Management Plan

FSH 1909.12 Chapter 20 describes the planning requirements of the 2012 Planning Rule and the procedures for developing, amending, or revising a land management plan.

23.23k – Renewable Energy

This section requires that the Responsible Official shall consider renewable energy resources and appropriate placement and sustainable management of infrastructure such as utility corridors in in the development of plan components, including standards or guidelines.

Many energy sources such as wind, solar, biomass, and hydroelectric can be considered renewable as these forms are capable of producing energy without depleting the source of the energy. Energy developed on or off National Forest System lands often requires infrastructure to transfer electric power…through transmission corridors between producers and consumers.

1. When developing plan components:
    a. The Interdisciplinary Team should review the assessment for information about the current and future potential energy developments their potential contributions and impacts in and around the plan area (FSH 1909.12, Ch. 10, sec. 13.5).
    b. The Interdisciplinary Team should consider existing facilities and potential for generation and transmission of energy from or across National Forest System lands.
    c. The Responsible Official should engage with other Federal agencies, such as the FERC, BLM, USACE, or State or local government agencies that may have jurisdiction of certain types of energy facilities in the plan area. The BLM is the lead Federal agency for permitting interagency pipelines. Additional laws and regulations may apply to these types of energy developments. Appropriate engagement with these agencies and interests and recognition of applicable laws and regulations must be part of the planning process.

d. The Interdisciplinary Team should consider how and whether the land management plan may provide for renewable energy, such as solar, wind, biomass and hydroelectric energy sites. The team should evaluate lands that are most suitable for these uses and avoid lands that are sensitive, legally restricted from such development or committed to other uses where such energy development would not be desirable. The evaluation of lands should consider how and whether the plan area can contribute to providing renewable energy while simultaneously providing for other desired conditions and objectives of the plan area. The Interdisciplinary Team should develop appropriate plan components that establish this framework for future renewable energy development, while avoiding or mitigating related adverse impacts.

2. The plan may include:
   a. Desired conditions that identify long-term energy developments, uses of resources such as biomass for energy, or transmission corridors and the desired context for their operation.
   b. Objectives that identify measureable outcomes or intended achievements related to energy resource management, such as improving the condition of infrastructure developments, providing a supply of material for energy generation such as fuelwood, biomass or mitigation outcomes related to energy developments, such as modification of fish passage at dams.
   c. Suitable use areas or areas not suitable for certain types of energy developments or resource use in accordance with the appropriate legal authorities and land capability.
   d. Standards or guidelines to identify restrictions on certain practices related to the use, development, or transmission of energy within the plan area, within appropriate legal authorities of the Forest Service.
   e. Provision of energy or transmission of energy across the plan area as a distinct role and contribution of the plan area.

The environmental analysis document evaluates the potential impact of the plan's decision regarding energy developments on the social, economic, cultural, and ecological conditions within and near the plan area.

Tongass National Forest Land and Resource Management Plan

The Forest Plan is the governing document for management activities that take place on the Tongass National Forest (USDA Forest Service 2008). The Forest Plan consists of three parts that work together to facilitate the development of management activities. These parts are: forest goals and desired conditions for resources; the management prescriptions for each of the 19 LUDs; and the Forest-wide Standards and Guidelines, which apply to all or most areas of the Forest and provide for the protection and management of forest resources.

The following sections summarize the current direction provided in the 2008 Forest Plan as it pertains to energy and related infrastructure.

Transportation and Utility Systems LUD

The 2008 Forest Plan includes a Transportation and Utility System (TUS) LUD that "provide(s) for, and/or facilitate(s) the development of existing and future major public Transportation and Utility Systems" (USDA Forest Service 2008). Major systems are defined in the context of the TUS LUD as "state and federal highways, railroads, public hydroelectric power projects and associated facilities, powerlines 66 kV or greater, and pipelines 10 inches or greater in diameter." Four types of transportation and utility corridors are identified as part of the TUS LUD and shown on the LUD map that accompanies

the 2008 Forest Plan. These corridors are: Existing Power Transmission Corridor, Potential Power Transmission Corridor, Existing State Road Corridor, and Proposed State Road Corridor. The first two types of corridor—Existing Power Transmission Corridor and Potential Power Transmission Corridor—are shown on Figure 1.[1]

The TUS LUD is an overlay LUD that applies to existing or new transportation and utility systems once construction is initiated. Prior to construction, the management prescriptions of the underlying LUDs remain applicable, as follows:

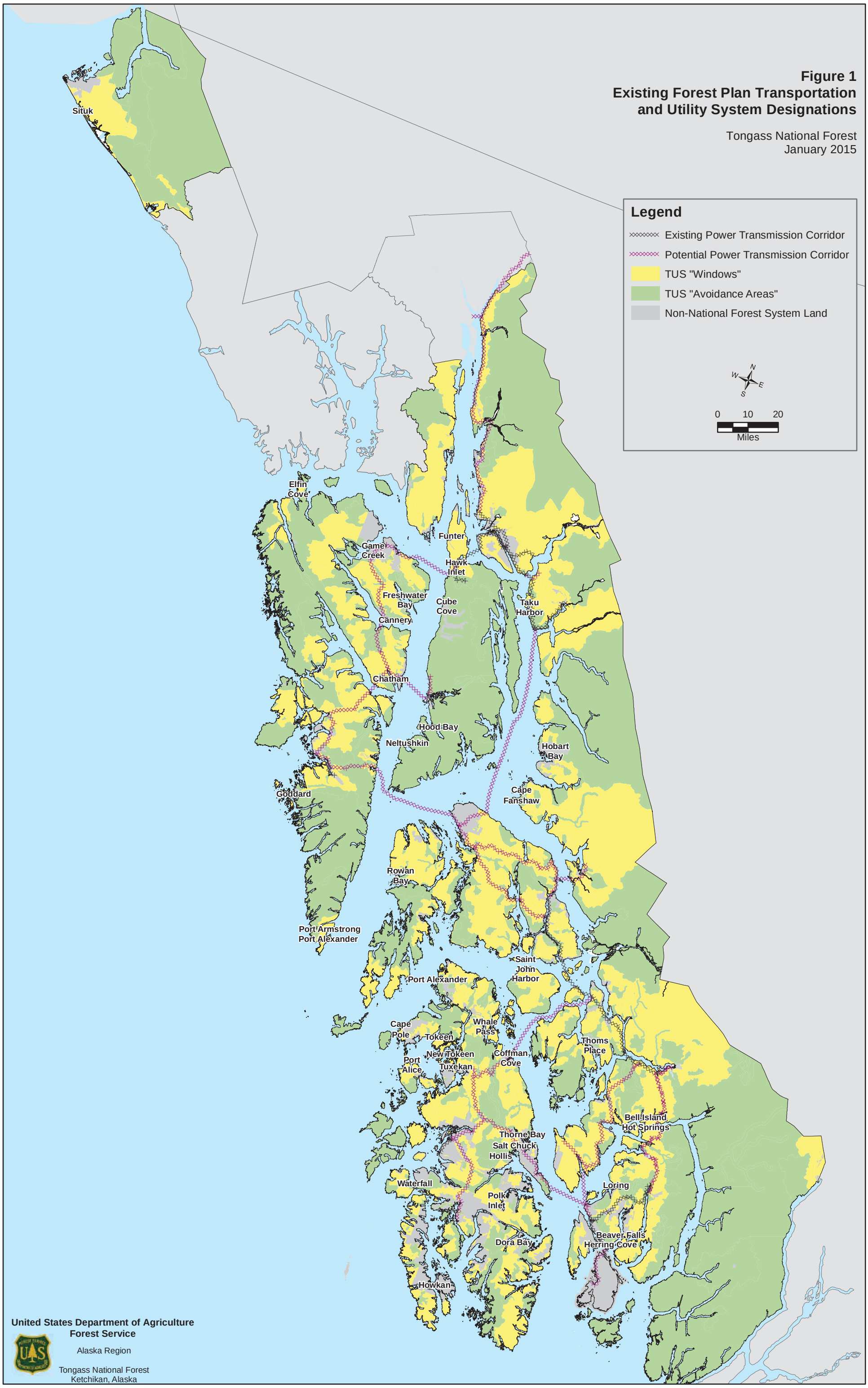
> "During the period before actual construction of new systems occurs, the management prescription(s) of the (initial) LUD(s) underlying the corridors will remain applicable. Upon initiation of construction, and during system operation, this management prescription will apply. The Transportation Utility System (TUS) LUD takes precedence over any underlying LUD (subject to applicable laws) regardless of whether the underlying LUD is a TUS Avoidance LUD or not. As such, it represents a "window" through the underlying LUD through which roads and/or utilities can be built." (USDA Forest Service 2008, p. 3-128)

Lands Forest-wide Standards and Guidelines

The Forest-wide Standards and Guidelines for Lands address special use administration for right-of-way grants, including those related to the TUS LUD. The Forest Plan identifies three types of TUS-related areas on the Tongass based on the existing LUDs: TUS "windows," TUS "avoidance areas," and TUS "exclusion areas." These areas are defined in the plan as follows:

1. A TUS "window" is an area potentially available for the location of transportation or utility corridors and sites. Windows represent areas of future opportunity where the applied management direction will not conflict with future designation of a TUS. A site-specific analysis is still required during project-level planning, to identify resource protection needs within these areas. Windows are designated through the allocation of lands to TUS windows in their standards and guidelines.
2. A TUS "avoidance area" is an area where the establishment and use of transportation or utility corridors and sites is not desirable given the LUD emphasis. A search for "windows" should be exhausted before TUS facilities are considered in avoidance areas. When feasible, these areas should be avoided through site-specific analysis during project-level planning. Avoidance areas often include congressionally and administratively designated areas. Although special environmental or procedural considerations may be required for these areas, these special designations do not preclude consideration and use as a TUS. Avoidance areas are designated through the allocation of lands to LUDs specifically identified as TUS avoidance areas in their standards and guidelines. In cases where proposed or potential corridors are allocated to the TUS LUD that traverse other LUDs identified as TUS "avoidance areas," treat the corridors within such LUDs the same as TUS "windows" (subject to applicable laws). Refer to the Transportation and Utility System section for direction in Chapter 3 of the 2008 Environmental Impact Statement (USDA Forest Service 2008).

[1] These corridors are taken directly from the 2008 Forest Plan LUD map and do not represent existing conditions in all cases. This is the case with the Swan Lake-Lake Tyee Intertie, which is shown as a Potential Power Transmission Corridor on the Forest Plan LUD map and Figure 1, but has since been constructed. Existing conditions are shown in Figure 2.



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3. A TUS "exclusion area" is a large area (large enough to cause significant barriers) that legislatively precludes TUS. There will be no exclusion areas on the Tongass National Forest due to special authorities provided in the Alaska National Interest Lands Conservation Act (ANILCA), Title XI. (USDA Forest Service 2008, p. 4-32 to 4-33)

The 19 LUDs on the Tongass include two overlay LUDs: the TUS LUD and the Minerals LUD. The remaining 17 LUDs are either designated TUS windows or TUS avoidance areas. Four of the 17 non-overlay LUDs are TUS windows and together account for 6,306,620 acres, or approximately 38 percent of the Forest. The remaining 13 non-overlay LUDs, which together comprise 10,335,748 acres or 62 percent of the Forest, are TUS avoidance areas.

The distribution of TUS windows and TUS avoidance areas is shown in Table 1.

Table 1. TUS Window and Avoidance Areas by LUD (acres)

TUS "Window"	Acres	TUS "Avoidance Areas"	Acres
Natural Setting LUD Group		***Wilderness LUD Group***	
Semi-Remote Recreation	2,978,438	Wilderness	2,619,486
Development LUD Group		Wilderness National Monument	3,102,905
Modified Landscape	723,678	Non-Wilderness National Monument	167,031
Scenic Viewshed	306,251	***Natural Setting LUD Group***	
Timber Production	2,298,253	LUD II	868,695
Total	**6,306,620**	Remote Recreation	1,998,371
		Old Growth Habitat	1,182,851
		Enacted Municipal Watershed	43,975
		Research Natural Area	21,312
		Special Interest Area	206,051
		Wild River	52,776
		Scenic River	15,499
		Recreational River	25,398
		Development LUD Group	
		Experimental Forest	31,396
		Total	**10,335,748**

Source: Tongass NF GIS Corporate Data Library
Note: The combined total excludes unmapped areas (e.g., saltwater, shoreline boundaries) in the GIS database.

Inventoried Roadless Areas

IRAs are defined as undeveloped areas typically exceeding 5,000 acres that meet the minimum criteria for wilderness consideration under the Wilderness Act and were inventoried during the Forest Service's Roadless Area Review and Evaluation (RARE) II process and during subsequent updates and forest planning analyses. The Tongass is currently using the IRA boundaries associated with the 2001 Roadless Rule (USDA Forest Service 2001), which are identified in a set of maps that are part of the Forest Service Roadless Area Conservation, Final EIS, Volume 2, dated November 2000 (USDA Forest Service 2000). These maps identify 9.3 million acres in IRAs on the Tongass and correspond closely with the 1996 roadless area inventory that was prepared for the 1997 Forest Plan Revision (USDA Forest Service 1997). Including Wilderness, the Tongass National Forest is more than 90 percent roadless.

Project proponents have filed permit applications with the Federal Energy Regulatory Commission (FERC) for about 7 new or amended hydroelectric projects on the Tongass National Forest such as Soule River, Crooked Creek/Jim's Lake, Sweetheart Lake and Swan Lake projects. Each of these new

hydroelectric projects are within inventoried roadless areas with one located in Wilderness. The proposed projects are at various stages in the permitting and FERC licensing process, and require Forest Service review and/or responses. Forest Service involvement includes the permitting of investigative studies, reviewing and commenting on project documents, review of study plans and results, participation in project development and resource mitigation, development of Federal Power Act section 4(e) terms and conditions and issuance of an authorization after the project is licensed by FERC. Three additional projects (Lake Osprey/Little Port Walter, Tenakee Springs/Indian River, and Angoon Hydro/Thayer Creek) are not under FERC jurisdiction. The Forest Service special use permit will be the authorizing document for these three projects.

In addition, proposed transmission lines serving as power interties among Southeast Alaska communities also cross inventoried roadless areas.

The Federal Power Act (FPA) grants FERC the authority to issue and administer licenses for hydropower projects. For projects located on National Forest System lands, Section 4(e) of the FPA requires FERC to determine whether the project is consistent with National Forest purposes and the land management plan. Section 4(e) also gives the Forest Service authority to impose mandatory conditions in the FERC license to ensure the adequate protection and use of National Forest System (NFS) land and resources.

Prohibitions on road construction and timber removal in inventoried roadless areas are considered conditions necessary for the protection and use of NFS land and resources.

If sited and designed properly, hydroelectric projects provide an environmentally and economically preferred source of power due to the near elimination of hydrocarbon emissions from diesel fuels and reduce the risk of catastrophic diesel fuel spills associated with shipping, handling, and storing activities.

Section 4(e) can be used to mitigate the impacts of any project including the location and size of a dam, associated project works (pipelines, roads, and facilities), reasonable access, and mitigation measures. The Forest Service may develop conditions necessary to protect NFS lands and resources, such as limiting or prohibiting certain roads, preserving remote characteristics, defining the size of facilities, project operations (run-of-river vs. large storage reservoirs, etc.) so long as the conditions do not constitute a veto and thereby usurp FERC's role in deciding to license a hydropower facility.

3. Renewable Energy and Alaska

Twenty-nine states, Washington D.C., and two U.S. territories have Renewable Portfolio Standards (RPS). An additional eight states, including Alaska, have a less binding Renewable Energy Goal. Alaska's goal was established in 2010 with passage of House Bill 306 by the Alaska State Legislature. House Bill 306 established goals to generate 50 percent of the state's electricity from renewable sources (solar, wind, biomass, hydropower, wave, tidal, and geothermal) by 2025 and reduce energy use 15 percent per capita by 2020 (Alaska Energy Authority [AEA] and Renewable Energy Alaska Project [REAP] 2013).

Alaska already meets more than 24 percent of its electric power generation from renewable sources, mostly hydroelectric power. The State legislature and AEA, a state agency, fund a variety of grant and loan programs to incentivize renewable energy production and energy conservation in Alaska. Hydroelectric power is Alaska's largest source of renewable energy and supplies about 20 percent of the state's electricity in an average water year. Most of the state's developed hydroelectric projects are located primarily in Southeast, the Alaska Peninsula, and Southcentral. In 2011, hydroelectric power

accounted for 96 percent of net power generation in Southeast Alaska, with diesel supplying the other 4 percent (Fay et al. 2013).

4. Existing Conditions

Southeast Alaska consists of a 500-mile-long stretch of mainland and densely forested coastal islands and peninsulas, approximately 120 miles across at its widest point. The region includes approximately 29,000 square miles of land (16.1 percent of the total U.S. land area) and over 11,000 miles of coastline. Islands make up about 40 percent of the region's total land area. The Tongass National Forest stretches roughly 500 miles from Ketchikan in the southeast to Yakutat in the northwest and includes approximately 80 percent of the land area in Southeast Alaska.

Southeast Alaska is sparsely populated, with an approximate population density of 2 persons per square mile. Slightly more than two-thirds of the population total (estimated to be 74,280 in 2014) is concentrated in just three cities: Juneau, Ketchikan, and Sitka, with the remaining population distributed throughout the region in 32 small communities, most with fewer than 1,000 residents (Alaska DOL 2015a). Most of these communities are surrounded by, or are adjacent to, NFS lands. Only three communities are connected to other parts of the mainland by road: Haines and Skagway in the north, and Hyder in the southeast. Most communities with roads have isolated road systems that do not connect with other communities.

Viewed from an electric generation and transmission perspective, the region consists mainly of multiple, small load centers, separated from one another by mountainous terrain and marine waters. The 2012 Southeast Alaska Integrated Resource Plan (IRP) describes the region's electric transmission grid as limited in terms of the number of communities connected and notes that the grid is very different from the integrated, interconnected, and redundant grids that are in place throughout the lower 48 states (Black & Veatch 2012).

Southeast Alaska has a wet, relatively temperate climate, and the combination of high precipitation rates and mountainous terrain provides considerable opportunity for hydroelectric generation. As noted above, in 2011, hydroelectric power accounted for 96 percent of the region's net power generation, with diesel supplying the other 4 percent. Statewide, hydropower accounted for just 20 percent of net generation, with natural gas accounting for more than half (59 percent) of net generation (Fay et al. 2013).

Although it accounts for most of the region's net power generation, hydroelectric power is not evenly distributed among the region's communities. As communities moved toward electrification, hydropower projects were developed in locations near the region's main load centers (i.e., the larger communities). Diesel generation was developed to supplement and backup hydroelectric generation, where it existed, and for communities that could not economically access hydroelectric power. Diesel generation is the main alternate source of energy because of the availability of diesel fuel, the ease of installing diesel generators in a wide range of capacities, and relatively low initial costs.

Twenty-four operating hydroelectric projects are located either on National Forest System lands or on adjacent state or private land. These projects have a total installed capacity of 201 MW and range in size from less than 1 megawatt (MW) to 78 MW in size (Table 2). Hydroelectric projects in Southeast Alaska can be divided into two general categories:

- Projects developed by local utilities to serve local demand. These projects include those developed to serve Skagway, Haines, Juneau, Sitka, Petersburg, Ketchikan, Metlakatla, and Prince of Wales Island.
- Projects developed by the state or Federal Power Administration to serve shared interconnected load centers. These projects include Snettisham, Lake Tyee, and Swan Lake (Black & Veatch 2012).

The existing transmission system in Southeast Alaska is limited, but the electric systems in a few communities are currently interconnected. These may be summarized by region, as follows:

- Southeast Alaska Power Agency (SEAPA) Region—The SEAPA system connects Ketchikan, Petersburg, and Wrangell.
- Juneau Area—The Alaska Electric Light & Power (AEL&P) system connects Juneau, Douglas Island, Auke Bay, and Greens Creek.
- Prince of Wales Island—The Alaska Power & Telephone (AP&T) system connects the communities of Coffman Cove, Craig, Hollis, Hydaburg, Kasaan, Klawock, and Thorne Bay.
- Upper Lynn Canal Region—A separate AP&T system connects Haines and Skagway in the Upper Lynn Canal Region and is connected via an intertie to the existing Inside Passage Electrical Cooperative (IPEC) system that serves Klukwan and Chilkat Valley.

Existing operating hydroelectric projects and the existing transmission system are shown on Figure 2.

Table 2. Existing Renewable Energy Projects

No. [1/]	Name	Type	Capacity (MW)	Date Online	Community Served
1	Goat Lake	Hydropower (Storage)	4.0	1997	Skagway and Haines
2	Dewey Lakes	Hydropower (Run-of-the-River)	0.9	1902	Skagway
3	Kasidaya Creek	Hydropower (Run-of-the-River)	3.0	2008	Upper Lynn Canal
4	Salmon Creek	Hydropower (Storage)	6.7	1913	Juneau
5	Gold Creek	Hydropower (Run-of-the-River)	1.6	1914	Juneau
6	Annex Creek	Hydropower (Dam/Reservoir)	3.6	1915	Juneau
7	Lake Dorothy	Hydropower (Dam/Reservoir)	14.3	2009	Juneau
8	Snettisham	Hydropower (Dam/Reservoir)	78.0	1979	Juneau and Douglas
9	Falls Creek	Hydropower (Run-of-the-River)	0.8	2009	Gustavus
10	Pelican	Hydropower (Run-of-the-River)	0.7	1941	Pelican
11	Blue Lake	Hydropower (Dam/Reservoir)	6.0	1961	Sitka
12	Green Lake	Hydropower (Dam/Reservoir)	18.6	1979	Sitka and surrounding areas
13	Crystal Lake	Hydropower (Dam/Reservoir)	2.0	1920s	Petersburg
14	Tyee Lake	Hydropower (Lake tap)	20.0	1984	Wrangell, Petersburg, Ketchikan
15	Black Bear Lake	Hydropower (Lake tap)	4.5	1995	Prince of Wales Island
16	South Fork Black Bear	Hydropower (Run-of-the-River)	2.0	2005	Prince of Wales Island
17	Ketchikan Lakes	Hydropower (Dam/Reservoir)	4.3	2000	Ketchikan
18	Beaver Falls	Hydropower (Dam/Reservoir)	5.4	1947	Ketchikan
19	Silvis Lake	Hydropower (Dam/Reservoir)	2.1	1968	Ketchikan
20	Swan Lake	Hydropower (Dam/Reservoir)	22.4	1983	Ketchikan, Wrangell, Petersburg
	Total Installed Capacity		**200.9**		

1/ Four other hydropower projects – Hidden Falls Hatchery, Jetty Lake, Betty Lake, and Burnett Inlet Hatchery – on NFS lands supply power to fish hatcheries and are not included.
Notes: Prince of Wales Island - Craig, Klawock, Hydaburg, Hollis, Kasaan, and Thorne Bay
Upper Lynn Canal - Haines, Skagway, Klukwan, and Chilkat Valley
Sources: USDA Forest Service 2010, AEA 2014, AEL&P 2014, AP&T 2014, Levitt et al. 2008, SEAPA 2014

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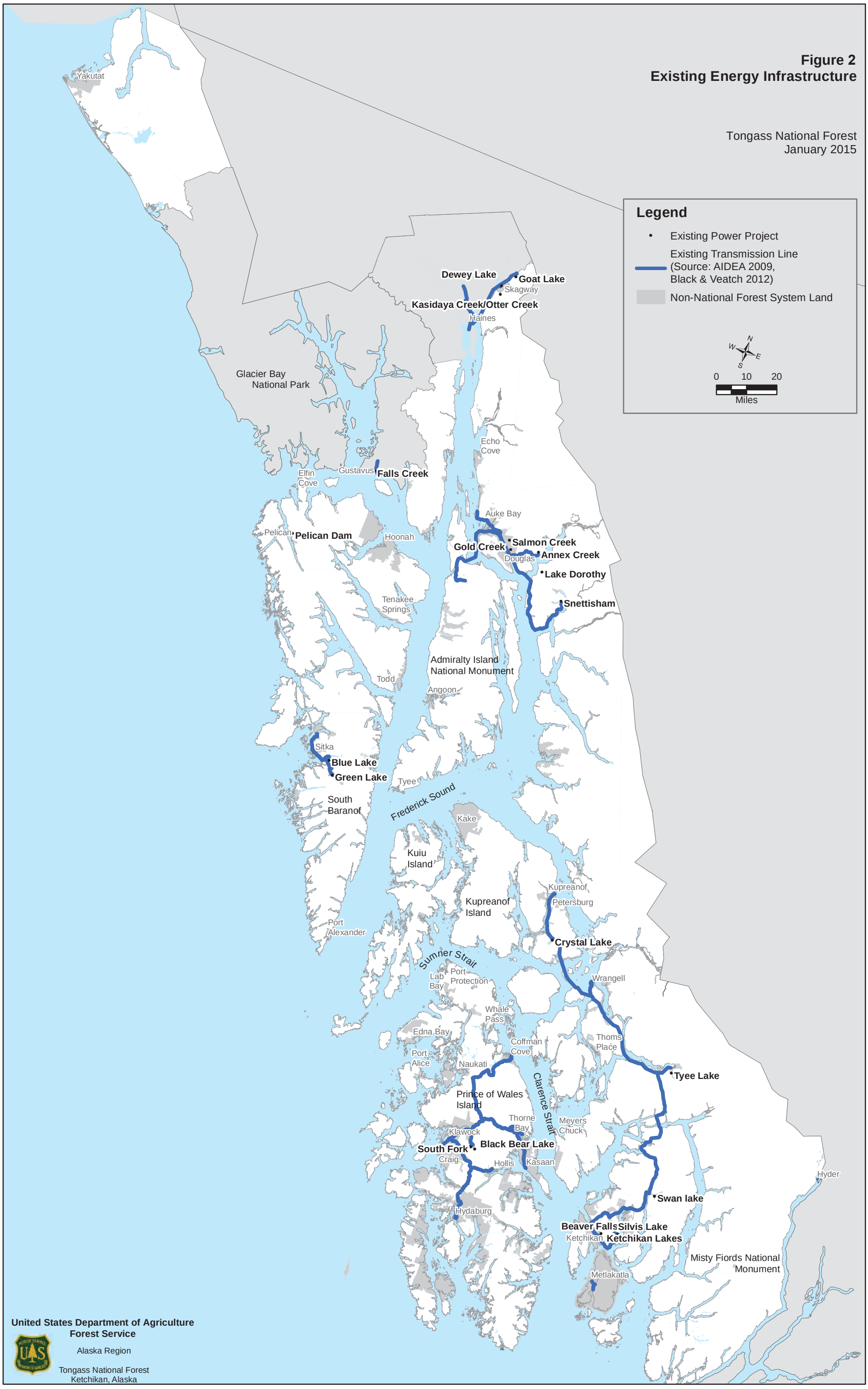

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Current Trends

Municipal governments, Alaska Native organizations, corporations, and regional planning and development groups are all actively involved in energy planning in Southeast Alaska. The City of Wrangell is a strong advocate for the proposed Alaska-British Columbia Intertie (AK-BC Intertie) that would facilitate the export of surplus power from Southeast Alaska to Canada and the lower 48. Tlingit Haida Central Council, Grand Camp of the Alaska Native Brotherhood, and Sealaska Corporation have all publicly supported hydroelectric power generation and intertie projects in the region. Southeast Conference has funded several energy development plans and worked closely with AEA to secure funding for specific projects (USDA Forest Service 2010).

Regional planning efforts have included development of the 2012 Southeast Alaska IRP. Developed in response to direction from the Alaska Legislature, AEA was the lead agency for this plan which explored the current status of energy resources in the region, as well as options for minimizing future power supply and space heating costs, while maintaining or improving power supply reliability (Black & Veatch 2012).

According to the Southeast Alaska IRP, the Southeast region is currently at a crossroads regarding the mix of generation, demand-side management/energy efficiency, and transmission resources that it will rely on to meet future electric and heating needs. The Southeast Alaska IRP identified the following trends influencing energy demand and development in Southeast Alaska:

- Southeast Alaska has significant hydroelectric resources, but they are not evenly distributed throughout the region (as noted above). The power requirements of the region's larger communities, as well as some of the smaller communities are met by relatively low cost hydroelectric generation, while other communities are entirely dependent on high cost diesel generation.
- Historically perceived as a stable priced fuel that it is easy to transport and use, recent volatility in diesel prices (especially the unprecedented increase prior to 2010) has made the search for alternative heating fuels and the development of renewable energy sources a key part of regional energy planning.
- The Southeast Alaska region as a whole is currently short of hydroelectric storage capacity, making potential storage projects (which allow generation to be more closely aligned with demand) more valuable from a system integration perspective than potential run-of-the river projects.
- The majority of homes in Southeast Alaska (70 percent) used fuel oil to heat their homes in the 2005 to 2009 period, compared to just 34 percent statewide. In the period leading up to the 2012 Southeast Alaska IRP, the Southeast region saw a large increase in the number of conversions from fuel oil to electric space heating in those communities where hydroelectric power is available. This trend has led to unplanned growth in electric loads and reductions in the excess generation available from existing hydroelectric facilities.

The Southeast Alaska IRP also addresses the potential for connecting the region's isolated power projects into a regional grid system (the Southeast Intertie), as well as the potential for developing the AK-BC Intertie, which would connect the Southeast region to the BC Hydro transmission network in Canada. The Program Overview prepared for the Forest Service's Alaska Region Energy Program in 2010 noted that several current proposals would facilitate the export of surplus power to Canada and the Lower 48.

The Soule River project, proposed by AP&T near Hyder and within a few miles of the Alaska/British Columbia boundary, is proposed for the sole purpose of exporting power. Several groups are working to promote a major transmission line in Bradfield Canal that would to tie into planned and existing electrical lines in British Columbia – also for the purpose of selling power to Canada and the Lower 48 states. Project proponents view the export and sale of surplus power as a way to fund and stimulate the development of additional energy infrastructure in Southeast Alaska (USDA Forest Service 2010).

Social and Economic Context

Today, the power requirements of the region's larger communities, including Juneau, Ketchikan, Sitka, Petersburg, Wrangell, Skagway, and Haines, as well as some smaller communities, are met by relatively low cost hydroelectric generation, with diesel generation used only as a back-up. Other communities do not have this benefit and are instead entirely dependent on diesel generation. While considerable hydroelectric power is available in some locations, the lack of power transmission facilities prevents its distribution to the region as a whole (Black & Veatch 2012).

Fourteen of the 32 communities within or adjacent to the Tongass National Forest are completely dependent upon diesel-generated electricity. Nine of these communities (Angoon, Coffman Cove, Elfin Cove, Hoonah, Kake, Naukati Bay, Tenakee Springs, Whale Pass, and Yakutat), ranging in population in 2014 from 16 to 787, have central electric utility systems that rely on diesel generation. The other six communities that are dependent on diesel generation (Edna Bay, Meyers Chuck, Point Baker, Port Alexander, and Port Protection) with 2014 populations ranging from 13 to 56 have no central utility system and residents rely upon individual generators (USDA Forest Service 2010; Alaska DOL 2015b).

Although relatively easy and inexpensive to install, high fuel costs and the operations and maintenance expenses associated with diesel generators make them expensive to operate. As a result, in communities where hydroelectric power is not available, the reliance upon diesel generation has contributed to very high electric rates. According to the 2012 Southeast Alaska IRP, this has "created a gap or chasm between communities, where stable and "well-to-do" communities exist near struggling communities and a notable absence of private sector economic activity are the norm" (Black & Veatch 2012, p. 1-4). Alexander et al. (2010, p. 8) found that "the high cost of energy in the communities that rely on diesel generation impedes economic development, as decisions to locate new commercial and industrial developments are influenced by the availability of reliable low-cost power."

Residents in communities in Southeast Alaska that rely primarily on hydroelectric power to generate electricity have the lowest residential rates in the State, with rates as low as 10 cents/kilowatt hour (kWh) in 2011. Residents of Anchorage and other places in Southcentral Alaska that rely mostly on natural gas for generation also have low rates, paying around 13 cents/kWh in 2011. Rates are much higher in smaller, more remote communities that rely on diesel, with rates ranging from about 50 cents to more than $1.50/kWh. The State helps to lower the price of electricity for residential customers and community facilities in most of these communities through the Power Cost Equalization (PCE) program. However, residents in these communities still pay higher rates even after the receipt of PCE payments (Fay et al. 2013).

The average residential rate in the U.S. was about 12 cents/kWh in 2011. The State average residential rate was 17.6 cents/kWh; just three other states (Hawaii, New York, and Connecticut) had higher average residential rates than Alaska in 2011 (U.S. Energy Information Administration 2014). In Southeast

Alaska in 2011, electric rates for residential customers ranged from 9 cents to 73 cents/kWh (Table 3).[2] The lowest rates were in Metlakatla and Sitka (9 cents/kWh), Petersburg and Ketchikan (10 cents/kWh), Wrangell (11 cents/kWh), and Juneau (12 cents/kWh). The highest rates were in Pelican (69 cents/kWh), Tenakee Springs (69 cents/kWh), and Elfin Cove (73 cents/kWh). Rates for commercial and other users in each community are generally the same or very similar to residential rates (Table 3).

As noted above, the effective rate to residential customers in qualifying communities is lowered by the State of Alaska's PCE program. In Southeast Alaska, PCE reimbursement rates in 2011 ranged from 7 cents/kWh in Haines and Skagway to 40 cents/kWh in the communities served by IPEC (Chilkat Valley, Kake, Hoonah, Klukwan, and Angoon) (Table 3).

Disbursements from the PCE program substantially reduced the cost of electricity for residential customers in participating communities, with PCE reimbursement rates in Southeast communities in 2011 ranging from 7 cents/kWh in Haines and Skagway to 40 cents/kWh in the communities served by IPEC (Chilkat Valley, Kake, Hoonah, Klukwan, and Angoon). Residential rates in Southeast communities after the PCE program ranged from 15 cents to 36 cents/kWh. These rates were still higher than those in non-PCE communities, and more than twice as high in some communities (Table 3).

PCE disbursements per customer are limited to 500 kWh/month for residential customers and 70 kWh/month per resident for community facilities. This limitation coupled with comparatively high electricity rates even after the PCE program, resulted in average residential electricity consumption of 358 kWh/month in Southeast Alaska PCE communities in 2010—less than half the non-PCE average consumption of 978 kWh/month (Fay et al. 2012).

Commercial and other customers, as defined in the footnotes to Table 3, are not eligible to participate in the PCE program and there is no comparable program for these customers. These customers pay the full retail cost for power in all communities, including those where residential rates are lowered by the PCE program. Commercial rates in Southeast Alaska communities in 2011 ranged from 9 cents/kWh (Sitka) to 75 cents/kWh (Elfin Cove) (Table 3).

[2] Table 3 only includes information for those communities with central utility systems. Information is not included for those communities where residents rely upon individual generators.

Table 3. Electric Rates in Southeast Alaska Communities, 2011

Community[2/]	Utility	Residential				Commercial		Other[1/]	
		Customers (Number of Accounts)	Rates ($/kWh)	PCE Rate ($/kWh)[3/]	Residential Rate after PCE ($/kWh)	Customers (Number of Accounts)	Rates ($/kWh)	Customers (Number of Accounts)	Rates ($/kWh)
Metlakatla	Metlakatla Power & Light	641	0.09	0.00	0.09	210	0.12	67	0.18
Sitka	Sitka, City & Borough of	3,682	0.09	0.00	0.09	1,603	0.09	16	0.09
Petersburg	Petersburg, City of	1,367	0.10	0.00	0.10	713	0.12	37	0.11
Ketchikan	Ketchikan Public Utilities	6,208	0.10	0.00	0.10	1,223	0.10	12	0.08
Wrangell	Wrangell, City of	1,050	0.11	0.00	0.11	578	0.11	0	0.00
Juneau	AEL&P	13,842	0.12	0.00	0.12	2,166	0.10	94	0.09
Haines[4/]	AP&T	1,054	0.22	0.07	0.15	329	0.22	49	0.22
Skagway[4/]	AP&T	579	0.22	0.07	0.15	435	0.22	88	0.22
Klawock	AP&T	368	0.24	0.08	0.16	114	0.24	35	0.24
Hollis	AP&T	114	0.24	0.08	0.16	14	0.24	8	0.24
Thorne Bay	AP&T	285	0.24	0.08	0.16	104	0.24	54	0.24
Craig	AP&T	655	0.24	0.08	0.16	293	0.24	73	0.24
Hydaburg	AP&T	123	0.24	0.08	0.16	35	0.24	20	0.24
Gustavus	Gustavus Electric Company	429	0.45	0.17	0.28	120	0.45	30	0.45
Coffman Cove	AP&T	148	0.47	0.29	0.18	29	0.47	13	0.47
Yakutat	Yakutat Power Inc.	275	0.50	0.33	0.17	85	0.50	60	0.50
Naukati Bay	AP&T	60	0.55	0.37	0.18	7	0.55	1	0.55
Whale Pass	AP&T	60	0.60	0.34	0.26	9	0.60	5	0.60
Chilkat Valley	IPEC	201	0.62	0.40	0.22	29	0.62	9	0.62
Kake	IPEC	224	0.62	0.40	0.22	49	0.62	21	0.62
Hoonah	IPEC	358	0.62	0.40	0.22	57	0.62	43	0.62
Klukwan	IPEC	47	0.62	0.40	0.22	7	0.62	8	0.62
Angoon	IPEC	197	0.63	0.40	0.23	27	0.63	14	0.63
Pelican	Pelican Utility	68	0.69	0.38	0.31	14	0.69	27	0.69
Tenakee Springs	Tenakee Springs, City of	123	0.69	0.38	0.31	21	0.69	14	0.69
Elfin Cove	Elfin Cove Utility Commission	41	0.75	0.37	0.36	31	0.75	7	0.73

AEL&P – Alaska Electric Light and Power Company; AP&T – Alaska Power and Telephone; IPEC – Inside Passage Electric Cooperative; PCE rates were not provided for Pelican
1/ Other includes sales to community and governmental facilities and industrial customers.
2/ Table only includes information for those communities with central utility systems. Information is not included for those communities where residents rely upon individual generators.
3/ PCE Rate is the reimbursement amount paid by the state per kilowatt-hour.
4/ PCE Rates and Residential Rates after PCE data for Haines and Skagway are from Fay et al. (2012). All other data are from Fay et al. (2013).
Source: Fay et al. 2012, 2013

Renewable Energy Resources in Southeast Alaska

Hydropower is the main source of power generation in Southeast Alaska, accounting for 96 percent of net generation in 2011 (Fay et al. 2013). Other renewable resources exist and are being explored in the region. The following section provides a brief overview of hydropower and other renewable energy resources in Southeast Alaska.

Hydropower: As part of the Southeast Alaska IRP, AEA contractors developed a comprehensive list of potential hydroelectric projects in the region, with projects identified from numerous sources. One of the main sources was a 1947 report prepared by the Federal Power Commission that identified 200 projects, some of which have since been constructed. In total, the Southeast Alaska IRP identified almost 300 projects, but cautioned there is likely some duplication as some project names changed over time making it difficult to track individual projects. These projects are listed in Appendix C to the IRP (Black & Veatch 2012).

The Southeast Alaska IRP subsequently identifies five proposed hydroelectric facilities as "committed resources" (projects assumed to exist for the purposes of their analysis): Blue Lake Expansion, Gartina Falls, Reynolds Creek, Thayer Creek, and Whitman Lake, and uses a refined screening analysis to identify a total of 24 other potential hydroelectric projects that have the potential to be suitable to serve Southeast Alaska utility systems and communities. These projects are identified in Table 10-4 in the IRP (Black & Veatch 2012).

Wind: According to the Southeast Alaska IRP, there are small areas distributed throughout the region that may possess wind resources, but most utility-scale resources are in areas that are inaccessible due to terrain, are located in IRAs, or are too far from population centers (Black & Veatch 2012).

Geothermal: According to the Renewable Energy Atlas of Alaska, most of Southeast Alaska has low to moderate temperature geothermal systems with surface expressions as hot springs. Use of geothermal resources can involve direct use, such as district heating, greenhouses, and swimming pool heating, or electricity production (AEA and REAP 2013). Three applications for geothermal projects on the Tongass have been submitted to the Forest Service: Bell Island Geothermal, Neka Geothermal, and Tenakee Geothermal. Bell Island is the only remaining active application on file and carried forward in Table 4. The issuance of the 2012 Supplemental Final EIS and Record of Decision (USDA Forest Service 2012) allows geothermal exploration activities across three leases through 2017.

Biomass: Alaska's primary biomass fuels are wood, sawmill waste, fish byproducts, and municipal waste (AEA and REAP 2013). Wood is an important energy source for Alaskans, with more than 100,000 cords of wood burned statewide each year in the form of cordwood, chips, and pellets. Large-scale wood fired power generation ended in Southeast Alaska the 1990s with the closure of the pulp mills in Sitka and Ketchikan, but interest in using sawdust and wood wastes for lumber drying, space heating, and small-scale power production has increased in recent years (AEA and REAP 2013). Current biomass projects are mainly geared toward heating facilities (Black & Veatch 2012). The Sealaska Corporation installed the state's first large-scale pellet boiler at its headquarters in Juneau in 2010, and wood-fired boilers have been installed elsewhere in Southeast Alaska, including Sitka, Craig, and Coffman Cove (AEA and REAP 2013). According to the Renewable Energy Atlas of Alaska, interest in manufacturing wood pellets continues to increase (AEA and REAP 2013).

Solar: The Southeast Alaska IRP did not identify any solar projects in Southeast Alaska and recommended that solar not be used to meet the near-term needs of Southeast Alaska, but should instead be monitored and perhaps considered in the future as costs decrease (Black & Veatch 2012).

Tidal: Tidal and river in-stream energy generation involves the use of hydrokinetic devices placed directly into a river or tidal current to capture the kinetic energy of moving water. AEA has granted partial funding for two tidal power reconnaissance and feasibility studies in Southeast Alaska; the Port Frederick Project and Kootznahoo Tidal Energy Project (Kootznahoo Project), which was formerly known as the Angoon Tidal Power Project, have been surrendered and dismissed by FERC, respectively. A third project – the Gastineau Channel Tidal – identified in the Southeast Alaska IRP (Black & Veatch 2012) was granted a preliminary permit by the FERC in 2010; however, this permit expired in 2013. None of these projects are included in the Forest Service's list of Proposed Renewable Energy Projects (Table 4).

Wave: Alaska has one of the strongest wave resources in the world, but much of this energy is dissipated on remote, undeveloped shorelines. The Renewable Energy Atlas of Alaska identified the Yakutat Wave project as perhaps the best prospect for wave energy development in Alaska (AEA and REAP 2013). This project is part of the Forest Service's list of Proposed Renewable Energy Projects (Table 4).

Proposed Renewable Energy Projects

The Program Overview prepared for the Forest Service's Alaska Region Energy Program in 2010, noted that the Alaska Region of the Forest Service, and especially the Tongass National Forest, is experiencing unprecedented growth in the number of new energy project proposals, due in part to the availability of Federal and State grants, high fossil-fuel costs, proposed transmission lines through Canada, and tax breaks for renewable energy projects (USDA Forest Service 2010). Proposed projects identified at that time included hydropower, geothermal, and tidal energy. More recently in June 2014, the Forest Service has identified 25 proposed renewable energy projects in Southeast Alaska that are currently active (USDA Forest Service 2014a). Twenty-one of these projects are either on or considered likely to affect NFS lands (Table 4; Figure 3).[3] Additional summary information is provided for these projects in Appendix A.

Table 4. Proposed Renewable Energy Projects

No.	Name	Ranger District	On or Likely to Affect NFS Lands	Applicant	Power Destination	LUD(s)	TUS-related Area	Roadless Area
1	Yakutat Wave	Yakutat	Yes	Resolute Marine Energy	Yakutat	Scenic Viewshed	Window	na
2	Annex Creek	Juneau	Yes	AEL&P	Juneau	Semi-Remote Recreation	Window	302
3	Sweetheart Lake	Juneau	Yes	Juneau Hydropower, Inc.	Juneau	Semi-Remote Recreation	Window	302
4	Angoon Hydro/Thayer Creek*	Admiralty	Yes	Kootznoowoo, Inc.	Angoon	Wilderness	Legislated	na
5	Crooked Creek/Jim's Lake	Hoonah	Yes	Community of Elfin Cove	Elfin Cove	Semi-Remote Recreation	Window	311

[3] Note that Figure 3 currently shows 16 of the 25 projects identified in Table 4. Note also that the proposed transmission lines shown on this figure are the "Potential Power Transmission Corridors" from the 2008 Forest Plan LUD map.

Table 4. Proposed Renewable Energy Projects (continued)

No.	Name	Ranger District	On or Likely to Affect NFS Lands	Applicant	Power Destination	LUD(s)	TUS-related Area	Roadless Area
6	Tenakee Springs/Indian River*	Sitka	Yes	City of Tenakee Springs	Tenakee Springs	na		na
7	Lake Osprey/Little Port Walter *	Sitka	Yes	NOAA/NMFS	Little Port Walter Marine Station	Remote Recreation	Avoidance	334
8	Wrangell Met Tower*	Wrangell	Yes	Wrangell Power and Light	na	Timber Production	Window	na
9	Swan Lake Expansion	KMF	Yes	SEAPA	Ketchikan, Swan-Tyee Intertie	Semi-Remote Recreation	Window	526
10	Bell Island Geothermal*	KMF	Yes	B. Wilson	Swan-Tyee Intertie	Semi-Remote Recreation	Window	529
11	Mahoney Lake**	KMF	Yes	City of Saxman, AP&T et al.	Swan-Tyee Intertie	Semi-Remote Recreation	Window	524
12	Soule River	KMF	Yes	AP&T	BC and Lower 48	Remote Recreation	Avoidance	530

12 total. 8 window --- 2 avoidance – 1 legislated – 1 on non-NFS lands.
12 total 8 in IRA -- 1 in Wilderness

Notes:
na – not applicable
KMF – Ketchikan-Misty Fiords
* Non-FERC ** FERC licensed in 1998, unconstructed
Source: USDA Forest Service 2014a, 2014b

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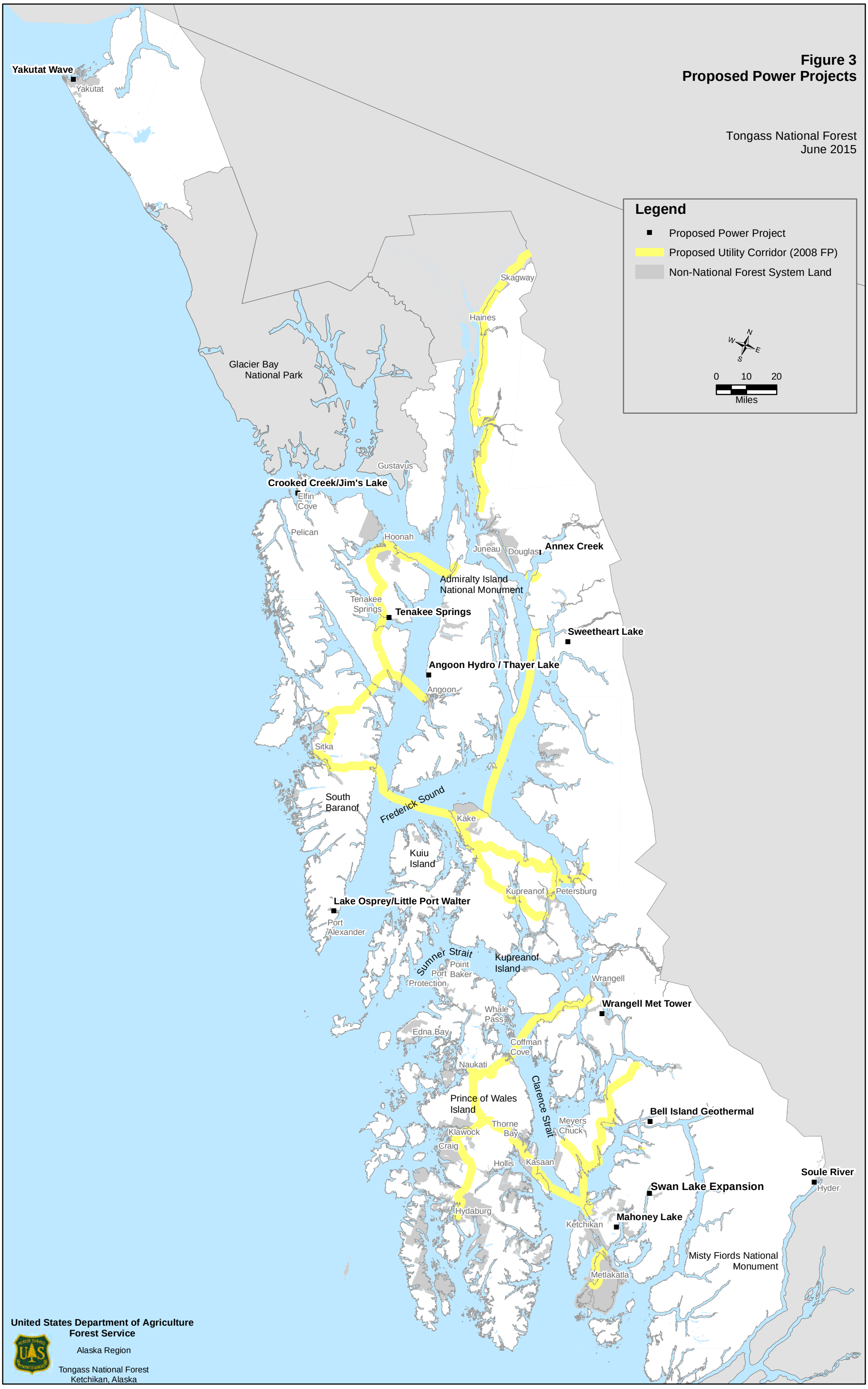

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Twenty of the projects identified in Table 4 are hydroelectric projects. The remaining five projects consist of a wave energy project (Yakutat Wave), three geothermal projects (Bell Island Geothermal, Neka Geothermal, and Tenakee Geothermal), and a meteorological tower (Wrangell Meteorological Tower) (Table 4). Project proponents have filed permit applications with the Federal Energy Regulatory Commission (FERC) for 16 of the projects identified in Table 4, including the Soule River, Takatz Lake, and Thomas Bay projects. Additional projects, including Lake Osprey/Little Port Walter and Angoon Hydro/Thayer Creek, are not under FERC jurisdiction (Table 4).

Most of the identified projects are located in undeveloped areas of the forest. Based on the existing LUDs, seven of the 21 projects on or likely to affect NFS lands are entirely located in TUS "avoidance areas," with two more projects partially located in a TUS "avoidance area." Sixteen of the 21 proposed projects are located in IRAs, with one located in Wilderness (Table 4). Kootznoowoo, Inc., the village corporation of Angoon, is seeking to develop a run-of-river hydroelectric facility within the Kootznoowoo Wilderness. ANILCA section 506(a)(3)(B) granted Kootznoowoo, Inc. ''the right to develop hydroelectric resources on Admiralty Island within township 49 south, range 67 east, and township 50 south, range 67 east, Cooper River Base and Meridian, subject to such conditions as the Secretary of Agriculture shall prescribe for the protection of water, fishery, wildlife, recreational, and scenic values of Admiralty Island.'' ANILCA also recognized the economic and cultural needs and expectations associated with Kootznoowoo, Inc. (ANILCA Sec. 506(a)(3)(B).

Many of the proposed projects identified in Table 4 include transmission lines and in some cases, access roads on NFS lands. The 2010 Region 10 Energy Program Overview (USDA Forest Service 2010) indicated that at least 20 new transmission line corridors being considered for Southeast Alaska would cross NFS lands, noting, however, that many of these are still in the early conceptual planning stage and applications have not been submitted to the Forest Service. Several organizations in Southeast Alaska have planned interconnected transmission lines and or interties that would connect multiple power projects and allow power sales and sharing throughout the region (USDA Forest Service 2010). These include the Swan Lake-Lake Tyee Intertie Project, completed in 2009, and the Kake to Petersburg Transmission Line Intertie Project, which is currently undergoing NEPA review; the Draft EIS was released in December 2014 and a Final EIS and ROD is anticipated in August 2015.

5. Renewable Energy Sites

Alternatives 2, 3, 4and 5 for the proposed Forest Plan amendment would address renewable energy sites through the addition of new forest-wide Renewable Energy plan components, e.g. desired conditions, objectives, standards and guidelines to the Forest Plan. The Renewable Energy plan components would address each energy project including all related facilities, access roads, utility lines for the transmission and distribution of electric energy, ancillary equipment sites and areas required for construction and long-term maintenance of the project. As proposed, should there be a conflict in direction, the proposed plan components in Chapter 5 would take priority over forest-wide and LUD-specific standards and guidelines (subject to applicable laws). These plan components will be presented in the Draft EIS.

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Appendix A

Tongass National Forest Energy Program
Proposed Project List 2012-2017

Tongass National Forest Energy Program – 2012- 2017						June 2015	
Proposed and unconstructed projects on or adjacent to National Forest System lands							
Name - District – Applicant Power destination – FERC #	**Comments**	**Forest Plan LUD, Roadless**	**2012-2013**	**2014**	**2015**	**2016**	**2017**
1. Yakutat Wave – YRD Resolute Marine Energy, Yakutat, P-14438	Located offshore at Cannon Beach.	Scenic Viewshed	FERC prelim permit issued 1/30/2013.	Studies. Plan to install one wave unit in September.	?	?	?
2. Annex Creek – JRD AELP, Juneau , P-2307 Relicensing	FERC license issued 08/31/1988, expires August 2018.	Semi-Remote Recreation, **Roadless #302**	Informal consultation, study plan approved	First study season.	Studies, study reports	DLA, APEA estimated 02/2016.	FLA
3. Sweetheart Lake – JRD, Juneau Hydropower Inc., Juneau, SE Intertie, P-13563	FERC issued 2nd prelim permit on 4/11/2013.	Semi-Remote Recreation **Roadless #302**	Studies, Draft LA.	FLA, PDEA submitted on 05/28/2014. FERC estimating it will be ready for env. analysis in 11/2014.	Estimating FERC DEIS 08/2015.	Estimating FERC FEIS March 2016. License?	?
4. Angoon Hydro/Thayer Creek – ANM, Kootznoowoo, Inc., Angoon, Non-FERC project	ROD signed May 2009. Rec'd AEA funding for permitting/final design.	**Wilderness**	AP&T issued special use permit to support planning and design 03/2013.	Development plans? Permits?	Development plans? Permits?	?	?
5. Crooked Creek/Jim's Lake HRD, Community of Elfin Cove, Elfin Cove, P-14514		Semi-Remote Recreation, **Roadless #311**	FERC prelim permit issued on 7/19/2013.	Studies. 08/2014 filed for FERC exemption.	Draft LA?	Final LA?	?
6. Tenakee Springs /Indian River – SRD City of Tenakee Springs, Tenakee Springs, Non-FERC project	Project is on State and City land but will impact FS fish passage. Upper reaches of watershed on NFS lands. FERC determined license not needed 5/26/2010.	N/A	Studies, Design, Coordination	Construction of access road began in spring 2014.	Construction on going?	On-line?	--

Name - District – Applicant Power destination – FERC #	Comments	Forest Plan LUD, Roadless	2012-2013	2014	2015	2016	2017
7. Lake Osprey/Little Port Walter – SRD NOAA/NMFS, Little Port Walter Marine Station, Non-FERC project	Federally-owned project.	**Remote Recreation, Roadless # 334**	Planning.	District continues to assist NMFS on NEPA analysis.	?	?	?
8. Wrangell Met Tower-WRD Wrangell Power and Light, Non-FERC project	Funded by AEA	Timber Production	--	Special use permit issued 02/06/2014 to study feasibility for a wind energy project.	Permit expires 12/ 31/2015.	?	?
9. Bell Island Geothermal – KMRD, B. Wilson, Swan-Tyee Intertie, Non-FERC project	TNF minerals group has lead.	Semi-Remote Recreation, **Roadless # 529**	ROD signed 11/2012. FS consents to BLM leases. BLM issued three leases to Beverly Wilson on 06/01/2013.	?	?	?	?
10. Swan Lake Expansion– KMRD, SEAPA, Ketchikan, Swan-Tyee Intertie, P- 2911 Non-capacity Amendment	Most of existing project is on State land. The dam raise may affect up to 26 acres of NFS lands.	Semi-Remote Recreation, **Roadless # 526**	Extensive informal consultation and involvement.	Draft amendment application filed with FERC on 04/11/2014. FS comments provided 06/02/2014.	License amendment issued August 18. FS issues special use permit?	Construction estimated to begin in January?	?

Name - District – Applicant Power destination – FERC #	Comments	Forest Plan LUD, Roadless	2012-2013	2014	2015	2016	2017
11. Mahoney Lake – KMRD City of Saxman, AP&T et al. Swan-Tyee Intertie, P-11393	Licensed in 1998. Stay of license issued in 2004. Upper lake, road segment, and transmission line on NFS lands.	Semi-Remote Recreation **Roadless #524**	10/2011 SEAPA asks stay to be removed. 11/2011 agent for licensee requests FERC take no action in response to the SEAPA filing.	?	?	?	?
12. Soule River – KMRD Alaska Power & Telephone, BC and Lower 48, P-12615, P-13528	First preliminary permit issued 07/2006. Draft license application and draft EA filed 04/2011. FS filed comments and p Preliminary 4(e) conditions in 05/2011. Would require Forest Plan amendment to build as planned.	**Remote Recreation, Roadless #530**	FERC issued 3rd prelim permit on 5/20/2013. DOE notices filing of Presidential Permit application on 07/30/2013.	FS investigative studies permit expected to be issued by 06/30/2014.	?	?	?

Summary:

8	FERC hydro and wave projects.
2	Non-FERC hydro projects.
1	geothermal projects
1	Wind energy feasibility project
12	energy projects

Typical FERC Hydro Project Activities and General Timeline:

Year 1: Applicant submits application to FERC and is issued a Preliminary Permit. This gives applicant exclusive right to study feasibility of a site and file a license application within three years. Forest Service files as intervener and submits comments. Applicant applies to Forest Service for investigative studies permit. Forest Service issues special use authorization for investigative studies.

Year 1-2: Pre-application document (PAD) is submitted by applicant to initiate public process and describe project thought to be feasible. Forest Service provides comments. Study plans are developed in consultation with stakeholders. Field studies are conducted. Forest Service provides comments.

Year 2-3: More studies. Applicant prepares Scoping Documents 1 and 2. Applicant prepares Draft License Application and submits to FERC. Includes detailed description of project and environmental analysis. Forest Service comments and submits preliminary 4(e) terms and conditions.

Year 3-4: More studies. Applicant prepares/submits Final License Application to FERC, including responses and revisions based on DLA comments. FERC issues EA. Applicant may submit application to Forest Service for permit for the licensed project.

Year 4-5: FERC issues license. Applicant completes required plans for construction, monitoring, etc. Forest Service comments. Applicant submits application to Forest Service for permit for the licensed project—if has not already done so. Forest Service issues decision and authorizes project to occupy NFS lands.

Year 6-?: Post-licensing plans and reports. Construction begins. Forest Service reviews, monitors, and inspects.

FERC project documents can be viewed/downloaded at: www.ferc.gov/docs-filing/elibrary.asp

Tongass National Forest Hydropower Projects								June 19, 2014
Proposed and unconstructed projects on or adjacent to National Forest System lands								
FERC Project #	**Name**	**District**	**Active Project**	**FERC has lead**	**on NFS or likely to affect NFS**	**in Roadless**	**in Wilderness**	**Status**
P-13599	Lace River	Juneau	?	Yes	Yes	Yes	No	second PP denied on 02/14/2014
P-14480	Sheep Creek		Yes	Yes	No	non-NFS	non-NFS	PP, studies
P-2307	Annex Creek		Yes	Yes	Yes	Yes	No	NOI/PAD, studies
P-13563	Sweetheart Lake		Yes	Yes	Yes	Yes	No	FLA submitted 05/28/2014
non-FERC	Angoon Hydro/Thayer Creek	Admiralty	Yes	No	Yes	No	Yes	Third-party issued FS special use permit to support planning and design 03/2013
P-14514	Crooked Creek/Jim's Lake	Hoonah	Yes	Yes	Yes	Yes	No	PP, studies
P-14066	Gartina Falls		Yes	Yes	No	No	N/A	FERC licensed 01/29/2013
DI11-9-000	Water Supply Creek		Yes	No	No	No	N/A	FERC found license not required 02/21/2012
non-FERC	Tenakee Springs/Indian River	Sitka	Yes	No	Yes	No	No	Access road construction began spring 2014
P-2230	Blue Lake		Yes	Yes	Yes	Yes	No	In construction phase
P-13234	Takatz Lake		Yes	Yes	Yes	Yes	No	2nd PP, studies
non-FERC	Lake Osprey/Little Port Walter		Yes	No	Yes	Yes	No	District assisting NMFS with envt. analysis
P-14360	Cascade Creek II	Petersburg	Yes	Yes	Yes	Yes	No	PP
non-FERC at present	Sunrise Lake	Wrangell	No	No	Yes	Yes	No	City of Wrangell holds FS special use permit
P-14285	Moira Sound	Craig	Yes	Yes	Yes	Yes	No	PP, studies
P-11480	Reynolds Creek		Yes	Yes	No	non-NFS	non-NFS	In construction phase.
P-11841	Whitman Lake	Ketchikan-Misty Fiords	Yes	Yes	Yes	Yes	No	Construction began 02/2013
P-2911	Swan Lake		Yes	Yes	Yes	Yes	No	Draft Amendment Application filed on 04/11/2014
P-11393	Mahoney Lake		Yes	Yes	Yes	Yes	No	Licensed in 1998. Stay of license in 2004
P-12615, P-13528	Soule River		Yes	Yes	Yes	Yes	No	PDEA/DLA, 3rd PP, Pres Permit application
		Totals	20	15	16	14	1	

Summary:

20 hydropower projects
15 are FERC projects
4 are non-FERC projects

16 projects are on NFS or likely to affect NFS lands
14 projects in Roadless
1 project in Wilderness